

# Culture of Shared Intelligence: Perspectives on a Co-evolutionary Future of Humans, Machines and Society

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## ABSTRACT

Digital platforms are not neutral tools. They bundle data, control access and shape markets. This raises the question of how to create a culture of shared intelligence that strengthens collective learning, maintains social cohesion and opens up innovation processes. The work is based on a theory-led literature analysis that combines systems theory, institutional economics, platform research and commons approaches. Feedback loops, institutional rules and cultural models are analysed as conditions under which collective knowledge can unfold. Shared intelligence is not created through networking alone, but through institutional safeguards and cultural orientation. Technical architectures are effective when they ensure openness and interoperability. Cultural guiding principles determine whether knowledge is shared or remains tied to exclusive utilisation logics. The analysis illustrates the ambivalence in selected case studies: they can promote learning processes, cooperation and participation, but without governance they reinforce power asymmetries and social fragmentation. The study thus makes a theoretical contribution to the design of digital infrastructures. It shows that shared intelligence is a project of governance, not of technology. What will be politically decisive is whether regulation and institutional

innovation ensure open standards, fair access and resilient structures. This is the only way to create a platform culture that does not separate man and machine, but rather transforms them into a co-operative learning relationship.

**Keywords:** platform economy, collective intelligence, governance, resilience, institutional economy, commons, learning analytics, digital infrastructures, cultural models

## INTRODUCTION

### Problem definition

Digital platforms determine access to data, markets and knowledge. They are not neutral infrastructures, but apparatuses of power that set conditions for participation, control information flows and frame economic processes. Srnicek (2017) describes this as platform capitalism and refers to efficiency gains with a simultaneous concentration of power (Moch, 2024). Castells (1996) shows that networks are the dominant form of organisation in the information age and are profoundly changing production and communication relationships.

Collective knowledge does not arise automatically in such structures. It requires organisation, coordination and clear mechanisms. Malone et al. (2010) make it clear that collective intelligence always remains an organisational problem that

makes contributions visible and combines them. Bateson (1972) emphasises learning as pattern recognition in contexts, Holland (1992) describes complex adaptive systems with emergent properties from many simple interactions.

Shared intelligence is thus a design project. Granovetter (1985) argues that economic behaviour becomes unstable without social embedding. Ostrom (1990) demonstrates that common goods can only be coordinated sustainably with rules, monitoring and participation, which applies analogously to digital knowledge spaces. The debates surrounding learning analytics show the ambivalence. Ferguson (2012) emphasises the potential of data-based transparency for learning processes. Slade and Prinsloo (2013) warn against control without consent and traceability, which undermines trust. Nissenbaum (2009) reminds us that digital architectures always shape normative orders and thus affect the integrity of social relationships.

The problem area is obvious. Shared intelligence can strengthen cooperation and innovation, but at the same time deepen exclusion and monopolise knowledge. The direction it takes is determined by institutional, technological and cultural frameworks. What is new about this study is the integration of institutional economics, platform theory and the commons debate into a framework model of shared intelligence. The result is an independent contribution that goes beyond a mere synthesis of the literature. Hildebrandt (2016) shows that smart technologies can transform the law itself by inscribing normative settings in code and undermining traditional mechanisms of legal governance. It follows that governance must be understood not only in institutional and cultural terms, but also in technical and legal terms. Floridi (2014) also emphasises that the digital infosphere is reshaping people's self-image. He speaks of a *fourth revolution* in which information and communication technologies are not just tools, but are changing the conditions of human reality itself. This makes it clear that

shared intelligence also represents a cultural and philosophical challenge.

### **Research question, hypotheses and objectives**

This leads to the central research question of this thesis. How can a culture of shared intelligence be created that strengthens collective learning, ensures social cohesion and opens up innovation?

Two hypotheses guide the analysis. Firstly, shared intelligence will remain fragile as long as it is not institutionally embedded. Trust grows through verifiable rules and transparent procedures. Open architectures favour sustainable innovation. Industry 4.0 concepts, on the other hand, refer to adaptive networks and resilient structures (Kagermann & Wahlster, 2022; Moch, 2024). This makes it clear that shared intelligence does not arise from technical efficiency, but from conscious design.

This paper aims to determine the conditions under which a culture of shared intelligence can emerge and remain stable. The starting point is the observation that platform economies bundle knowledge, but at the same time restrict access and distribute power unequally. The work is based on two steps. Firstly, a theoretical framework is developed that combines systems theory, institutional economics and platform research. The analysis uses three case studies, which are analysed in more detail in chapter 5. These cases illustrate that technological potentials are only effective if they are secured by rules, standards and participation.

**Global perspective:** The analysis is characterised by a Western perspective. It is crucial for future research to include experiences from the Global South, such as informal institutions, local innovation cultures and regional standards (Miceli & Posada, 2022). Such perspectives highlight how platform logics and data practices unfold in non-Western contexts. Only a global perspective can prevent Eurocentric distortions and open up viable approaches for

global governance. The overarching goal is to understand shared intelligence as a design project. It is the result of institutions, architectures and cultural negotiation processes. The work thus combines critical analysis with a normative outlook on political and social options for action.

### **Theoretical framework**

#### **Systems theory and complexity**

Systems theory shows that social and technical developments are not linear. They arise through feedback, self-organisation and emergent patterns. Bateson (1972) describes learning as an ecology of the mind. Meanings do not emerge in isolation, but in patterns of relationships. Holland (1992) understands complex adaptive systems as networks of simple units. Their interactions generate collective characteristics that cannot be derived from individual behaviour.

For shared intelligence, this means that innovation only arises if institutional and technical frameworks allow feedback processes. Hopfield (1982) shows that neural networks can develop collective memory capacities if they are linked accordingly. Hassabis et al. (2017) illustrate that advances in AI often stem from analysing neurobiological systems. Humans and machines do not develop in the mode of transmission, but co-evolutionary. Complexity theory also emphasises the need for robust, adaptive structures. Scharte (2024) argues that resilience is not aimed at stability, but at the ability to absorb disruptions and find new equilibria. This means for the platform economy: Sustainable intelligence networks must not remain stuck in efficiency logic. They must integrate diversity, absorb crises and adapt to changing conditions.

#### **Institutional economics and embedding**

Institutions form the framework for economic activity, technological development and social interaction. North (1990) sees them as rules, norms and enforcement mechanisms that reduce uncertainty and create certainty of

expectations. If such structures are lacking, collective action becomes fragile and susceptible to opportunism.

Granovetter (1985) proves that markets do not function in isolation. Economic action only gains stability through social embedding in networks of trust and reciprocity. Without this anchoring, there is a risk of reduction to abstract efficiency metrics that undermine social cohesion. Ostrom (1990) uses the example of the commons to show that shared resources only remain sustainable if there are clear rules, monitoring and mechanisms for conflict resolution. Applied to digital platforms, this means that governance must not be reduced to technical standards. It must include institutional arrangements that ensure participation, stabilise trust and limit power asymmetries.

This makes it clear that a culture of shared intelligence does not grow technically, but is shaped institutionally. It is the result of rules and social negotiation, not an effect of pure networking.

#### **Platform economy and digital markets**

Today, platforms are central infrastructures. They coordinate interactions between user groups, control access and bundle data flows. The dynamics of two-sided markets follow a self-reