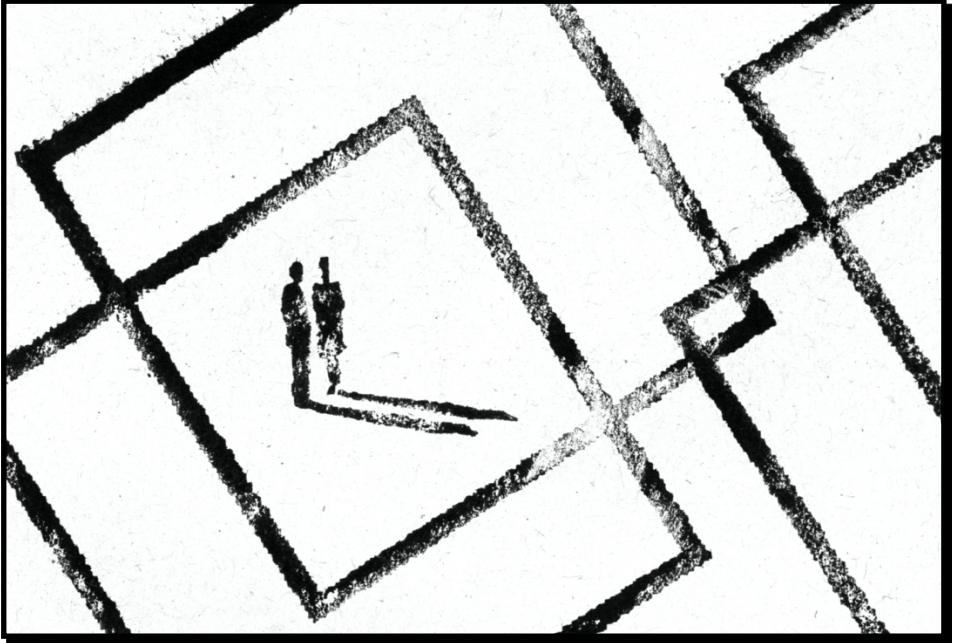


**Arianna Agudio**

941836



# Collaborative Learning

## RESEARCH THESIS

How creative organisations can build and maintain shared knowledge  
in hybrid working environments

**DID** Digital and  
Interaction Design



**POLITECNICO**  
MILANO 1863

Academic tutor: prof. Margherita Pillan  
School of Design, A.Y. 2020/2021



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In questo nuovo mondo nomade  
[...] la nostra preda è la conoscenza  
e la comprensione dei processi creativi  
della vita e della società.

**Marshall McLuhan**  
**Gli strumenti del comunicare**



# Abstract

## ITALIANO

L'apprendimento collaborativo è un asset strategico per le organizzazioni che si occupano di creatività e innovazione. I team di progetto devono investire da un lato, nel rifinire i loro processi di gestione della conoscenza e le loro strategie in supporto all'apprendimento dell'organizzazione. E dall'altro, devono anche potenziare le loro pratiche collaborative e la costruzione di strutture orizzontali, quali le comunità o i circoli creativi, per assicurarsi che il contesto dell'organizzazione sia effettivamente favorevole all'apprendimento. Leadership e governance hanno un ruolo decisivo in questo contesto dinamico e distribuito, dato in particolare che gli ambienti ibridi di lavoro stanno ridefinendo il nuovo panorama e le sue complesse sfide. I team creativi e di design poi, vivendo in contesti di lavoro intensivi dal punto di vista di gestione della conoscenza, spesso all'avanguardia nell'innovazione tecnologica, sono particolarmente esposti a questi cambiamenti e rappresentano quindi un'opportunità per scoprire nuove soluzioni promettenti, e un terreno fertile per la sperimentazione su questi temi.

Per capire come i team creativi possono costruire e mantenere della conoscenza condivisa in un ambiente di lavoro ibrido, sfrutto i concetti teorici e i modelli estratti dalla letteratura per delineare l'ambito del problema e i fattori che lo definiscono. Applico poi i metodi di ricerca a uno scenario reale, per arricchire la definizione del problema con dati e risultati direttamente dal campo. La conoscenza raccolta da entrambi i flussi di ricerca viene poi utilizzata per elaborare una strategia preliminare di apprendimento collaborativo per lo scenario di riferimento. Il risultato dell'attività di ricerca viene presentato al team, e il feedback raccolto tramite questa attività sperimentale viene quindi utilizzato per valutare la proposta e l'approccio alla domanda di ricerca.

Sostengo quindi una combinazione equilibrata di strategie di codificazione e socializzazione per la gestione della conoscenza all'interno dei team creativi, come anche la continua sperimentazione e iterazione che permette ai team di adattare dinamicamente i processi e le strutture organizzative al contesto in costante evoluzione.

## ENGLISH

Collaborative learning is a strategic asset for creative and innovation-driven organisations in the knowledge economy. Project teams need to invest on the one hand in refining their knowledge management processes and strategies to support organisational learning. And on the other, they also need to work on boosting their collaboration practices and community building to ensure that the organisational environment is actually conducive to learning. Leadership and governance have a decisive role in this dynamic and distributed setting, in particular as hybrid working environments come to define the new panorama and its complex challenges. Design and creative teams in particular, being in knowledge intensive workspaces, oftentimes at the forefront of technological innovation, are particularly exposed to these changes and therefore represent an opportunity to discover early adopters of promising solutions, as well as a fertile ground for experimentation on these topics. To understand how creative teams can build and maintain shared knowledge in the hybrid working environment I exploit theoretical concepts and models extracted from the literature to outline the problem space and the factors that define it. I then apply research methods to a real scenario, to enrich the problem space definition with real data and insights from the field. The knowledge gathered from both research streams is then used to elaborate a preliminary collaborative learning strategy for the scenario of reference. The outcome of the research activity is presented to the team, and the feedback gathered from this experimental activity is used to assess the proposal and the overall research approach.

I therefore argue for a balanced combination of codification and socialisation strategies for knowledge management within creative teams, and for the continuous experimentation and iterations that allow teams to dynamically adapt organisational processes and structures to the changing context.

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# Introduction

Knowledge workers need to build, collect, organise, and effectively share information in their daily professional practice. This means that the organisations capable of learning and effectively using knowledge to generate value through innovation are those that can survive and thrive best in the knowledge economy.

Hybrid working environments have added complexity to the process of organisational learning as activities and documentation artefacts in the physical workplace have been heavily integrated (if not in many cases completely substituted) by virtual ones.

The current phase is transitional and complex, where the fully physical and the fully virtual models are heavily interacting to each define its own territory and boundaries, as well as new solutions for their coexistence and cross-contamination.

The complexity of this scenario is also being defined by the variety of artefacts that support and document organisational knowledge: information is in fact spread out in presentations, emails, design files, but also meetings, notes and mindmaps, in an ever-changing digital world. Teams therefore rely on a mix of individual and collaborative work, and of multiple platforms, software, and tools to handle knowledge.

The Covid-19 pandemic has exacerbated the aforementioned shift from physical to virtual practices in a process that will not be fully reversed once the emergency is over: collaborative processes have been moved online for extended periods of time putting to the test most teams and transforming their solutions.

Particularly exposed to these latest changes in the work field are organisations dealing with design work and creative practice. This is because these types of organisations represent a particular context in which all

workers (designers) are knowledge workers: all the organisation's members are directly dealing with and being affected by knowledge management processes in their daily work. In my research I therefore focus on this knowledge intensive context to study its knowledge management dynamics. But as in the knowledge economy a growing number of professions in different fields requires more and more creative thinking, idea generation and problem solving, this analysis can provide insights on dynamics which are valuable in other fields and can be transferred to other contexts as well.

The current heavily uncertain scenario opens up many opportunities for innovations and improvements in organisations of all types. The aim of this research is to therefore take the opportunity offered by this tumultuous and transitional time, and face the challenge:

- An extensive literature review on knowledge work, hybrid working environments and organisational learning aims to identify the key theoretical tools and concepts that can be used to frame the current scenario.
- An exploratory research phase is then aimed at applying the outlined theoretical framework to a real context and scenario, where I could enrich it with first-hand information: Notation Creative Consulting AG, a one-year-old medium-sized design agency, whose multidisciplinary team I joined soon after its foundation.
- The research activities and the critical application of the theoretical tools from the literature are finally aimed at mapping the current process of the organisation, the underlying reference model, and the main problems that currently affect it. The ultimate goal of this activity is to identify the key knowledge management challenges of the organisation, and to propose targeted interventions or experiments to solve them. Evaluating their effectiveness, the response and participation of the team, and the explicit feedback received, is finally aimed at gathering actionable insights for the organisation, as well as at assessing the overall contribution of my analysis.

The objective of this research thesis is therefore to contribute to the research in the area of collaborative learning and of knowledge management processes at large, paying particular attention to how these processes are performed in the context of creative teams and innovation-driven organisations.

My hope is also that Notation and its team will be inspired by the theoretical models and concepts collected in the literature review, but also that they will directly benefit from these research activities both on the practical and on the strategic level.

# Literature Review

## 2.

# Knowledge work

In the technological world we live in today, the ultimate purpose of the human is to learn and to know. With the transition from an industrial economy to a knowledge-based economy, value and wealth come in fact from the transfer of information rather than from the immediate production of goods (McLuhan, 2015).

In today's socio-economic environment, many professions can therefore be re-framed as knowledge work.

“Knowledge work is defined as the creation, distribution, or application of knowledge by highly skilled and autonomous workers using tools and theoretical concepts to produce complex, intangible, and tangible results.”

(Antikainen & Lönnqvist, 2005; Davenport, Thomas, & Cantrell, 2002; Drucker, 1999; Harrison, Wheeler, & Whitehead, 2004; Pyöriä, 2005; Schultze, 2000; in Bosch-Sijtsema et al., 2011)

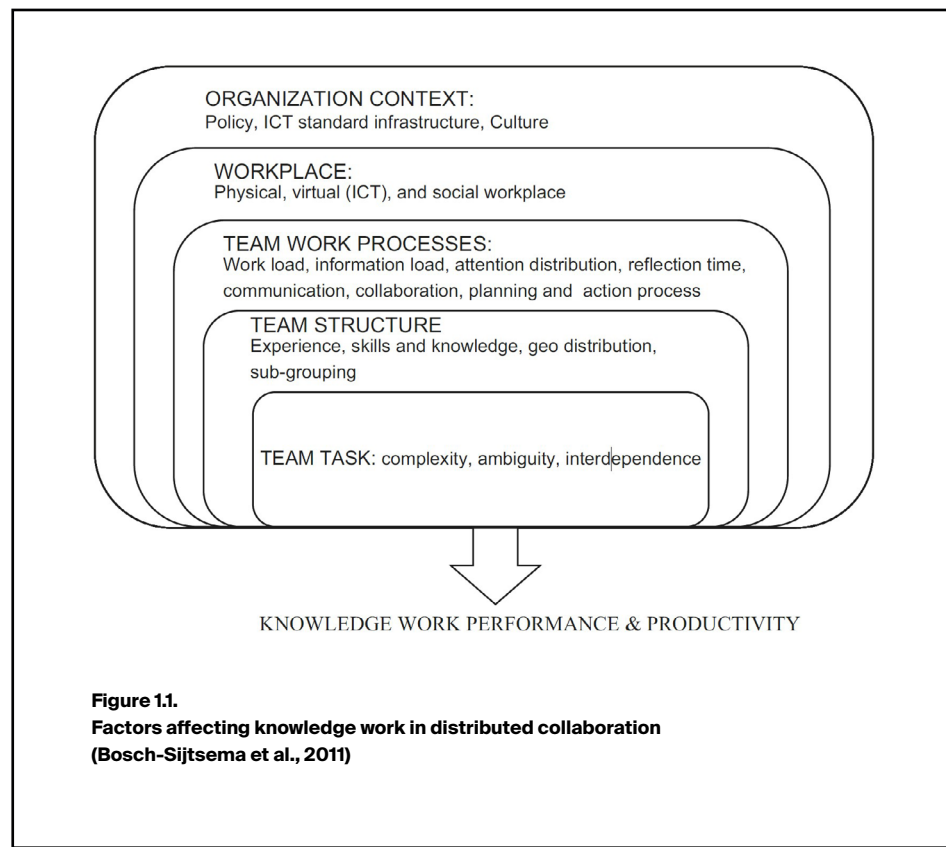
Given its particular nature, knowledge work is typically

- Unstructured
- Non-routine
- Complex
- Situation specific

It is also typically performed in teams where cooperation and collaboration make it possible to work on tasks too complex for one single individual (Bosch-Sijtsema et al., 2011).

These specific characteristics, the multiple potential outcomes that knowledge work can generate, and the influence of team dynamics on collaboration effectiveness, make it particularly hard to evaluate workers' performance with traditional models and approaches.

The factors to consider are in fact more complex than those that fit into the more traditional Input-Process-Output (I-P-O) logic (Bosch-Sijtsema et al., 2011).



New frameworks and performance models for the analysis of knowledge work need to consider the traditional factors of

- Task contents

- Team structure
- Team work process and collaboration modalities

But also the contextual ones of

- Workplace (with its information and communication technology - ICT - infrastructure) and spaces (with the new opportunities provided by the use of such technologies)
- Organization (with its support structure and policies)

To keep competitive and up to speed in such a fast changing environment, organizations need to constantly adapt, adjust, and align to the five aforementioned factors (Bosch-Sijtsema et al., 2011).

These factors can be used to frame knowledge work of both co-located and distributed teams in the new working context and therefore provide an overview of the main characteristics with which knowledge work can be analysed.

## Task content

Knowledge workers perform both individual and collaborative tasks which vary in complexity: tasks can be spread on a range from simple to high complexity according to the cognitive and emotional demands required to perform and successfully complete them.

Task interdependence describes the amount and the quality of interactions among groups and their members and it can be classified as (Thompson, 2003):

- Pooled: each team or department has different and independent functions which converge and get combined on a higher level and contribute to the overall result.
- Sequential: organisational units perform in sequence, as if in an assembly line, so the output of one unit is the starting point for the following one.
- Reciprocal: teams interact in a cyclical and closed loop, a model that makes the still sequential interdependence more responsive to change.

The lack of discussion among team members of mutual expectations

and operative alignment can increase task ambiguity.

Complexity, interdependence and ambiguity increase the demands for the team and therefore influence knowledge work, potentially affecting productivity. The task content and typology have in fact influence on the whole context in which they are situated, in particular they spread on the chain of factors that go from the individual worker to the whole team and its process:

- Competences, skills and knowledge required
- Team structure
- Collaborative processes
- Coordination
- Workflow

## Team structure

The parameters that can be used to characterise the team structure are key indicators of the team's performance and effectiveness:

- Team size
- Members' geographical location
- Cultural backgrounds and languages
- Temporal boundaries
- Organisational membership
- Expertise - knowledge, skills, abilities
- Personality characteristics
- Team tenure
- Members' past experiences

These parameters shape the communication flow, the conflict resolution strategies, and they also determine the workers' motivation and team spirit, a key factor in the estimation of job satisfaction.

Teams of knowledge workers typically have a variable structure and many possible configurations. Among those it's important to highlight the peculiarity of the structure that distributed teams have: they are in fact often asymmetric in their distribution for what concerns skill and experience diversities, as well as team configuration, which directly translate to diversities in the distribution of seniority, domain expertise

and years of work experience within the organization.

For this type of teams, autonomy is a key factor and the self-managing behaviour they exhibit is a managerial challenge for the new generation of leaders.

## Team work process

Given that many knowledge work tasks are collaborative or closely interrelated and part of a shared process, team members interact to combine resources to effectively perform them. This implies that workers are involved in the process that results from this combination of resources on all cognitive, affective, motivational and behavioural levels.

The overall work process is determined and supported by some key activities and sub-processes, which can be operational - like planning, goal setting, communication, cooperation, coordination, information transfer, and learning - but also interpersonal processes - like cohesion, trust, and satisfaction.

The complexity that ensues from these layers of nested processes is again a challenge which can be exacerbated by distributed collaboration practices. The processes of project-based organisation are in fact already in traditional contexts affected by workload, information and attention load (from multiple projects work) which translates to insufficient time to perform simple tasks and to reflect on complex tasks, and in distributed settings they can be additionally affected by the insufficient access to organizational learnings of past projects and tasks, which leads to less efficient work (double work) and less effective work (low quality work).

Within this complex process the worker can engage in four typical work modes (Gensler, 2008):

- Socialise - engage in interactions that create social bonds and productive relationships (6% of work time on average);
- Focus - concentrate on task or project work (59% of work time on average);
- Collaborate - gather to work or co-create in a group (22% of work time on average);



- Learn (in a structured, collaborative or independent way) - dedicate time to get new knowledge or a new skill via education or experience (4% of work time on average).

Each work mode is crucial to effectively and efficiently achieve results and move the process forward but research shows that the difference between average companies and top performing ones is that the latter focus more on learning (157% more critical to project success), collaboration (122% more important) and socialisation (twice as critical).

## Workspace

The knowledge workspace is defined as a combination of physical, social and organisational factors that influence in particular informal communication, interaction dynamics, and learning patterns.

The match between the workplace design and the teams' and tasks' requirements is essential to the productivity and healthiness of the organisation.

ICT and connectivity are deeply ingrained in today's typical workplace whose definition has evolved to encompass

- Physical spaces
- Virtual spaces
- Social spaces or interaction spaces, both formal and informal

These different types of spaces affect the ability and the opportunities that knowledge workers get to engage in the different work modes required to successfully complete tasks and achieve project goals: socialise, focus, collaborate and learn (Gensler, 2008).

### PHYSICAL SPACE

Teams mainly need a physical workplace to

- Work with the team;
- Interact informally with members of the organisation;
- Build team identity;
- Access equipment.

The configuration of the physical workplace heavily affects the operational work of individual members and teams while it also comes to

shape allowed or favoured social behaviours.

As an example, the open plan office which has been adopted by many organisations as the flexible solution fit for all knowledge workers (Greene and Myerson, 2011), can on the one hand facilitate communication and interaction while on the other it can also create the conditions for activities causing noise and distraction to individual focused work and a lack of privacy that can in some cases hinder creative processes (Bosch-Sijtsema et al., 2011).

### VIRTUAL SPACE

Knowledge work today is immersed in the virtual space, which can be seen as a tight web made up of the communication and the collaborative technologies that support dislocated interaction. Tools, hardware, software, and ICT infrastructure therefore shape an environment whose relationship with the physical one is flexible and changing: it can at times be an overlay on top of a strong physical space but it can also be a completely independent or alternative space with different dynamics and structures.

Workers and leaders of the knowledge economy are still discovering the potentialities of virtual spaces as they develop and evolve. How to navigate them in a way that is not only efficient but also healthy, satisfying and enriching for workers is one of today's biggest challenges.

### SOCIAL SPACE

The interaction between people, both in the physical and virtual workspaces, defines the social space. This is the dimension in which informal discussions and social gatherings reside and where community is built. The social space and the activities that it hosts are heavily influenced by factors (both in their real and perceived aspects) such as proximity and availability of dedicated space and time.

Social space plays a key role in determining workers motivation and sense of belonging. Members that spend the majority of their work time in the virtual space, and that can therefore be defined as remote members, can in particular be affected by the lack of a social environment for informal meetings and often report feeling excluded.

# Organisation

The organisational context is defined by its

- Structure
- Resources
- Culture
- Policies
- Standards

In turn it comes to define how teams are working as these factors shape tasks difficulty, complexity and tempo. The structure of the organisation, which is defined across physical, virtual and social spaces, determines in fact how they coexist and interact: different policies, culture and infra-structure alignments can for example facilitate or inhibit collaboration and mobile work.

This framework by Bosch-Sijtsema et al. (2011) provides a wide overview of the factors involved and a core map to navigate and to analyse knowledge work both for co-located, distributed and remote teams. Though the main focus is on team performance and productivity it ultimately also touches aspects that are connected to and highly dependent on individual sense of purpose, healthiness and happiness: these factors are crucial in the analysis of work and can further push the analysis of creative organisations in particular one level deeper.

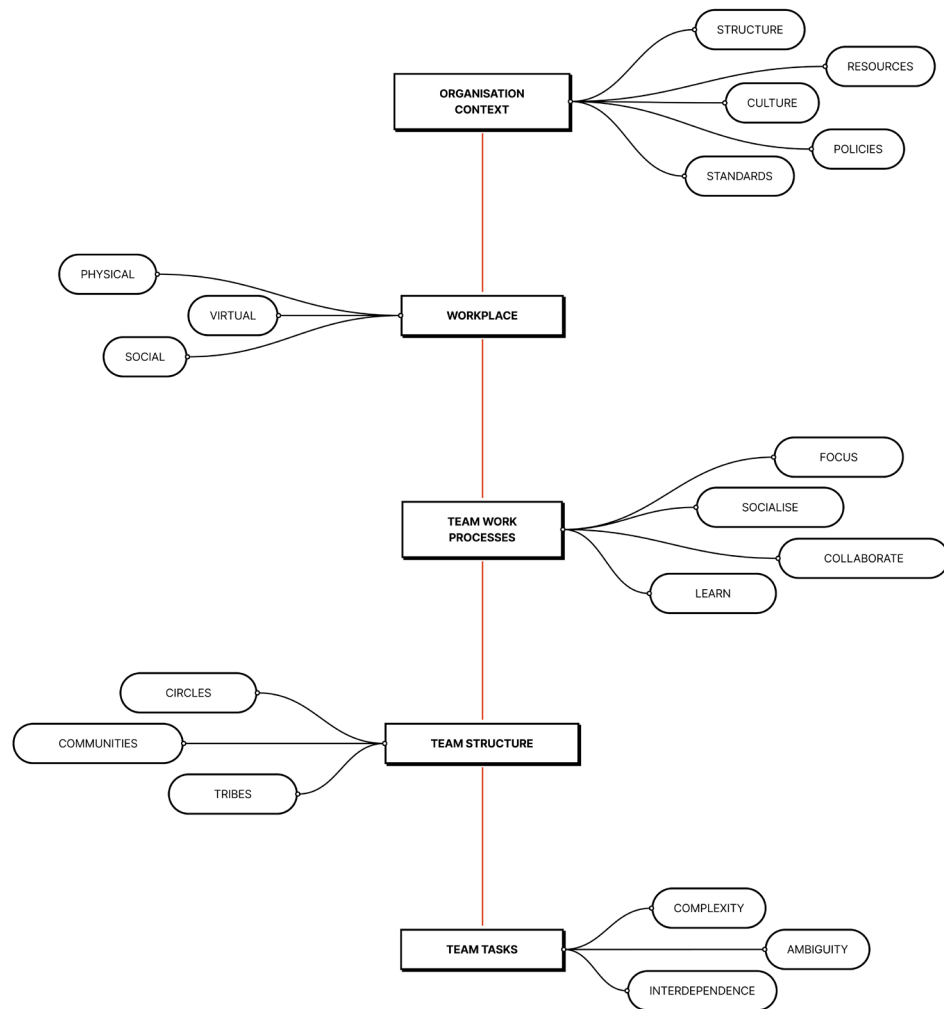
## Knowledge assets

Knowledge workers handle different types of knowledge assets in their daily operations. Knowledge assets are the organisation-specific resources necessary for the process of value creation. They are dynamic and constantly evolving, and can be categorised into four different types: experiential, conceptual, routine and systemic knowledge assets.

- **Experiential:** shared tacit knowledge built through common experiences. It is hard to articulate, extract and verbalise, therefore also hard to imitate. Includes skills and procedural knowledge (know-how), emotional knowledge (care, love, trust, security), physical knowledge (facial expressions and gestures), energetic knowledge (enthusiasm and tension), and rhythmic knowledge (improvisation and entertainment).
- **Conceptual:** explicit knowledge articulated in tangible form through images, symbols and language. Includes concepts, designs and brand equity.
- **Routine:** tacit knowledge embedded in the actions and practices of the organisation. Includes organisational culture, rituals, patterns of thinking and actions. It can be reinforced and shared via stories and continuous exercise.
- **Systemic:** systematised and packaged explicit knowledge, visible and easy to transfer. Includes technologies and product specifications, licences, patents, databases, manuals and documentation on customers and suppliers.

In order to create, maintain and exploit knowledge in all its potential, all types of assets have to be considered in the dynamic knowledge management processes.

(Nonaka, Toyama and Konno, 2000)

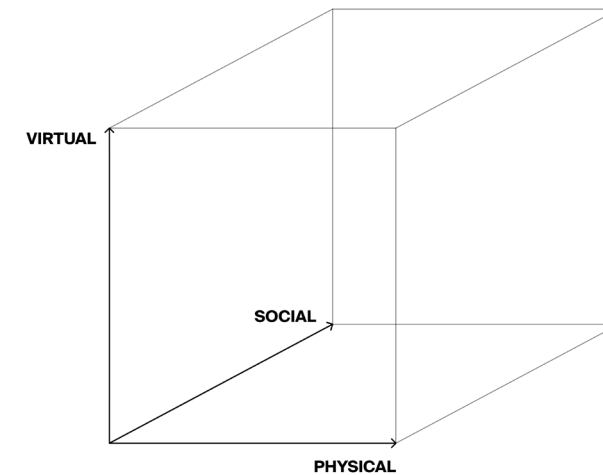


**Figure 1.2**  
Overview of the main organisational factors from Bosch-Sijtsema et al. (2011) expanded and integrated with the main concepts extracted from the literature

### 3.

## An interaction-focused analysis of work spaces

Here I collect some key concepts from literature to frame the interactions across the three interfaces: with and within the physical, virtual and social spaces and the interplay between them.



**Figure 3.1.**  
Physical, virtual and social spaces as dimensions to map the work experience of knowledge-driven organisations

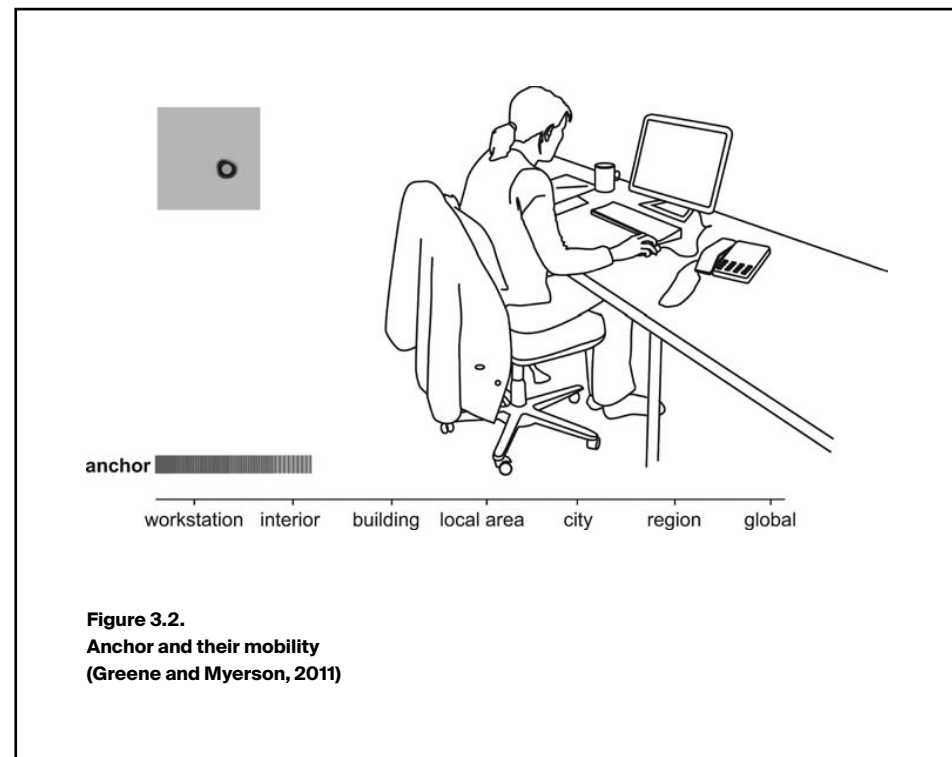
# The physical interface

The physical workplace plays a key role in determining knowledge workers' activities and processes. But it's also true that knowledge workers' attitudes, needs and behaviours can shape the physical space in which they are situated and determine how that space is being lived.

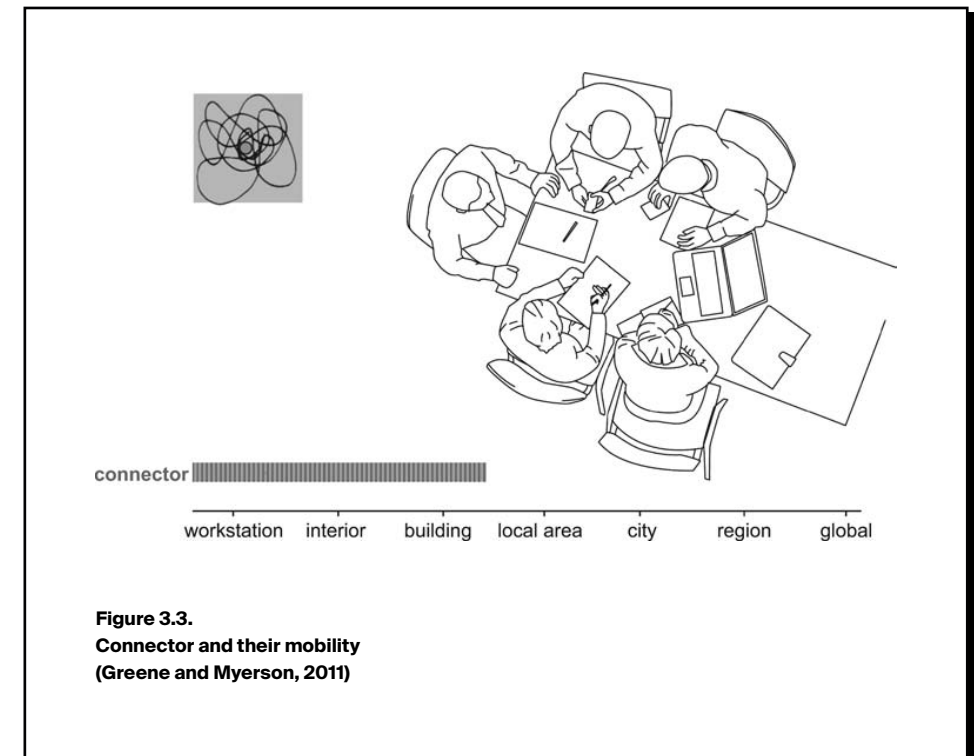
## HOW DO KNOWLEDGE WORKERS INHABIT THE PHYSICAL WORKSPACE?

Greene and Myerson (2011) defined different types of knowledge workers according to their relationship with the physical space:

- The Anchor
- The Connector
- The Gatherer
- The Navigator

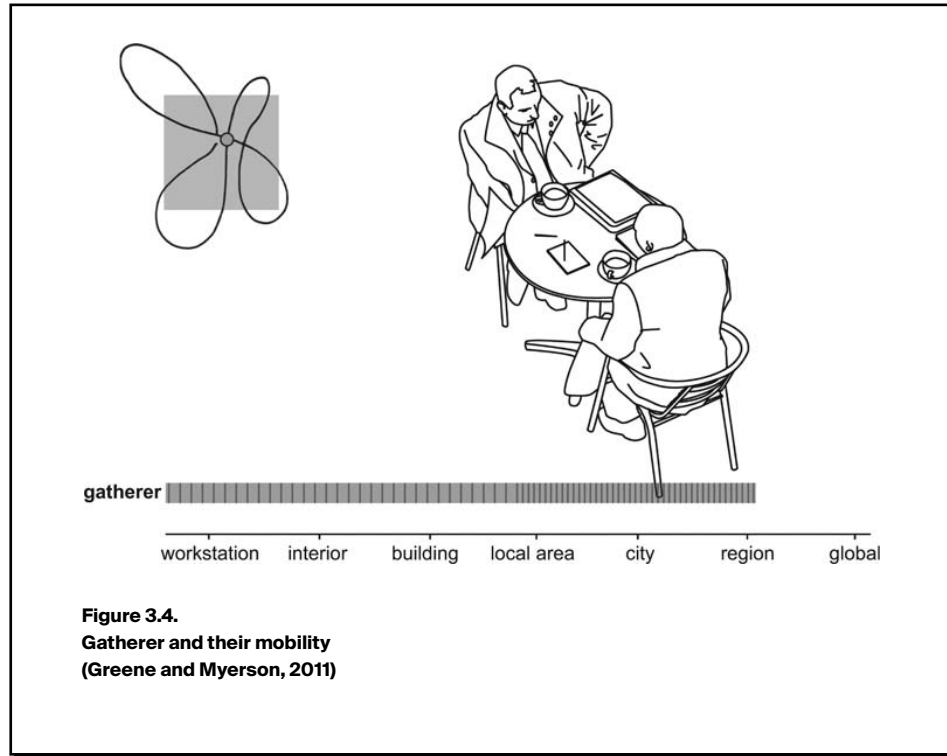


THE ANCHOR is the office-based sedentary worker. Anchors have a strong sense of ownership and ritual connected with the physical space of the office, and given their consistent presence they are the ones to go to in order to collect information: this role they naturally pick up makes them an essential player in the knowledge transfer within the organisation. Their activities, being formal or informal, collaborative or solo, are mostly scheduled in predefined slots. Anchors' needs are not entirely met by the open plan office where ambient noise and interruption may disrupt the flow of focused work.

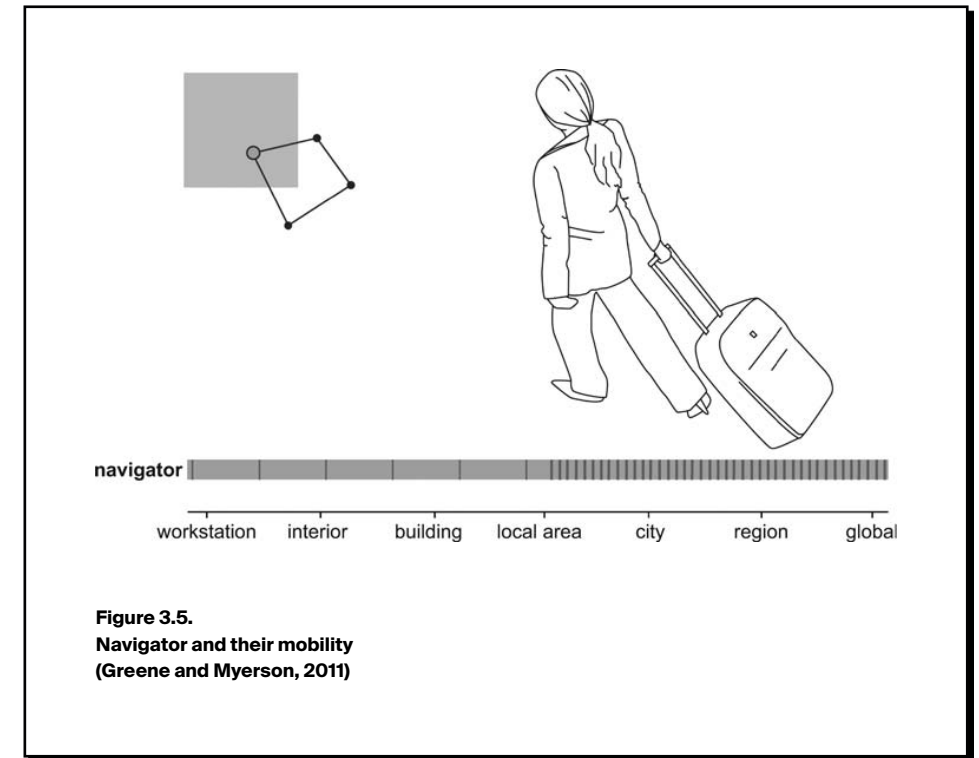


THE CONNECTOR type of knowledge worker depends on interaction, collaboration and communication. They continuously tour around the workplace and benefit from having alternative places that answer different temporary needs. Their needs are not entirely met in workplaces that mainly (if not exclusively) rely on laptops and screens to perform

tasks, and that apply clean-desk policies which hinder the creativity of those that need to work and organise information in a more spatial or visual way.



THE GATHERER spends the majority of their time away from the office. They rely on mobile and wireless technology to travel and build relationships outside the organisation. The office for them acts as a central fulcrum to which they periodically return in order to process information and transfer newly acquired knowledge to other members. Their needs are met when they can find a temporary space both for collaboration and for reflection, the latter being a task for which they also benefit from uninterrupted focus time from home office.



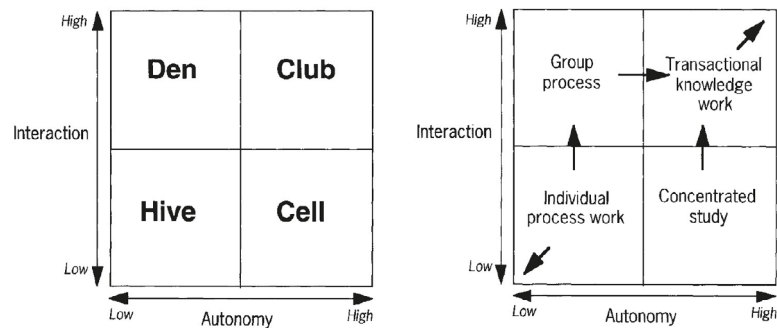
THE NAVIGATOR type makes up the growing group of the nomad workers. They are rarely sitting at an office desk and given the small amount of time when they are physically present at the organisation's workplace it is more difficult to frame them in traditional hierarchies and structures. Their needs are met when they are made to feel welcome and comfortable in the workplace upon their return.

The spectrum of possibilities outlined by Greene and Myerson (2011) in their framework opens up the discussion to more flexible and distributed ways of collaboration for creative teams which ultimately need a responsive space with permeable boundaries where they can express their creativity and individuality. For the organisation this means establishing new cultural protocols, where organisational members can to a certain extent choose and control the design and adjustments of the knowledge-led workplace.

This complex set of requirements already implies a vision of the office as an aggregate entity made up of different workplaces, both physical and virtual, and therefore oftentimes hybrid.

## HOW DO KNOWLEDGE WORK PATTERNS SHAPE THE PHYSICAL WORKSPACES?

Four archetypes of organisational models can be identified, each defined by a specific spatial arrangement (Laing et al., 1998). The workspace can in fact be configured as either a Den, a Club, a Hive, or a Cell according to the level of interaction and autonomy it allows and supports. Where interaction represents the level of face-to-face exchanges, as well as formal and informal communications. And where autonomy refers to the degree of freedom that organisation members have on their work and their tasks.



**Figure 3.6.**  
**Directions for the future of work spaces**  
(Laing et al., 1998)

THE HIVE is a low autonomy and low interaction model common for process based individual work.

THE CELL is a high autonomy and low interaction unit for knowledge based individual and concentrated work.

THE DEN is a low autonomy and high interaction configuration fit for process based teams and group work.

THE CLUB is a configuration that allows high autonomy and high interaction for knowledge based teamwork.

Laing et al. (1998) already back in the nineties discovered “an inherent dynamic trend” in the hive, cell, den, club model: they observed in its early days a movement towards the office as club, and towards patterns and model that favour more interaction and more autonomy.

"We predict that: much individual process work (hive) is likely to be exported to lower wage economies or to be automated; group process (den) and concentrated study (cell) are increasingly likely to merge or run parallel within increasingly plural work patterns; most office work will eventually tend to become transactional and club-like, with higher interaction and greater autonomy, for both individuals and groups; some work will become 'virtual', capable of being carried out in a totally aspatial way."

(Laing et al., 1998)

This dynamism causes changes within the work patterns, as well as shifts from one work pattern to the other, but also different combinations of work patterns that in particular will come to define the physical workplace for the knowledge and creative work of hybrid teams.

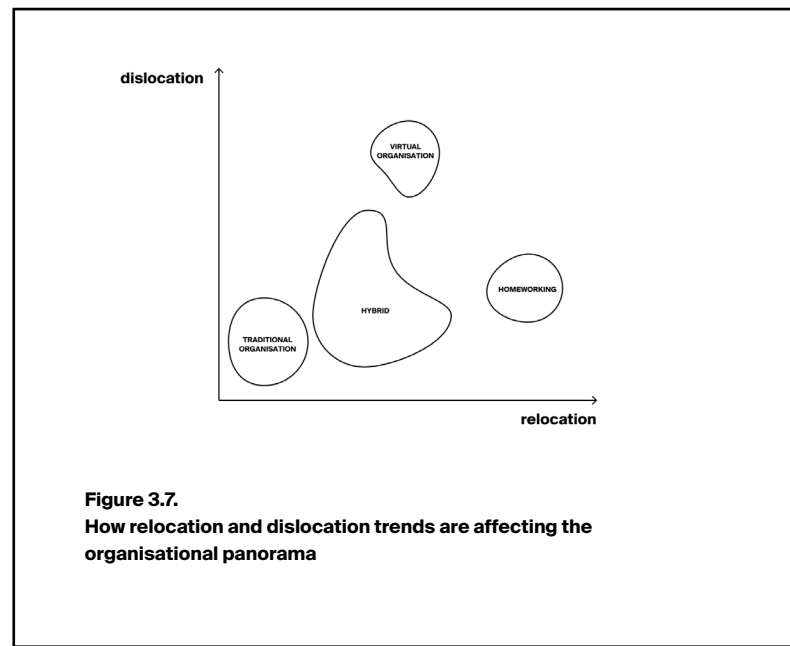
# The virtual interface

The development of information and communication technologies (ICTs) resulted in a spatial reconfiguration of the organisation, its management and the work its members perform.

This evolution of the technological means has in fact enabled a spectrum of possibilities from the upgraded traditional organisation, still dependent on the fixed workspace, to the fully virtual one (Halford, 2005). This wide range of results is the effect of two different forces at work in this context:

- Relocation of work (from the office to the domestic space)
- Dislocation of work (from the physical space to the cyberspace)

The most common scenario is the one that sits in the middle with members of the hybrid organisation that work from the office and from home, exploiting technology to bridge the physical and the virtual workspace.

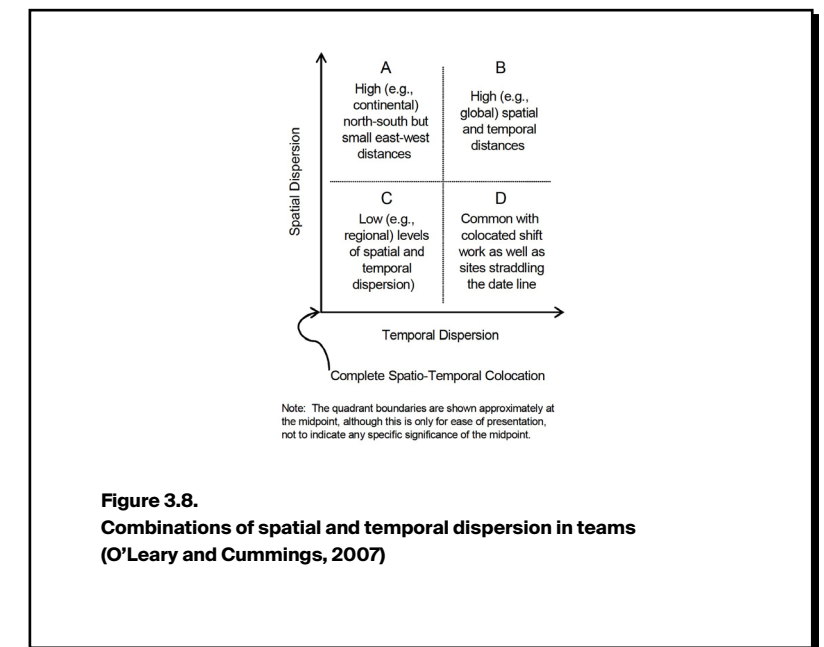


“Spatial hybridity changes the nature of work, organisation and management in domestic space, in cyberspace and in organisational space”

(Halford, 2005) so the new work context supported by technology can be mobile, globally multi-located and distributed and the knowledge work that it supports can be carried out in virtual teams and through their distributed collaboration.

O’Leary and Cummings (2007) describe the dimensions and degrees of spatial dispersion:

- Spatial dispersion - the average spatial or geographical distance among team members;
- Temporal dispersion - the extent to which team members have overlapping work hours or their time difference;
- Configurational dispersion
- Site - determined by the number of sites and locations at which team members work;
- Isolation - determined by the number of sites and locations at which team members work alone, their isolation from other members;
- Imbalance - determined by the number of sites and locations with uneven distribution of team members and the resulting imbalance between subgroups of members.





Dimensions and degrees of dispersions affect different mechanisms and the use and effectiveness of technology in the team work life:

- Spatial dispersion has its strongest effects on spontaneous face-to-face communication, decreasing the likelihood of such interactions;
- Temporal dispersion has its greatest influence on real-time problem solving as it decreases the likelihood of synchronous interaction;
- Site dispersion (configurational) increases the number of dependencies which must be managed thus affecting the team's coordination;
- Isolation (configurational dispersion) affects awareness of fellow team members as the remoteness of isolated ones increases.
- Imbalance (configurational dispersion) affects conflict management, majority influence and the potential for negative subgroup dynamics.

The virtual interface with and through which distributed teams interact is complex and poses some challenges but it is not all bad as Argote (2011) observes:

"New organizational forms can make it harder for organizations to interpret experience while at the same time providing opportunities to learn from new sources of experience. For example, learning can be challenging in virtual organizations in which members are geographically distributed around the globe. Virtual organizations typically communicate through electronic means rather than face-to-face (Gibson and Gibbs, 2006). The lack of social cues can make communication and the interpretation of experience more difficult (Sproull and Kiesler, 1991). Although learning in geographically distributed units is difficult, it can also expose focal units to new knowledge. Cummings (2004) found that teams that learned more from external sources were more productive than their inwardly focused counterparts."

It is possible, to simplify and describe this varied panorama, to cluster the different possibilities allowed by the combinations of the different dimensions and degrees of dispersions in Homeworking, Virtual working, and Hybrid working.

## **HOMEWORKING**

Given that technology enabled employees to work from a different place, many took advantage of this opportunity and decided to work from home. The peculiarity of this context is that the physical space still has a very prominent role, but being a particular space with a specific valence this has some implications.

This fluidity of space, where personal and work spaces not only coexist but blend together, brings some benefits for the individual like autonomy and flexibility. It also brings some benefits for the organisation as home office reports show an increase in workers' productivity. But it also bring some new challenges and disadvantages for managers, professionals and employed workers alike: "homeworkers subject themselves to close scrutiny and high levels of self-discipline in order to validate the trust that has been placed in them" (Argote, 2011). This leads to surfacing symptoms like overwork, anxiety, stress, guilt, and reduced work-life balance: the erosion of the boundaries between work and home can in fact create a psychic overload and generate tension, which in turn can lead to conflict with other household members. Simultaneously managing paid and unpaid work like childcare and domestic work, within the same space and time frame, has proven in fact to be a huge challenge, especially for homeworking women. Additionally homeworking lacks most of the "human touch" that enriches a typical working day in the knowledge economy and removes individuals from their social network leading to socio-spatial isolation and the loss of all the opportunities that derive from informal exchanges.

## **VIRTUAL WORKING**

Unlike homeworking, the focus in the context of virtual working is less on the physical space and more shifted towards the concept of "edgeless and permeable" organisations (Davidow and Malone, 1992; in Halford, 2005). With the contemporary dislocation trend in fact, the only work boundaries for virtual workers are defined by the access to the technological infrastructure.

In this work environment defined by virtuality, individuals tend towards working practices and processes defined by multitasking, flexibility and



independence. The factor of independence in particular then contributes to the shift in the definition of the organisation, which becomes a flexible web of individuals, capitals and technologies.

This way of working has some implications on interactions among workers and becomes an interesting challenge for management with issues related to authority and its perception, as well as issues pertaining to organisational identity.

Some research findings in fact already point directly at the possibility that the threats of electronic communication, in particular those caused by the mismatch between human nature and the constructed organisational environments, are leading us towards increasing social isolation. The risk is that of adopting managerial practices that forget about the difference between instrumental communication and human, affective, “soul-oriented communication” (Baruch, 2001). The solution, Baruch (2001) argues, is not in the rejection of technology but in working towards finding a balance on the individual, organisation and societal level:

“As in Physics, whenever there are forces pulling in one direction, there will be counter-forces. [...] The forces that modern IT applies to people might work in the direction of individualism and detachment, with strong association to masculine qualities. Counter-forces occur because people still want to be together, to work and live in a community and to share their feelings with others, thereby minimizing the negative impact of the Autistic Society Syndrome.”

The current scenario is therefore a transitional one with the concept of virtuality and virtual work that ideally transcends space with its boundaries and limitations, but where most organisations still rely on conventional practices and structures, only partially adhering to this new model and its potentialities. The impact of virtual working, on individuals, organisations and society at large, is therefore still widely unknown.

## HYBRID WORKSPACES

Hybrid workspaces are in the grey area defined both by relocation and dislocation, while also still inheriting the connection to traditional workspaces. Knowledge workers in the hybrid working environment are therefore multiply located.

This has huge impacts on work in general, on many different levels:

“[...] spatial hybridity changes the nature of work, organisation and management in organisational space, cyberspace and domestic space, resulting in distinctive practices, experiences and relationships in all three spaces.”

(Halford, 2005)

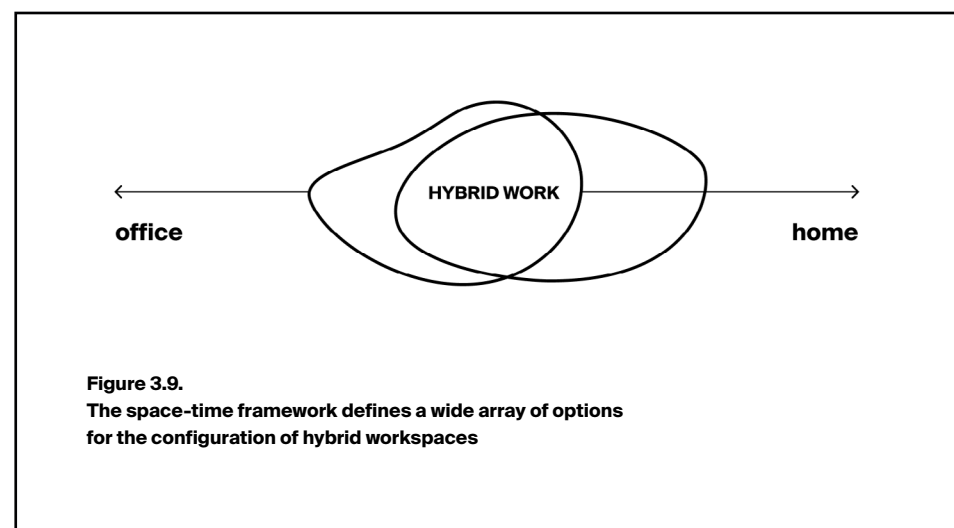
In terms of processes, what has been observed by Halford (2005) is that in hybrid working contexts people tend to organise their tasks into different work streams:

- The office task stream, which is mainly used for concentrated and challenging tasks and characterised by intense interaction among teams and members of the organisation;
- The home task stream, which is mainly used for routine tasks and characterised by isolation.

This distribution of work in different streams across organisational and domestic spaces then generates in turn different constructions of time (Halford, 2005): the office timeframe, defined by the individual bodily presence, and the home timeframe. Within the home space and time frame in particular, Halford (2005) identifies some key challenges that individual workers face. In fact as spatial boundaries collapse, so do the boundaries of rituals and habits: work gets more integrated into the morning routine for example and alters some of its steps (i.e. logging on while having breakfast, skipping work clothes,...). The direct consequence is that workers in this context rely on clock-based time management to bring structure to the working day, and to compensate for the lack of spatial boundaries: unlike fully remote workers that mainly rely on

task-based time structures, hybrid workers primarily look at the clock to decide when to “switch off”. But workers in the hybrid working environment strongly feel the need to prove particularly trustworthy and productive in the domestic space, especially women (Brocklehurst, 2001; in Halford, 2005): this translates for example to rigorous time accounting and to continuous on-call availability.

These task stream and timeframe models are tightly tied together and interdependent, with the Where and When ultimately intertwining to ultimately define the How of hybrid working.



In addition to time and space, sociality has also updated its boundaries in these new working spaces. In fact, hybrid workers often risk feeling isolated while working from the home space: this has in response strengthened the sociability in the office space, as workers use those in place occasions to make up for the lack of social interactions in the virtual space. It is also a matter of habit as Halford (2005) noticed: after some time in home office workers re-spatialised their exchanges and transferred their social interactions in the virtual space. As a result of this process the quality of the social interactions themselves changed as well. The more intimate nature of the domestic space makes room

for the emergence of new identities, based on which workers can build closer relations with colleagues.

The analysis of Halford (2005) was mainly focused on the most popular tools for organisational communication at the time: the telephone and emails. But today, after the introduction of the chat and the video call as work tools, the interaction pattern for hybrid and fully remote workers has partially changed again.

# Zoom in our home

At the end of December 2019, the maximum number of active Zoom participants in a day was approximately 10 million (Yuan, 2020) as proudly stated by founder and CEO Eric S. Yuan, that prior to founding Zoom was working for the company WebEx (now Cisco Webex) (Iqbal, 2021) another strong player in the virtual meetings' spaces field. This number of daily active participants surpassed 300 million by May 2020 (Zoom, 2020a) an index that perfectly quantifies the phenomenon that the Guardian cleverly renamed "The Zoom boom" (Kalia, 2020). At the height of the Covid-19 Pandemic platforms and applications like Zoom, FaceTime, Google Meets, Houseparty and Microsoft Teams among others, have known an unprecedented notoriety. Video calls quickly became a daily standard practice during lockdowns both for work and educational purposes as well as being a massive source of emotional support for isolated people of all ages. These tools brought about new challenges in interpersonal interactions, and in the ways people operate and socialise through them that have been exacerbated by the extensive use experienced in the past year and a half. The scenario transitioned from that of in-person meetings as the norm and online meetings as the exceptional occurrence for most of the population, to the polar opposite scenario in a matter of days. Humans often and proudly define themselves as social animals, so at a time when they were asked to remove most of the sociality from their daily life, they naturally looked for a surrogate of the full sensory experience of in-person meetings in the Covid-friendly solution of the social video call. "People started organising virtual happy hours, game nights, book clubs, watch parties, brunches and other gatherings. [...] we've all found ourselves celebrating birthdays, baby showers, engagements and even weddings with our friends and family compacted into boxes on a screen" observes Jessica Roy in her Los Angeles Times article on how to organise the perfect Zoom party (Roy, 2020). Being social online helped people to feel part of their communities, it relieved their isolation and helped them deal with a psychologically challenging situation: things somehow still get done and life slowly goes on.

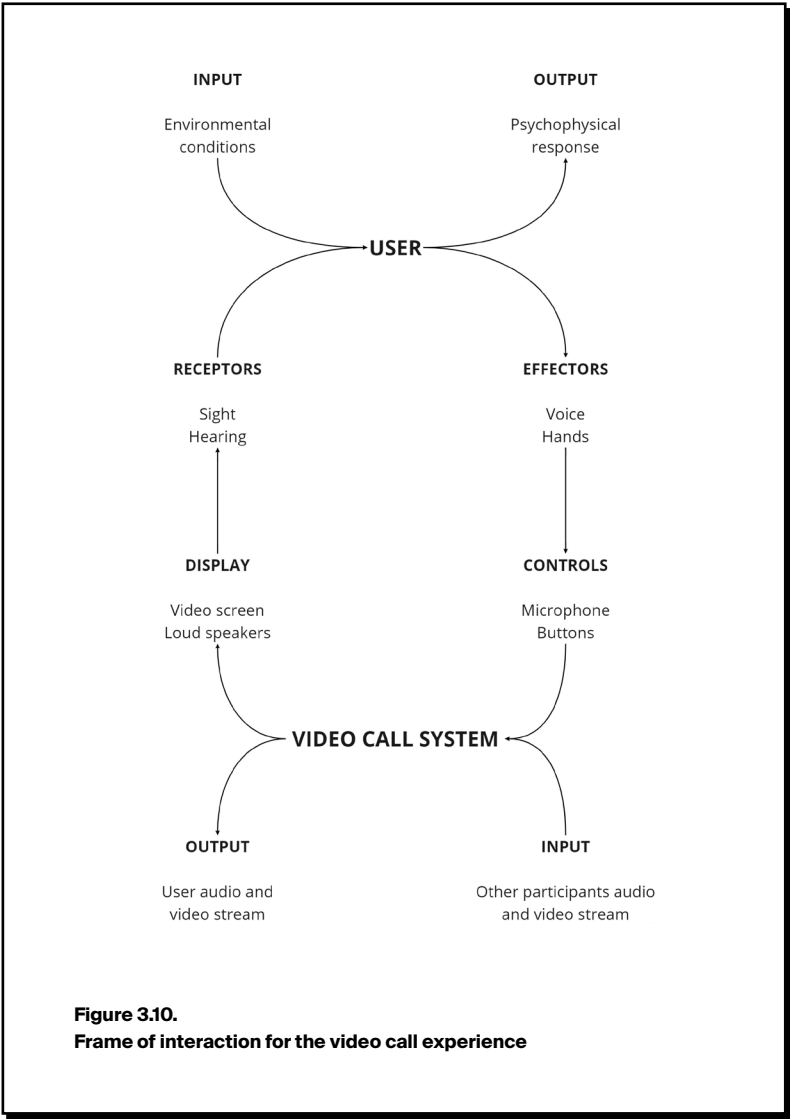


Figure 3.10.  
Frame of interaction for the video call experience

But using the same tool within the same space, for work, education, and leisure alike, considering also the technical restrictions imposed by the medium itself, introduces some User Experience and Interaction Design challenges.

The strictly audio-visual nature of the medium makes it useful to dissect the interaction into its components and explore them relying on

parameters of analysis that are typically used to describe movies and director choices (Gaudiosi and Sainati, 2007) : video, audio, how they play together and how this communicates and affects the relationship of the characters on-screen.

In this analysis Zoom is being used as main software of reference for the following reasons:

- Zoom is the most popular video conferencing platform, customers top choice, classified by analysts as a leader in the field (Gartner, 2021).



- Zoom can be analysed as a stand-alone product as it is not part of a bigger system like Microsoft Teams, Google Hangouts and Google Meets.
- Zoom it's easy to access for a wide range of users: it doesn't

require an account to join calls, it works across most platforms, both for desktop and mobile, and it is free.

## Video

First of all, the standard framing for a video meeting is the close-up shot, where the user tries to position himself in the centre of the frame, facing the laptop camera, which has also possibly been placed at a good angle. This type of paradigm already poses some challenges to most users:

- Being on camera doesn't come natural to many, and moreover the preview of the user's own video is constantly displayed on the screen among the images of the other participants.
- In some types of meetings, turning the camera off is not an option, and if it is, doing so has some implications.

The background plays a fundamental role in the shot, especially considering that in the scenario of reference it is often a portion of the user's home, and therefore a private space whose corners are for the most part not designed for formal or representation use.

### CAMERA ON

Seeing oneself during video calls and meetings can be a source of distraction and makes people feel self-conscious (Feder, 2020). Individuals are in fact not used to seeing their live image moving and reacting during real-time conversations (O'Gieblyn, 2021) and therefore the "digital mirror" that Zoom places in front of them is a strong attraction for one's limited attention (Gritters, 2020).

It is a common experience to self-monitor how one is coming across, both in terms of look and aesthetic but also to analyse how one is reacting and performing and infer how this could be perceived by the other participants, whose image is also readily available on screen and therefore easy to compare to one's own. The internal judgement is therefore continuous, and it coexists with the feeling that one is also being constantly examined by the others as well: this is the phenomenon of

the Imaginary Audience, which is the false belief, especially common in early adolescents, that one is always being scrutinised by a group of spectators (American Psychological Association, 2020).

The reality is in fact that the others are more likely to be studying their own image on-screen as well rather than focusing on the stream of one of the other participants. And even in the chance that they could for a moment be fixating on a specific subject's video stream they wouldn't probably be perceiving their emotional reactions as accurately as the subject fears: it has in fact been observed that people tend to attribute an emotion to their own neutral face, at the slightest sign of muscular activation, that even highly trained professionals and expert therapists are not able to detect (Vergallito et al., 2020).

The overall distracting effect would be much stronger if one would deactivate the default mirror filter that is being applied to one's video feed-back and see the image as it gets transmitted to the other participants: the constant struggle to recognise oneself and to locate one's details and distinguishing marks would be a severe source of disturbance and estrangement for the user who would struggle to process information and hold a normal conversation (Dunphy-Lelii, 2020).

However, even though in this last argument the technology is contributing to fixing the issue, the slight delay produced by that same technology greatly contributes to the alienating effect of looking at oneself on Zoom (Dunphy-Lelii, 2020). The first type of technology-caused delay concerns the generation of the image by the camera: the slightly asynchronous reflection makes the video stream of the self even more interesting for the subject. While the second type of delay occurs when the image is being transmitted to the other participants while the subject receives theirs and is sometimes affected by unreliable and laggy connection. These two disturbances add up, exaggerate each other's effects, and further divert the user's attention away from the ultimate goal of the interaction: successfully exchange information and share a positive digital experience.

CAMERA OFF

If seeing one's image is so problematic, especially in the long run, why not simply turn the camera off? This may seem like an obvious quick fix to a seemingly small issue, but it is not practically feasible if we consider the reality of communication over digital video.

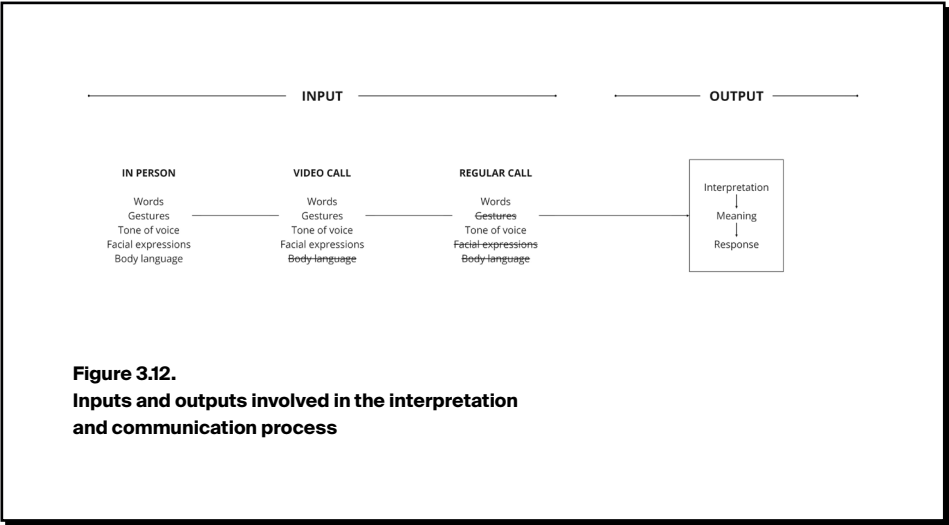


Figure 3.12.  
Inputs and outputs involved in the interpretation  
and communication process

In-person communication heavily relies on body language and social cues to infer meaning and interpret what the interlocutor is saying. Over video call many of these signifiers are lost so most of these cues have to be inferred from what is available in the close-up shot: people's faces and few hand gestures. Facial expressions are a valuable resource on which to rely on for interpretation as testified by the psychotherapist Paul Gebben, specialised in telemedicine: "I can see somebody's eyebrow go up. I can see people's reactions to things. I don't see any of that in a phone call! It's all about the non-verbals" (Gritters, 2020).

Turning the camera off could therefore translate to less distraction for a listener but by removing a fundamental source of feedback for the speaker, this simple action could in the end worsen the overall quality of the communication, particularly in small group settings.

Furthermore, facial reactions and responsive gestures like nodding are often used to prove that one is present and listening (O'Gieblyn, 2021)

and they can communicate support and encouragement, and therefore partially substitute the social cues typical of in-person conversation.

It is also important to consider that the direction of gaze is another key signifier that communicates engagement and disengagement with the conversation and helps to regulate turn-taking during in-person exchanges (Rossano, 2012). This cue is weaker and possibly less relevant and effective online as it is only possible to roughly estimate where a subject is looking and almost impossible to guess what they're looking at even when they're sharing their screen.

In some specific contexts, like customer interviews, it could even be beneficial to force oneself to fake eye contact with the person on the other side of the screen (Curtis, 2016). In order to do so, the speaker would have to trick their brain to look towards the camera, a point of focus it naturally avoids in favour of other stimuli on the laptop screen. To achieve said result a popular strategy is that of placing one's own video stream close to the camera to exploit the previously mentioned common tendency of the subject to look at his own image.

## BACKGROUND AND FILTERS

The human brain is wired to automatically look for faces in environments and images. In the close-up type of framing mostly used in video calls it is therefore obvious that the first thing people will focus on, after their own face, is another participant's face. Then, especially if the length and purpose of the call allow, the user's attention could wander off to observe the second element in said participant close-up shot: their background.

Considering the specificities of the scenario of reference, which refers to the extensive use of video call systems during the so-called "Zoom boom" (Kalia, 2020) at the height of the pandemic, it can be assumed that most people were indeed taking advantage of online meetings from their own homes.

One's own house is ideally a place of shelter, where one can find privacy and quietness, a place of self-expression, where access is limited and socially regulated, and where work, rest and leisure have dedicated areas. As a matter of fact this can be true only for somehow privileged peo-

ple and unless one is able to find a plain and homogenous background, the environment framing the user can be revealing of their social status and financial situation.

This can be source of inequality and discrimination as it provides other participants with accessory information about the subject that may be used to make inferences well beyond what the subject planned to communicate and share about his private life in the first place.

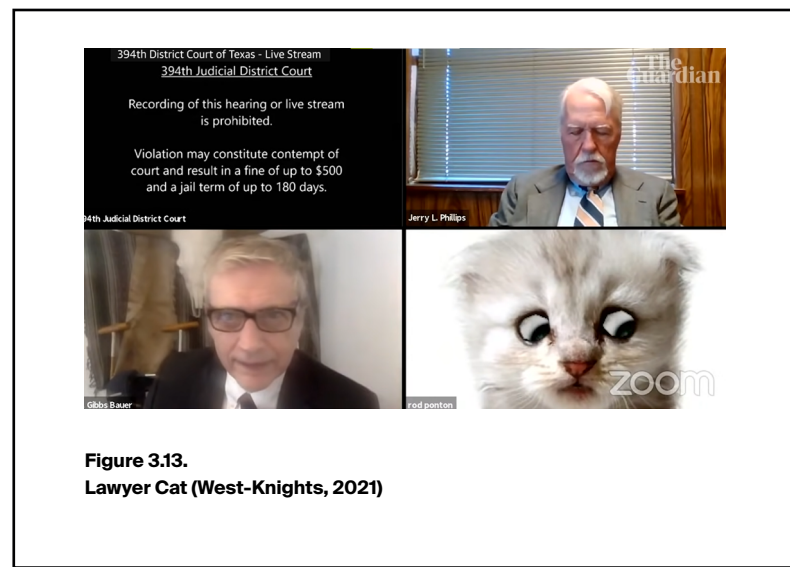
"That we might let all of our friends, colleagues, and contacts look into our homes at a moment's notice is a shared expectation that's part of the new digital social order" writes Kyle Chayka online. A new social order, fuelled by modern media culture, whose paradigms are "domestic voyeurism and exhibitionism" (Chayka, 2020).

Many users solved the issue by looking for inspiration online, giving up a corner of the house specifically for arranging a Zoom backdrop that could fit their needs, while others changed location within the house to make sure the background was right for the occasion and the level of intimacy appropriate for the specific group of participants (Chayka, 2020).

A tech-based solution to the background dilemma is the use of filters. This option is now available on most video conferencing software programmes, and they offer different possibilities:

- Background blur - Blurring the background can hide some personal details of the user background from prying eyes. It has to be considered though that this effect relies on the camera of the laptop, in most cases therefore of average quality, and is highly sensitive to poor lighting conditions, another common occurrence in the spaces that are not designed to constantly be on camera: this can result in some awkward aura effects and a not so precise silhouette definition around the subject.
- Colour adjustments and improved lighting - Another option available to the users is to apply a coloured filter on the whole video stream, a function that used together with the brightness setting can help to minimise the effects of bad lighting conditions. These functions do not make a distinction between foreground and background, therefore these colour and lighting changes will also affect the user's complexion.

- Virtual background - The same technology that allows users to isolate their silhouette and blur their background can be used to edit the latter more drastically: instead of simply blurring everything but the user, the Virtual Background function isolates the foreground and entirely substitutes the other pixels of the video stream with a completely different set of pixels from a pre-set static or dynamic source. The final effect is limited again by the same lighting requirements as with the Background Blur but both solutions have been widely used especially in corporate environments, regardless of technical shortcomings.



- Humorous video filters - “#NoFilter? No thanks! Grow unicorn horns, wear a pirate eye patch, or hang out on the slopes in aerospace goggles to level up your team calls, happy hours, or game nights” advertises the Zoom Product Marketing Manager on their website (Zoom, 2020b). The introduction of these more playful features is consistent with the current social media trends and proved to be very appreciated by kids and appealing to the younger users. But it also had a positive role in providing opportunities for fun and more informal exchanges in professional

and corporate environments, a dimension of the office life that partially if not entirely got lost with remote working. This type of feature, though being widely known and used across apps and platforms, can still be a source of mistakes and subsequent embarrassment for the less tech-savvy adults, especially those of the older generations and first-time users who don’t normally dive into software settings.

- Touch up my appearance - Zoom currently allows its users to control with a slider the intensity of the skin smoothing function it offers: a real-time algorithm identifies the user’s face and applies a soft-focus effect to reduce natural redness and blemishes. The need for a filter to “beautify” the user is the product of the current selfie culture and it is still unclear what psychological effects these practices will have on the users in the long run (Ryan-Mosley, 2021). The immediate result is that many users, that as analysed before can be so focused on their own video stream, feel more confident and relaxed when their representation looks more polished and compliant with beauty standards.

## Audio

The other fundamental stream of information in a video call is represented by the auditory channel. People nowadays are used to video and entertainment contents that are bite sized and provided in a continuous stream: there is no space for silence and no space for breaks. This model has been more or less unconsciously brought over to the video calls and online meetings area where it has met the typical business goals of top performance and productivity.

The lack of tolerance for silence is also linked with the perception of delay in conversations over a digital medium (Schoenenberg, Raake and Koeppel, 2014). Speed and smoothness have been reported as two of the most important factors to establish the quality of a conversation in this kind of setting. But while people are very tolerant of transmission delays, they tend to attribute the resulting confusion in the conversation to the interlocutor: as the communication structure changes so does



the perception of the user at the other end of the communication tool. The transmission delay's effects get misattributed in particular to the personality and the behaviour of the conversation partner who as a result is perceived as less friendly, less attentive, more disrespectful as the rhythm of the conversation lags and the speaker gets interrupted, and more hesitant as response times get longer.

The presence of echo, noise and redundant audio feedback makes the user attribute the perceived low quality of the mediated communication (Guéguin et al., 2008) to technical issues rather than other participants' traits. Still perceived low quality is a source of stress and frustration for the users which have organically established some strategies to reduce the disturbing factors in the online exchanges. It is in fact common practice to mute oneself when not immediately and directly involved in the conversation in order to reduce background noise and interruptions.

But it is important to consider here that interruptions have a fundamental role in normal conversations especially when it comes to turn taking. "A turn is assembled out of components, notably turn - constructional units; speakers employ a variety of linguistic and other resources in designing these components and thereby building turns-at-talk, resources that include lexis (or words), phonetic and prosodic resources, syntactic, morphological and other grammatical forms, timing (e.g., very slightly delaying a response), laughter and aspiration, gesture and other bodily movements and positions (including eye gaze)" (Drew, 2012). These linguistic and paralinguistic resources contribute to determine sequence, action, and recipient: "where in a sequence a turn is being taken; what is being done in that turn; and to whom the turn is addressed" (Drew, 2012). All these aspects of in-person conversation are internalised by people through practice and experience and come natural to most adults. But as Paul Drew explains in his research the seemingly simple action of taking turns to talk and build a conversation with meaning implies the understanding and the control of many factors, most of which are heavily affected by the complexity brought about by the digital medium.

For example, as users are encouraged to keep their microphones on mute, the act of taking a turn doesn't rely anymore on the aforementioned resources but on the technical requirement of deactivating the mute button and forcibly taking the floor. This becomes especially relevant if we consider how turn taking is linked with speaker prioritisation in

online video calls: one of the most used layouts for video-call software gives in fact the highest priority to whoever speaks the loudest which will be placed in the most prominent position or take up most of the space on screen. This further contributes to making turn-taking less organic and discussion participation and moderation more difficult.

This type of shift from the typical in-person norm for peer-to-peer conversation to the online typical Zoom call setup means that turn transitions can become harsher. As a result, this can affect the social behaviour of participants and impair their ability to operate in close co-ordination which is fundamental to hold a meaningful exchange (Clayman, 2012).

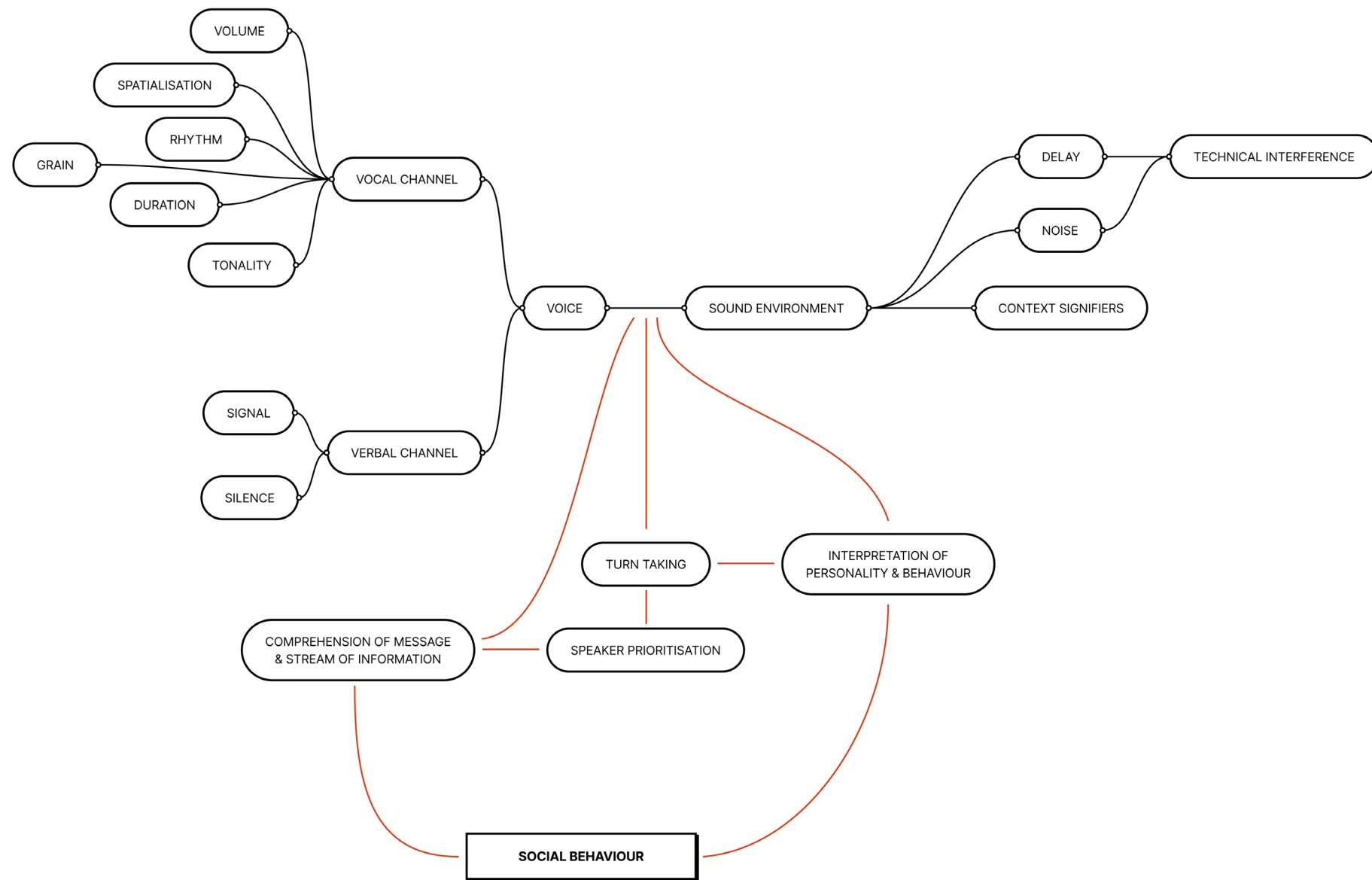
It is possible then to analyse the other elements that contribute to building the full audio signal: other than the subject's voice there also is in fact the surrounding sound environment, which includes (but is not limited to) the background noise. Some of the audio signals in the background are not just classifiable as noises but are instead carriers of meaning and therefore useful signifiers in conversations and interpersonal interactions.

As much as the video background, the audio environment can be revealing of a participant's private life details regarding for example their location or their family status, and therefore linked with aforementioned topics of privilege and inequality, but it can also come to affect one's productivity and performance. The audio environment comes to be a source of disturbance when the relationship between signal and noise becomes unfavourable for the first and imbalanced towards the latter. People tend to focus on human voices among other sounds, as much as they tend to look for human faces in images and videos (Gaudiosi and Sainati, 2007) but the communication becomes irreparably corrupted if the signals overlap and become indistinguishable.

The difficulty of discerning the meaningful sound among the different signals from the speaker's environment is enhanced by the fact that the user in a video call system has only one listening point. So, though image and sound coexist, it is still impossible for the listener to localise the different sound sources, that in the mix can lose their quality but also their original hierarchical structure.

This type of mediated listening experience is also less immersive than in-person conversations where, as data is distributed in space, it is eas-





**Figure 3.14**  
Auditory factors affecting social behaviour

ier for people to process and memorise information: spatialized audio can in fact have a positive impact on factors like speaker identifications, focus and perceived comprehension (Baldis, 2001).

It is also important to consider the qualities that different voices have that can impact their successful transmission as well as the listening experience of the interlocutor. Other than the previously mentioned parameters of volume and spatialization, it is possible to consider the rhythm and the duration of the speech, as well as the grain and the tonality of the speaker's voice (Gaudiosi and Sainati, 2007).

Listeners in fact take meaningful information for their sense-making process both from the verbal channel and the vocal one: what the speaker is saying and how it is saying it. The vocal channel conveys paralinguistic information that can be used to infer the affective state of the speaker as well as their personality traits (Imhof, 2010): for example, “the impressions of high-pitched or slow-talking [male] speakers seem particularly negative” (Apple, Streeter and Krauss, 1979).

Assuming that the vocal parameters of the user are given, the most useful technological aid to reduce the analysed audio issues is the setting used for background noise reduction: filtering the audio stream for distracting noises like keyboard typing, fan noises, and dog barking, can increase the quality of the audio and make the user’ speech more comprehensible.

## User Interface

The interface through which video call participants communicate has a huge role in determining the User Experience that they have. The teleconferencing software has in fact to display the video stream of the meeting participants, while allowing the individual user to control his own audio-visual stream via the software settings.

Furthermore, it can be observed that the laptop is the only interface between the users as the interaction is happening via and with the screen itself. The technological tool is multifunctional and complex, and it poses some interesting challenges.

It is useful to distinguish here between two common scenarios, that are influenced and determined by different factors, but that can also coexist

in some use-cases:

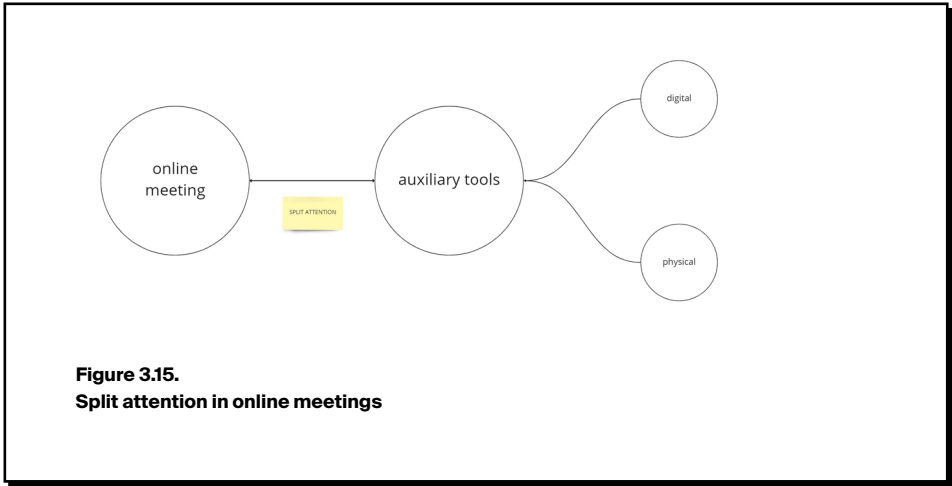


Figure 3.15.  
Split attention in online meetings

- Users at some point during a virtual meeting are necessarily multitasking within the video conference environment: they could for example need to watch the video stream and listen to the interventions of the other participants, while making sure that the tool is set up correctly, checking the chat, taking notes, ...

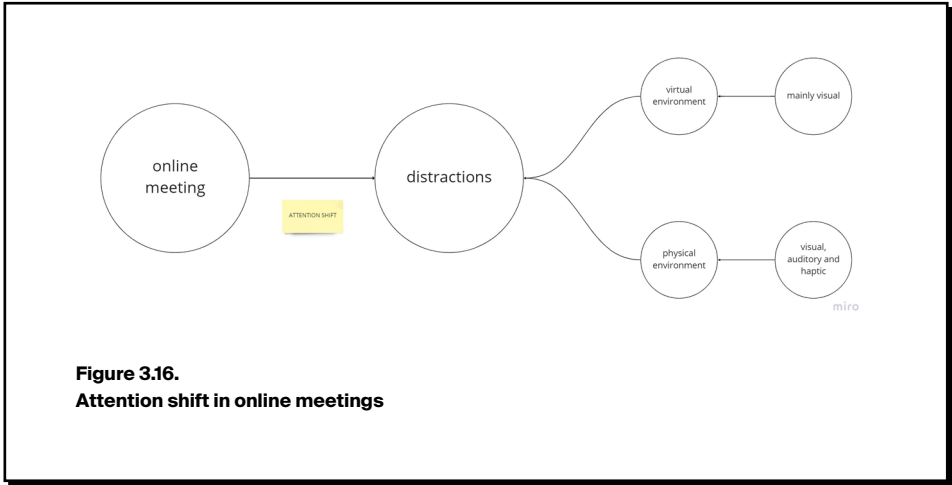


Figure 3.16.  
Attention shift in online meetings

- But it is also possible that, given the potentiality of the digital tool being used, the user gets distracted or simply decides to focus their attention outside of the meeting' space, either in the digital environment (checking emails or the news, answering other messages, browsing online, ...) or in the physical one (street noises, other people talking, someone ringing the doorbell, ...)

Many studies have observed people multitasking and even though some argue for the benefits of such a way of working, others highlight the negative effects of splitting the brain's resources among multiple activities (Lang and Chrzan, 2015): the brain has in fact limited capacity both in terms of memory and attention, and media multitasking can affect and often worsen the cognitive activities. It clearly results then that, especially when such activities are concerned with working and learning tasks, it is even more fundamental that nothing gets in the way of optimal user participation and performance.

The recent integration of health-related Zoom Apps inside the main video conferencing platform is also symptomatic of how much the User Experience of the main software and its core functionality has become related to goals broader than simply hosting a productive or effective virtual meeting.

## ZOOM FATIGUE

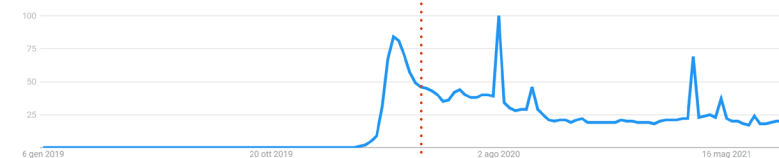
The negative psychophysical effects of this interaction model have been experienced by all users who extensively reported about the phenomenon on social media to the point where the specific term "Zoom fatigue" has organically emerged to describe the associated set of symptoms: the name has been then popularised online, is now commonly used in conversations and scientific publications, regardless of the video conferencing platform being used.

The data on the search requests made to Google Search from January 2019 to today (note: August 2021) clearly shows a peak of interest for the search query "Zoom Fatigue" at the end of April 2020 that has since declined but that still presents relevant interest spikes all throughout the last year (Google, 2021c).

It is interesting to compare the data on the search requests in the same



**Figure 3.17.**  
Interest over time for "Zoom Fatigue"  
(Google, 2021c)



**Figure 3.18.**  
Interest over time for "COVID-19"  
(Google, 2021a)



**Figure 3.19.**  
Interest over time for "Lockdown"  
(Google, 2021b)

time span of the terms “Covid-19” (Google, 2021a) and “Lockdown” (Google, 2021b).

The patterns of these curves are comparable and their trend suggests a link stronger than mere association among the search queries: a causal correlation can in fact be inferred from the temporal shift in the peaks from February 2020 to August 2020.

Interest in the search queries “Covid-19” and “Lockdown” peaked in fact at the end of March 2020, specifically during the week from Monday 23rd and Friday 29th, while the trend for the search query “Zoom fatigue” shows that its peak followed a month later, suggesting that it took only a relatively short period of time for remote work, online education and social distancing to, first trigger a strong psychophysical reaction, and second for such reaction to be so severe and so common to be brought up to the general public awareness and to pervade the online discourse.

The Zoom Exhaustion & Fatigue (ZEF) Scale (Fauville, Luo, Muller Queiroz, et al., 2021) has been recently theorised to measure this fatigue caused by interpersonal technologies and the factors determining such effect. A 15-item questionnaire collects information about the user's general, visual, social, emotional and motivational fatigue to generate the so-called ZEF score.

These questions aim at assessing how the factors of mirror anxiety, the sensation of being physically trapped, hyper gaze from a grid of staring faces, and the cognitive load from producing and interpreting nonverbal cues, are affecting people in online meetings and if they could be used to predict the occurrence and severity of Zoom Fatigue (Fauville, Luo, Queiroz, et al., 2021).

The research team that is currently analysing the data has already got some interesting insights into this new phenomenon: for example, women scored higher on many indicators as they tend to have longer meetings with shorter breaks in between, but, other than gender, also race, age and personality type play a role in determining the actual level of Zoom Fatigue as well as the experience evaluation on which the ZEF score is based (De Witte, 2021).

As Jeff Hancock, director of the Stanford Social Media Lab, puts it: “when we first had elevators, we didn't know whether we should stare at each other or not in that space. More recently, ridesharing has brought

## ZEF questionnaire

### General

- How tired do you feel after video conferencing?
- How exhausted do you feel after video conferencing?
- How mentally drained do you feel after video conferencing?

### Visual

- How blurred does your vision get after video conferencing?
- How irritated do your eyes feel after video conferencing?
- How much do your eyes hurt after video conferencing?

### Social

- How much do you tend to avoid social situations after video conferencing?
- How much do you want to be alone after video conferencing?
- How much do you need time by yourself after video conferencing?

### Motivational

- How much do you dread having to do things after video conferencing?
- How often do you feel like doing nothing after video conferencing?
- How often do you feel too tired to do other things after video conferencing?

### Emotional

- How emotionally drained do you feel after video conferencing?
- How irritable do you feel after video conferencing?
- How moody do you feel after video conferencing?

(Fauville, Luo, Muller Queiroz, et al., 2021)

up questions about whether you talk to the driver or not, or whether to get in the back seat or the passenger seat [...] We had to evolve ways to make it work for us. We're in that era now with videoconferencing, and understanding the mechanisms will help us understand the optimal way to do things for different settings, different organisations and different kinds of meetings" (Ramachandran, 2021).

Therefore, improvements on the experience and interaction level, as well as thoughtful use of video conferencing tools in general, should aim at reducing the different factors causing stress and fatigue (like constant eye gaze at a close distance, high cognitive load, all-day mirroring, reduced mobility) to maximise the cost-benefit ratio (Bailenson, 2021) and provide the user with a frictionless experience in the hybrid or virtual work environment.

## The social interface

Social networks within organisations, as well as with other organisations, are good predictors of the ability of the organisation itself to acquire new knowledge and capabilities: social ties in fact provide access to information (both job-related as well as non job-related) that enables innovation (McEvily and Zaheer, 1999 in Argote and Ingram, 2000). If then in particular those social ties are not redundant or overlapping the effect has exponential benefit (Argote and Ingram, 2000).

"Non-job-related communication contents are positively related to performance, satisfaction, and the work climate."

(Hertel et al., 2005; in Bosch-Sijtsema et al., 2011)

The strength of social ties then is a good indicator of the frequency of repeated interactions which in turn further promotes knowledge acquisition and exchange and shortens project-completion times. This is particularly true when project knowledge is not codified (Hansen, 1999, in Argote and Ingram, 2000): weak ties are sufficient when knowledge is not complex and can be codified, but distant relationships become a problem when knowledge gets more complex and distributed.

The study of creative processes has therefore to take into account not only the creativity of single individuals but also that of collaborative teams and social networks. Sociocultural theory can be used for the analysis of group creativity and group learning (Sawyer, 2012). Socioculturalism is connected to the study of cultural psychology, educational theory, distributed cognition and situated action, and it is based on the premise that "situated social practices (processes) are the fundamental unit of social reality, with individuals and groups secondary and derivative". The individual creative mental process and the group's creative

collaborative process coexist and interact and Sawyer (2012) suggests that “to fully explain group creativity and group learning, existing sociocultural theory must be extended beyond a narrow focus on process and practice, to focus on three levels of analysis: individual creative acts, interactional dynamics over time, and the emergence of collective group creations”: which is the extension of sociocultural theory with “collaborative emergence”. The theory of collaborative emergence is built around the idea that in complex systems with many components that interact in complex configurations, a pattern or property emerges at the system-level as a result of the structure and the interactions of the components of the system. This view has been adopted both by contemporary creativity theory and contemporary sociocultural theory: creativity can therefore in this framework be seen as an emergent process of the social group that within the organisational system is engaged in complex interactions.

If we want to support group creativity, then we have to support the interactional mechanisms they use such as building and maintaining a shared problem space, referencing objects in that space, collective remembering of relevant histories, and bridging across time and related episodes of the group's activity (Sarmiento and Stahl, 2008): in order to properly do so it is first fundamental to understand how the group is configured (the social interface) and what resources it has to support referencing, recalling and bridging (documentation artefacts).

The structures of social networks within organisations and the knowledge flows they have are affected by many different factors, the first one being the nature of the individuals that form the organisation as they ultimately are the first retainer of information and they also determine the flows with and from other knowledge repositories. Among the individual-related factors, length of service (and its distribution within the organisation) is crucial as “long-tenured individuals can facilitate the retrieval of information from organizational memory” while the involvement of younger individuals ensures the effective acquisition of new knowledge (Walsh and Rivera Ungson, 1991).

Then, the different levels of identification that members may have with the organisation imply different configuration of social ties and there-

fore different channels for knowledge transfer. They may in fact identify primarily with their work group, or project team, or feel belonging towards their department and division, or identify as a member of the organisation at large (Moreland & Levine, 2000 in Argote and Ingram, 2000).

These different factors create different social configurations in organisations: let's consider as exemplar models clans and networks (Ouchi, 1980 and Miles & Snow, 1986, in Walsh and Rivera Ungson, 1991).

- The governance structure of a clan is based on trust and sophisticated socialisation. Clans normally arise as bureaucracy fails and then they thrive as the organising costs in this model are particularly low. This is due to the principle which stands at the core of all clan exchanges which is the perception of equity from the parts involved. In this model, rational and self-interested parties therefore engage in exchanges which they believe will be equitable in the long run even if they appear unfair in the moment when the exchange itself occurs.
- Networks are purposeful and conscious relationships between organisations or between organisational sub-structures. Also in this model the social structure is more dependent on truth and perception of fairness rather than on the formal agreements that may shape the social structure in the first place. The transactions in a network are therefore strongly sustained by memory and its management processes, which contribute to the stabilisation of the relationships in the network itself.

Knowledge work in particular, is mainly carried out in project-based organizations where members work simultaneously on multiple projects with different team members.

"A team is embedded in a multilevel system of individual-, team-, and organizational-level aspects, which focuses centrally on task-relevant processes, which incorporates temporal dynamics encompassing episodic tasks and developmental progression, and which views team processes and outcomes as emergent phenomena unfolding in a proximal

task or social context that teams in part enact while also being embedded in a larger organization or environmental context" (Kozlowski & Ilgen, 2006; Marks et al., 2001; in Bosch-Sijtsema et al., 2011).

The social system in which distributed collaboration takes place is therefore fluid, characterised by temporary structures and changing configurations, with new actors frequently joining and leaving the system (Bosch-Sijtsema et al., 2011).

From the literature, I identified in particular two social structures which have the potential to sustain knowledge-centred and innovation-driven creative organisations: collaborative circles and communities.

## COLLABORATIVE CIRCLES

A collaborative circle is a group of collaborating friends, of people working in the same field that are a part of the same social network and that end up associating (Farrell, 2001). This theory was originally formulated on historical data of notable groups of artists and writers, but has been observed to be valid and valuable also for physicists, engineers, political leaders and people in many other disciplines alike.

"A collaborative circle combines the dynamics of a friendship group and a work group. [...] A collaborative circle is a primary group consisting of peers who share similar occupational goals and who, through long periods of dialogue and collaboration, negotiate a common vision that guides their work. The vision consists of a shared set of assumptions about their discipline, including what constitutes good work, how to work, what subjects are worth working on, and how to think about them."

(Farrell, 2001)

The collaborative circle is therefore a group of peers that by negotiating together an innovative vision of their field, define their professional and occupational identity, develop their own rituals and jargon and build a sense of trust that allows them to explore truly innovative and even rebellious ideas.

In traditional theories, creativity has been studied as the product of an isolated creative genius. Collaborative circles theory on the other hand is centred on the idea that most creativity happens in groups where members are interdependent and completely involved (Kohut, 1985 in Farrell, 2001).

The group dynamics have in fact a transformative effect on the work and on the development of the members of the circle. The interpersonal dynamics have the power to nourish collaborative thinking and creative group work, especially in teams of small sizes.

Creative circles can be developed in stages:

- Formation - when members, because of their similar values and aspirations, gravitate towards a magnet place and first meet. Transitional stages of life seem in particular to favour the formation of collaborative circles. In this development phase members of the circle are more prone to sharing finished products rather than work in progress.
- Rebellion against authority - in this early stages of development it is easier for collaborative circles to agree on shared dislikes rather than likes or work they value. This often takes the form of a common antipathy for authorities in the field and helps the circle to define its identity via rejection and rebellion. In this phase the circle starts to share stories that become legends in the first ritualistic activities of the group.
- Negotiating a new vision - where members reach a consensus on a theory and a method for doing work in their specific field. Via trial and error, they in fact elaborate a vision that guides both



the decisions of what problems to work on and the best ways to do so.

- Creative work - individual and group work alternate and often take place in a physical setting that, at times completely unrelated to the work itself, becomes a symbolic part of the circle's identity. In this phase of development, the group develops some interaction rituals as well as stronger boundaries to distinguish insiders and outsiders.
- Collective action - new roles emerge as members collaborate on a bigger shared project. The internal structure of the circle becomes more elaborate and the contacts with the outside world increase. There are more opportunities for conflict and outsiders' opinions could directly affect the circle and its configuration.
- The separation - when unresolved conflicts accumulate and may polarise the group, the culture that unified the circle in the early stages of development now seems constraining and members start seeking individual recognition. The ownership of ideas in particular can lead to divisions and antagonisms, that if not healed or remedied directly translate to conflict and ultimately separation.
- Nostalgic reunion - circles can reunite around alumni representatives but though affective bonds may still persist, they will never go back to the original synergy that bonded the group in the first place.

The developmental stages follow the trajectory already evident in the path of forming, norming, storming and performing, detailed by Tuckman in 1965. Though the developmental process is based on observed and recurrent commonalities it also leaves room for variations (Farrell, 2001). Across developmental stages in fact collaborative circles work to develop trust, commitment and instrumental intimacy, making the most of contextual conditions and locational resources. The strategic action fields' characteristics affect therefore the creative circles' com-

positions, roles, and dynamics (Parker and Corte, 2017). The attention space, consensus, social control, resources, as well as organisational and geographical contexts, define the different subfields that determine variations in the collaborative circles' emergence and development processes.

Among the factors for which rings true, it is important to highlight the role that Farrell (2001) attributes to internet communication:

"Internet communication may facilitate the formation of circles, and [...] it may enable them to maintain contact between meetings, but I do not think it allows for the kind of indepth dialogue that leads to meaningful personal development and creative work. For this kind of interaction, there is no substitute for ritualized meetings and working side by side" (Farrell, 2001).

## COMMUNITY

An organisation can truly be innovative only if it creates a safe space for its members to be creative. Building community is a strategy to achieve this goal (Vogl, 2016).

Vogl (2016) defines a community as a group of people who feel concern for each other's welfare and who support the technical, social and internal growth of its members.

A community is therefore defined by:

- A shared set of values - The values of a community can be expressed consciously or unconsciously, in explicit or implicit ways by all its different members. Besides the initial effort required to reach the general agreement on this defining element, a community also needs to invest in updating and evolving its values to stay relevant in today's dynamic world. In particular, within for-profit organisations, formalising or corporatising a community exposes the community itself to the risk of being more fragile: this is due to the fact that, as profit-driven unhealthy values find room to emerge in these organisational spaces, individual members become at risk of feeling disconnected. This in turn affects their perception of belonging and as a result their contribution and their commitment to the overall community also gets affected.



- **Membership identity** - From the core values of the community, members can in fact extract some guiding principles. These principles can be used by individual members to guide their behaviour within the community as well as to define their identity within that same context: “Who am I? How should I act? What do I believe?” (Vogl, 2016).
- **Moral proscriptions** - The values and principles can then also be used on the group level to evaluate new ideas and to support decision making when the community needs to consider new options, their impact on the strength of the community and their growth potential. The community is therefore aligned on some moral proscriptions that define what and whom is protected and respected by the community, what is shared and with whom, what is intolerable and what standards define the overall behaviour of the community.
- **Insider understanding** - Given that a community is aligned on values, principles and behaviours, implies that a shared baseline for mutual understanding can emerge: this internal understanding means that members don't need to explain themselves to other members, which has a big emotional impact both on the individual level and on the community level.

“We're in a connection economy in which those who connect others will succeed [...] When leaders create a robust and committed community, they build relationships that are effective and resilient. These relationships in turn can lead to profound change.”

(Vogl, 2016)

It therefore becomes fundamental for creative and innovation-driven organisations to consider the community that they have as a key resource and make the best effort to ensure it's strong and based on healthy values. In the process of building a community organisations can focus on establishing some core principles (Vogl, 2016):

- **Boundary** - Community insiders and outsiders should clearly be distinguished by a recognised demarcation whose primary role is to identify a safe space for insiders rather than acting as a blockers for outsiders which should still find an exploration zone where to get in touch with the community. This boundary is maintained and enforced by gatekeepers which can both be formal and informal, and that should in both ways ensure that both the boundary and its enforcement remain dynamic in order to serve the changing community.
- **Initiation** - It is important for new members to have an official recognition to mark the moment in which they join the community. This step is crucial and often ritualistic and defines belonging.
- **Rituals** - Having specific times and events that have a shared meaning inside the community creates a bridge between the present, the past and the future of the community itself and it generates a feeling of stability in the ever changing context. Rituals can be formal or informal, vary in intensity and translate into different solutions but ultimately they all align on a shared foundational form that defines its phases (opening, body and closing) and the contents to be designed.
- **Temple** - Each community needs a shared and sacred place that can enhance its rituals. “Any space can be temporarily set aside (made sacred)” be it formal or informal, physical or virtual.
- **Stories** - Sharing stories is the most powerful way humans learn. Sharing origin stories, value stories, vulnerable and personal stories is a process that is fundamental for the community and its members in order to share values and strengthen identity.

## Foundational Form Elements of rituals

### Opening

- Welcome
- Intention
- Reference a tradition
- Explain events and instructions

### Body

- Share wisdom
- Invite participation

### Closing

- Acknowledgement
- Sending

(Vogl, 2016)

and connected. As progression within a community is defined by improving skills and growing concern for others, opportunities to learn and to teach should be built in the structure of the community itself: especially in corporate settings, if talented people don't know how they can progress within the organisation, they'll look for options and for growth paths elsewhere.

The social component of knowledge-based work makes the spaces it inhabits interrelational and performative more than essential (Gregson and Rose, 2000 in Halford, 2005).

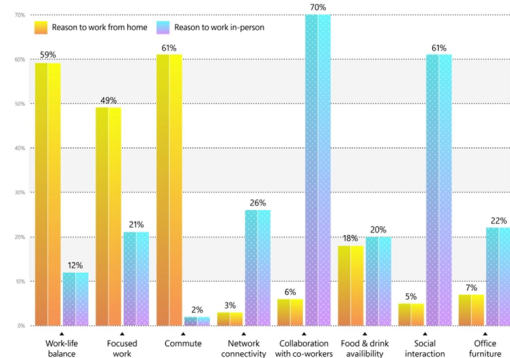
This idea implies that the physical office should embrace this social component and support it by assuming a new role.

- Symbols - Members need to be reminded of values, identity and commitment to a community: symbols can be tools that assist the community as reminders or tokens imbued with intention, meaning and a connection to the future.
- Inner rings - Communities thrive when their members feel valued and valuable. This happens when each member is offered a progression or a journey from the outer rings of a community (where new members are) to the formal or informal inner rings (where elders and skilled members are). This progression in healthy communities shouldn't have a strong hierarchical connotation but coexist with the idea that every part of the community is central

# A new role for the physical office

The concepts collected so far provide an overview of the rapid changes that are happening across the three interfaces (physical, virtual and social). Those changes define transitional phases that are challenging workers and managers on many different levels. The most recent trends research highlight engagement and inclusivity, continuous collaboration and communication, as well as team alignment and visibility as the most urgent and critical to tackle (Miro, 2021).

Each organisation could have different priorities according to the field of interest and its specific ways of working but overall there is a general agreement that the concept of the workplace needs revisiting. The “new normal” calls for a new workspace paradigm that can be referred to as “distributed by design” (MIT Technology Review Insights, 2022). This transformation in the point of view on those challenges implies not merely adapting to said changes and emergencies, but anticipating them and designing for the future of the workplace. The change is therefore mainly cultural and reports show that organisations, despite common concerns, are mature for this evolution.



**Figure 3.20.**  
Reasons Microsoft employees cite for working at home and in-person  
(Microsoft WorkLab, 2021)

What we can therefore expect from this “new normal” is to have a physical office that becomes a cultural space for the organisation’s members that assumes the roles of a social anchor that facilitates connections, a schoolhouse that enables organisational learning and an innovation hub for unscripted and unstructured collaboration (Fayard, Weeks and Khan, 2021).

## A SOCIAL ANCHOR

In-person interactions build commitment, support and cooperation. The limited body language available in videoconferences often leads to misinterpretation and makes bonding more difficult.

“A short meetup at a colleague’s desk can result in what the psychiatrist Edward Hallowell calls a human moment: face-to-face encounter that allows for empathy, emotional connection, and nonverbal cues to complement what is actually said. [...] In human moments people are often energized and more likely to empathize with each other, which supports organizational culture and collaboration.”

(Fayard, Weeks and Khan, 2021)

## A SCHOOLHOUSE

Directly affected by organisational culture and the overall ability of members to collaborate, is knowledge sharing and more in general knowledge management processes. In hybrid workspaces, knowledge that can be made explicit can be codified, scaled and distributed, but tacit knowledge is learned and passed on to other members (especially new ones) via on-the-job experience, direct observation and interactions

with colleagues. For this critical process, technology can be a facilitator but not a complete substitute: what the current hybrid environment lacks are cultural translations and spontaneous learning opportunities which are fundamental for any creative profession.

## AN INNOVATION HUB

Innovation and creativity both benefit from chance encounters and the likelihood of them happening is a good predictor of creative teams' performance. Close in-person contact facilitates unstructured collaboration and therefore innovation.

"Increasingly, what companies need from people is their creativity—and as we've seen, people are more creative when they're together and can share human moments. That's why we need the office."

(Fayard, Weeks and Khan, 2021)

To answer these needs, the new workspace for knowledge and creative workers therefore needs to be first of all designed for human moments. This translates to allowing both openness and privacy, supporting different types of social interactions and non work-related rituals to nurture work relationships. But it should also be customised by technology and the ICT infrastructure which should allow us to understand how workers operate socially and design dedicated social spaces accordingly. The role of technology should therefore be to support the relationships across spaces and interfaces rather than removing them from the table. Finally, the workspace should be a place managed to encourage connections, where people feel entitled to take time to socialise and connect, and where leaders also spend time in common spaces and

participate in the life of the workplace, embodying the social behaviour of reference and role-modelling for the norm they wish to establish.

"A global tech company we know decided to cut costs by eliminating the coffee machine in one of its R&D centers. Initially productivity went up: Managers measured an increase in the number of lines of code produced and a decrease in the number of bugs. People were spending less time talking over coffee and more time coding. But later the total number of product releases went down, owing to an increase in integration bugs. That coffee talk turned out to have produced valuable collaboration."

(Fayard, Weeks and Khan, 2021)

The organisational processes that distributed collaboration needs should then focus on specific touchpoints designed to clarify and align expectations, refresh rules and work practices according to lessons learned, and finally build and revive the team's trust.

Satya Nadella, Chairman and CEO  
at Microsoft:

"[...] the vast majority of employees say they want more flexible remote work options, but at the same time also say they want more in-person collaboration, post-pandemic. This is the hybrid work paradox. [...] Hybrid work represents the biggest shift to how we work in our generation. And it will require a new operating model, spanning people, places, and processes."

(Nadella, 2021)

Nickle LaMoreaux, Chief Human Resources Officer at IBM and Brian Elliott, Executive Lead at Future Forum and Senior VP at Slack:

"This future way of working is relatively untested at our companies. In fact, we believe that getting hybrid work right depends on embracing this uncertainty and iterating as we go. It depends on resisting the urge to impose new top-down policies and structures. Instead, individuals and small teams should be empowered to experiment with how work gets done best for them, and how best to achieve their desired outcomes.[...] Your digital infrastructure needs to become the focal point that the office once provided. [...] This puts every member of the team—no matter where or when or how they work—on a level playing field. It creates a foundation of information that is the great equaliser, giving every employee shared access to the context they need to make informed decisions."

(Lamoreaux and Elliott, 2021)

## 4.

# New spaces for leadership

All the factors and challenges that define hybrid working practices are not only affecting the employed worker but also managers and their leadership: traditional managerial practices are very reliant on co-location, on the chances of overhearing and overseeing, and on traditional surveillance practices. The concerns that managers reported in Halford' study (2005) were mainly related to time anxiety and trust concerns.

To address these issues, most managers have taken action to establish a stronger virtual presence, to involve more with the other members of the organisation both in the virtual and in the physical office space, and to ultimately aim at building a personal relationship with them. The employment relationship is nonetheless still affected by tensions: the different time and space contexts cause shifts in the organisational power constitution and distribution, ultimately resulting in different means of control, on one side, and resistance on the other (Halford, 2005).

Project managers and executives are now operating in a new and rapidly changing context, defined first by complexity, as more and more interdependent elements are coming together to define processes, projects, systems and organisations alike; and then heterogeneity, as that same complexity multiplies not only the elements involved but also the diversity that comes with the different value systems, representations and cultures that they bring and that as a consequence need to coexist and interact.

This change in leadership practices is affecting all levels of society and is picking up speed because of the increase of the general level of ed-

Arvind Krishna, Chairman and Chief Executive Officer at IBM:

“Here is my pledge:

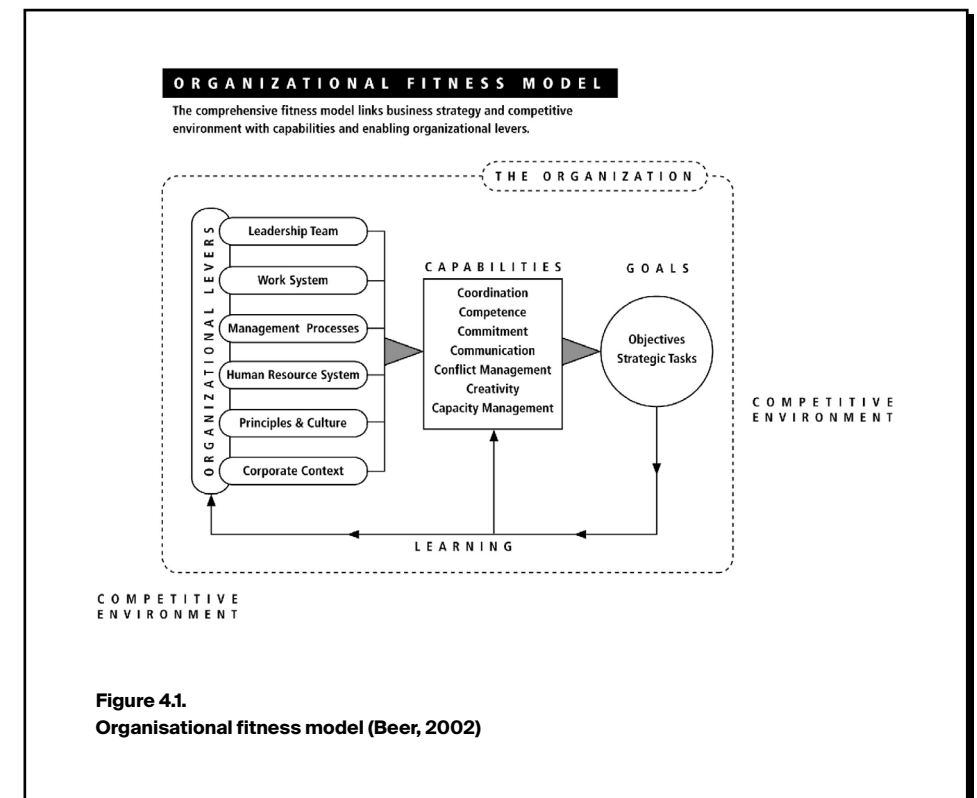
As the CEO of IBM, I pledge to support my fellow IBMers working from home during COVID-19.

- I pledge to be Family Sensitive.
- I pledge to support Flexibility for Personal Needs.
- I pledge to support “Not Camera Ready” times.
- I pledge to Be Kind.
- I pledge to Set Boundaries and Prevent Video Fatigue.
- I pledge to Take Care of Myself.
- I pledge to Frequently Check In on people.
- I pledge to Be Connected.”

(Krishna, 2020)

ucation, that causes a subsequent refusal of authoritarianism, as well as for the steady diffusion and growth of individualism over the prioritisation of the collective interest. In an organisational context, from a managerial perspective in particular, this bigger societal trend implies that individuals within a system will try to take part in relevant decisions whenever possible, and prioritise their personal interest in that process. These aspirations call for new models that can support wider stakeholders' integration and participation into the decision-making process, as well as new values and organizational cultures where “people decide to join the initiative, discover the meaning of the project that is being proposed, get involved in its realisation, and take responsibility for its implementation” (Beauvillard, 2012).

The complex managerial system used in innovation-driven organisations is actually made up of different layers: the organisational layers include the leadership team, the work system, the management process,



**Figure 4.1.**  
Organisational fitness model (Beer, 2002)

the human resource system, the principles and culture of the organisation, as well as the corporate context (Voelpel, Leibold and Streb, 2005).

Organisational fitness depends on the business strategy, on how it enables organisational layers and how it interacts with the competitive environment. The development of organisational fitness can be impaired by six “silent killers” (Beer and Eisenstat, 2000):

- Lack of leadership
- Poor coordination and conflicting priorities
- Lack of openness and willingness to cooperate
- Poor communication
- Inadequate leadership and development at lower hierarchical levels

To succeed in highly competitive environments, organisations have to continuously redesign their internal layers to ultimately develop the organisation capabilities required to perform well and grow: coordination, competence, commitment, communication, conflict management, creativity, and capacity management (Voelpel, Leibold and Streb, 2005).

According to how these organisational layers are configured and reconfigured over time, Buck and Endenburg (2010) distinguish between two group of workers: organised workers, defined as a group that collaborates under the direction of an established leadership; and self-organised workers, which is a group that acts as one cohesive team without the need of external orders (Buck and Endenburg, 2010).

It has been observed that allowing workers to develop self-organising processes stimulates creative thinking, generates new structures, and circulates new ideas. Focusing on the role of leadership within these self-organising models is therefore particularly interesting for today's creative and dynamic work context.

## Leading self-organising circles

Sociocracy, also known as dynamic, nonviolent, or green governance, is a method for decision-making and the management of work which enables the organisation to self-manage and to spread the authority to its sub-parts.

### Brief history of Sociocracy

(19th century)

- Auguste Comte: he formulated Positivism, established Sociology, and developed an utopian project based on the pillars of altruisms, the religion of humanity and sociocracy, which he described as the governance of people that share a social relationship (i.e. friends or allies).
- John Stuart Mill: he was an advocate for utilitarianism and liberalism, and promoted workers unions and cooperatives.

(20th century)

- Mary Parker Follett: a pioneer in the field of organisational theory, she advocated for human relations and for the principle of power-sharing as core organisational assets.
- Rensis Likert: he developed the theory of participative management, which includes individual members of the organisation in the process of decision-making.
- Kees Boeke: reformist and pacifist, guided by Quaker beliefs, he developed the applied his idea of sociocracy to education and the school system.
- Gerard Endenburg: he developed a dynamic method for decision making and the governance of organisations and societies based on the principle of equivalence.

(Buck and Endenburg, 2010)

Dynamic governance inherits its core principles from the disciplines of systems theory and system dynamics, which mainly focus on establishing analogies and connections between phenomena which initially appear as distinct and unrelated (Romme and van Witteloostuijn, 1999):

- The behaviour of a complex system is the result of its underlying structural organisation - which in dynamic governance concepts translates to equivalent and non-controlling constituent elements that actively apply consent, elections and double linking principles.
- In static systems, information, energy and power flow in one direction only, while in dynamic systems the feedback and control loops are more complex. Causes and effects tend to be more distant in time and space, and at times may seem unpredictable and unexpected.
- The definition of local patterns on the one hand, and global behaviours on the other generates tension that affects the dynamic system. Circles as structural entities find in the assigned common aim a source of tension that acts as source of energy.

“Each circle has its own aim and organises the three functions of leading, doing, and measuring/feedback. A circle makes its own policy decisions by consent, maintains its own memory system, and develops itself through research, teaching, and learning that interacts with its aim.”

(Buck and Endenburg, 2010)

The core components of sociocracy therefore are:

- Consent - the principle at the basis of decision-making;
- Elections - the principle at the basis of the assignment of functions and tasks;

- Circles - the semi-autonomous structure for decision-making;
- Double linking - the structure of the interactions and connections between circles.

While traditional organisations rely mainly on majority vote and autocratic leadership (which can employ different styles), dynamic governance or sociocracy modifies the underlying power structure that support any management style. This organisational structure in fact overlays on top of the traditional organisational structure so that top-down and bottom-up power flows are in a circular relationship. Given its dynamic nature, the classic “either/or” dialectic used to describe the dynamics of workers versus management is challenged in favour of the “both/and” logical model: “both stockholders and management, both management and workers, both autocratic and egalitarian decision-making, both security assurance and creative stimulus, both profit and human values” (Buck and Endenburg, 2010).

The flexibility in the management of the organisational layers that dynamic governance allows, is particularly fit for the current knowledge work panorama: it can be applied in whole or in part - to the complete organisation or to selected circles only - while it can also coexist with other strategies provided that the management has a clear vision for the organisation, which can act as the central pillar that sustains such flexibility.

The dynamism of these complex and interconnected systems, coupled with the facts that “the insights gained in one area of study can accelerate understanding and discoveries in other fields” (Buck and Endenburg, 2010) also means that applying these principles and perspective in creative and innovation-driven organisations can uncover hidden opportunities for synergies and create fertile ground for free and open enquiry at all levels - on top, general and unit circle - which would in turn maximise the organisational problem-solving capabilities.

In the practical implementation of the circular model made by Gerard Endenburg at his Endenburg Elektrotechnik Incorporated company in the 70s, each circle was made responsible for their members’ training



and education as well (Romme and van Witteloostuijn, 1999). The team could manage its own budget to spend in the following areas: special functions and tasks (professional skills and knowledge), organisational processes and structuring, and decision making.

“participation programs which intend to create more commitment and involvement of workers, fail to work if this underlying static structure is not reorganized”

(Buck and Endenburg, 2010)

Circular organisational design can therefore also stimulate and facilitate learning, provided that the group in charge makes behavioural interventions to create momentum towards organisational learning. But, as organisational members come and go at all levels of the organisation, behavioural interventions alone are not sufficient in generating sustainable change towards organisational learning. The change has to be supported by a structure that facilitates learning and embeds it in the organisation itself.

The learning behaviour (on the individual, team and organisational level) is therefore the result of a circular organisational structure based on participation (Romme and van Witteloostuijn, 1999).

## Tribal leadership

Logan, King and Fischer-Wright (2011), during a decade of research studies, analysed real organisations to extract principles and findings, discovering tribal dynamics and the tribal leadership system, which can be compared and contrasted against the system of circles proposed by earlier models of dynamic governance.

"Birds flock, fish school,  
people tribe."

(Logan, King and Fischer-Wright, 2011)

A tribe is a social unit “bigger than a group but smaller than a society [...] the basic building block of any large human effort, including earning a living” (Logan, King and Fischer-Wright, 2011). A small company can be seen as a tribe, a large company as a tribe of tribes. Within organisations tribes have great influence and decide in particular how much work gets done, how and according to which quality standards.

Within tribal systems, though power can be distributed and organisation dynamic, leaders still have a strategic role: they in fact build the tribe, help it grow by upgrading the tribal culture and therefore directly contribute to the tribe’s performance.

“Without the leaders building the tribe,  
a culture of mediocrity will prevail. Without  
an inspired tribe, leaders are impotent.”

(Logan, King and Fischer-Wright, 2011)

A key aspect of this tribe shaping activity is morphing language: each tribe and cultural stage is characterised in fact by a specific linguistic and behavioural fingerprint that can first, be observed and recognised by tribal leaders, and eventually, changed or morphed into something different, hopefully better.

But it is also a reciprocal action and interplay, a mutual exchange of respect and identification: as the leader builds the tribe, the members of said tribe recognise them as leaders. This reciprocal dynamic is also valid for all other tribe members: an individual default state can influence the tribal culture in which they are situated and it will also in turn be influenced by the tribe itself.

Tribal leadership is therefore based on strong relationships and a shared strategy which guides the definition and development of the dominant culture. If tribes are the organisations' most powerful vehicles, culture is the engine of the tribes. It is therefore a responsibility of the tribal leader to push the team through the five stages of cultural development.

## **STAGE ONE**

Hostility and violence are dominant at this stage which resembles the dawn of human societies, before the civilisation process began.

This stage is governed by the harsh fight for survival and organisations are rarely in this lower stage for long: they either perish or step up to the next stage. As for what concerns individuals in this stage, they are usually not hired at all, or quickly spotted and expelled by the organisation itself. Still there is a possibility for individuals in stage one that join tribes at a higher cultural stage to jump out of their current state provided they are willing to move forward.

## **STAGE TWO**

Tribes at this cultural stage are made up of passive and apathetic members which feel no passion, motivation or sense of urgency towards the organisational goals. This stage is common for tribes in large organisations and it can lead to them being unable to produce meaningful innovation. Individuals at this cultural stage feel they are victims of circumstance, and that there is no possible outlet for their creativity inside the organisational context. Leaders can level up this cultural stage by

taking genuine interest in their employees which is the only effective way to break the cycle of accountability avoidance and cynical criticism.

## **STAGE THREE**

This cultural stage is built on individual knowledge and individual success. A tribe at stage three is essentially a group of unsatisfied "lone warriors" that believe they alone can do the work they don't get enough time and support for. This stage is highly influenced by the societal pressure that is put on individual success and performance, and that is deeply ingrained in the school system first, then in the universities and finally also in the workplace.

The lower levels of this cultural stage are fuelled by fear used as a propeller by individuals to excel: despite their efforts and the time they invest to thrive, it will all ultimately lead to frustration as the goals they have are unreachable due to the limited nature of their resources. This cultural stage is very common in knowledge-based organisations: they can transition to a dominant stage four culture by redirecting the fire that burns in individuals at stage three towards shared goals and partnerships.

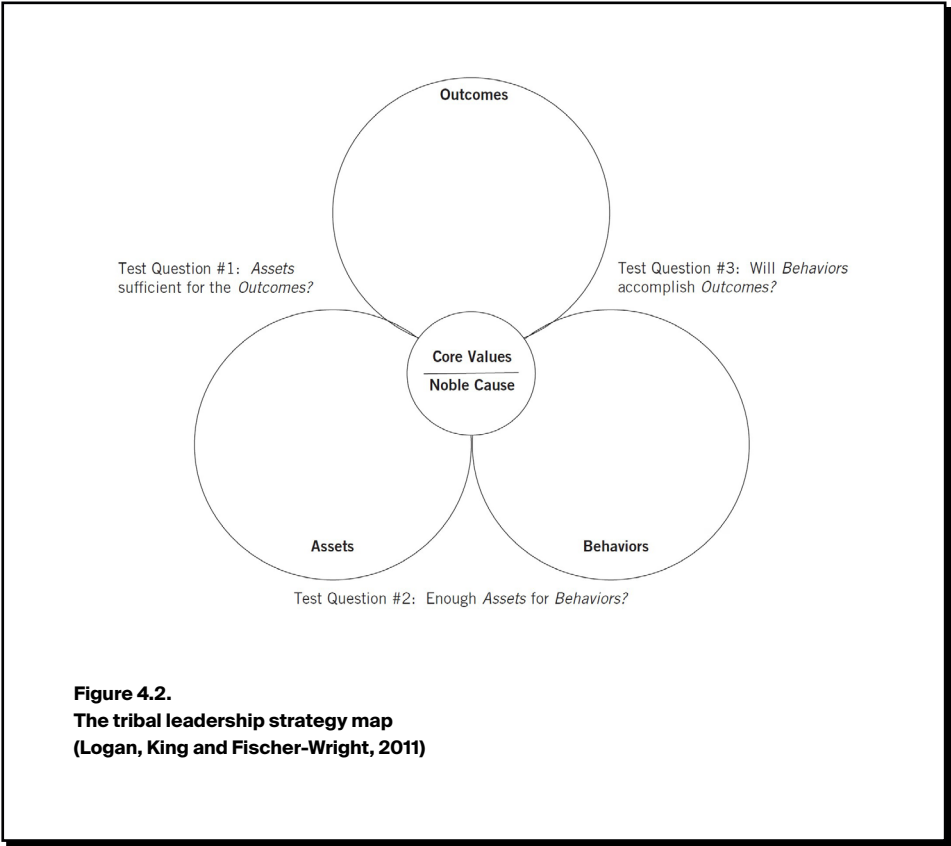
## **STAGE FOUR**

A tribe at cultural stage four is deeply aligned on common goals and values. The sense of self of its members is affected by the sense of belonging to the tribe itself: they feel proud and part of a group that values them, and as a team they can achieve esteem, respect, loyalty, legacy, and enduring success.

Cultural stage four is typically achieved when a team member, most likely the tribal leader, has the epiphany and finds a group of like-minded people that are either available to discuss cultural progress, or that are already aligned in the vision and willing to level up. Both these activities can be set in motion and proceed outside of pre-defined organisational boundaries which could at times work against such cultural growth. In order to stabilise in this cultural stage it is necessary to assess the current situation, to establish some core values to unite the tribe as well as a common cause to create a shared basis of alignment on which to work.

In parallel to this internal work, it is also typical of tribes at this stage

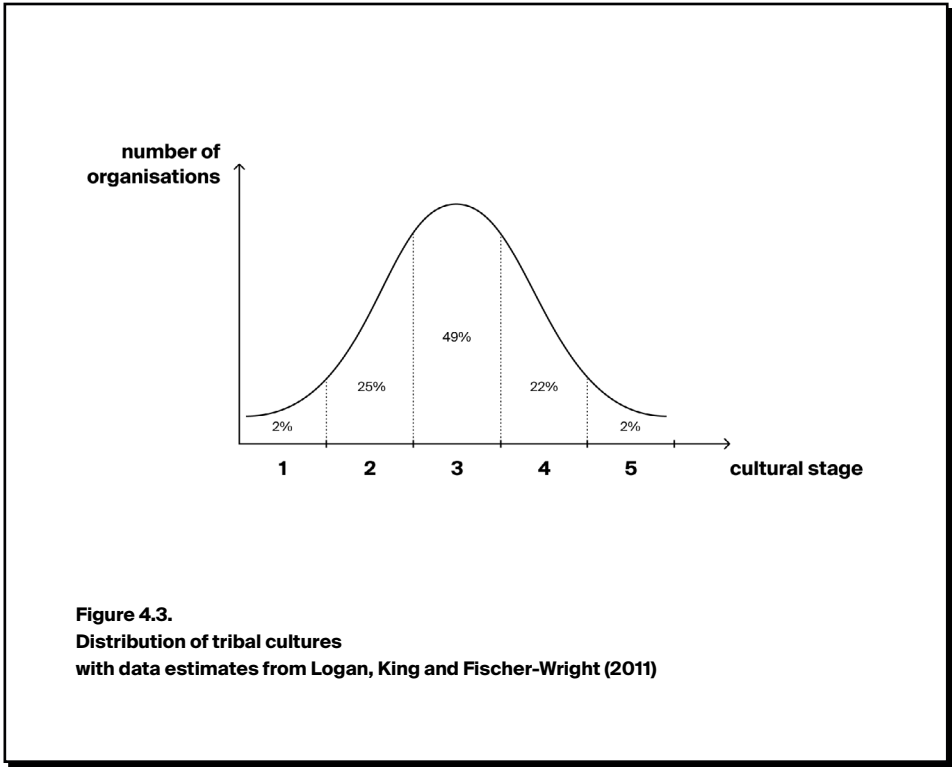
to look outwards and pick an adversary or a competitor whose size is directly correlated to the power of the tribe.



Organisations at cultural stage four apply a complex system of networked and coordinated strategies that mix top-down and bottom-up approaches: each member, team and department has their own strategy and it is very likely that those in direct contact with clients, taking care of the operational work - and therefore often at the bottom of the organisational hierarchy - are the ones who offer the best high-level strategic inputs.

STAGE FIVE

The leadership, vision and inspiration of stage five tribes is aimed towards great innovations that will have a positive global impact. This cultural stage is the most rare and generally is the product of the focused burst of tribes whose culture oscillates between stage four, where the structural preparations are made, and stage five, where the higher goal is in reach: making history for a tribe at cultural stage five is possible. The future of business for Logan, King and Fischer-Wright (2011) is for organisations to leverage cultural opportunities and stabilise at stage five, but currently that is still a widely unexplored territory.



The predominant language and behaviours of the tribe’s members and leaders are good indicators of the cultural stage in which the tribe is and thus of the performance to be expected from the unit itself. Observation is more accurate than self-reporting as people tend to overestimate

their own cultural level by two stages. Analysing power and relationship cues then is the best way to validate the first evaluation: how one is bonded with their tribe and how much change they can produce in the organisation is in fact revealing.

After making this first assessment, tribal leaders can start to influence a tribe's cultural stage: if they can move the critical mass of the tribe to the next higher cultural stage the rest of its members will either follow or leave. To achieve this goal a tribal leader can leverage the power of language that tribe members use, as well as the type of relationship that they form with other members, to ultimately generate inside the tribe itself a self-sustaining culture capable of first stabilising into the current stage and then of progressing to higher cultural stages.

The great benefit of progressing through cultural stages, and ultimately achieving a stable stage four culture, is that effortless organisational learning emerges: at cultural stage four, tribe members in fact can actively teach each other the latest learnings, thinking and practises.

## 5.

# Organisational learning

“A learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights” (Garvin, 1993). But change and adaptation in themselves don't necessarily imply learning (Fiol and Lyles, 1985) and it is therefore crucial for an organization to have a framework to map, understand and monitor its learning processes, to ultimately try and distinguish them from unreflective changes.

## LEARNING

the development of insights, knowledge, and associations between past actions, the effectiveness of those actions, and future actions.

## ADAPTATION

the ability to make incremental adjustments as a result of environmental changes, goal structure changes, or other changes.

(Fiol and Lyles, 1985)

Understanding and committing to organisational learning is a key strategic asset for organisations that aim at achieving the continuous improvement necessary to survive in today's competitive and fast-evolving market of innovative and therefore knowledge-creating companies (Garvin, 1993). The main source of competitive advantage for an organization comes in fact from resources and assets that are developed within an organization (Barney, 1986 in Argote and Ingram, 2000), rather than acquired from external sources, and that are difficult for competitors to imitate or replicate (Lippman & Rumelt, 1982 in Argote and Ingram, 2000).

The contextual factors of culture, strategy, structure and environment, influence - but are also in turn influenced by - the ability of an organization to develop new learnings (Fiol and Lyles, 1985):

- Culture, as the system of ideology, norms and beliefs that can encourage actions conducive to learning.
- Strategy, as the favourable set of goals and objectives responsible for guiding the process of interpretation of the environment and decision making.
- Structure, as dynamic, circular and decentralised structures multiply the learning possibilities compared to centralized and mechanistic ones (Romme and van Witteloostuijn, 1999).
- Environment, as finding a balance between change, a potential cause for stress and uncertainty, and stability can prevent individual and organizational overload.

Time, and in particular, time pressure, plays also a crucial role in determining the frequency of organisational learning: as it is a continuous and ongoing process, it requires recurrent and dedicated times for reflection and analysis (Garvin, 1993). The top management should therefore explicitly free up team members' time for thinking about strategic plans, customer needs, reviewing work streams and starting new initiatives. But organisational learning is far more wide and complex than those few examples: organisational learning is ultimately concerned with knowledge, insights and understanding at large.

"A productive failure is one that leads to insight, understanding, and thus an addition to the commonly held wisdom of the organization. An unproductive success occurs when something goes well, but nobody knows how or why."

(Nadler, 1989; in Garvin, 1993)

Organizational wisdom, and its maturity, can be mapped according to the following eight stages of knowledge (Garvin, 1993):

- Recognizing prototypes (what is a good product?).
- Recognizing attributes within prototypes (ability to define some conditions under which process gives good output).
- Discriminating among attributes (which attributes are important? Experts may differ about relevance of patterns; new operators are often trained through apprenticeships).
- Measuring attributes (some key attributes are measured; measures may be qualitative and relative).
- Locally controlling attributes (repeatable performance; process designed by expert, but technicians can perform it).
- Recognizing and discriminating between contingencies (production process can be mechanized and monitored manually).
- Controlling contingencies (process can be automated).
- Understanding procedures and controlling contingencies (process is completely understood).

The aim of organizational learning can therefore be framed as the outcome of the process that works to move knowledge from one stage to the following one, to ultimately reach complete understanding and therefore to improve actions (Fiol and Lyles, 1985).

The depth and breadth of knowledge and understanding that is reached by organisations can additionally be mapped on different levels of organisational learning (Romme and van Witteloostuijn, 1999):

## **ZERO LEARNING**

The organisation is faced with a new problem but members fail to take corrective action.

## **SINGLE LOOP LEARNING**

**Are we doing things right?**

An error is detected and the organisation updates its competencies and knowledge in response. Its policies, processes and mental models aren't affected: it's a consolidation process.

## **DOUBLE LOOP LEARNING**

**Are we doing the right things?**

An error is detected and the organisation reframes its policies, processes and mental models to change its competencies and knowledge in response: it's a transformative and conversational process.

## **TRIPLE LOOP LEARNING**

**Can we participate in making well-informed choices on strategy, objectives,...?**

The organisation works on the structures and strategies needed to increase its learning ability. The goal is to link distinct units of learning in one overarching infrastructure, and enable the members of the organisation to use such infrastructure.

In theoretical literature there is on the one hand a general agreement on the interpretation of single and double loop learnings, but great misalignment in the terminology used to describe these concepts (Simonin, 2017). For the higher N-loop learning levels on the other hand, there seems to be wide consensus on the expressions but not on the meanings and interpretations associated with them. Some nuanced interpretations of higher level learning for example focus on the new structures and strategies for learning, while others on ethical behaviours and collective mindfulness, and some others on the reflection and optimisation that starts from the learning processes of lower levels.

Each loop and hierarchical level of organisational learning can be associated with a learning archetype (Simonin, 2017) to further illustrate the implications of each stage:

## **N=0**

The Dodo bird, which is completely habituated and adapted to its usual environment, is the archetype for zero loop learning: the lack of ability to learn and respond to change can lead the organisation to extinction.

## **N=1**

The Hedgehog, which knows almost everything about a specific domain, is the archetype for single loop learning: this specialised expertise and centripetal mindset can grow in an organisation by repetition.

## **N=2**

The Fox, which knows a lot about many things, is the archetype for double loop learning: this type of learning makes the organisation adaptable, flexible and agile in its changing context and it cultivates divergent thinking.

## **N=3 AND ABOVE**

Finally, the Sphinx, which is the mythical guardian at the gates of wisdom, is the archetype for higher levels of learning: great fortune awaits the organisations that solve the riddle that is "learning to learn how to learn" (Simonin, 2017).

"[...] triple and quadruple loop learning is required to change the ethos of organisations (triple loop learning) and of society as a whole (quadruple loop learning) to allow us all to benefit from the knowledge and expertise that is currently sited at the margins."

(Hersh, 2005; in Simonin, 2017)

“If learning can be partially viewed as an optimization problem” argues Simonin (2017) then the different levels of N-loop learning change what is being optimised (the type of knowledge concerned), who is doing the learning (the type of learner, from the individual to the society) and also where the learning is happening (the spatial nature of the learning, in terms of both organisational and geographical distance).

To make progress with the organisational learning optimisation problem, and to learn how to learn together, organisation members need to exploit the component technologies (Senge et al., 1994) of systems thinking, personal mastery, mental models, shared vision and team learning, in order to effectively perform the following activities (Garvin, 1993):

- Systematic problem solving - it needs to rely on the scientific method for problem diagnosis (motivated by current difficulties), and on statistical tools for data collection, organisation and analysis. These inferences that derive from this process can then be systematically used as the basis for strategic decision making.
- Experimentation, motivated by opportunities and contextual changes, and aimed at gaining deep understanding from superficial knowledge (knowing not only the how but also the why of things). It can take the form of ongoing programs where incremental innovation is achieved by carrying out a continuous series of small experiments to ensure a steady flow of new ideas. This type of experimentation and systematic risk taking can be supported by an incentive system. But experimentation can also consist of demonstration projects, where new organizational capabilities and systemic changes are designed from scratch and tested. This type of projects can be seen as transitory states of the organization and can set a precedent for future projects.
- Learning from own experience and history, by reviewing successes and failures, carrying out a systematic assessment and recording lessons learned in a form open and accessible to employees.

- Learning from others' experiences and history via benchmarking: identify best-practice organizations, study their practices and performance, carry out site visits and interviews, analyse results, elaborate development recommendations and implement the new knowledge.
- Transferring knowledge in a quick and efficient way - via reports, site visits and tours, personnel rotation programs and standardisation programs.

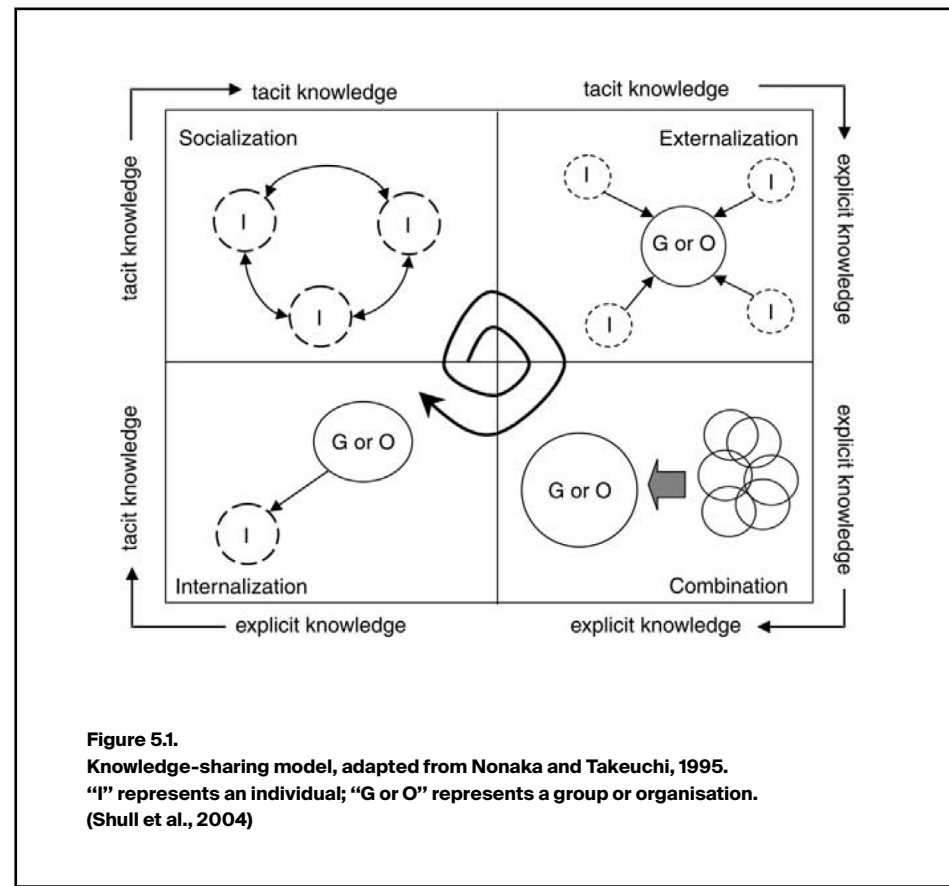
"Accuracy and precision are essential for learning. Employees must therefore become more disciplined in their thinking and more attentive to details. They must continually ask, "How do we know that's true?", recognizing that close enough is not good enough if real learning is to take place. They must push beyond obvious symptoms to assess underlying causes, often collecting evidence when conventional wisdom says it is unnecessary. Otherwise, the organization will remain a prisoner of "gut facts" and sloppy reasoning, and learning will be stifled."

(Garvin, 1993)

The organizational learning processes happen in stages (Garvin, 1993) that have been represented by Nonaka and Takeuchi as a continuous life cycle: "from knowledge creation or acquisition (in which tacit knowledge is made explicit), to its organization and storage, to its distribution to potential users, to its application by those users. The application of knowledge can become the basis for new knowledge creation, beginning a new cycle" (Shull et al., 2004). Each cycle should positively affect



work results and improve performance (in qualitative and/or quantitative terms).



The knowledge gained within the organizational learning process can therefore lead both to behaviour and cognition development. Behaviour development is a lower level development which results from repetition and routine within a given structure and set of rules, and focuses on the immediate result of specific activities and behaviours. While cognition development is a higher level development which is a more cognitive process that aims at improving overarching rules and frames of reference with a long-term and widespread impact. Behavioural and cognitive development are functional to different stages and cycles of learn-

ing and need to be considered in the overarching process, which has to be managed systematically in order to leverage both from a strategic point of view.

The overall process can thus be described and analysed as being made up of the sub-processes of knowledge creation, knowledge transfer, knowledge retention and knowledge recalling.

## Knowledge management processes

### KNOWLEDGE CREATION

A change in organisational knowledge occurs as a function of experience and of the procedural understanding gained through exposure and involvement (Argote, 2011).

Members and teams can in fact be exposed to different types of experiences, both direct and indirect, characterised by varying degrees of novelty, ambiguity and heterogeneity, as well as by positive and negative connotations (Argote, 2011): both successes and failures can actually contribute to the knowledge creation process provided that the organisational orientation is aimed at learning rather than mere performing.

Organisational orientation is one of the contextual factors that affect the knowledge creation process. It coexists with the perceived psychological safety of members, the power dynamics within the organisational structure, as well as with the existence and strength of a superordinate identity that can unify both co-located and geographically dispersed units (Argote, 2011). The influence of these contextual factors defines the learning process and determines the learning outcomes.

The organisational knowledge acquired, which can be explicit, tacit or difficult-to-articulate (Kogut and Zander, 1992 in Argote, 2011), then resides in different knowledge repositories (Walsh & Ungson, 1991 in Argote and Ingram, 2000): individual members, roles and structures, procedures and practices, culture, and the physical workspace.



## KNOWLEDGE TRANSFER

Individuals, the “learning agents” (Argyris and Schon, 1978 in Walsh and Rivera Ungson, 1991) can be seen as the core knowledge producing element but their knowledge only benefits the organization to the extent that it gets shared, transferred and embedded into the organization and its culture via a supra-individual repository capable of crossing the organizational units, in a progression that links the individual level, to the group level, to the organisational level, to finally the inter-organisational level.

“Knowledge transfer in organizations is the process through which one unit (e.g., group, department, or division) is affected by the experience of another.”

(Argote and Ingram, 2000)

“It starts with socialization, in which tacit knowledge is transferred between individuals. It progresses to externalization, in which individuals make their tacit knowledge explicit to the group or organization. Through combination, explicit knowledge is then organized into more sophisticated or abstract knowledge. And lastly, through internalization individuals will absorb explicit knowledge, combining it with their own knowledge and experiences to produce new tacit knowledge. The cycle fosters continuous learning and knowledge gain.”

(Shull et al., 2004)

Cognitive, relational, motivational and emotional factors, can act as facilitators or barriers to knowledge transfer. These individual parameters, with the social networks and alliances in which they are embedded, and together with personnel movement, all affect transfer processes.

The process of knowledge transfer is a source of competitive advantage for organisations which should aim at optimising its effectiveness (Argote and Ingram, 2000). As the success of knowledge transfer has evident effects in the changes of knowledge or performance of organizational units, it means that it can also be measured by measuring those same results. Both performance and knowledge change based evaluations have limitations given the complexity of the organizational system itself and of the context in which it stands.

Knowledge repositories play a decisive role in knowledge transfer as on the one hand they affect both the processes that determine the exchange of knowledge and its outcome, and on the other hand they reflect the outcome of knowledge transfer procedures and change accordingly (Argote and Ingram, 2000).

McGrath and Argote developed the framework of knowledge reservoirs to describe and model knowledge reusal (Argote and Ingram, 2000). In McGrath and Argote knowledge is embedded in three basic organizational elements:

- Members - the human component
- Tools - the technological component
- Tasks - oriented by goals, intentions and purposes

These elements combine to form subnetworks:

- Member-member: the social network
- Task-task: sequences and routines
- Tool-tool: the technological system
- Member-task: the division of labour
- Member-tool: who operates what
- Task-tool: which tool is used to do what
- Member-task-tool: which tool is being used by whom to do what (the coordination network)

Therefore knowledge is not only embedded in the elementary nodes of the networks but also in the interrelations among them and it can be transferred, both explicitly and implicitly, by moving a reservoir from one

unit to another (transporting members, technologies and routines), or by modifying the recipient unit directly through communication and training (Argote and Ingram, 2000).

Transfer processes can be complex and problematic given different levels of compatibility and adaptability of different elements (as well as whole networks) to new or altered networks, sites or contexts. Given that knowledge reservoirs are highly interdependent, compatibility has to be evaluated to aim for successful transfers: the elements of a network must be internally compatible, then also compatible with each other, and finally compatible with the context in which the transfer will place them (Argote and Ingram, 2000).

Transfer can therefore take different strategic approaches (Argote and Ingram, 2000):

- Moving members (Gruenfeld, Martorena, and Fan, 2000 in Argote and Ingram, 2000) brings benefits to the knowledge generation of indigenous members who get influenced by the itinerants (the members who change group) upon their return.
- Moving tools requires high adaptability and its results can vary considerably but has proven particularly effective for inter-organizational knowledge exchange (Leonard-Barton, 1988; Mansfield, 1985 in Argote and Ingram, 2000).
- Moving routines and tasks can be effective, but the compatibility of some of their specific characteristics can heavily affect the likelihood of success.
- Moving subnetworks can be particularly complex and potentially ineffective when members (who have unique peculiarities) are directly involved in the subnetwork.

When these mechanisms are coexistent in a wide-spectrum knowledge transfer strategy their strengths can add up and complement each other: members' adaptability and sensitivity, with tools' consistency and scalability, with tasks' flexibility and granularity (Argote and Ingram, 2000).

In general, all the characteristics of the source, the context, the receiver and also of the knowledge itself can contribute as deciding factors in knowledge transfer practices and therefore affect first, the perception of the opportunity to transfer knowledge at the very beginning of

the process, and then, the actual execution of the transfer itself, and therefore the extent, the quality and the success of the overall process (Argote and Ingram, 2000).

It is possible in fact that an ill-designed process of knowledge transfer negatively impacts the performativity of the receiving unit and ultimately on the whole organizational learning system. The adoption of a detailed model open to complexity - like the framework of knowledge reservoirs - can assist management in analysing where knowledge is being created and stored inside the organization, and if and how to best transfer it with the ultimate goal of maximising competitive advantage by minimising transfer to external organizations and maximising internal transfer.

## KNOWLEDGE RETENTION

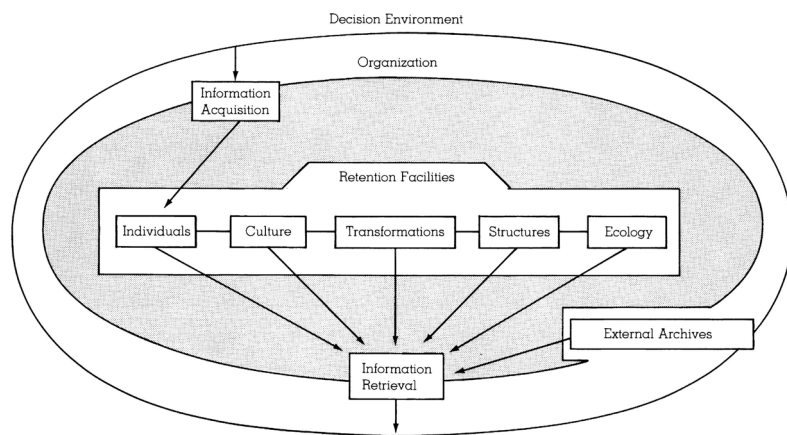
To ensure knowledge retention organizations can either retain individuals who have knowledge or - in a more strategic way - facilitate and establish strong knowledge transfer practices and building knowledge repositories (Argote and Ingram, 2000 in Argote, 2011; Walsh and Ungson, 1991) like communication tools and processes, rules and routines, social networks and transactive memory systems - or the knowledge of who knows what (Wegner, 1986).

“[...] organizational learning is not simply the sum of each member's learning. Organizations, unlike individuals, develop and maintain learning systems that not only influence their immediate members, but are then transmitted to others by way of organization histories and norm”

(Fiol and Lyles, 1985)

Organizational memory is not stored centrally, but actually distributed across different “retention facilities” (Walsh and Rivera Ungson, 1991):

- Individuals: direct experiences and observations
- Culture: collection of past experiences that drive interpretation processes
- Transformations: how the organization produces an output from the input
- Structures: internal roles and related behaviour expectations
- Ecology: the physical space where the organization is situated
- External archives: historical information in former employees’ “old hands” (Neustadt and May, 1986 in Walsh and Rivera Ungson, 1991) or stored by competitors, regulatory bodies and governmental agencies, but potentially also the media and financial services firms.



**Figure 5.2.**  
The structure of organizational memory  
(Walsh and Rivera Ungson, 1991)

The quality of information stored in each “retention bin” varies greatly and is characterised by different degrees of completeness, accuracy and decay rate.

Like the process of retention and transmission of the whole human knowledge it is a social activity, since the amount of information available exceeds the retention ability of any one individual and has to be therefore stored in a “thought collective” or “collective memory” (Fleck, 1938/1979; Halbwachs, 1950/1980; in Walsh and Rivera Ungson, 1991).

As the concept of organisational memory suggests, knowledge accumulation and retention are also inextricably linked with their opposite processes of organizational forgetting and knowledge decay (Argote, 2011). The Web 2.0 technologies have greatly affected knowledge transfer and retention practices as the communication capabilities they provide has driven a shift from more traditional knowledge repositories and directories to contextual expert identification capabilities (Argote, 2011) while it has also affected the path to access information and knowledge.

## KNOWLEDGE RECALLING

Information acquisition, retention and retrieval is traditionally associated with individuals and the process through which they experience the world and change their behaviour accordingly (Anderson, 1980 in Walsh and Rivera Ungson, 1991). More recent theories suggest that memory (more or less metaphorically) is a faculty also present in supra-individual collectivities like organizations, an argument for which Walsh and Rivera Ungson (1991) identified some key challenges:

- Construct validity: How is organizational memory different from individual memory?
- Measurement: For example, how do individuals retrieve information from organizational memory?
- Consequentiality: Of what consequence is it for organizations that they are able to preserve knowledge of past events and bring it to bear on present decisions?

They in particular worked on this topic assuming that

- organisations are systems capable of processing information;
- organisations make sense of data coming from their environment by interpretation;

- organisations are networks where meanings are shared among individual units through common language and social interactions.

Organizational knowledge can within this framework be recalled with two different processes (Walsh and Rivera Ungson, 1991): automatic retrieval, which is an effortless and intuitive process that can happen both at the individual and at the supra-individual level, and controlled retrieval, by contrast effortful and purposeful.

Memory has different roles within an organisation (Walsh and Rivera Ungson, 1991). It has an informational role, as the content of retention facilities can improve efficiency and effectiveness of decision-making processes within an organization. It has a control function, as shared knowledge can shape behaviour and lower the cost of monitoring activities. But it also has a political role, as the control of information can be a source of imbalance that concentrates power in some individuals. According to these roles knowledge retrieval can then be:

- Used - Decisions based on correctly retrieved historical data and backed up by shared knowledge, are more likely to be effective and less likely to meet resistance. Automatic retrieval processes in particular are characterised by a strong inertial force that can be strategically managed in order to maximise the effect of change efforts and to give momentum to new endeavours.
- Misused - Decision makers may be unaware of how automatic retrieval processes are affecting the interpretation of a novel context. They may also waste resources in controlled retrieval when routine solutions would be fit. Past analogies from controlled retrieval can also blind decision makers who in such cases may replicate routine solutions without critical evaluation.
- Abused - the control of information can in fact lead to abusive domination and compromise the organization's viability.

Organisational learning, as the study of knowledge management within an organizational context, is fundamental as the organisation itself has

the power to learn, unlearn and relearn across systems, structures and knowledge repositories. This organisational capability has to be leveraged in order to ensure a strategic alignment with the context and the environment, which is a key factor in maintaining the organization competitive and valuable in the long term (Fiol and Lyles, 1985). Within this necessarily ongoing process of organisational adaptation, organizational performance, the leadership's managerial strategy, as well as the communication strategy of the organisation play a decisive role (Rebelo, Lourenço and Dimas, 2019).

## Communication for innovation

The market in which innovators are working today is complex, dynamic, competitive and oftentimes unpredictable. And though innovation is being recognised as a vital asset for economic survival and prosperity, still there is a lack of understanding and guidance in navigating “The Mess” that is essential in creating “The New” (Erwin, 2013).

Novel concepts and discoveries are in fact

- Complex: with many interrelated factors that interact with a multidimensional context;
- Unfamiliar: out of the usual frame of reference and the conventional mental model;
- Still-fuzzy: unfinished, unstable, in motion and constantly evolving.

The communication that therefore describes the idea and makes its implementation possible has to be an ongoing process and it has to rely on strategies, methods and tools that stir away from the classical transfer model on which PowerPoints presentations are built.

Communication for innovation has in fact to be collaborative, pervasive and engaging to ensure that stakeholders are fully committed, that an effective shared mental model is in place, that people believe in the new idea, so that it can move through the organization organically with low chances of organisational rejection.

To better target all the relevant stakeholders and constituents Kim Erwin (2013) distinguishes different communication modes according to the

level of engagement they support:

- The Transfer Mode: information is packaged, presented and delivered from an active sender to a passive receiver (mass audience).
- The Collaborative Mode: information is co-created and shared within an interdisciplinary development team (the core stakeholders) and with the larger working team and decision makers (the inner ring).
- The Experience Mode: information is exchanged among interacting participants (the inner ring) during a shared and constructed experience.
- The Pull Mode: information is shared with the whole organization (the outer ring) to attract relevant individuals who self-select as stakeholders.

These different communication modes should not be considered alternative but coexisting and complementary: the wide diffusion of information delivery strategies based on the practical transfer model has in fact generated a set of communication conventions within organizations and systems that make this model very ineffective for high levels of engagement that, on the other hand, the collaborative, experience and pull modes can heavily support.

In the context of organisational learning, especially when concerned with knowledge that should cross the boundaries of projects and teams, and diffuse in the organization regardless of time and spatial constraints, the Extension Model for Experiential and Collaborative Communication can be of great use (Erwin, 2013). These types of experiences have in fact the potential to stretch the learning experience beyond conventional constraints and enable data persistence and reuse.

Extension experiences should be supported by artifacts and practices that allow for multiple entry points into the collected information which should in turn be detailed but bite-sized and organised to support random-access and nonlinear browsing, as well as progressive integrations and additions of new knowledge.

The ultimate goal of extension experiences is for knowledge to become widely disseminated and used, but also to potentially change the organisational culture it lives in. For the experience to have such an impact it

should be supported by artifacts that are designed with scale, authenticity and detail in mind, to ensure that the information ultimately has the attention, credibility, and reference value that it needs to go viral.

## Organisational Memetics

The theory of memetics proposes the application of the Darwinian evolutionary model to information transfer practices. In this context, the term meme has been coined and widely used to refer to a unitarian bit of culture that can propagate itself from brain to brain by imitation (Dawkins, 2006). To use the words of Richard Dawkins himself: "If a scientist hears, or reads about, a good idea, he passes it on to his colleagues and students. He mentions it in his articles and his lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain."

The meme can therefore be seen as a living structure made of information that is characterised by a certain survival value dependent on the appeal it has or the advantage it brings to the brain that hosts it. Much like a biological gene, a meme is subject to processes like those that govern the natural selection and its survival is therefore also favoured by the qualities of longevity, fecundity and copying-fidelity, while affected by mutations and competition against other memes in the pool.

This model can also be applied to the smaller scale of organisational culture and to organisational learning practices to better frame the idea that information and knowledge can and should virally spread and take root within an organisation (Erwin, 2013): this sub-field of evolutionary organizational studies is called organizational memetics (Schlaile, Bogner and Muelder, 2021) and other than being a great modelling tool for the organizational culture, it can be actively used as a framework in memetic engineering to facilitate diagnosis, development and design of the cultural environment itself (Pech and Slade, 2004).

In the context of the previously outlined knowledge-networked economy, companies and organisations, as complex adaptive systems, use

## Definition of “organizational meme”

Any of the core elements of organizational culture, like basic assumptions, norms, standards, and symbolic systems that can be transferred by imitation from one human mind to the next.

(Voelpel, Leibold and Streb, 2005)

## Definition of “innovation meme”

A unit of cultural transmission or imitation that carries information responsible for innovations, and that can be transferred to other carriers, e.g., employees, departments, organizations etc.

(Voelpel, Leibold and Streb, 2005)

innovation as the main source of value and ongoing strategy for long-term survival. The success of this model is unavoidably linked with the replication capability of the organizational culture that is able to produce such innovations. If therefore innovation is dealing with cultural items subject to variation, replication, and selection, it is ultimately

dealing with memes and it is then crucial for organisations to be able to create, track and manage what has been defined as the innovation meme (Voelpel, Leibold and Streb, 2005).

The life path of the innovation meme is highly influenced (if not completely defined) by the interaction of the organization members within

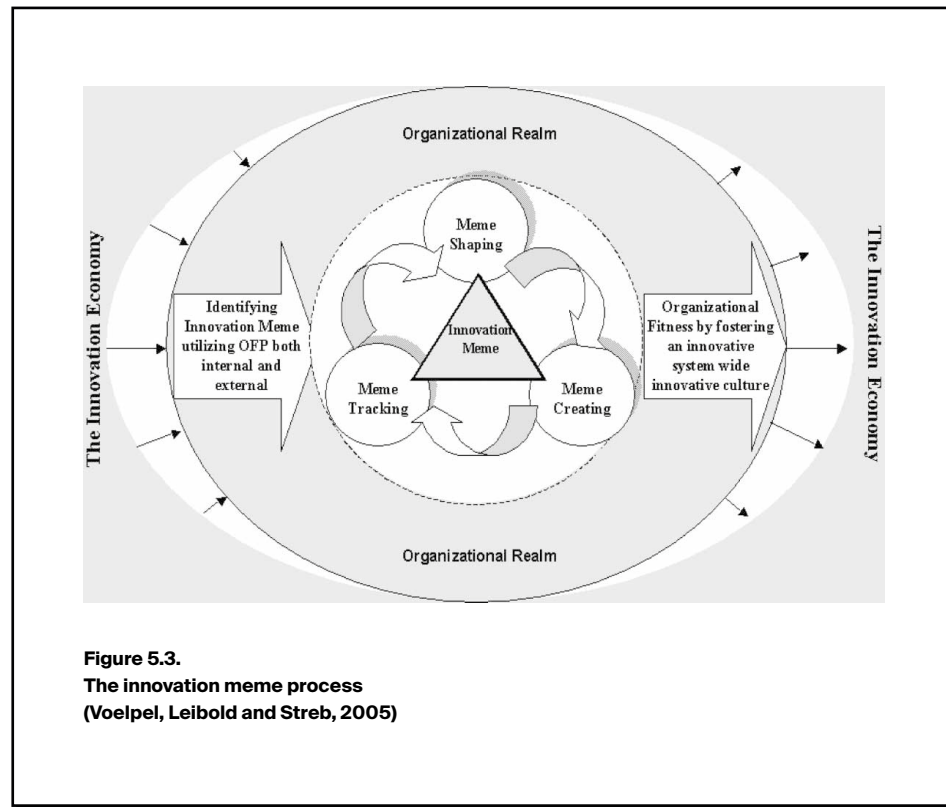
## Organizational Fitness Profiling for innovation meme tracking

1. What have been successful innovations affecting the company? During the past years, what have been the most unique and influential innovations in general? This must not only focus on the own industry or market: brilliant innovations are made everywhere.
2. How were they developed? Where do they come from? Behind every important innovation there is a story of how it was developed, or how the innovator got the idea. It is important to look for the origin of the creativity.
3. Who are the innovative ‘masters’ (originators or drivers)? The creative minds behind the innovations should be identified.
4. What are they doing differently? What makes the approach the innovator used different from others? Very often exceptional circumstances have caused/nurtured the discovery of innovations. It is important to know the story behind the innovation.
5. Is what has been found in the answers to the above questions a cultural unit that can be transferred by imitation? Only if it has particular meme characteristics can it be called an innovation meme.

(Beer, 2003 in Voelpel, Leibold and Streb, 2005)



the emergent and self-organising socio-cultural system. Traditional managerial approaches fail this realm of organizational management but, as innovative solutions of co-creation have emerged, organisational leadership can track, participate in the shaping, and facilitate the creation of the organisation-specific set of vital innovation memes via a methodical process of meme management.



In terms typical of memetics' frameworks, what can be said of participatory mass media culture is also true for organisational culture: if a meme doesn't spread, it's dead. That's why a culture or a platform for organisational learning and knowledge sharing should be populated by spreadable contents and artifacts (Jenkins, Ford and Green, 2013), strategically designed to always be:

- Available

- Portable
- Reusable
- Relevant
- Part of a stream.

The type of spreadable contents required for an organisation-wide viral diffusion differ from the output of production strategies that work for mass-media and commercial culture - like shared fantasies, humour, parody and references, unfinished content, mystery, timely controversy, and rumours (Jenkins, Ford and Green, 2013) - but, especially in a context-specific, experiential and pull modes of communication (Erwin, 2013), extension artifacts can from those fields take inspiration.

## The limits of codified project knowledge

It's very common for project-based organisations to rely on documents to manage knowledge. Project documents in fact can collect various types of information to represent the innovative knowledge developed and collected during the project process: such collection should ultimately support organisational learning.

In the literature there are documented findings from research that reinforce both the benefits and the disadvantages of project documentation. Some studies concluded in fact that "codified knowledge transfers more readily than knowledge that is not codified" (Argote and Ingram, 2000) while others "found that the use of documents from knowledge management systems had a deleterious effect on performance, and that the effect was even more negative for experienced teams and teams working in a competitive environment" (Haas and Hansen, 2005 in Argote, 2011).

These findings can be put into perspective by considering two different knowledge strategies (Hansen et al., 1999 in Matthies, 2015): personalisation and codification. Personalisation is used to refer to the direct

person-to-person knowledge transfer while Codification implies the person-to-document knowledge transfer.

Codification strategies in particular produce a wide array of project documents with the goal of supporting the reuse of knowledge and positively contributing to future projects. The main problem with the codification strategy is that information collected this way quickly stratifies and grows in quantity and variety. The extension of codified knowledge then quickly exceeds the limited ability of individuals to process information and even in a team the time and effort that would be required to process this data becomes incompatible with the process that it should support.

The result of this issue is that lessons and learnings from past projects and experiences remain untapped after project closing.

Matthies (2015) identified some prerequisites to fulfil in order to effectively reuse documentation:

- Support by suitable systems, procedure, and techniques in order to analyse multiple documents and discover mistakes and success patterns.
- Standardised creation of relevant project knowledge to ensure quality and relevance of documented information.
- Structuring of comprehensive stocks of documents with clear and shared structures and procedures.
- Conceptualisation of codified project knowledge and contextualisation to simplify need-based access.
- Person-specific notification and knowledge dissemination according to individual needs and interests.
- Lack of awareness, capacities, and responsibility should be treated as a cultural problem inside the organisation and tackled as such.

But he himself concluded that “codified knowledge is only one side of the coin” (Matthies, 2015). In project-based organisations in particular, knowledge and information strategies are in fact also socially constructed (Almeida and Soares, 2014) as a huge portion of tacit knowledge is retained not by individual team members but lives within the project team’s social and relational context. This is a crucial factor when considering the “informational limbo” that Almeida and Soares (2014)

use to describe this break in the flow of information from project to project and, more in general, from project to organisation.

Socialisation becomes particularly relevant for agile product development teams. Agile is a project management methodology that had initially been developed for software development teams but that has then spread to other areas and disciplines involved in product development. At the core of efficient and effective agile teams there is a shared agreement on the Agile Values that have been formalised in the original Agile Manifesto (Beck et al., 2001):

- Individuals and interactions over processes and tools.
- Working software (or more in general, product) over comprehensive documentation.
- Customer collaboration over contract negotiation.
- Responding to change over following a plan.

Though the application of agile methodologies does not impose strict regulations on documentation and potentially reduces the amount of it that is necessary to successfully complete a project, it is still very unlikely for agile teams to completely avoid it.

The type of documentation that can bring benefit to agile teams can be borrowed from other methodologies and can mainly be categorised as either Organizational Documentation or Technical Documentation (Poniszewska-Marańda, Zieliski and Marańda, 2019):

- Organizational Documentation collects project’s goals, deadlines, information about team members and their responsibilities, as well as financial constraints and opportunities.
- Technical Documentation collects on the other hand all the specifications of the project’s outcome. This type of artifact has to be constantly updated to reflect and effectively describe the current status of the product should it either be necessary to onboard new team members or support the communication with the target users.

In the organisations and project teams where the agile values and principles are applied there is therefore a clear preference for personalisa-



tion over codification which is minimised in order to free up space and time for interactions among team members.

Each way of working and particularly of learning and managing knowledge implies an organisational structure capable of supporting it: such a result can be achieved with the development of design operations.

## DesignOps to support learning

Design Operations (DesignOps) focus on the planning, management and optimisation of processes and practices to amplify the value and impact of design. They support teams in creating high quality designs, in evolving and growing as a team but also as individual designers, and in establishing and scaling efficient workflows (Kaplan, 2019).

DesignOps are the formalisation of an aspect of design management that emerged in these last few years. When Agile methods started to be applied not only in software development but also in product development, many designers found themselves in what Dave Malouf (2018), operations and strategy professional, defined as a “culture optimised for engineers”: this meant that designers were often isolated from other designers, working only as superficial producers instead of product strategists, with tools that were chosen according to their efficient integration with developers’ tools rather than their design functionalities.

It is in this context that emerged the need for centralised services and systems aimed at reducing the friction in the design process: this translates to creating process and work management practices that allow serendipity, interruption and creative deconstruction which are key properties of creative work and should therefore be an integral part of the product development process. Design Operations are therefore the tools, infrastructure, workflow, people and governance that a design organisation establishes so that designers can focus on design (Malouf, 2018).

## What DesignOps can do

- Plan
- Budget
- Communicate up, down, and across
- Align

## So that designers can do

- Design

(Malouf, 2018)

DesignOps can therefore translate into different solutions targeted for a specific organisation’s requirements or even a specific team member’s needs.

Overall the main targets on which Design Operations work is focused are (Kaplan, 2019):

### HOW WE WORK TOGETHER

Organise: How do we structure our teams, define design, and build the right team?

Collaborate: How do we create environments and sessions that enable effective communication?

Humanise: How do we ensure hiring, onboarding, and personal development practices treat employees like humans first?

### HOW WE GET OUR WORK DONE

Standardise: How do we facilitate design quality through consistent toolsets and processes?

Harmonise: How do we share and expand knowledge through design

systems and research insight repositories?  
Prioritise: How do we use systems to manage workflow and make decisions about what to work on?

HOW OUR WORK CREATES IMPACT

Measure: How do we make design accountable by defining and measuring design quality?  
Socialise: How do we educate others on design’s value and share success stories of user-centred design processes?  
Enable: How do we cultivate the understanding and use of design activities, even by those outside of the design team?

The DesignOps Landscape

DesignOps practices should be defined based on an organization’s biggest gaps or pain points within the 3 main areas of DesignOps: How we work together, how we get work done, and how our work creates impact.



Figure 5.4.  
The DesignOps menu (Kaplan, 2019)

“The interconnection between design and research - as well as with other parts of the organization like business operations (BusinessOps) and people operations (PeopleOps) - increases efficiency, communication, and output, and allows everyone to work as a unified front in collaboration with stakeholders”

(Malouf and Black, 2018)

In tackling these topics Design Operations have effect on two different levels: the project support level, which contributes to the project specific workflow to assist the creative process, and the operations support level where to set standards and processes for the whole team (Whitehead, 2019).

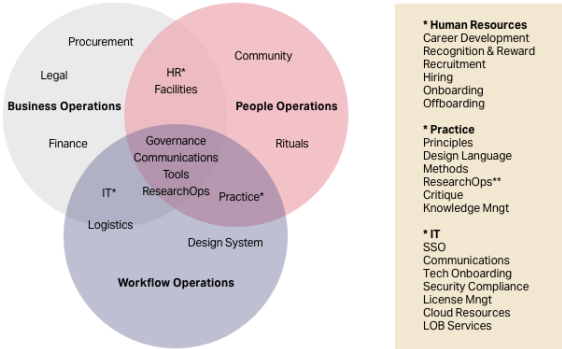


Figure 5.5.  
How DesignOps works (Malouf, 2018)

The collection of activities that DesignOps encompass, work to balance processes that cover three different but equally fundamental areas (Malouf, 2018):

- Business operations - whose main focus is on budget and equipment.
- People operations - that ensure individual and team training and development.
- Workflow operations - for design management tools and processes, production flows and scalability.

Establishing cross-functional partnerships across teams to align priorities and processes, update on project statuses and collaborate on problem solving, represents a key resource in any design organisation (Battles, 2018). It is in particular at the intersection of Workflow and People Operations that Knowledge Management Practices get established and can grow and where particular attention should be paid by organisations willing to learn.

In particular, for Design Operations supporting knowledge management processes, scalability plays a key role. As teams grow it is in fact common practice to establish roles for designers that are more rigid and specialised. This fragmentation means that it also becomes harder to keep everyone updated with the specific knowledge collected by each designer and each team and in the attempt to do so designers experience information overload (Whitehead, 2019). Communication and collaboration protocols need to be established and while in bigger organisations this could be done by a dedicated DesignOps professional, in smaller companies designers and Project Managers could collaborate to achieve this same goal.

When it comes to sharing knowledge and the optimisation of the operations involved in the process, the goal should be focused on both factors of quality and quantity. Value generation is maximised when teams can create and share the right amount of reliable insights. This is particularly evident for example in research teams, where a huge bulk of data is often spread out in multiple repositories (high quantity) and where it also happens that multiple researchers have to go through the same raw data again because synthetic deliverables were not available for them to consult (low quality).

The digital tools available today offer many opportunities to optimise this aspect of the design process, for distributed, decentralised and remote teams in particular (Kaplan, 2019), by providing a platform where to share artefacts (like canvases, diagrams, tables,...) and knowledge repositories that are common, accessible, and scalable.

The role of Design Operations is therefore to identify and optimise “the processes that lend themselves to documentation, decision paths and archiving” (Malouf, 2018) taking also in consideration the potentiality of both traditional and physical tools as well as their digital counterparts (when it comes for example to whiteboards, notes, tables, wikis,...). But the role of DesignOps is to then also ensure that within a project-based organisation different processes can coexist and still be in close contact with each other.

Then, other than ensuring learning on organisational and project level, DesignOps are also responsible for discovering existing knowledge gaps, understanding how to address them, and preventing the emergence of new gaps altogether. This means paying attention to both group learning and individual learning, ensuring that the latter is not taken for granted. Training has a prominent role in strategies for individual learning and growth within an organisation and increasing attention is being invested on this topic.

The Covid-19 pandemic and the generalised shift to hybrid and remote working greatly transformed learning and training processes and therefore how best DesignOps should tackle their challenges:

Resources for developing skills or absorbing new material, often delivered in group or class settings in the old days, moved online to the Dell Learning Studio, where people could visit individually at their leisure. The group component of the events, now held virtually, focuses on collaboration and networking. “Instead of having a leadership program or training program, it’s now a training experience or a leadership experience,” Saavedra adds. “That change in language is actually reflective of the change in design.”

(MIT Technology Review Insights, 2022)

## THE REMOTE UX MENTORSHIP PROGRAM AT SHOPIFY

Shopify Inc. is a Canadian multinational company founded in 2006 that today has more than 1,700,000 businesses using its e-commerce platform in approximately 175 countries.

In the middle of March 2020, with the outbreak of the Covid-19 pandemic, the CEO Tobi Lutke announced that all of his 5,000-plus employees were going “remote first” (Sali, 2020).

It is important here to highlight the fact that half of the company’s employees were already working remotely at the time, so the company already had some great experience in designing and consistently applying Design Operations to ensure the maximum efficiency and wellbeing of the whole team.

It is in this context that Sharon Moorhouse, Technical Program Manager at Shopify, and her team have developed a system of programs to tackle the challenge of how to connect within the organisation those who have knowledge with those who would like to learn from them (Moorhouse, 2021).

What she explains about the office environment at Shopify but that also rings true for many other workspaces, is that knowledge sharing in the office most of the time relies on informal practices and random chances. The shift to remote working exacerbated the unreliability of this type of ad-hoc approach and it highlighted the knowledge sharing problem especially in big teams, like the UX team that at Shopify counts more than 500 people.

To support a team of this size they have different programs in place:

- The “UX Expert Series” program, where they periodically invite an expert for a live event for the team.
- The “Own Your Own Development” program, where team members are offered a budget which they can freely invest on opportunities for personal growth (like books, conferences, courses...).
- And the new fully remote mentorship program.

This latest venture of theirs has been developed to support the team’s ongoing education and learning in what they refer to as a “digital by default environment” (Moorhouse, 2021).

The program requires participants to spend a suggested time investment of 1.5 hours a week, for a cycle of 6 to 8 consecutive weeks which they found to be the right time frame to allow both mentors and mentees to make progress without an excessive time commitment which could negatively affect their working performance.

For this program they prioritised knowledge exchange and enrichment from the experience over job titles and levels so, as they “didn’t subscribe to the idea that seniority of title equates to the ability to mentor [...] you could find a junior designer mentoring a UX director. And we love that.” (Moorhouse, 2021).

They defined two simple criteria for the mentorship match:

- Skill match: the two participants have signalled their interest in mentoring and being mentored in the same focus area.
- Team mismatch: the two participants belong to different teams and report to different team leads.

This type of criteria ensured first the usefulness of the program while also allowing participants to benefit from the encounter with people they may not usually work with and that they may not even have met otherwise, an aspect of this mentorship experience that participants reported as being extremely valuable.

To finally measure the success of their efforts with this program the Design Ops team at Shopify first gathered baseline data, defined KPIs, and checked in with the participants after each cycle. The feedback they collected with this process contributed to the refinements and further developments of the program itself which is being iteratively improved and that will further be expanded throughout 2022.

### KEY TAKEAWAYS

- Different programs tackle the challenges of organisational, team and individual learning in specific and targeted ways.
- Remote-first teams have specific needs that need to be addressed.
- The organisation of their remote mentorship program is based on recurring appointments, within a clear time-frame and participants selection.
- An iterative approach to DesignOps ensures that the program will be kept up to date and relevant for the organisation.

# Exploratory Research

# A real case-study

## THE COMPANY

Notation Creative Consulting AG is a brand and product design consultancy based in Zürich. The agency was founded as an independent company in 2020 by members of the Global Brand and Design Team at Sennheiser, the German company specialised in high-quality audio equipment, which is now supporting as design partner.

Notation works with international clients offering services in the following areas of expertise:

- Brand design, identity and strategy
- Industrial design
- Interaction, interface and experience design
- Strategic consulting

The internal organization of the company and its 20 employees can be - for simplification purposes - summarised as follows:

- Brand design team
- Product design team
  - Industrial design team
  - UX design team
- Management

## MY ROLE

I started to work at Notation in February 2021 as Interaction Design Intern (so only a few months after its foundation in November 2020) and then permanently joined the team in Zürich in November 2021 as User Experience Designer.

In these months I witnessed the company grow, change, learn a lot and achieve striking results for a one year old company. Still, given this short time frame, when it comes to organizational processes and culture Notation can be seen as a partially blank sheet: the professionals of the team have in fact great individual expertise but the collective layer that is mainly fine-tuned and organically improved with time and collaboration has still to emerge and take a stable shape. Being the company so young and the team so new it is therefore a particularly fertile ground where to grow a strong culture geared towards learning and innovation and where to establish some firm pillars on which to grow in the future. Thus the topics covered in my research could support future decisions and the preliminary definition of processes which have a strategic relevance for Notation and its employees, while simultaneously gaining benefit from being grounded in a real context with solid reference scenarios.

## THE TIMING

Notation was founded at a very particular historical time: in November 2019 as the design activities started, the outbreak of what then became popular as the Covid-19 pandemic was first discovered in the city of Wuhan, China. It only took a few months for governments worldwide to implement lockdowns to protect the population and prevent the virus from spreading, or at least slow it down to a more manageable pace.

Different factors came therefore to define the particular temporal context in which the life of Notation has so far been situated.

### First, (a young team)

The team is new and growing, as the organisation is young. As it was founded from a pre-existing team, its core structure it's solid, especially for what concerns managerial and senior roles within the organization.

Still becoming independent from a bigger company and hiring new people implies the challenge for the whole organization to learn new ways of working and of doing so as one cohesive team. Though it is possible to actively put effort and work into the definition of the organization itself, it ultimately takes time to evolve and find a more stable shape that fits the organisation's needs and feels right for a diverse group of people.

### Then, (a young team put to the test)

The effects of the global Covid-19 pandemic (on all possible levels: social, economic, political, physical, psychological,...) are hitting everybody. The extent of its effects are still unclear to this day, two years after it first started, but it is obvious that the changes in the daily life and habits of people have an impact on their work life as well.

### Finally, (a fully-remote young team put to the test)

The restrictions introduced with the Covid-19 pandemic and its periodic waves exacerbated the shift to hybrid working practices. In fact, what could have gradually emerged as a technologically driven work trend, has been forced on people and whole teams for extended periods of time. Many organisations, including Notation, have had to quickly adapt to full remote working and everything that it implies.

This specific combination of contextual factors makes the moment particularly unique and interesting for research: as everybody for long periods of time has been working from the home office, there has been the opportunity to first-hand experience no asymmetry in team distribution and configuration, which was typical in pre-pandemic collaborative teams of knowledge-driven organisations (Bosch-Sijtsema et al., 2011).

# Foundational research methodology

The definition of my research strategy has been determined by the particular opportunities and the specific needs of the context of inquiry, as well as by the nature of the theme I am addressing and the research question I set out to answer: how can creative teams build and maintain shared knowledge in the hybrid working environment?

## INTERVIEWS

In order to understand and better define the problems and the needs of the team, it was first necessary for me to assess the status quo by talking directly with a representative user group. I thus identified the existing user base whose experience could help me discover pain points and opportunities in the following Notation team members:

- Iwan, manager.
- Oliver, manager.
- Ralf, head of product and experience design.
- Magdalena, lead of user experience design.
- Lena, user experience designer.
- Alexander, head of account management.
- Pascal, head of brand design.
- Nadine, brand consultant.

Referring directly to this group of experts within the Notation team, allowed me to gather qualitative information that is extremely relevant for the following reasons:

- The group is varied and diverse, with people from all levels of the hierarchy within the organization, which means they have the clear big picture of what is currently happening in the studio: some of them know precisely what is happening inside the specific team and projects they work on or supervise, while others are informed about higher level information that is relevant across teams.

- Most of the user group has also been with Notation since its foundation so they not only can describe the current state of things, but they can also recall specific episodes and cases that are useful for the research.
- These users also have different professional backgrounds: this contributes to the richness of the insights gathered as well as to the completeness of the information about activities and tasks typical of each team.
- The users take part in key activities for which the topic of documentation is crucial (like onboarding new team members, communicating with stakeholders, managing projects and the overall organization).

To conduct exploratory interviews with these users I organised one-on-one meetings that were held remotely over the span of four consecutive days with the goal of collecting and freezing the complete picture painted by these participants.

The interviews were semi-structured and the list of questions that I prepared was based on the principle that “only one spot generates valid data – the present: what the user is doing right now” (Nielsen, 2010). I therefore aimed first at collecting information on the current experience, practices and processes at Notation, and then I focused on the point of view of these users, trying to collect their expectations and opinions.

I also applied the Critical Incident Method to collect information about past events: asking users to recall a particularly positive or negative instance is in fact more effective than asking them to remember a generic event from the past as “these extreme cases are often more vivid in users' minds” (Nielsen, 2010).

This type of qualitative and attitudinal research relies on “what people say” to determine if and why there is a problem to design a solution for. To mitigate the inherent limitations of self-reported information I used data triangulation, supplementing interviews with observations gathered during my time at the company.



FIELD STUDY

The now almost one-year-old experience I've had at Notation allowed me to directly observe “what people do” and gather insights that can substitute in this phase an ex-novo field study on the team and the context in which they operate. Direct observation has in fact provided me with first-hand information on most of the tasks, processes, systems, workflows, tools, and the users themselves, but also on the potential pain points and opportunities of managing a hybrid working environment.

It is also important to underline here that during my time at Notation I started to research on the topic of hybrid learning and working environments pretty early, but I narrowed my focus area down to organizational learning later during the internship time, and also it wasn't until the interviews that directly involved the organization in my thesis work. I therefore collected observations and reflections in the most natural way possible: this factor can help to limit the interference of potential confirmation biases especially in the search and interpretation of information. By comparing and contrasting the knowledge I acquired with primary research on “what people say” and “what people do” I aimed at gathering task information to identify the most urgent needs and biggest opportunities.

Pain points analysis

PROCESS

To gather and summarise the data collected I translated the knowledge acquired during the one-on-one interviews into individual empathy maps: I divided each transcript into digital sticky notes and organised them into the four quadrants - Says, Thinks, Does, and Feels - keeping references and direct quotes whenever possible inside the sticky notes to better recall relevant facts and episodes.

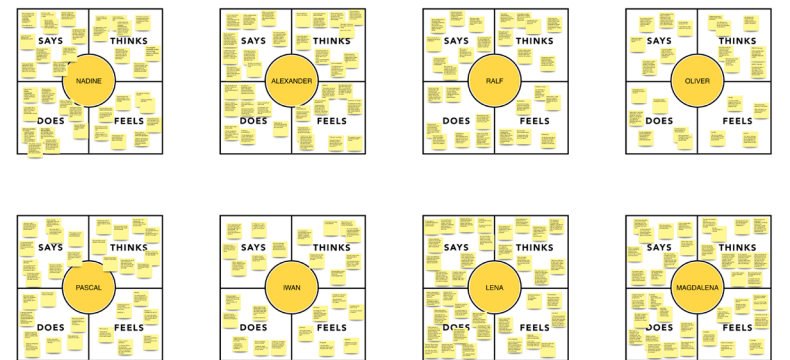
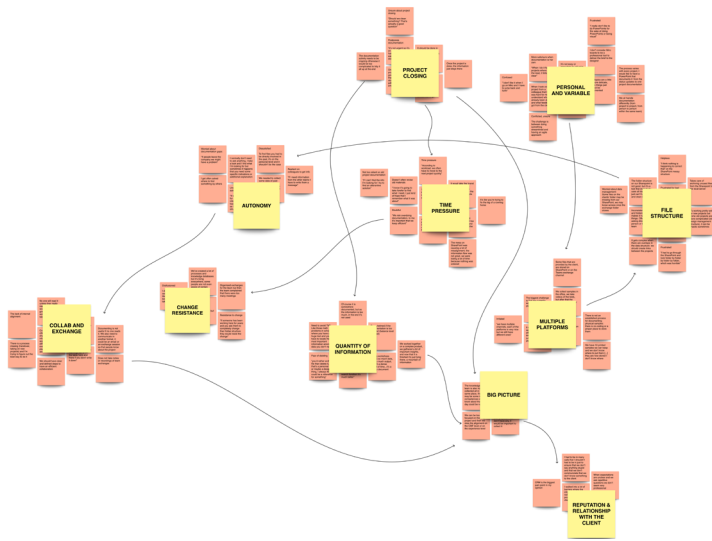


Figure 6.1. Empathy maps overview

To proceed with my analysis, I extracted all the pain points I identified within the individual empathy maps, and thus clustered them according to subject: this aggregated view helps to gain a complete understanding of the overarching problem space and the factors that interact and contribute to the frictions' persistence.



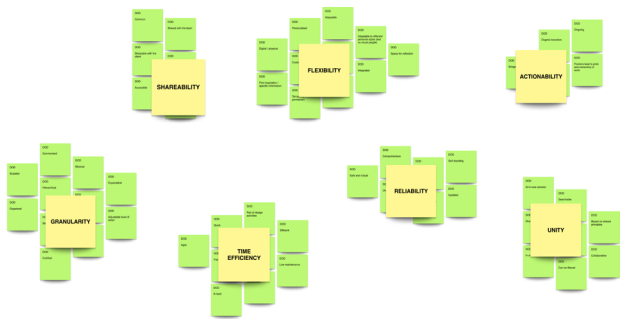
**Figure 6.2.**  
Aggregated pain points

I then extracted all the meanings and metaphors that the participants used in association with the ideas of design documentation and project knowledge maintenance to surface the underlying mental model from the team's vocabulary and stories, to ultimately try and analyse which traits of the mental model are shared and which ones are unique to some team members and their previous experiences.



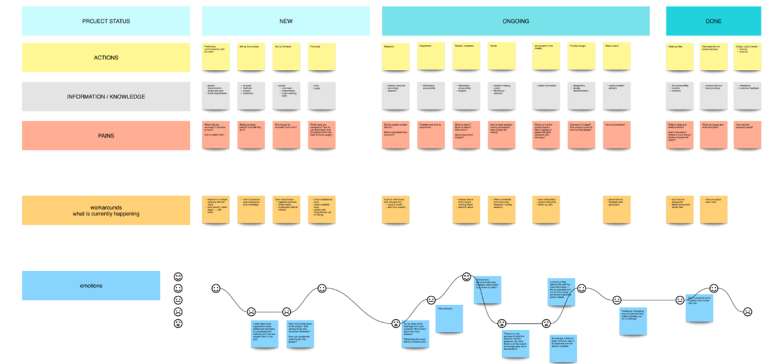
**Figure 6.3.**  
Meanings of design documentation

The characteristics of the extracted mental model and the attributes that users associated with their ideal process of knowledge creation, transfer, retention and recalling can also assist the formulation of a theoretical “Definition of Done” for my research and establish some acceptance criteria with which to compare my research findings.



**Figure 6.4.**  
Expectations and definition of done

Elaborating on the insights from this user group allowed me to outline the different attitudes, behaviours and concerns, and build an unified experience map that could guide further reflections.



**Figure 6.5.**  
Experience map



Figure 6.6.  
Empathy map - Nadine

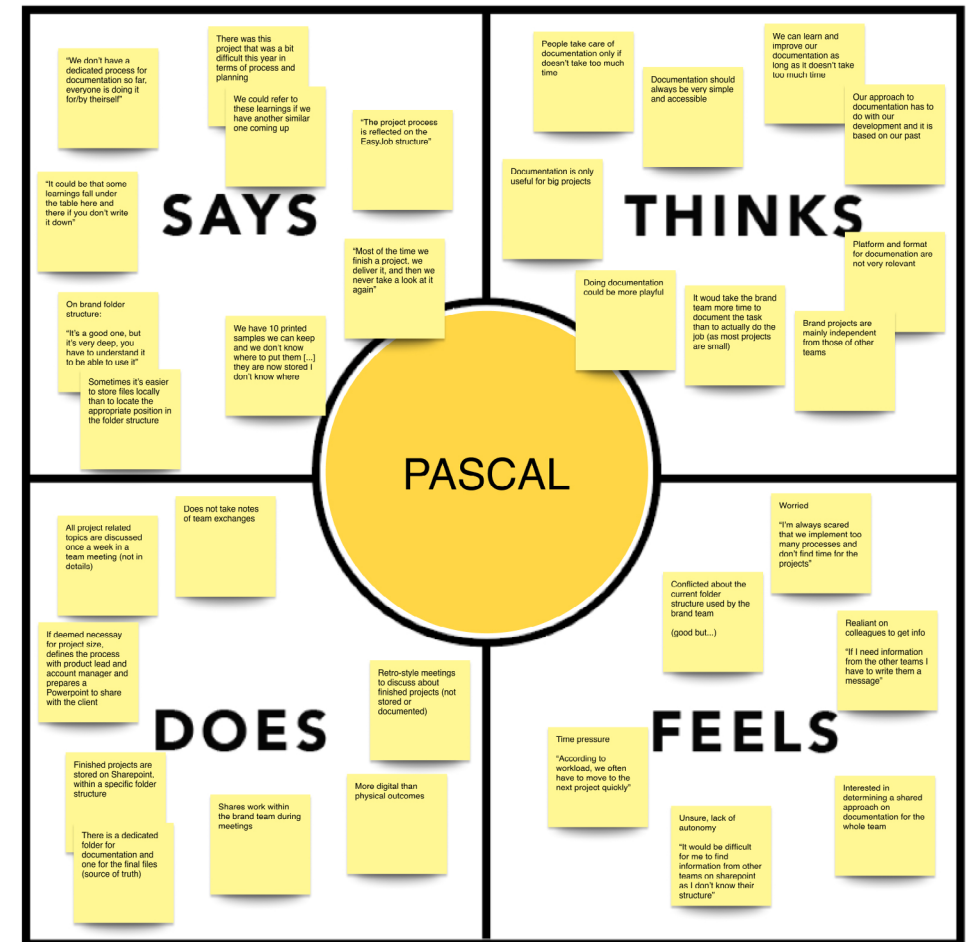


Figure 6.7.  
Empathy map - Pascal



Figure 6.8.  
Empathy map - Alexander

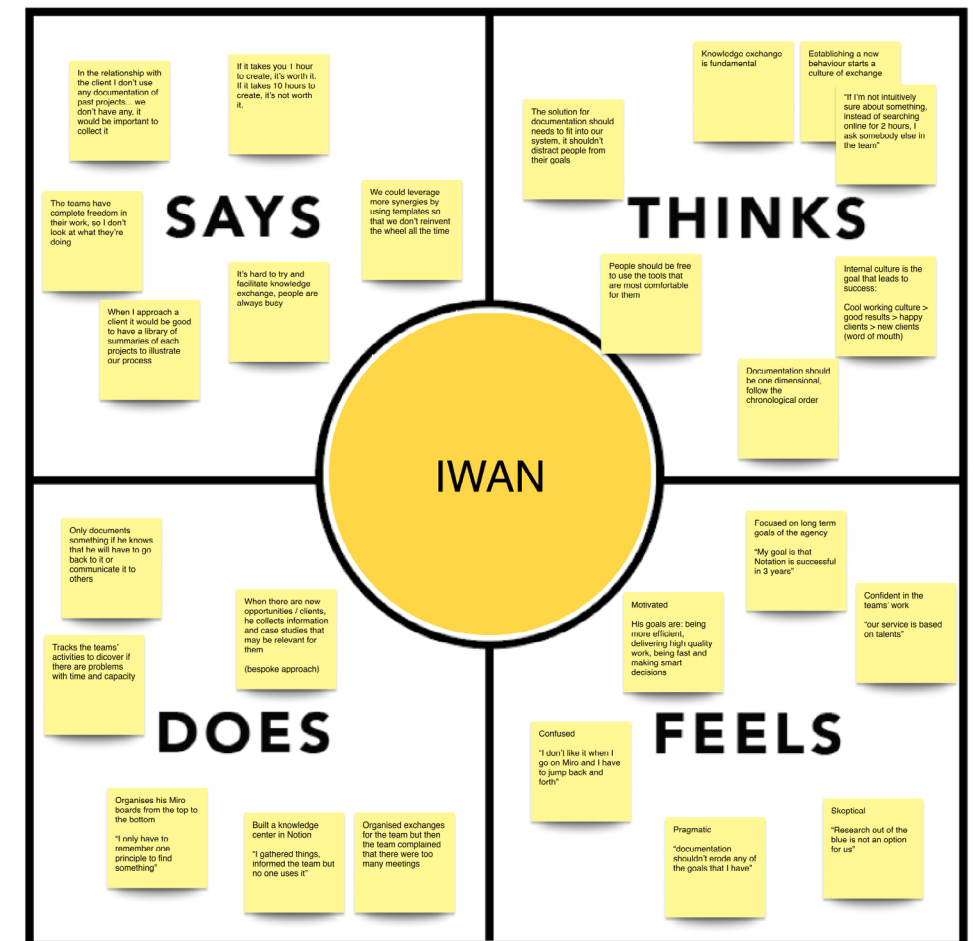


Figure 6.9.  
Empathy map - Iwan

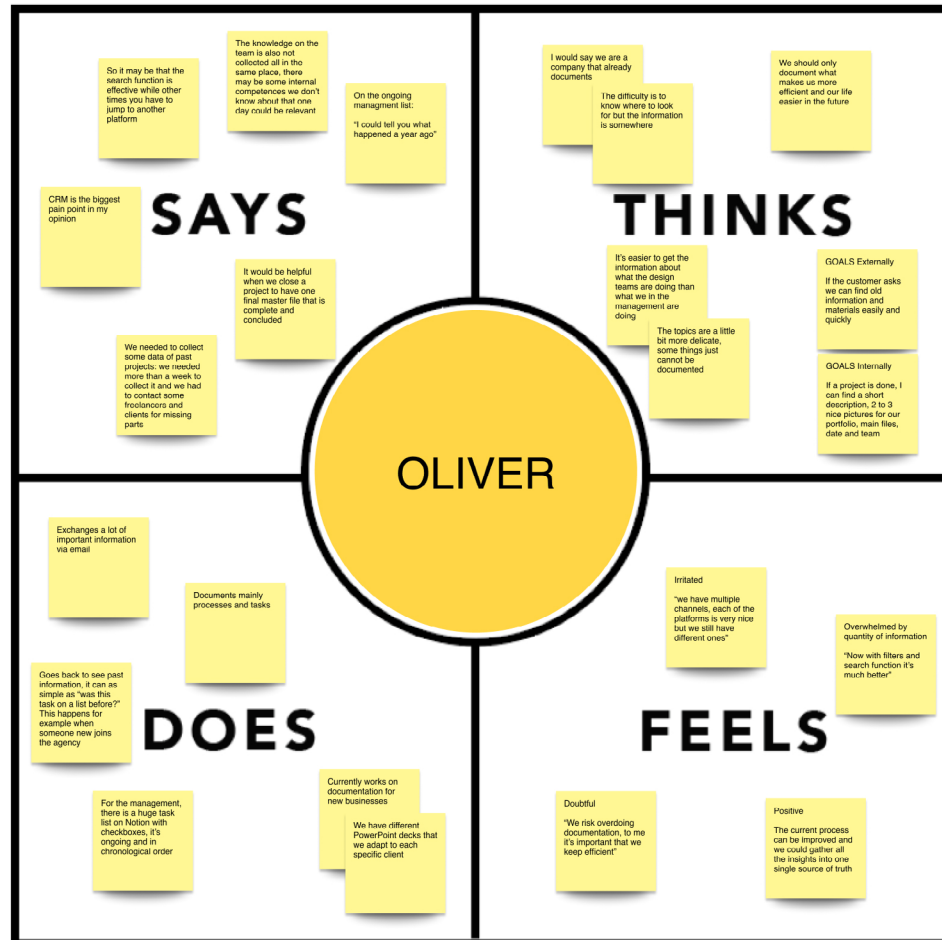


Figure 6.10.  
Empathy map - Oliver

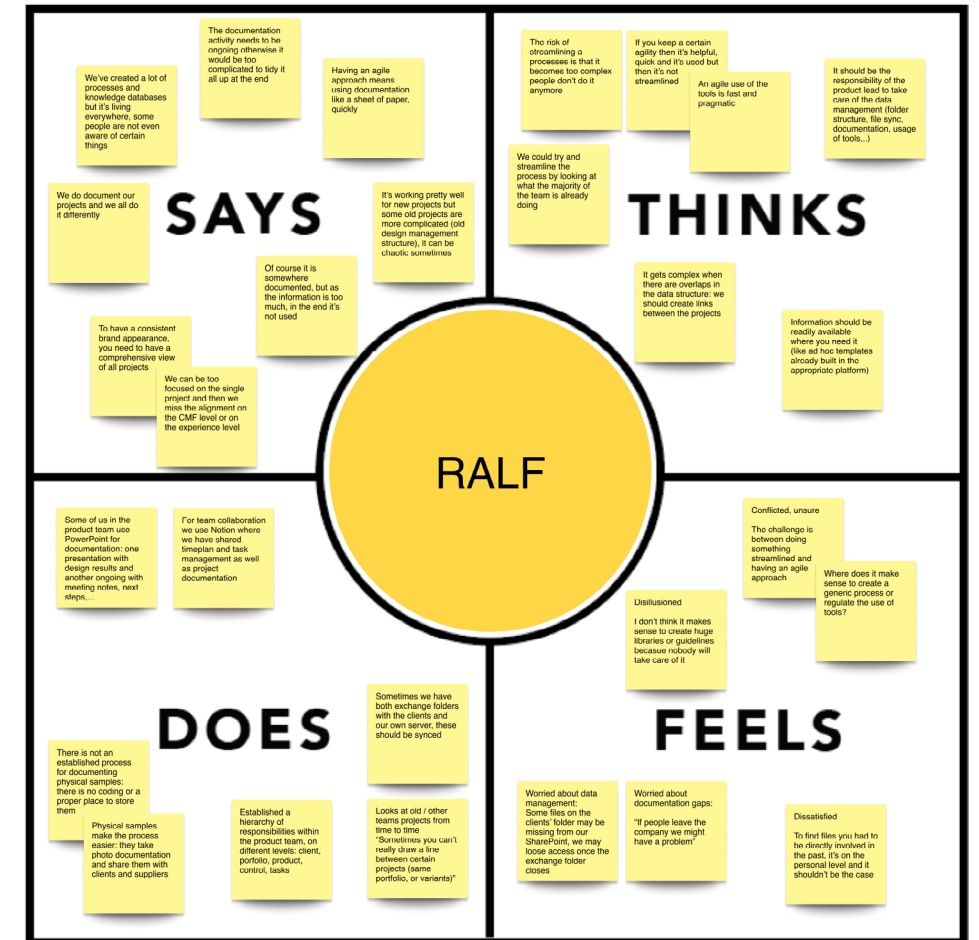


Figure 6.11.  
Empathy map - Ralf



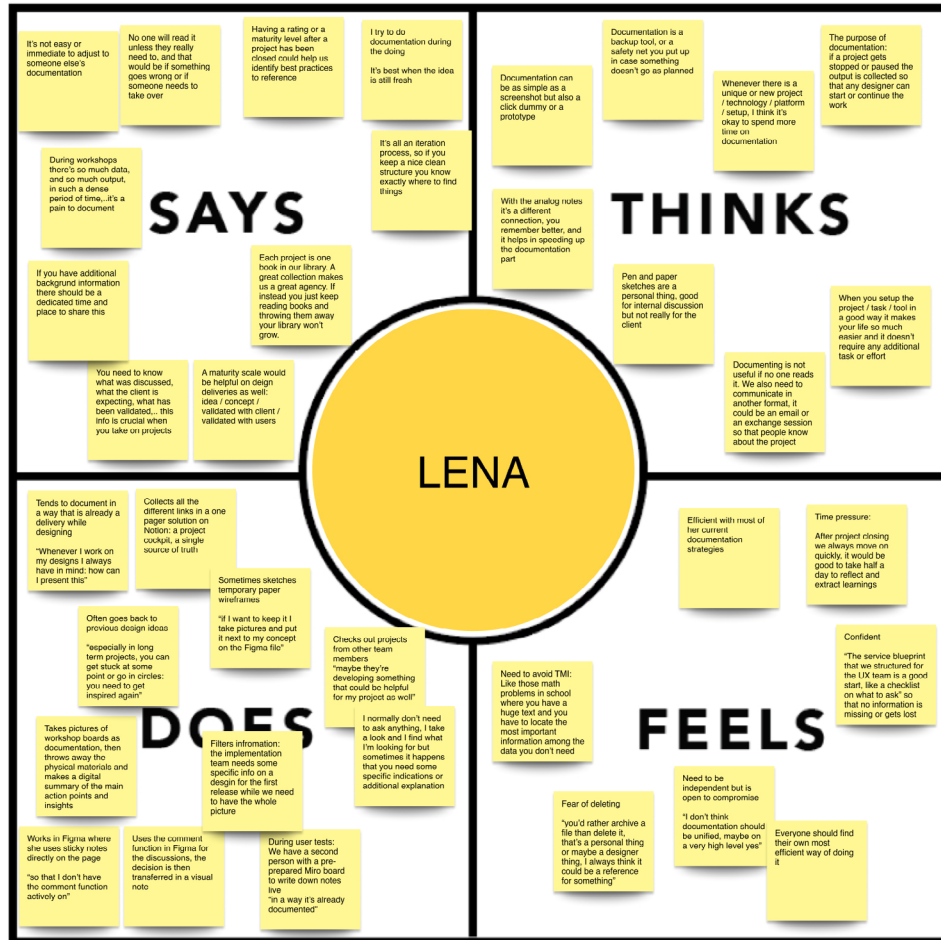


Figure 6.12.  
Empathy map - Lena

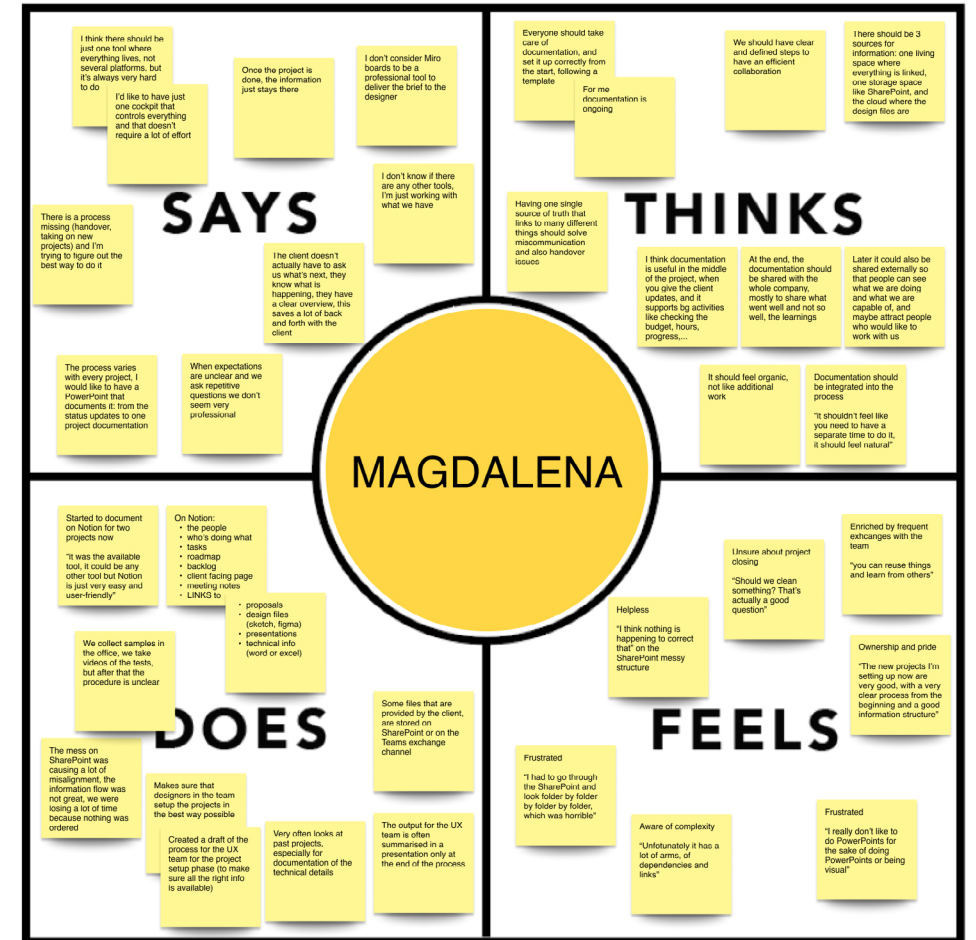
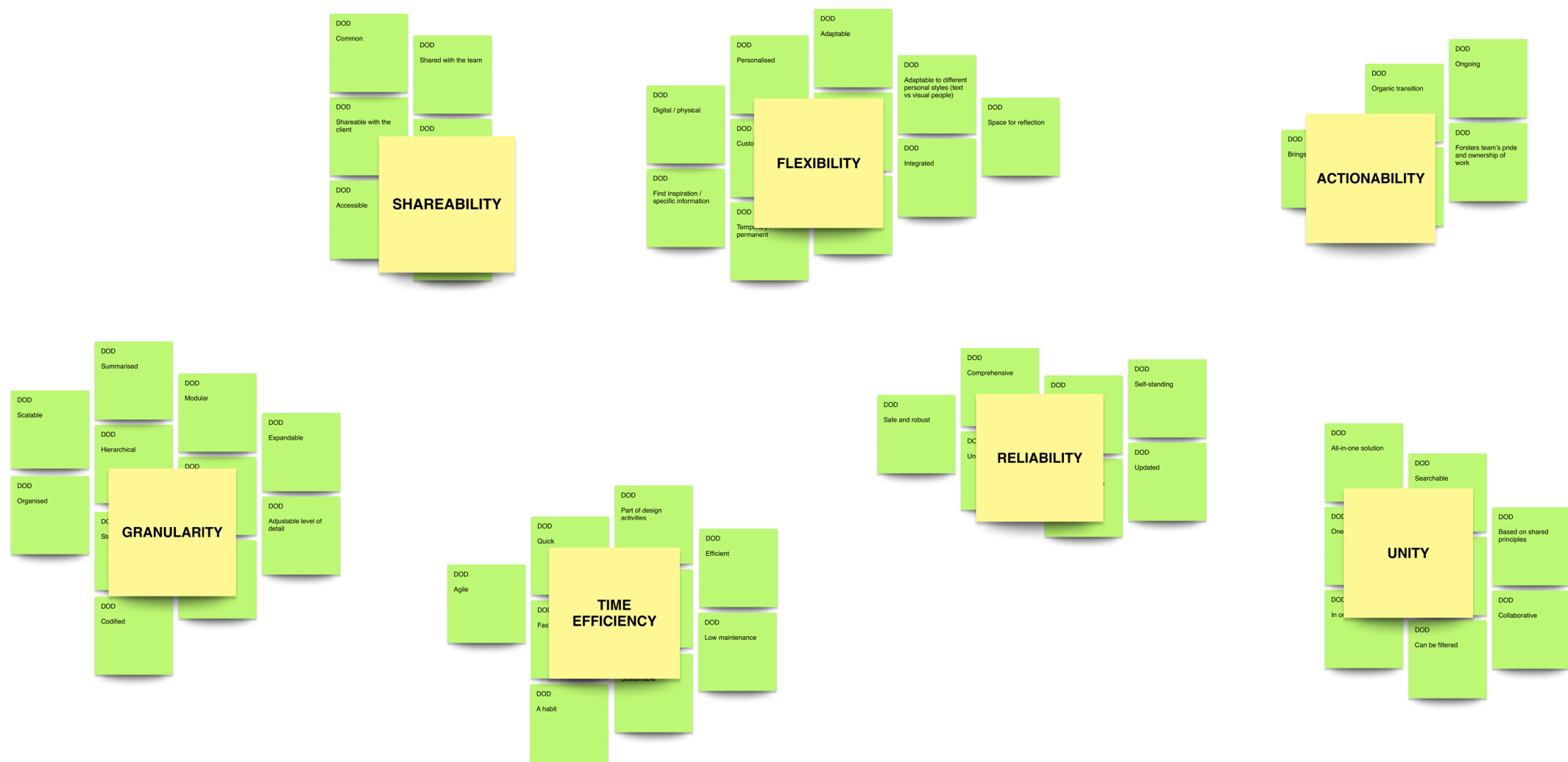


Figure 6.13.  
Empathy map - Magdalena





**Figure 6.4.**  
Expectations and definition of done



# Overview of work spaces and typical interactions

### PHYSICAL SPACE

Notation has an open plan office organised to offer different types of workspaces: there are desks with high and low partitions, phone booths, meeting rooms, a kitchen and lunch area, and a storage and lab space. The equipped desks available for the team are situated in an assigned area to manage the co-inhabitation with the Sennheiser AMBEO team. The growing needs of the organisation and the Covid-19 restrictions lead the management to establish hot-desking and an office attendance policy: workers don't have an assigned desk but they can use any of the available ones on the days when their attendance is planned or a special need is communicated.

Overall therefore, for the past year, the team reunites in the same physical space only on special occasions and meetings are primarily held online. Home office is therefore an integral part of the work schedule and flexibility in terms of work times and locations is also allowed. In terms of knowledge processes this means that most (if not all) exchanges are mediated by technological means and, when co-located, carefully planned and timeboxed in advance on the shared calendar.

### VIRTUAL SPACE

The team currently collaborates and works on design projects, output, documentation and extension artefacts in the Notation virtual workspace on different platforms and online digital tools. The main ones involved in the design process and in the knowledge management processes are:

- Miro
- Notion
- Microsoft SharePoint
- Microsoft PowerPoint
- Adobe Suite
- Figma and Sketch

The main communication tools are:

- Microsoft Teams for video conferencing, thematic channels and meetings, both internal and with clients;
- Outlook for emails;
- WhatsApp groups for fast or informal communication.

The tools are centrally managed and monitored, integrated and reviewed at need, especially for what concerns best security practices and standards. Within operational work, it is mainly a responsibility of each project team to take care of the maintenance of the digital area it feels responsible for. That task mainly falls back on the project or team lead, according to the different repositories, but as all team members are typically allowed and encouraged to contribute, each repository then evolves differently: responsibilities and knowledge management tasks vary accordingly.

### SOCIAL SPACE

The team is mostly co-located in the city of Zürich, but given the restrictions for the Covid-19 pandemic and the latest office attendance policy, it is lately very rare for the team to all be in the same physical place at once. This minimises the informal exchanges and events necessary to build team spirit, especially in the hybrid working environments.

As a natural response and adaptation to this context, some communication bubbles and circles have formed, and there are sub-organisational groups whose social ties are stronger. Especially within project teams, given the type of work typical of a design agency (based on communication and highly dependent on exchanges of information) the meetings are frequent and in the busiest periods "too many meetings" is a recurrent complaint. Overall such communication is mainly task-driven, primarily based on the exchange of information rather than knowledge,

and optimised for productivity, at times to the detriment of the “human touch”. Different project teams have different processes, habits and channels of communication so the results are not homogeneous. Still the fact that the whole team is just a call away from each other and always virtually connected acts as a stopgap for a community that needs strengthening.

In particular, the borders between disciplines are well demarcated by a lack of cross-team alignments. This is working against seamless collaboration especially in complex projects but team members have proven very motivated and have on multiple occasions found workarounds to ultimately meet stakeholders expectations and perform well.

In general, a format for culture and social network building is missing, and the spontaneous occasions that could make such a format unnecessary are lacking.

## Pain points across interfaces

The team members interviewed report a complete lack of alignment within the organisation in terms of the what, when and how of knowledge management.

This is especially evident in the closing phase of projects, where team members don't know exactly what to do with all the information collected. There is in particular no dedicated time to make sense of all that information, which then doesn't translate to knowledge and organisational learning.

### PROJECT CLOSING

- “Once the project is done, the information just stays there”
- “[...] it's not urgent, so it's on my to-do list and I have to move it on each month, and I just don't get to do it”
- “It should be done in such a way that it doesn't feel like extra work, it should just become the way we work.”
- “After project closing we always move on quickly, it would be good to take half a day to reflect and extract learnings”

This gap in the project closing phase also implies that the information gathered during a project doesn't get groomed and cleaned up. Data quickly accumulates and becomes unmanageable, not only for team members who directly worked on it, but especially for other organisation members that are not familiar with it.

### QUANTITY OF INFORMATION

- “We worked together on a complex product, we gathered a lot of important insights, and now that it is finished it's just lying there, a mountain of information”
- “Of course it is somewhere documented, but as the information is too much, in the end it's not used”
- “I wouldn't know where to find that information! Even though it's such a basic info, it should be one click, you know?!”

- “you'd rather archive a file than delete it, that's a personal thing or maybe a designer thing, I always think it could be a reference for something”

Familiarity is in fact a prerequisite to fully understand the knowledge that is currently codified and documented. Given the lack of shared requirements and processes, every team member approaches the challenge of knowledge documentation differently, making the output personal and variable across projects and teams.

## PERSONAL AND VARIABLE

- “We don't have a dedicated process for documentation so far, everyone is doing it for/by themselves”
- “When I took over a project from a colleague that left, it was hard for me to understand what had already been decided and what feedback we got from the client”
- “It's not easy or immediate to adjust to someone else's documentation”
- “[...] some things just cannot be documented”

The variability and personalisation on the output level of codified knowledge implies that such deliverables have different formats and that they are therefore most often living on different platforms and stored in different knowledge repositories.

## MULTIPLE PLATFORMS

- “The biggest challenge is that we currently work on different platforms”
- “The difficulty is to know where to look for, but the information is somewhere”

In the case where codified knowledge is stored within the same knowledge repository, the file or platform structure is then also an issue, as there is no alignment there as well. This results in a knowledge discoverability issue that is therefore huge and stratified, as there is a massive quantity of unorganised data that is stored but dispersed, often accessible but not easily discoverable: the classic impasse of too much information being just like no information at all.

## FILE STRUCTURE

- “it's a tool that everybody uses all day so we just can't turn it off and clean it up”
- “[...] I had to look folder by folder by folder by folder, which was horrible”
- “I think nothing is happening to correct that”
- “it can be chaotic sometimes”

All these issues pile up and directly affect team members' autonomy in the process of knowledge retrieval, both for what concerns information about past projects, as well as information about current projects being developed by other teams: it is very frequent that they need to ask other team members for links, or basic project data, after quickly trying to locate the information autonomously and getting frustrated. They may also look for an alternative first-hand solution or rely on individual memory rather than going through the painful process of recalling knowledge within the current system.

## AUTONOMY

- “If people leave the company we might have a problem”
- “I normally don't need to ask anything, I take a look and I find what I'm looking for but sometimes it happens that you need some specific indications or additional explanation”
- “I get often asked where to find something by others”
- “It would be difficult for me to find information from other teams on SharePoint as I don't know their structure”

- “To find files you had to be directly involved in the past, it’s on the personal level and it shouldn’t be the case”
- “We needed to collect some data of past projects: we needed more than a week to collect it and we had to contact some free-lancers and clients for missing parts”

All these inputs point to the fact that the team has some issues in managing codified knowledge, and is reaching out to people and using communication to fill in the gaps. Still, the lack of a proper socialisation of knowledge (and ultimately of a knowledge management strategy that balances codification and socialisation) negatively impacts the quality of collaboration and of knowledge exchanges.

## COLLABORATION AND EXCHANGE

- “We should have clear and defined steps to have an efficient collaboration”
- “There is a process missing and I’m trying to figure out the best way to do it”
- “Collaborating with others is more of a challenge, information gets scattered around different places”
- “It could be that some learnings fall under the table here and there if you don’t write it down”
- “It’s hard to try and facilitate knowledge exchange, people are always busy”

This modus operandi is also directly linked with time pressure and the feeling of the team of constantly rushing from one task to the other, from one project to the next. This impacts not only the quantity, but also the quality of the time being dedicated to learning. But it also affects the perception of how these issues may be solved and processes improved.

## TIME PRESSURE

- “If I can’t find the info I’m looking for I try to find an alternative

solution”

- “I know it’s going to take forever to find what I need, I just kind of hope that I remember what it was about”
- “It’s like you’re trying to fix the leg of a running horse”
- “I’m always scared that we implement too many processes and don’t find time for the projects”

Time pressure in fact also results in change resistance from the team: team members currently don’t have time, energy and therefore willingness to invest effort in considering new approaches or potential solutions to the current knowledge management issues.

## CHANGE RESISTANCE

- “I don’t think it makes sense to create huge libraries or guidelines because nobody will take care of it”
- “I gathered things, informed the team but no one uses it”
- “We’ve created a lot of processes and knowledge databases but it’s living everywhere, some people are not even aware of certain things”

This approach, though partially determined by contingencies and contextual factors, is very short sighted: though the team is currently performing, it is lacking the big picture, many opportunities for knowledge transfer and synergies are unexploited, and projects will eventually suffer as well.

## BIG PICTURE

- “The knowledge on the team is also not collected all in the same place, there may be some internal competences we don’t know about that one day could be relevant”
- “We can be too focused on the single project and then we miss the alignment on the CMF level or on the experience level”

There is another huge risk in leaving these knowledge management issues untackled. In this dynamic and fast-paced field, it is fundamental in fact for an innovation and creativity driven organisation to be competitive and a safe bet when it comes to processes and methods. Its inability to learn as an organisation could quickly affect its reputation and its relationship with clients.

## REPUTATION AND RELATIONSHIP WITH THE CLIENT

- “When expectations are unclear and we ask repetitive questions we don’t seem very professional”
- “CRM is the biggest pain point in my opinion”
- “I had to be in many calls that I shouldn’t had to be in just to ensure that we don’t say anything stupid and that we don’t communicate that we don’t know something to the client”
- “I walked into a lot of barriers where the information I had was not updated... so the proposal I made to the client was obsolete”

## COMMENTARY

Overall, the analysis of the current practices and tools in use shows that team members have more or less found each their own strategy to deal with knowledge management while bypassing the misalignment issue, though some other interrelated activities (like communication and data management) are negatively affected by this plurality of inconsistent solutions.

The team members interviewed expressed mostly negative feelings in relation to the topic of knowledge management mainly related to the frustration and the uncertainty inherent in the current setup. But they also stated to be very interested in the topic of collaborative learning, which they seem to value on a hypothetical level as a powerful tool that if implemented correctly and efficiently could bring great benefit to the agency and solve some of the pain points detected. There seems to be therefore a good alignment on the direction in which to aim and on the desirable development that can be set in motion on this topic from the

current standpoint.

In particular it is then interesting to highlight the tension between the mental models extracted as team members have to balance the external and internal value drivers of knowledge exchange: organisational learning and knowledge management as routine design work, or as catalyst for new business opportunities. These different but coexisting points of view are then reflected in the associated connotation of knowledge management work which is perceived both as a time investment, a safety net or backup resource, as well as a potential source of advertisement and historical records of the agency.

It is important to highlight here that the most common practice within the organization to currently exchange knowledge is mainly reliant on direct communication among individual members. This approach is being applied not only to knowledge exchanges related to specific projects but also on the organisational level. For this purpose the organisation has in fact setup different team exchanges like

- Product Team Monday Meeting (weekly)
- UX Fresh Eyes (weekly)
- ID Skill Cafe (planned bi-weekly, effective at need)
- Notation Exchange Session (planned weekly, effective at need)

These meetings have different goals and frequencies but they ultimately all got established organically to answer the team's practical needs of sharing information and finding alignment. This is particularly relevant as members of the larger working team, from different disciplines and different projects, often have a partial view on the overall activities of the organisation which results again in isolated, local, and discordant approaches.

There is therefore an additional layer of complexity when the information goes a level deeper, from status sharing to insights sharing: the proper knowledge exchange there is even more difficult and is under constant revision as the organizational goal of not working in silos is not being entirely met. This friction, on both superficial and deep level, ultimately results in disengagement and only partial buy-in of team members in bigger organisational efforts.

Within this context, there is an evident problem of scale as these bottom-up approaches have become less and less efficient and effective

as the team grew. The growth of the organisation in fact can affect both the complexity of the projects and processes to handle, as well as the amount of members and stakeholders involved. And though it cannot be sure whether such progression will be linear or will reach a temporary plateau and find balance there, the current structure and processes should still be optimised as soon as possible in order to establish a system for knowledge creation, transfer and retention able to support any evolution that will strategically be deemed sustainable and valuable.

## SUMMARY

The pain points detected are all interlinked and highly dependent on one another, as well as on the organisational context at large. That said, it is possible to distinguish between causes and effects to bring clarity to the raw mix.

The majority of factors (like the quantity of stored information, its structure and variability) primarily points to the lack of alignment on the codification strategy which is the most severe problem detected. The work pace and the procedural uncertainty are then defining the context in which these shortcomings on the codification strategy emerge. The combination of these knowledge management-related and context-related factors, is then resulting in the collaboration and learning-related pain points, as well as in the risk of client-facing implications. These effects on the one hand are the direct consequences of the lacking codification strategy, but on the other they surface the second most severe problem detected: the socialisation strategy - that could support and partially make up for the lacking codification one - is not structured enough to properly serve the team.

The misaligned codification strategy and the unstructured socialisation strategy are therefore the ultimate causes affecting the team's productivity and satisfaction, as well as the quality of the projects' results: my next steps aim at understanding how best to improve and leverage both aspects in a unified strategy to make progress both on collaboration and learning within the organisation.

“When the problem implies a need to learn, if learning is perceived as a threat by team members, they respond to this need in a defensive way. This defensive way of dealing with learning leads to an action on the symptom of the problem (learning gap) and not on the problem itself, creating a “symptomatic solution,” i.e. the reduction of the perceived need for learning. In other words, the reduction of the perceived need for a new understanding and new behaviors to face the problem. While divergence of ideas positively impacts on team learning, defensive routines not only impair the emergence of conflict of ideas but also team learning in general.”

(Rebelo, Lourenço and Dimas, 2019)

# UX team workshop

As discovered during the exploratory interviews, it has established itself as somewhat of a common practice within the UX team at Notation to collect project related knowledge and links in a comprehensive page on Notion. This type of one-pager concept is being referred to as Project Cockpit.

This type of knowledge management strategy is currently being used in several UX projects, for different clients: the pages have been set up independently and are an ongoing work-in-progress, so though they slightly vary in content and organisation, they ultimately share the same purpose and support the same functions.

The UX team at Notation had a retrospective session to assess this practice and process which can be useful in further understanding the needs of the team to make organizational learning ongoing, efficient and effective.

## PROJECT COCKPIT

Within the UX team Notion is used as an operational tool and the project page as a living artefact that supports daily work as well as the overall design process.

The UX Project Cockpit in fact collects information from three different domains:

- Account management information
- Operational information
- File storage information

And it supports the designers during different project phases and tasks:

- Project Setup
  - Client acquisition notes
- Project Management
  - Meeting notes
  - Workflow and processes
- Design

- Tools
- Output

The typical use of the Notion Project Cockpit for the UX team is therefore the collection of an inventory of information that would normally be accessible on different platforms.

Being the pages on Notion flexible entities with editable access rights, one project team has also tested the use of a sub-page within the Project Cockpit dedicated to status information, periodically updated and accessible to the client. This opened some more points of discussion, some general on the process level, some more specific on the project level:

- What information is useful to replicate for the client?
- How to ensure the correct setup and control of access rights for linked pages (even across different platforms and repositories)?
- Is this solution meeting the clients' expectations and needs?

## TEAM RETRO

The team finds great benefit in having a single source of truth where all project relevant information is collected. The information is accessible and transparent to other team members as well, making it easier to exchange information at need and to onboard new people on a running project.

Many similarities were found in the contents that in such pages have been collected, still there is a lack of alignment when it comes to having a shared structure and naming conventions to consistently apply across project pages: this would allow designers that are not part of the project team to be able to search for information confidently and independently in a more familiar virtual environment.

Building on this intuition, the team has then also recognised that the benefit of establishing a shared Project Cockpit model would still be limited, unless the streams that feed the information are also ultimately aligned: for example, providing quick and easy access to a link that points to a Sharepoint folder whose structure is hard to navigate for the user would still in the end have no effect on the flow of information which

would in that case still run into a blocker.

The Project Cockpit solution should then not only be shared and agreed on but also scalable so that it could easily be adapted to small projects, as well as to projects with a bigger scope and timeline.

The maintenance of such an artefact, whose complexity could quickly grow over time, has also been discussed. The Project Lead is the one that could benefit the most from this type of virtual object, as the ultimate goal of the Project Cockpit is not only to collect a big amount of information but also to present it in a way that provides a clear overview to the user. It is the designers though who most of the time have the updated operational information on ongoing projects and that could contribute to fill in the page with rich contents.

It could therefore make sense for the Project Lead to have the ultimate responsibility on the maintenance of the page but also on the delegation of specific knowledge documentation tasks of different sub-domains of the project.

## SPECIFICITY

It appears clear from the contents of the team retrospective that this digital tool follows some requirements that are specific to the work done by the UX team and the processes it follows.

Would therefore the Project Cockpit be useful for other teams and organisation members specialised in other fields? And related to this topic, how could bigger projects' pages take into account the different needs of non-UX professionals? And how should the streams from different domains coexist and be organised?

Though the solution is still widely UX domain specific, it represents a first test and early outcome of a learning-oriented approach that could lead to the development of a more solid structure and the definition of shared patterns and guidelines for knowledge management processes for the whole organisation.

“The outcome of a particular project may be less important than an overall increase in the ability of an organization to implement projects successfully.”

(Reich, 2007 in Almeida and Soares, 2014)



# Proposal

# Optimise for knowledge exchange

## KEY INSIGHTS FROM THE LITERATURE

- Organisational learning happens when knowledge management processes are healthy, aligned and optimised.
- Hybrid working environments affect these knowledge management processes by directly shaping the interactions that happen across the physical, virtual and social interfaces.
- All these interfaces have a primary role in defining the path to growth and success for creative and innovation-driven teams.

## KEY INSIGHTS FROM THE EXPLORATORY RESEARCH

- The team works on many different projects and does so in many different ways, optimising their processes and practises to the requirements of specific clients and specific projects.
- The team is not completely satisfied by the current knowledge management processes and they are actively trying to solve the issue with a learning-by-doing approach.
- Communication is used as a primary strategic tool to align efforts and exchange information.

This analysis lead me to conclude that it would be too constricting, demanding and ultimately counterproductive to uniform the processes at Notation on the output level across physical and virtual spaces: aligning

on a shared folder structure, documentation format, uniforming extension artefacts, and so on, would ultimately not work. A proposal in that direction would only partially be accepted within the current context. It would also be integrated into the current work activities with much effort. And finally it would become obsolete quickly, with results evolving independently, losing alignment again and processes quickly drifting away from the optimum.

## OBJECTIVES

- Maximise the effectiveness of the existing codification strategies by aligning processes and phases: it would then in fact be possible for the team to align on expectations and requirements for knowledge management processes according to shared milestones.
- Understand recurring patterns, highlight critical moments and discover opportunities across teams to boost the socialisation strategy and build some core pillars to sustain and structure it.

## PHASES

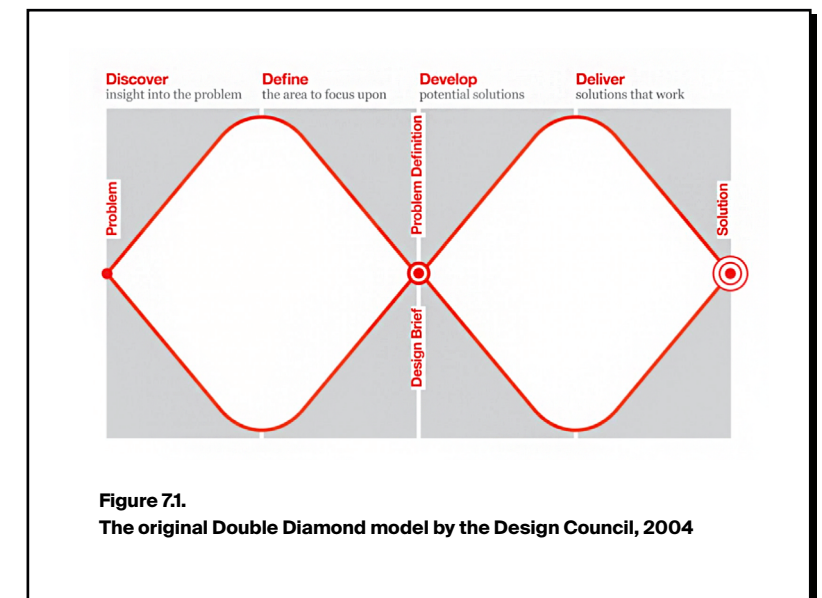
To understand where and how to intervene to bring the most benefit to both streams, I start by considering the process from a theoretical point of view, brainstorming on solutions that would also integrate in the ideal model the key concepts extracted from the literature. I then cross-check the conceptual output of this phase with real project processes and extract an overarching process model on which the team at Notation could align. Starting from this process model, I then propose rituals and microstructures as strategic tools to support the knowledge socialisation strategy. To finally validate the overall approach, as well as the specific tools selected, I propose an experiment and ask for feedback directly to the Notation team and elaborate on the outcomes to draw my conclusions.

# Process mapping

## FROM A THEORETICAL POINT OF VIEW

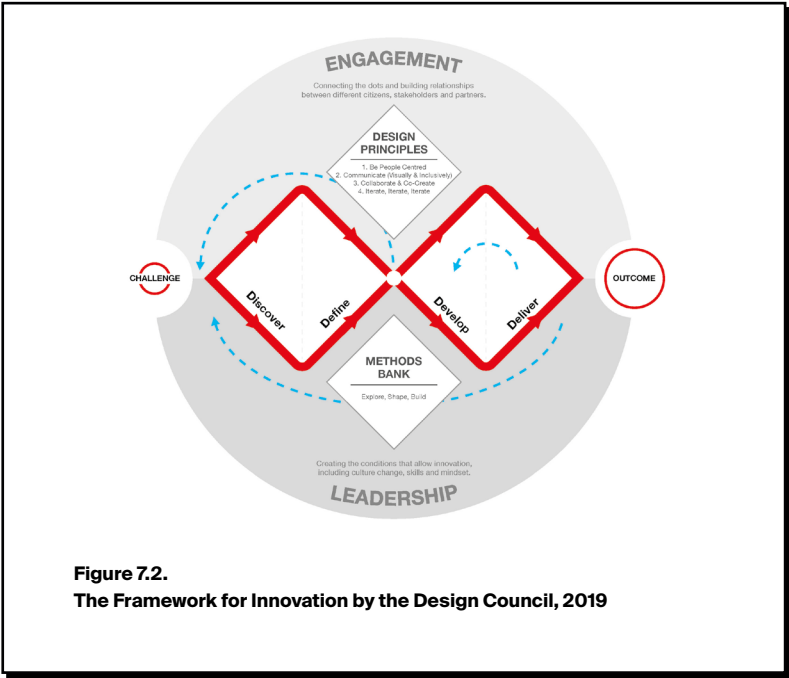
I started my analysis with the Double Diamond as the main reference model for most design activities. In this model the design process unfolds according to four phases with divergent and convergent stages that represent the different thinking modes at work:

- Discover - Where from an initial idea or inspiration research aimed at identifying user and customer needs starts.
- Define - Where the goal is to find an alignment between the insights from the research and the business objectives, and where the go or no-go decision takes place.
- Develop - Where design work leads toward the development, iteration and testing of solutions, typically multidisciplinary and very dynamic.
- Deliver - Where results are finalised and launched and where final feedback and approval takes place.



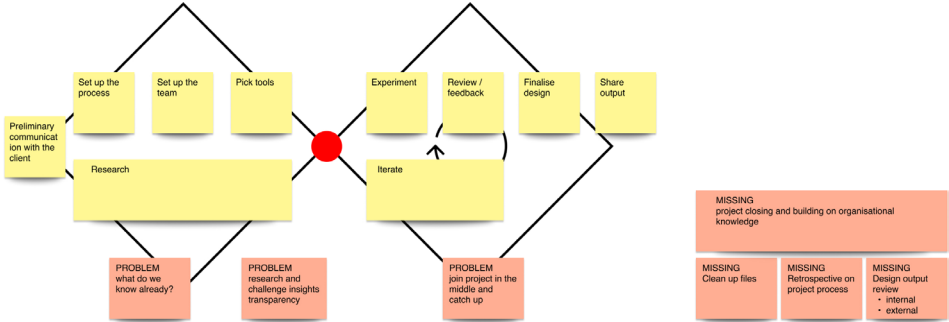
The Design Council itself proposed in 2019 an evolution of the Double Diamond model: the Framework for Innovation (Design Council, 2019). This updated framework, other than the Double Diamond design process at its core, also includes:

- The Principles to adopt for effective design work
  - Put people first.
  - Communicate visually and inclusively.
  - Collaborate and co-create.
  - Iterate, iterate, iterate.
- The Methods required to explore challenges, shape and build solutions.
- The Leadership able to create a safe space for experimentation and learning.
- The Engagement that nourishes the strong connections and relationships in a creative team.



Applying one of the key principles of design activities, I iterated on this framework to understand how to boost learning and knowledge exchange along the design process.

To do so I started from the critical moments and key problems discovered in my exploratory research and I aligned them with the Double Diamond design process.



**Figure 7.3.**  
Critical moments and key problems aligned with the theoretical model

This intermediate step surfaced two typology of problems related to knowledge exchange:

- Knowledge exchange problems related to a specific project
- Knowledge exchange problems related to organisation-wide learning (that follows) and culture building (that supports it).

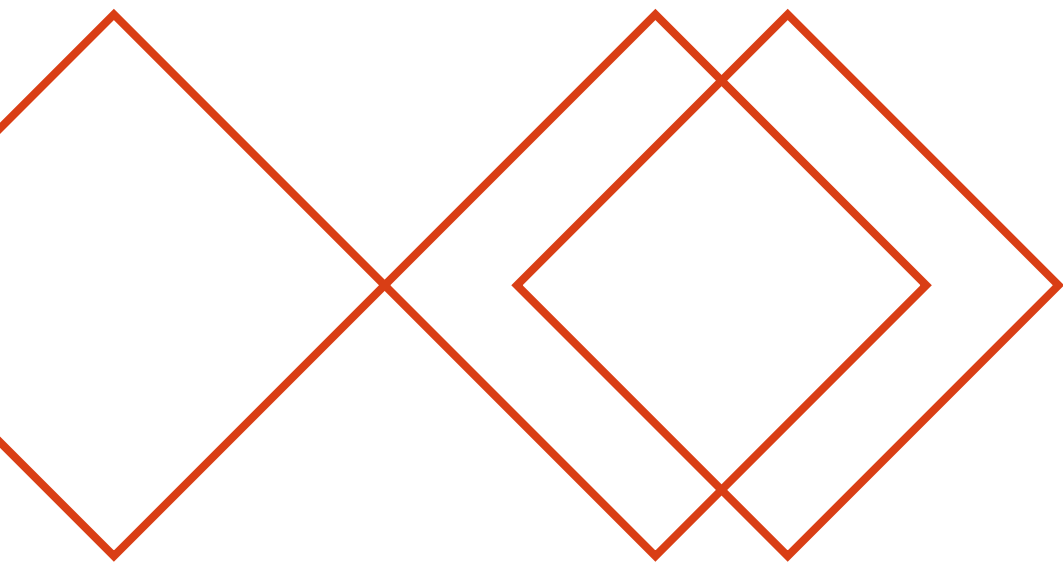
These problems then also can be clustered according to two distinct timeframes:

- The project-centred timeframe (with a clear beginning and end)
- The organisation lifetime (based on ongoing efforts and evolution-like patterns)

Focusing on these different aspects of the problem surfaced different views and ways of thinking about knowledge exchange that have to co-exist within the same organisation.

- Focusing on the problems within the context of project-centred timeframe and knowledge exchange could for example mean developing solutions to improve communication inside the project team and project documentation.
- While focusing on the organisation level both in terms of processes and timeframes could mean reinforcing the extension of project findings, creating bigger opportunities for retrospectives or working to establish and upgrade the organisation's values and principles.

My take on this duality is based on the idea that a holistic approach could benefit both levels: a holistic solution can in fact create an alignment while still allowing to adjust the solution to target for local and project-specific needs.



I visualised this idea and its implications on the Double Diamond process:

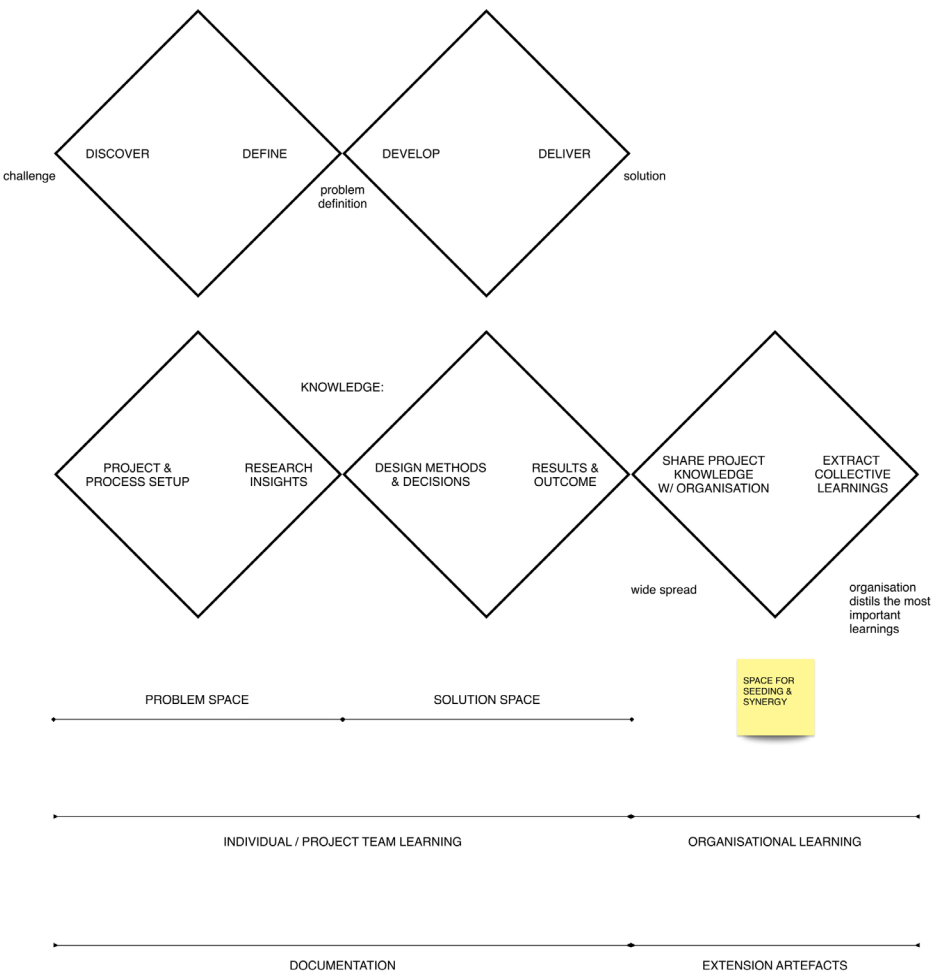


Figure 7.4. Extending the design process to include organisational learning

As I drafted this model in particular I wanted to highlight the need of including in the design process both the project learning and the organisational learning. The Framework for Innovation already works towards highlighting the relationship between the project and the organisational level (considering engagement and leadership as part of the picture for example) but it fails in describing how the project problem and solution space pay back into those realms. What happens within an organisation after a solution is found? How is it possible to learn from a project and make sure that it positively contributes to the other challenges?

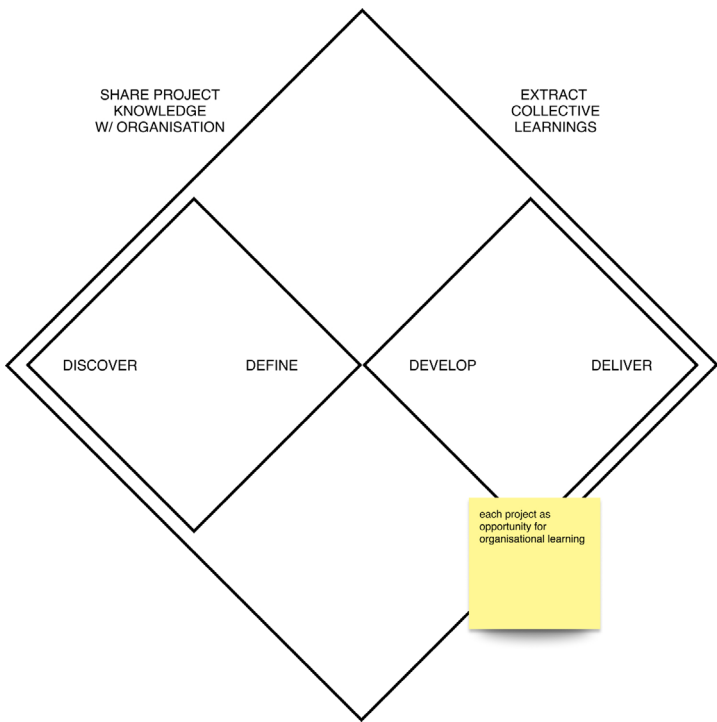


Figure 7.5.  
Expanding the design process to include organisational learning

Timeframe-wise this process of sharing knowledge and extracting learnings should be an ongoing effort where each individual project plays a part in the bigger endeavour that is building a creative and collaborative organisation.

INSIDE THE THIRD DIAMOND:

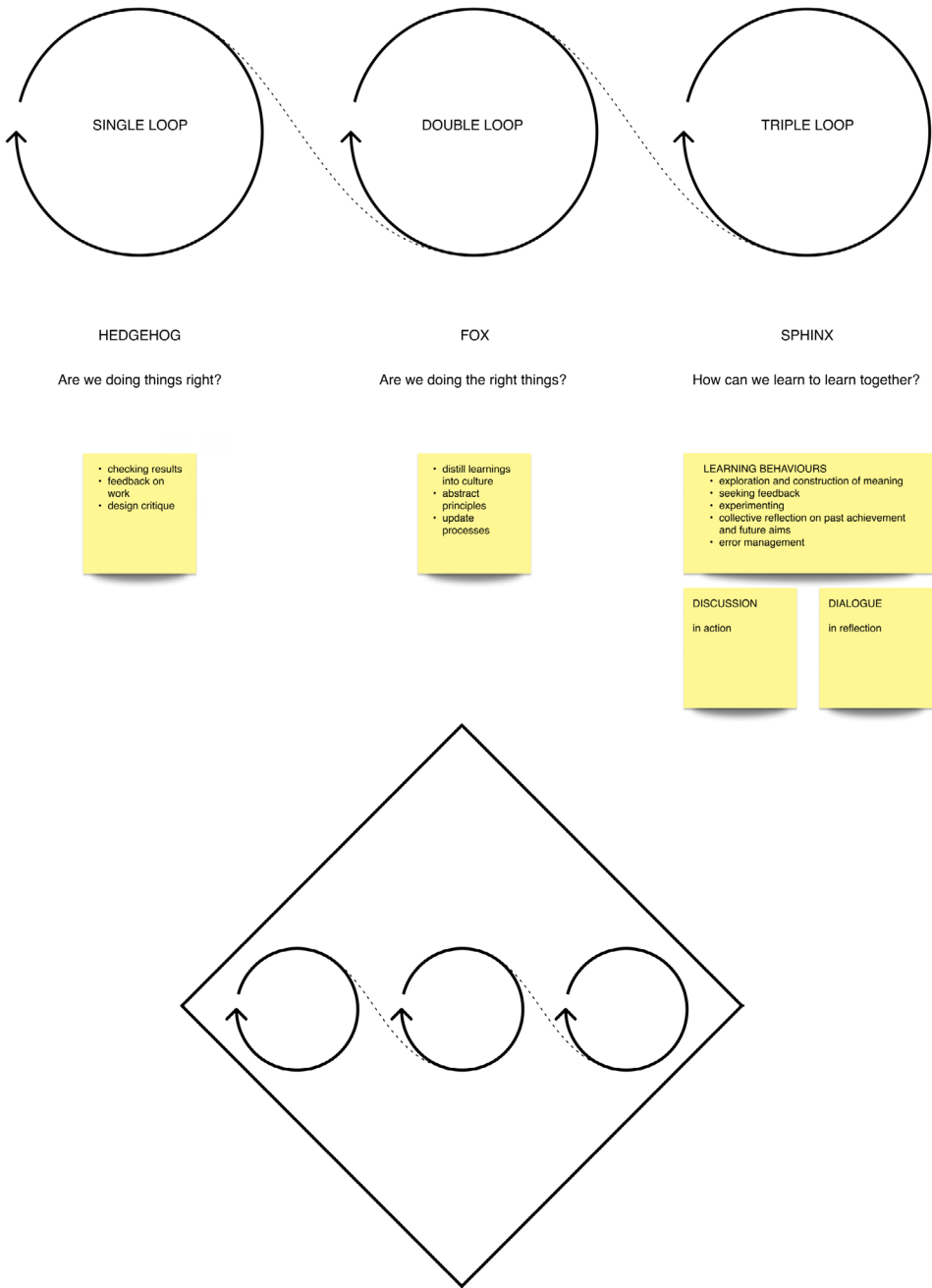
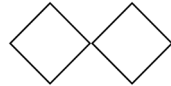


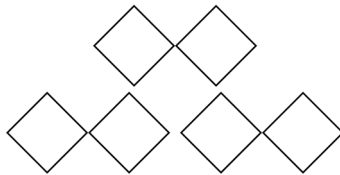
Figure 7.6.  
Including higher-level learning in the design process

The potentiality then of including this third diamond in the system is that of actively pushing the organisation towards triple loop learning:

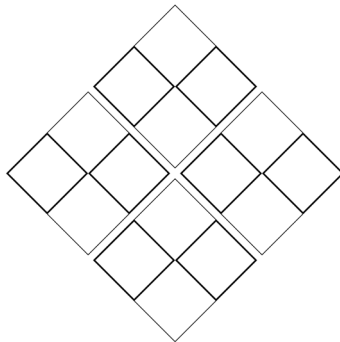
- Single loop: are we doing things right? - The answer can be worked out on project level (single double diamond)



- Double loop: are we doing the right things? - The answer can be worked out on the organisational level, by looking at the portfolio of activities and at the combined effect on general performance of all the projects together (system of double diamonds)

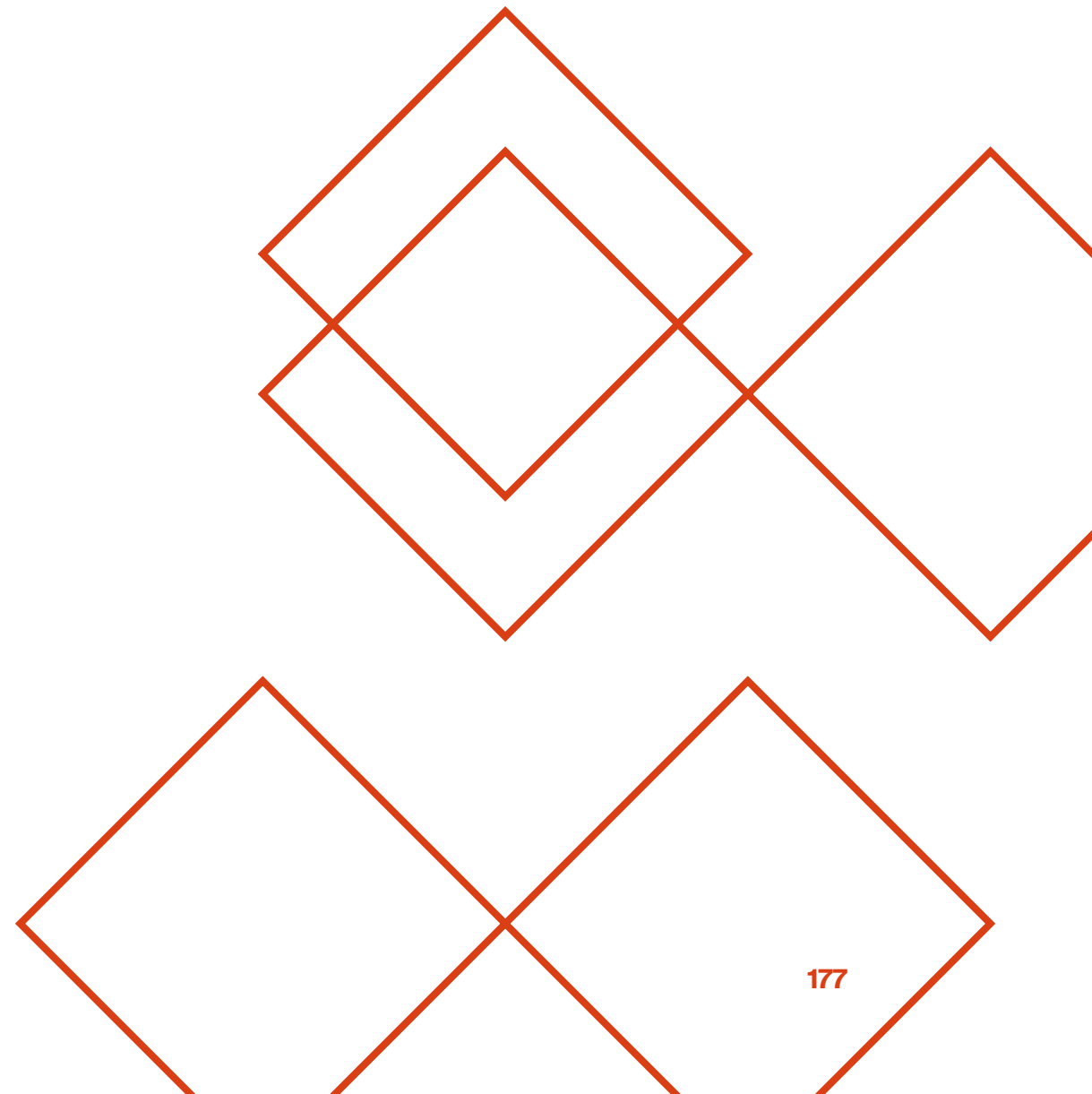


- Triple loop: how can we learn to learn together? - This needs to be worked out on both project and organisational level simultaneously (aggregate third diamonds, on higher level)



**Figure 7.7.**  
Single, double and triple loop learning framework matched  
with the increasingly wider process level it works with

Additionally, working on both levels simultaneously opens up opportunities for reflection and for discovery of fruitful synergies. Within this framework in fact engagement and leadership factors, as well as methods and principles, shift in their role: from being contextual parameters to becoming integral components of the design process, so not only affecting design projects but being actively shaped by them in the process.



FROM A MORE PRACTICAL POINT OF VIEW

To understand how this idea could find practical application I then considered and mapped real scenarios: with the help of three professionals specialised in different disciplines I set out to map the typical processes at Notation.

BRAND STRATEGY AND DESIGN

A typical brand strategy project starts with framing activities aimed at understanding the clients' needs and goals. This leads the design team to define a roadmap and officially kick off the project with research and strategy. These two phases are closely interrelated and are carried out in a loop where discoveries from the analysis of clients, competitors and market positioning, directly inform choices on the mission and vision for the brand. The alignment with the client on these strategic topics is crucial: only after an agreement on this preliminary definition of the strategy it is in fact possible for the design team to sharpen the positioning and start exploring the brand identity on a visual level. Strategy refinement and brand identity explorations are also closely interrelated and proceed together in a loop until both brand story and strategy are aligned. After these core decisions are taken it is possible to refine one final direction and then finally a specific vision.

Once the brand has a clear vision and strategy in place it is possible to start design implementation, which in this context would mean, on the high level, defining guidelines, the logic and a complete design system, but also on the lower level, applying those principles and design system to a curated selection of touchpoints.

It is the scope and size of each brand project that determines at which step the project starts and how far it goes: from a blank canvas to a clear vision, from an established vision to a new touchpoint, from a vague idea to the implementation of a clear brand language,...

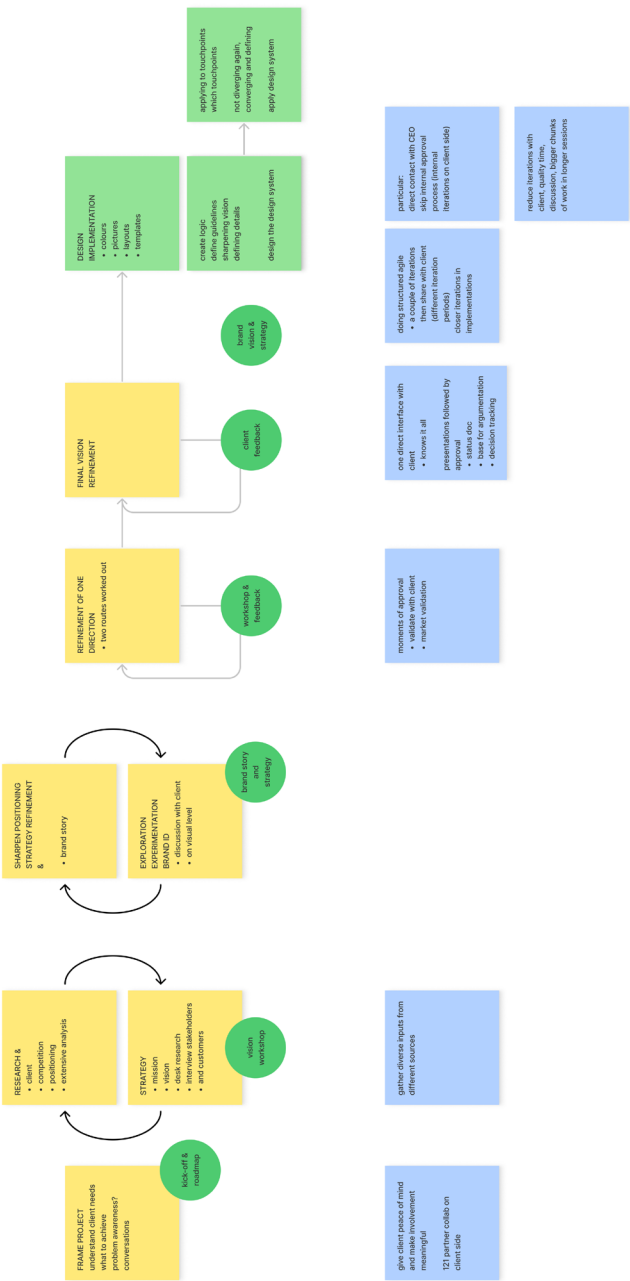


Figure 7.8. Documented process for brand design and strategy



INDUSTRIAL DESIGN

The typical industrial design project starts with a research phase that includes at least competitor analysis, target group analysis, and customer journey mapping. The critical output of this phase is the definition of a strategy for the project that sets the foundations of the following phase: concept. In this second phase many solutions are studied and explored via low fidelity prototypes. Each concept proposal is evaluated with a rating system that includes the parameters of feasibility, costs and risks, and a couple of solutions proposals get picked for the following phase. In refinement in fact the design team can focus on the definition of the details, the improvement of ergonomics and branding elements. The optimal result is achieved by iterating and developing variations of the same concept. The designs that get prepared in this phase are exposed to many stakeholders, like manufacturers, suppliers, the client and also key users for testing. This feedback loop is critical in refinement (but also on a higher level in the concept phase) as the more the project progresses the more the cost of design changes grows while their impact drops. This is also reflected in the process structure where loops are required inside each phase but avoided whenever possible in between them, which translates to a high level structure that is ideally very linear. The refinement of a final solution leads then to implementation where the design team is supporting the implementation partners with the troubleshooting necessary to deliver the final product on the market.

A peculiarity of the Notation context that needs to be addressed here is that, being the organisation an agency and a design consultancy, it is possible that the client briefing the Industrial Design team has done some pre-work already: not every project starts from research and it could in fact be that the team is mainly taking care of the refinement of a pre-existing concept rather than starting from scratch and kicking off with research.

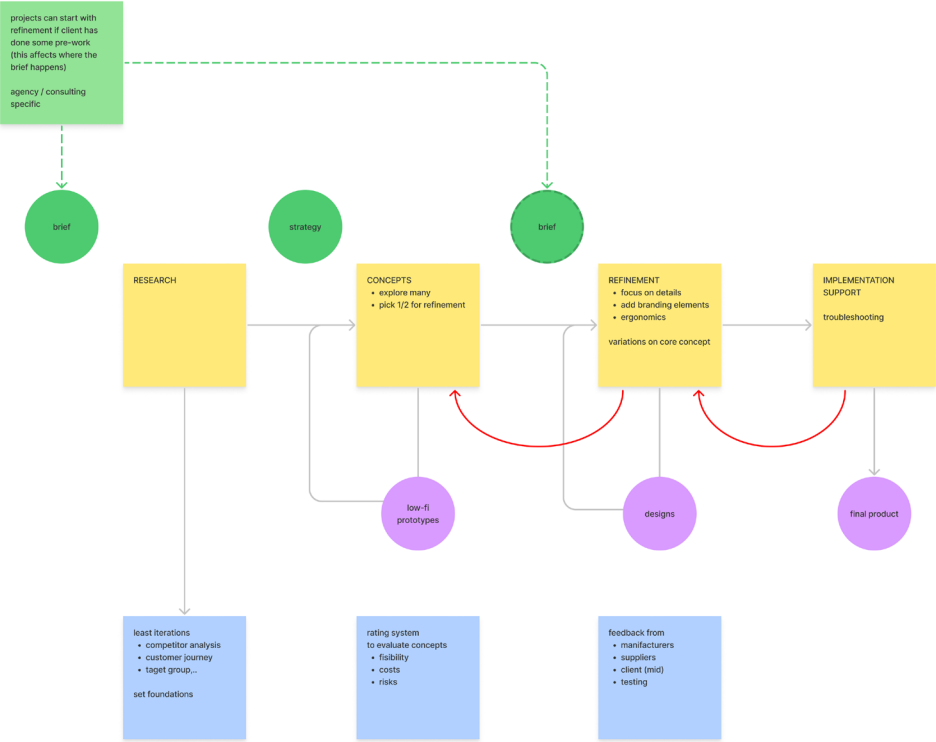


Figure 7.9. Documented process for industrial design

INTERFACE AND EXPERIENCE DESIGN

The most common interaction and experience design project for the team at Notation involves the development of digital solutions and interfaces. The typical process normally starts with the definition of the project parameters which include factors like interaction medium, context of use and user group. This initial phase, where explorative research is also taking place, produces or creates alignment on a shared vision for the product. The planning phase can then start and as most digital projects happen in agile teams, PBIs (Product Backlog Items) are created. It is crucial for the definition of the project roadmap that dependencies (for example with hardware elements) are as clear as possible from the very beginning and that requirements and functionality are continuously reviewed and taken into consideration not only in planning but also in the following phase. In the creation phase in fact features, architecture and design system are designed and directly passed onto the next phase which is that of review and testing. Here the PO (Product Owner) and DEV (Development Team) can provide feedback and potentially start preparing for implementation, while the design team tests the concepts with users to validate the solution and understand how to best refine it. At this step, time requirements are the most critical as they determine how long this phase can be and how many iterations are possible between this review/testing phase, and the creation phase. After this timeframe, the development team can start implementing the solution. The process is not linear so the output of this phase, which is the implementation state, gets reviewed again and contributes to update software requirements and their potential impacts on the functionality of the solution.

Design work and implementation work happen for the most part of the project simultaneously. This means that keeping the right pace and time shift in between the creation, review and testing, and development of the different features is crucial to keep the project and the team functioning. On the process level this means that the loops across phases are not only necessary in their presence but also crucial in their effectiveness.

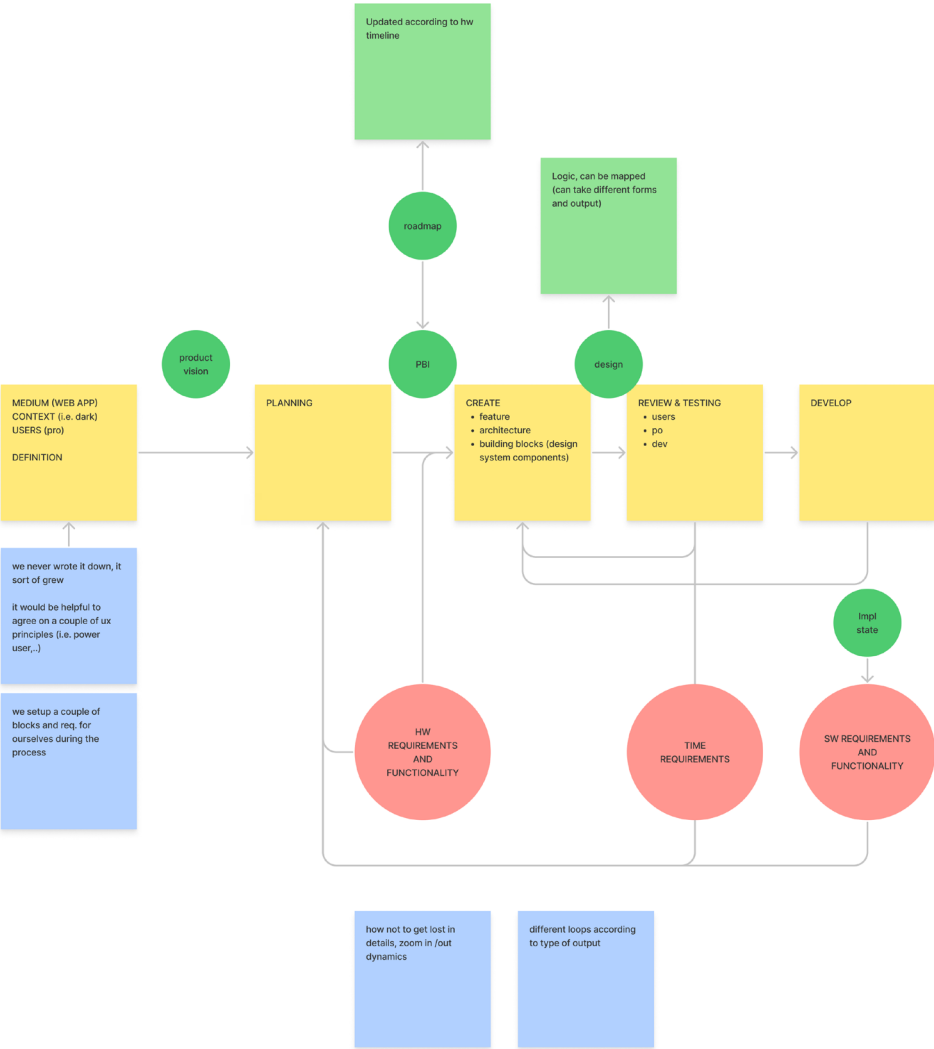


Figure 7.10. Documented process for interface and experience design

## TO A GENERAL MODEL FOR NOTATION

I extracted a general model by overlaying and simplifying the information from both these sources: theory and practice.

The typical project process at Notation can be mapped as unfolding according to the following phases:

- Project framing and planning
- Research and concept explorations
- Refine and review
- Implementation and development

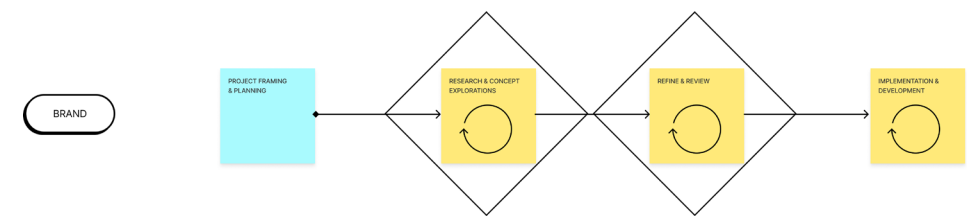


**Figure 7.11.**  
The general project process for the agency

Aligning and reaching a shared agreement on this basic structure on the organisational level creates the opportunity to first identify high-level recurring patterns and critical moments and then to take action to develop the full potential of these opportunities for learning and sharing knowledge across different types of project.

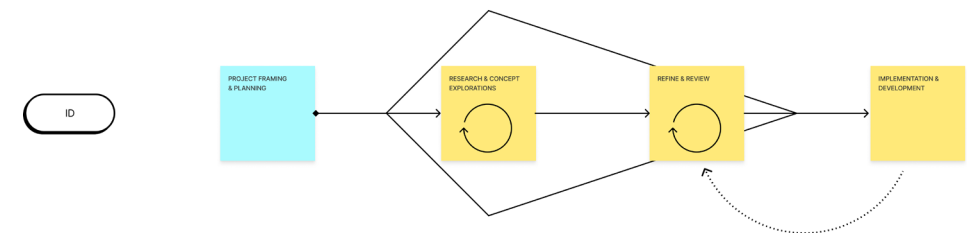
Creating alignment on these overarching phases allows in fact to then adapt the model to the different types of projects, management strategies and goals that a multidisciplinary team of a consulting agency may face over time with different clients.

A typical Brand Design and Strategy project has in fact two divergent phases with multiple iterations where to collect feedback from the client before moving to the actual implementation of the specific touchpoints. The sequence from one phase to the other is linear on a path that leads from the definition of higher level topics, like brand vision and story, to the details of the solutions to be implemented.



**Figure 7.12.**  
The model applied to a typical Brand Strategy and Design project

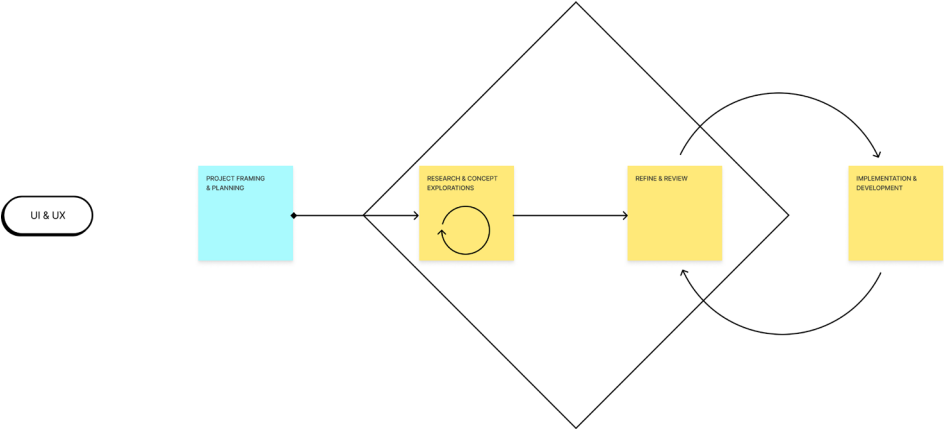
A typical Industrial Design project has on the other hand an explorative divergent phase followed by a longer convergence where ideally one solution gets refined and perfected before production. The sequence from one phase to the other is linear but considering in particular the dependence and feedback coming from suppliers and manufactures it could be possible to have a loop involving the phases of refinement and implementation.



**Figure 7.13.**  
The model applied to a typical Industrial Design project

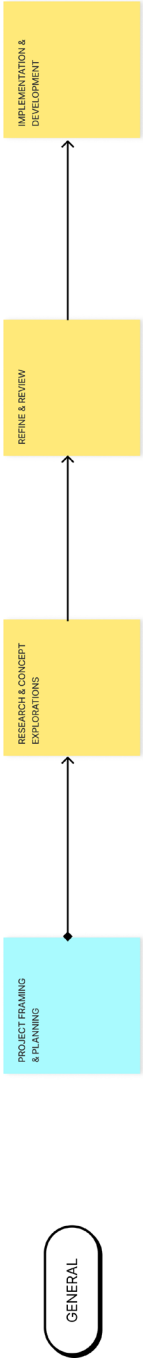
Finally, in a typical User Interface and Experience project, which often implies the development of digital touchpoints and solutions in a team organised according to agile methodologies, the phases are closely in-

terrelated. After a divergent experimental phase, the solution is defined and implemented in tight loops which ultimately lead to the refinement of the initial solution itself and to the convergence towards the final shape that solution will take.

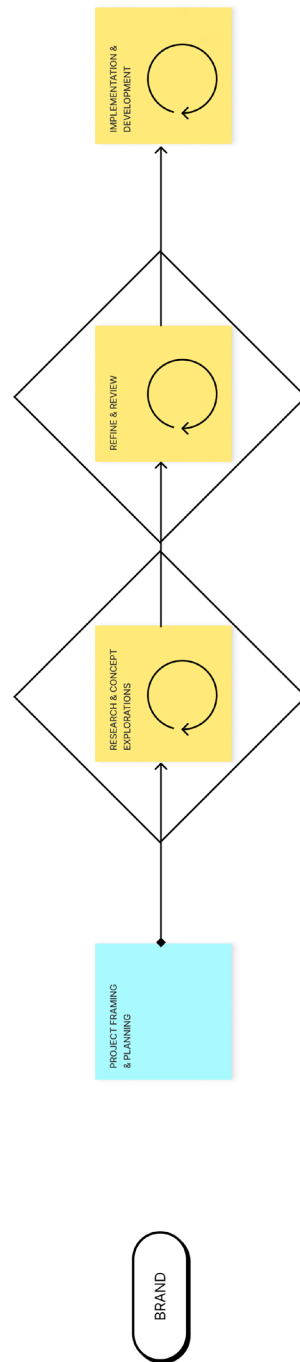


**Figure 7.14.**  
The model applied to a typical UI and UX Design project

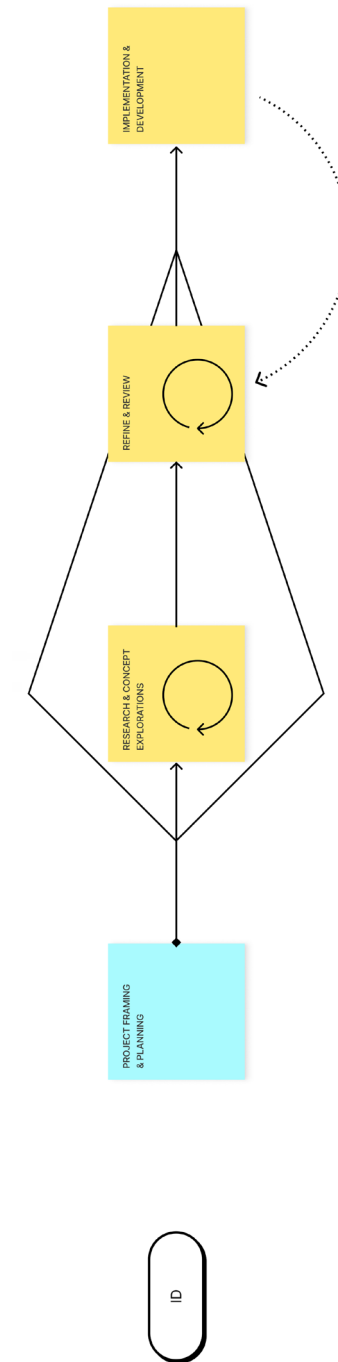
It is important to mention that this process can always be scaled to the needs of the client and the phases can be adapted to match the goal and scope of the project: the process for example is still valid if a client only needs support in the design and implementation of some brand assets rather than the full development of a strategic plan. This particular characteristic is a result of the context in which my research is situated, on multiple levels: from the specificity of a medium-sized design consultancy to the general needs of the workers in the knowledge economy. It ultimately pays into the core idea on which my proposal roots its foundations: processes and solutions for learning and knowledge exchange should be flexible in order to be useful in their application and resilient in their value.



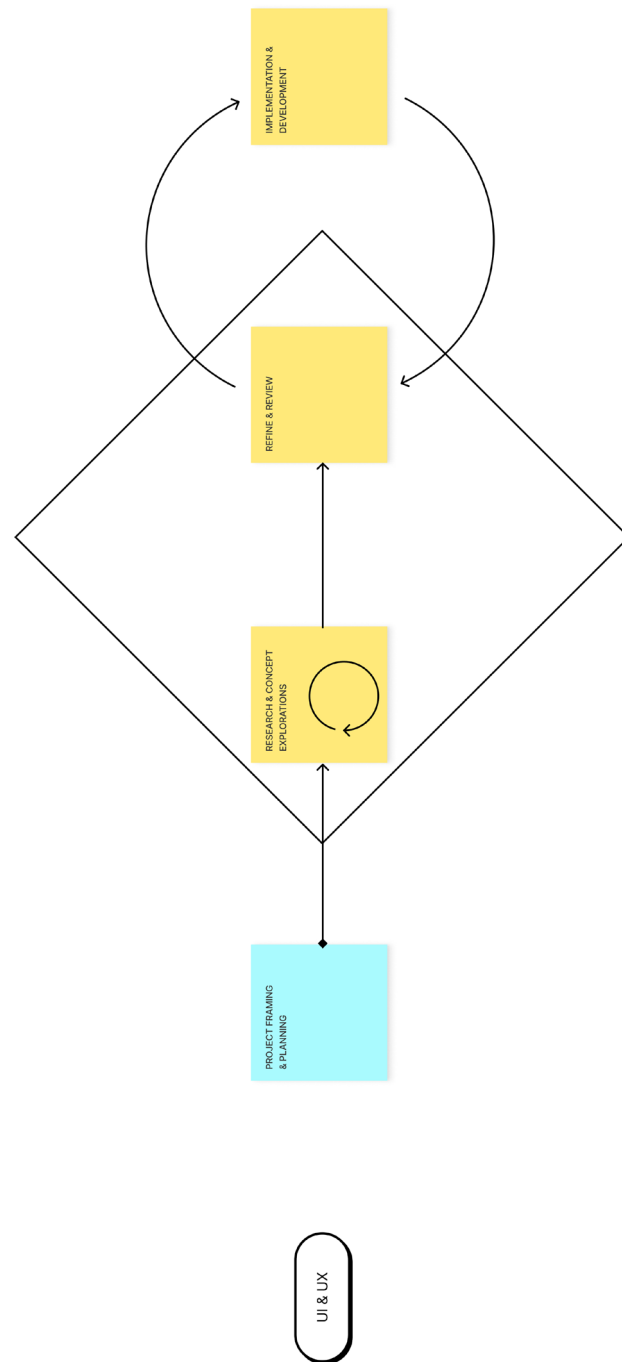
**Figure 7.11.**  
The general project process for the agency



**Figure 7.12.**  
The model applied to a typical Brand Strategy and Design project



**Figure 7.13.**  
The model applied to a typical Industrial Design project



**Figure 7.14.**  
The model applied to a typical UI and UX Design project

## Building rituals

Given the team's size, structure, and context of reference, at Notation the social interface that ties the physical and virtual spaces together is where critical activities for learning and knowledge management are happening.

To improve in these processes it is therefore fundamental to ensure that the social space is able to support the organisation's growing community and that its members are all engaged in shaping how to best work together.

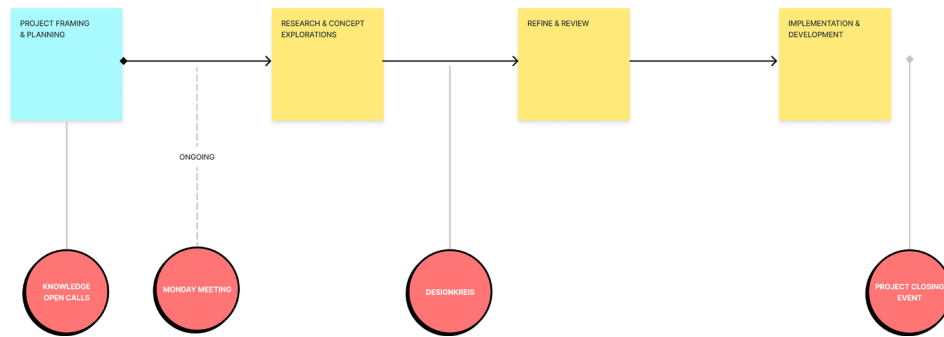
During the typical design process there are in fact many opportunities to make tacit knowledge explicit and make sure that said knowledge gets to the right members at the right time. This needs to happen on all levels (from the individual, to the group, to the whole organisation) on an ideal path where socialisation, externalisation, combination, and internalisation of knowledge ultimately lead to organisational learning, innovation, creation of value, and growth.

Establishing some rituals can ultimately support this goal across boundaries of project teams and disciplines. Rituals are in fact powerful commitment devices based on a shared agreement that fills the ritual itself with value and gives it meaning.

The idea I developed based on my research is that for organisational learning to happen, the team needs to share not only information but also experiences: in this context, the value and meaning associated with rituals can make them key experiences for knowledge management processes.

Further building on this idea, as different physical locations serve different work functions, different rituals and shared experiences serve different types of information and knowledge exchanges.

I thus identified some core rituals that can support the main knowledge management processes at work during the design process:



**Figure 7.15.**  
Key rituals for learning and knowledge exchange

## KNOWLEDGE OPEN CALLS

At the beginning of a new project there is always the opportunity to recall knowledge from past projects and past experience of team members. Concentrating the knowledge retrieval process into this type of ritual would on the one hand optimise resources by speeding up the project framing and planning phase, and on the other create an early opportunity for cross-pollination among project teams and disciplines. This type of knowledge exchange would also provide a learning opportunity for younger team members and it would also contribute to building a sense of belonging to the community thanks to the recalling of both shared stories and members' personal ones.

The goal of this ritual would therefore be to identify existing knowledge repositories relevant for the project early on and to map the potential opportunities that emerge from this early knowledge exchange.

Given that in this early stage of the design process some projects may still not have clear boundaries the invitation could be extended to the whole organisation so that members can self-select according to experience and interest in the topic of the Knowledge Open Call.

The setup and organisation of such a ritual is flexible and can be adapted according to the needs of the Open Call itself: participants could be

asked to provide visual inputs and references, documentation on a particular user group, learnings on processes and best practices,... the opportunities are endless. The scope of the Knowledge Open Call should therefore be project-centred and focused on the specific goal of the phase on which it is situated.

## MONDAY MEETING

Team alignments in bigger rounds are an ongoing opportunity for team members to take a step back from the current projects and context they are more accustomed to and open the vision to the organisational level. The Monday Meeting, or more in general a community-wide and frequent ritual, creates the opportunity to connect people. This ritual should be considered like a central hub where to identify interesting links and potential synergies. Discovering who should talk to whom, and which team members should be aligned in their activities, creates the opportunity to open or revive a channel of communication which could be weak or already present but out of sight, maybe overlooked or underestimated.

Unlike Knowledge Open Calls, Monday Meetings should be focused on advancing knowledge creation and knowledge transfer opportunities between synchronous projects. This can have a beneficial effect on multiple levels, from a more practical one where good operational alignment across teams can improve collaboration, to a more vision-driven level where management can discover new business opportunities.

## DESIGNKREIS

Design critique and feedback are essential to the success of a project but they are rarely systematically and formally integrated into the design process itself. The risk in taking such moments for granted is that they end up being neglected, at times entirely forgotten.

The Designkreis ritual should therefore aim at first, ensuring that the design is answering the goal of the project, and then that the quality of the solution is optimal if not excellent. Each critique session should be focused on discussion and analysis rather than confirmation, and participants should be chosen (or could self-select) with the ultimate goal of exchanging knowledge in mind.

Discussing design, given the highly social nature of this exchange, is

also a great opportunity for team members to build competences, like reflecting, reasoning, and, for those who organise and moderate the session, leadership, but also to cultivate the ability to express criticism, use the appropriate design language and potentially manage conflict. More in general, including the Designkreis ritual into the design process opens up the opportunity for the organisation to build a design critique culture and to ultimately increase the quality and value of the designed solutions.

## PROJECT CLOSING EVENT

Setting aside a moment at the end of a project to share the results, the process, and the learnings with the whole organisation is crucial for organisational learning and knowledge retention.

Establishing a Project Closing Event as a ritual would bring organisation-wide benefits also in terms of culture and team building.

This ritual can take different shapes and forms according to the practical and emotional needs of the team that is closing the project: it could be more like a celebration or more like a retrospective, delivered as a live event, an article, or a recorded video,... Regardless of the different structures and the varying artefacts that can support this ritual, it is important for the team to build a shared agreement and rely on the expectation that such an event will happen and that there will be a dedicated moment for the team to gather, reflect and learn together after an endeavour.

Building rituals is an effort that takes time but that can ultimately bring many benefits to the whole organisation, making the team stronger, more connected and engaged, ultimately faster and more confident in the execution of operational work.

Rituals can optimise the creative and learning processes, but the process of building rituals itself can in turn be optimised to ease adoption, make benefit immediately visible in the short term and ultimately also to provide the team with enough structure to be able to organically and autonomously refine and adapt new and existing rituals in the ongoing work necessary to grow.

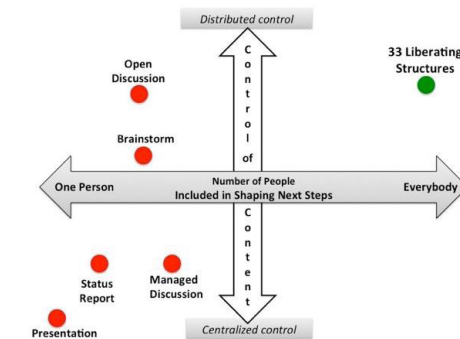
## Using microstructures

“Conventional structures are either too inhibiting (presentations, status reports and managed discussions) or too loose and disorganized (open discussions and brainstorm) to creatively engage people in shaping their own future.”

(Lipmanowicz and McCandless, 2014)



































The conventional structures used to organise work oftentimes don't support the type of engagement necessary to build and strengthen a creative community in dynamic and hybrid environments.

Liberating Structures, as intended by Lipmanowicz and McCandless (2014) are microstructures that can be used to complement more traditional practices to enhance relational coordination and trust. The ultimate goal is to replace more controlling and constraining approaches with participation, inclusion and engagement.



**Figure 7.16.**  
Liberating structures and conventional microstructures differences in control and structure (Lipmanowicz and McCandless, 2014)



LS Menu 	Wicked questions 	What? debrief 	Min specs 	Heard, seen respected 	What I need from you 	Integrated autonomy 
Design elements 	Appreciative interviews 	Discovery and action dialog 	Improv prototyping 	Drawing together 	Open space 	Critical uncertainties 
1-2-4-All 	TRIZ 	Shift & share 	Helping heuristics 	Design storyboards 	Generative relationships 	Ecocycle 
Impromptu networking 	15% solutions 	25 : 10 crowdsourcing 	Conversation café 	Celebrity interview 	Agree/certainty matrix 	Panarchy 
9-whys 	Troika consulting 	Wise crowds 	User experience fishbowl 	Social network webbing 	Simple ethnography 	Purpose to practice 

**Figure 7.17.**  
**Liberating Structures**  
(Lipmanowicz and McCandless, 2014)

The selection of interaction methods they collected builds an interrelated set that can be used to bring minimal structure to the interactions and team exchanges while liberating content and subject matter. The set is therefore flexible and allows for the distributed control that a growing number of creative organisations require.

Lipmanowicz and McCandless (2014) built their set of Liberating Structures following their ten Liberating Principles:

#### 1. Include and Unleash Everyone

- Invite everyone touched by a challenge to share possible solutions or invent new approaches together.
- Actively reach across silos and levels, beyond the usual suspects.

#### 2. Practice Deep Respect for People and Local Solutions

- Engage the people familiar with the local context, doing the work.
- Trust and unleash their collective expertise and inventiveness to solve complex challenges.
- Let go of the compulsion to control.

#### 3. Build Trust As You Go

- Cultivate a trusting group climate where speaking the truth is valued and shared ownership is the goal.
- Sift ideas and make decisions using input from everyone.
- Practice “nothing about me without me.”
- Be a leader and a follower.

#### 4. Learn by Failing Forward

- Debrief every step.
- Make it safe to speak up.
- Discover positive variation.
- Include and unleash everyone as you innovate, including clients, customers, and suppliers.
- Take risks safely.

#### 5. Practice Self-Discovery Within a Group

- Engage groups to the maximum degree in discovering solutions on their own.
- Increase diversity to spur creativity, broaden potential solutions, and enrich peer-to-peer learning.
- Encourage experiments on multiple tracks.

#### 6. Amplify Freedom AND Responsibility

- Specify minimum constraints and let go of overcontrol.
- Use the power of invitation.
- Value fast experiments over playing it safe.
- Track progress rigorously and feed back results to all.
- Expose and celebrate mistakes as sources of progress.

#### 7. Emphasise Possibilities: Believe Before You See

- Expose what is working well.
- Focus on what can be accomplished now with the imagination and materials at hand.
- Take the next steps that lead to creativity and renewal.

#### 8. Invite Creative Destruction To Enable Innovation

- Convene conversations about what is keeping people from working on the essence of their work.
- Remove the barriers even when it feels like heresy.
- Make it easy for people to deal with their fears.

#### 9. Engage In Seriously-Playful Curiosity

- Stir things up - with levity, paradoxical questions, and Improv - to spark a deep exploration of current practices and latent innovations.
- Make working together both demanding and inviting.

#### 10. Never Start Without Clear Purpose

- Dig deep for what is important and meaningful.
- Use Nine Whys routinely.
- Take time to include everyone in crafting an unambiguous statement of the deepest need for your work.

Additionally, they defined each microstructure with five Design Elements:

**Here for example how the Wise Crowds microstructure would be defined:**

- A structuring invitation

**"In turns, each participant is a client and the others are consultants"**

- Location, space arrangement and materials required

**"A small groups can gather in a circle, and bring a support for note taking"**

- Participation distribution

**"Everyone is included, and gets an opportunity to ask or offer help"**

- Group configuration

**"Mixed groups across functions, levels, and disciplines"**

- Agenda and time allocation

**"The participant as client presents the challenge and asks for help"**

**"The other participants as consultants ask clarifying questions"**

**"The consultants work as a team to offer advice and recommendations"**

**"The client provides feedback to the consultants"**

The different Liberating Structures can be obtained with the variation of these five structural elements. Each new definition or combination of these Design Elements, developed according to Liberating Principles, can therefore also generate new Liberating Structures.

# Collaboration experiment

For each critical moment, and therefore for each associated ritual, I selected a couple of microstructures that can support knowledge exchange and optimise the proposed rituals:

## FOR KNOWLEDGE OPEN CALLS

- User Experience fishbowl
- Min Specs

## FOR THE MONDAY MEETING

- “What I Need From You”
- Troika Consulting

## FOR THE DESIGNKREIS

- 1-2-4-All
- Wise Crowds

## FOR PROJECT CLOSING EVENTS

- What, So What, Now What

I thus invited the team at Notation to follow these steps:

- Consider the projects you’re working on at the moment: in which phase are they? What critical moments and rituals are the most relevant for you in that context?
- Can you identify one or more microstructures that could benefit the knowledge exchange on those projects? If so, make a selection, adapt them to your needs and try to use them.
- Finally, reflect: how did that go? Was it useful or beneficial? How did that affect your work? Record your feedback and share it.

I encouraged the team to be creative with the microstructures so that they could feel free to adapt them to their specific needs, both in terms of design elements of the microstructures themselves and their application.

Given the experimental nature of the proposal I also defined a precise timespan of one month for the team to test the integration of these microstructures into their current activities. At the end of the defined period I asked for their feedback and evaluated the results of the activity with the ultimate goal of building on top of these findings and opening up opportunities for discussions inside the organisation.

## USER EXPERIENCE FISHBOWL

Share know-how gained from experience with a larger community

### Structuring invitation

A small circle of people is invited to share their experience, as the other participants listen, observe and ask questions.

### Location, space arrangement and materials required

The group gathers in the same space, making sure that all participants can properly see and hear each other.

### Participation distribution

Every inner circle member gets to share their experience.

Every outer circle member gets to ask questions.

### Group configuration

Small inner and outer circles (3 to 7 people) make the conversation and the exchange easier to manage. If there are more participants it's possible to split the group in smaller satellite circles and organise debrief rounds at the end of the session.

### Agenda and time allocation

- Introduce the microstructure and its configuration.
- Facilitate the natural development of the inner circle's conversation.
- Allow the outer circle (or multiple circles) to make observations and raise questions.
- The interaction between the inner and outer circle goes on back and forth till they exhaust the topics.
- Debrief and ask "What seems possible now?".

### Potential for Knowledge Open Calls

The stories from the field and the past experiences of team members can help in setting a strong foundation at the beginning of new projects or as new challenges emerge. The use of this microstructure and its variations can help the team in surfacing latent knowledge and in identifying knowledge repositories early on in the design process.



## MIN SPECS

Specify only the absolute "must dos" and "must not dos" for achieving a purpose

### Structuring invitation

A group of innovators and creatives is invited to gather in order to discover the rules that bound their current project progress.

### Location, space arrangement and materials required

Ensure that all relevant people for the project are present and that inputs can be recorded for later use.

### Participation distribution

Allow all participants to contribute and participate freely.

### Group configuration

Inputs are gathered first from individuals, then from small groups and finally from the whole team.

### Agenda and time allocation

- The different group configurations brainstorm and collect all the do's and don'ts that need to be taken into consideration to achieve the project goal.
- All these inputs are gathered and form the list of maximum specifications (Max Specs).
- The group goes through the list of Max Specs, considers each item one by one and decides whether it represents a useful constraint for the ultimate purpose of the team's endeavour: "If we broke or ignored this rule, could we still achieve our purpose?".
- The items that remain are the Min Specs (aim for a short list of 2 to 5 rules).

### Potential for Knowledge Open Calls

Min Specs can help in setting a strong foundation at the beginning of a new project. By aligning on a small set of shared rules the team can in fact reach early process alignment and have a clear picture of the constraints that can guide the first explorative and divergent project phase.



## “WHAT I NEED FROM YOU”

Surface essential needs across functions and accept or reject requests for support

### Structuring invitation

Invite people with different organisational functions and working in different disciplines to coordinate efforts across silos.

### Location, space arrangement and materials required

Cluster the large group of participants according to their function.

### Participation distribution

Every participant can contribute within their cluster.

### Group configuration

Ensure that each cluster has a spokesperson for equal representation.

### Agenda and time allocation

- Each cluster gathers and compiles a list of clear and specific needs to address with the other functional clusters.
- Each cluster narrows down the list to the two top needs to be addressed and selects a spokesperson to represent them.
- All spokespersons gather and share their needs.
- Each spokesperson (potentially with the assistance of some members of their cluster) decides the responses to each request: positive (yes), negative (no), tentative (I will try), or undefined if the request was too vague or unclear to provide a simple answer.
- All spokespersons go through another round of sharing requests and responses, without further elaboration.
- A final debrief round allows participants to consider unclear or unresolved issues and define next steps.

### Potential for the Monday Meeting

The Monday Meeting is the perfect occasion for the dispersed team to come together (physically or virtually) and align on the different needs on the current projects, of the different functions (UX, ID, Brand and Management), and of the processes taking place on the organisational level. This microstructure can assist the team in periodically aligning operational strategies in order to improve collaboration.



## TROIKA CONSULTING

Get practical and imaginative help from colleagues immediately

### Structuring invitation

Peers are invited to exchange on their challenges and to extend coaching support beyond formal reporting relationships.

### Location, space arrangement and materials required

One or many small groups made up of three people.

### Participation distribution

Establish temporary client-consultant relationships inside the group and shift roles at each round.

### Group configuration

Gather groups of 3 people aiming for a good diversity in background and perspectives.

### Agenda and time allocation

- One participant (the client) raises a consulting question.
- The other participants (consultants) ask questions and generate ideas, suggestions, and advice for the client.
- Roles shift and the group takes another round with a new client and their challenge, until all participants get advice for their current challenge.

### Potential for the Monday Meeting

Consulting with peers in quick and small rounds has the potential to tap into the knowledge of other team members to get processes unstuck. Though the current Monday Meeting participation and structure are not set up to support this microstructure, an extension could be provided at need for this specific purpose. The Fresh Eyes session serves this purpose already for the UX team members but it could in fact be beneficial to extend this practice also to a ritual that involves the larger working group, especially for topics that involve decisions on project processes, strategies and communication, to further exchange approaches and learnings across silos.



## 1-2-4-ALL

Engage everyone simultaneously in generating questions, ideas, and suggestions

### Structuring invitation

Invite team members to participate in generative conversations in response to a challenge or a new proposal.

### Location, space arrangement and materials required

Unlimited number of participants and sub-groups.

Support for recording inputs and insights.

### Participation distribution

A facilitator moderates the discussion at need to ensure everyone gets the chance to contribute.

### Group configuration

The activity starts with individual work, then in pairs, in foursomes, and finally extends to the whole group.

### Agenda and time allocation

- Participants self-reflect on the challenge or question proposed.
- In pairs they generate ideas, building on top of the self-reflection outcomes.
- Foursomes then compare and contrast the ideas generated in pairs and develop them further.
- In the larger group, foursomes report the main ideas that stood out in their conversations.

### Potential for the Designkreis

Smaller groups act as a safe space for creativity and problem solving, where team members can freely express new ideas with reduced influence of power dynamics. Design critique sessions in particular can benefit from this microstructure as it helps in gathering inputs from many team members but it also allows them to discuss their ideas and feedback, therefore developing them to a higher level of maturity and depth.



## WISE CROWDS

Tap the wisdom of the whole group in rapid cycles

### Structuring invitation

Invite participants to gather and share their expertise and problem-solving skills.

### Location, space arrangement and materials required

One or many small groups of four or five people, provided with note taking support.

### Participation distribution

Everyone gets the time and opportunity both to ask for and offer help and advice.

### Group configuration

Gather people with different areas of expertise, backgrounds and discipline, regardless of their hierarchy in the organisation.

### Agenda and time allocation

- One participant assumes the role of the client and asks for help with their current challenge.
- The other participants, as consultants, ask clarifying questions and as a team offer recommendation and advice.
- The client takes notes and provides feedback to the other participants in the end.

### Potential for the Designkreis

This microstructure inherits a similar definition to that of the Troika Consulting (which I suggested for process coaching, as a potential extension of the Monday Meeting format) but it considers a bigger group of participants. In a design critique session in particular the knowledge of a cross-disciplinary and extended group could outperform that of the single member and ultimately improve the project results.



## WHAT, SO WHAT, NOW WHAT

Together, look back on progress to date and decide what adjustments are needed

### Structuring invitation

Invite team members to reflect on a shared experience with the goal of building alignment, understanding, strategic coordination, and learning.

### Location, space arrangement and materials required

An unlimited number of participants gathers in the same space. Dividing big groups in smaller rounds facilitates moderation. Participants require a support for taking notes and potentially a talking object to regulate turn taking.

### Participation distribution

Everyone gets to participate in the discussion. A facilitator may be required to moderate the discussion and to keep the team focused on one question at a time.

### Group configuration

The group can be structured according to an established team configuration or mixed to favour cross-pollination.

### Agenda and time allocation

- Each member works alone to identify the WHAT of the experience: “What happened? What did you notice, what facts or observations stood out?”.
- Members gather in small groups and collect the most relevant facts and inputs.
- The output from the small groups is shared with the whole team.
- Each member, then small group, and finally the whole team works on the SO WHAT of the experience: “Why is that important? What patterns or conclusions are emerging? What hypotheses can I/we make?”.
- Each member, then small group, and finally the whole team works on the NOW WHAT of the experience: “What actions make sense?”.

### Potential for Project Closing Events

Working on an innovative and creative design process opens up many opportunities that a wise team can exploit and build upon. This micro-structure can, particularly at the moment of closure of a project or a collective endeavour, create alignment and understanding on the organisational level, ensuring that both positive as well as negative experiences translate to learnings and that the team has the trust and motivation to explore such opportunities and take action.



# Learnings

## WHAT

### ON THE TEAM ENGAGEMENT

- The whole team was invited to participate in the experimental activity: this means twenty people.
- Eleven team members got informed about the topic and the research activity.
- Only four team members reached out to provide feedback.
- And, to my knowledge, no one tried to integrate any microstructures in their daily operations.

To understand this low engagement with the activity and the topic proposed it is first necessary to look at the context and consider again the pain points detected during the explorative research.

“It is very difficult for me to implement new collaboration concepts in daily work, if there is not a dedicated time investment bucket to do that.”

“The easier the task, and the less time people have to invest, the bigger is the chance they take part.”



My interpretation is that those pain points - the time pressure, the lack of alignment, the cumbersome collaboration practices currently in place, and the team's change resistance in particular - affected the standpoint from which they approached this activity and the ideas proposed, as well as the priority assigned to the task and their willingness to participate.

In an informal exchange on this topic, one colleague suggested that when new methods and processes are concerned, the team could benefit from more extended and formal training sessions. This input points directly back to the pain point of autonomy, with the team lacking the resources (potentially both in terms of time and skills) to approach a methodological challenge and learn independently. This leads me to conclude that the format I chose for the activity was not fit for the team at their current cultural stage and that the success of the experimental activity proposed is too dependent on the individual dispositions of team members and on current practices: a longer activity, with more guidance and checkpoints during the selected timeframe could have lead to better results in terms of engagement.

It is interesting to highlight then, that the people who provided feedback (ignoring the personal inclinations that might have influenced their decision to reach out or to participate) are all directly involved in shaping processes of the organisation at large, or have strategic project management responsibilities that can affect the performance of larger teams.

This leads me to conclude that they felt directly concerned with the theme of the activity, while the rest of the team didn't. As if processes - and the work that takes to improve them - are out of the direct area of interest or influence of the majority of the team.

I find this last observation in particular, revealing of the current internal power dynamics, responsibilities distribution and leadership. The organisation ultimately has a strong hierarchy and, though some responsibilities are distributed and project work may be self-managed, there are only few influential people that feel both empowered and responsible to make changes on the organisational level.

The emergent behaviour of the team is then very task-focused, performance-oriented and self-interested, creating an environment in which collaborative learning is obviously a struggle, a demanding tool to rarely use rather than a daily resource for growth. I in fact explicitly asked for their collaboration, as peers, but as the activity was not mandatory, nor enforced by some kind of budgeted task or authority, it was not done. This type of behaviour is obviously only the symptom of a deeper cultural problem in the organisation that if overlooked could ultimately lead to the establishment of unsustainable values that will undermine the pillars of this work community.

## ON THE PROCESS MODEL

The feedback received on the process model proposed was positive. As it takes into consideration both the field best practices and the current way of working of the team, it could seamlessly be integrated into the current activities and established as a reference and starting point both for operational activities as well as the supporting structure for budgeting and time management.

“The general process is similar to the way I always approach projects.”

“It fits our way of working and how we'd approach a project with a certain size”

“The process aligns pretty much with the process which we tend to use. Obviously there are some special cases.”

“This kind of structure needs to remain flexible. It is very top line so I like to add layers such as key milestones and key deliverables in order to be able to make all the decisions required”

It could boost alignment across projects and teams. But it could also be used as a communication tool in client-facing meetings and exchanges to create alignment on processes and expectations with people and experts outside of the design field and its practices.

## On the potential for operational use

“The process helps me to structure a project. At the beginning it helps to put a price tag on it and it is very understandable for the client. It could also be useful to use the “Salami strategy” and only put a price tag on the first phases because the project is still very unclear. The following phases can then be defined once that original picture gets clearer.”

“It also helps to keep the budget in check and mark key gates during the project - for example: We have now delivered the results of the research and concept exploration therefore that bucket of budget is now blocked and we move on to use the next bucket. If the client would like us to do some additional exploration then that would be on top. In cases where you know that these requests will come you could also put a price tag on such a loop.”

“It can also help to make it clear to the customer what needs to be done now and what needs to be done later - If for example they ask for concept sketches in the research phase - the structure can be shown to make clear that it would be a waste of time in this stage.”

## ON THE IDEA OF RITUALS

The team members that provided feedback are very into the idea of communication and recurring meetings as being fundamental tools for knowledge exchange and organisational learning. This point of view has to coexist with the overall team's needs of optimising time usage and of aligning with the current project processes. Optional attendance and participation have been mentioned as requirements, also because the team members see barriers between disciplines that determine a different perception of value in having certain rituals established.

“I think having rituals which gives us space to exchange with other team members are super important and often deliver surprising insights. If somebody made a mistake, sharing this in the team is super valuable and could prevent that mistake from happening twice within the team.”

“My experience has always shown me that communication is key but we need to keep things simple and not be overwhelmed with meetings.”

“Getting feedback from other teams which might not have such a deep knowledge in the subject can also be super helpful as they could mirror how the client could react to the idea.”

“The closing event is one which is super hard to implement because when is a project really closed? [...] But also reflecting on the project, identifying what went well, what not so well and what can we do better next time is something which I am really missing at the moment.”

“Agile working processes with repetitive and plannable structures need to be manifested first before going into detailed rituals.”

What I also gather from these feedbacks is that the team understands rituals in terms of mere recurring meetings, which require time and effort for preparation and whose benefit is mainly still task-driven. Here I see a big potential in deepening this level of understanding and in increasing the perceived value of rituals for the work community.

## ON MICROSTRUCTURES

The feedback I received on the idea of using microstructures to improve our exchanges and potentially our rituals is mostly positive with comments pointing at some interesting criticalities. The personalities of team members could for example influence the successful implementation of some of the microstructures proposed, and they may not find the right format to match the needs they have in their current daily activities.

“A lot of the questions you used to explain them should also be questions we should be regularly asking in our team meetings.”

“I think I get it. I did not try them because I couldn't remember them once I was in a situation. However I believe having the right tool, exercise, microstructure can be key in solving a tricky situation / problem during a project, workshop or meeting. How can we make them more accessible?”

“The term itself is new to me. It's not really approachable to me and these formats feel in certain cases a bit far from my reality.”

“Once they are established I would see a huge benefit [...] as you don't need to think about an agenda that intensively or prepare a lot in the beginning. This could free up brain capacity on busy days.”

Overall, I conclude that the idea of bringing minimal structure to our interactions in order to improve our collaboration is sticky enough to potentially spread and survive this experimental activity itself. On the other hand the terminology and the format of the microstructures needs to be broken down and simplified to become more accessible for all team members in order for them to accept them in the toolkit and to perceive them as actionable and concrete solutions rather than theoretical and abstract constructs.

## ON COLLABORATIVE LEARNING AT NOTATION

Before thinking about next steps and further developments, especially given the unsatisfactory engagement of the team, I wanted to understand, even in this small feedback round, how the overall topic is regarded within the organisation, if there is an alignment on the perception of its value and potentiality for the team.

“I believe as designers we constantly have to be aware of the newest tools, strategies and approaches to be able to call ourselves a creative consultancy.”

“I am totally willing to invest in this, however I am never really sure what the team needs. It seems that they are shy to admit that they are lacking in some skills.”

“How do we identify the needs? Should this be a regular question in our Monday Meetings?”

“It would be cool to have a place to collect such needs and then I would be happy to set up the necessary structure for learning.”

“I think there should be some sort of mentor or working group (internal or external) that drives this topic. It feels some mental space is required here to create something valuable for everyone.”

I welcome this feedback and the good intentions it indicates, particularly as the people who provided these inputs are directly involved in shaping processes within the organisation. I therefore approach the definition of further development and suggestion for Notation and for the research on this topic at large with an optimistic outlook.

The biggest learning for me personally from the overall research activity is in fact that it is always healthy and beneficial for professionals in all creative and innovation-driven fields to take a step back and gain perspective. It is easy to get lost into the daily tasks, meetings and activities, and lose the bigger picture on what doing design really means and how to do that at the best of our possibilities. To design with and for others cannot ultimately be reduced to a sequence of tasks and files in folders: it is an intrinsically human activity that lives and thrives off of collaboration and continuous learning. Finding a good way to learn and to collaborate, and finally to match the two, is therefore also design, just as much as finding useful, usable, and desirable solutions is.

## SO WHAT

In order to see the emergence of stable, effective and efficient Collaborative Learning in a creative team there are two fundamental prerequisites: the organisation in which the team is situated should be a Learning Organisation, as much as it should also be a Collaborative Organisation.

To achieve this result it is fundamental to invest in both directions:

- Focus on knowledge management practices to grow in Learning
- Work on culture, rituals and processes to grow in Collaboration

Within this context, the organisational structure and environment represent the common thread that determines both the strategy on these topics, and the success of team members' efforts. Power dynamics and hierarchy here are particularly influential, especially in those contexts where vertical and horizontal governance models coexist and evolve together. In such creative organisations the clash and blending of different viewpoints can generate tensions: the potential energy inherent in these tensions then, if channelled well, can fuel change, lead to experimentation, iterations and ultimately challenge the status quo and lead to organisational growth.

Moreover, the choice between vertical and horizontal organisational structures is less binary in hybrid working environments. The access to new technological solutions, organisational spaces and interfaces, can in fact make the organisational structure more flexible. This generates new opportunities for teams to explore and test different configurations, processes, tools and rituals. The evaluation of the individual and the organisational benefit of the resulting local solutions, as well as the behaviours that are rewarded within the organisation will finally determine

- The fitness of the current organisational configuration,
- The learnings that can be extracted from it, exchanged and retained, and finally
- The collaboration that will determine if and how the team can form a new strategy to develop the organisational solution (in terms of structures, culture, processes,...) that can best serve the new phase.

## 9.

# Further developments

## NOW WHAT

### FOR NOTATION CREATIVE CONSULTING AG

Given the current challenges and pain points that are affecting knowledge management and organisational learning processes at Notation, as well as the outcome of the experimental activity, I believe that the most urgent action point would be to establish an ongoing discussion on the theme of collaborative learning within the organisation. Working more on this topic is in fact a huge opportunity for the whole team to zoom out from the daily task-based work and gain a new point of view on their design activities, which would lead to a new level of awareness and understanding within the work community.

In order to do so, the spotlight should actively be kept on the topic long enough for it to impact the organisational culture and affect its rituals. What I currently observe is that the organisational culture is in fact not mature enough to support the knowledge management processes that would lead to truly top quality and innovative design solutions. Investing time and resources in this type of high-level and methodological approach could have a long-term positive impact on the organisation as well as on the team's performance and satisfaction. This work could then benefit all the organisational layers and ultimately lead to improved collaboration also on the practical and operational challenges that the team is facing.

The learnings on the methodology I used to introduce theoretical concepts and new methods to the team, can then in particular assist team leaders and key roles within the organisation in defining a better strategy to involve the team on such topics. My conclusion is in fact that, unless the whole organisation is aligned on the strategic value of collaborative learning, it will be very hard if not impossible to make any progress. What I suggest is to set things in motion by exploiting the formal organisation structure and its channels, until the team is engaged and aligned. At that point the informal organisation (and potentially the community that will grow in the meantime) will be strong enough to look at competencies beyond titles, roles and reporting, and to value the topic as part of daily activities and naturally push the discussion forward exploiting more horizontal dynamics and structures.

Finally, I think that the use of microstructures could still come to the aid of the team. Different formats like

- Relational Coordination Mapping
- Social Network Webbing
- Panarchy
- Integrated - Autonomy
- Ecocycle planning

could in fact also be considered, adapted and introduced to assist the work required for the alignment on the cultural and organisational level. Given the difficulty the team had to digest them in the current format though, a new process should be studied to facilitate the microstructures' introduction and acceptance. For this, as well as for the next steps I hope we - as a team - will take to drive this topic forward, I hope the insights of my research will be a strong support and valuable resource.

## FOR RESEARCH ON COLLABORATIVE LEARNING

With my research on collaborative learning I used theoretical tools and concepts to outline an ideal problem area that I could use as a lens to understand my context of reference. This approach has naturally influenced my process and has led me to make choices among concepts and sources to consider as a reference for my research activities. This selection is therefore biased by the context of my research, my experiences and my background: it would therefore be interesting to see a different outline of the same theoretical problem carried out from different perspectives and sustained by a different selection of theoretical concepts and tools.

This body of research work should therefore be considered one iteration, my contribution, a single loop in a bigger research process that covers many disciplines, and where interaction and experience design professionals can act as facilitators and as binding force within multidisciplinary research teams.

As the theme of collaborative learning in hybrid working contexts is very varied, broad, and still widely unexplored, it requires further attention and work: here I feel I could only scratch the surface and point at the most relevant challenges. My approach, proposal and underlying strategy, would in fact need to be validated within different creative teams, in contexts of analysis with different organisational structures, configuration of layers, and sizes. The study of other scenarios could test the limits and potentiality of this approach to the challenge of building collaborative and learning organisations, in the real context, while it is still evolving, and bring the right tools to the attention of innovation-driven organisations early on.

More in general, systematically studying the flow of ideas in the new hybrid working context could surface early adopters of new and promising leadership, participation and collaboration models that support and foster learning. Collecting these insights from the field and testing new solutions could ultimately allow designers and professionals in the Design Operations field to develop an algorithmic strategy to assess the maturity of collaborative learning in creative organisations, push the topic forward, learn, iterate and learn some more.



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**GRAZIE, ARIANNA**

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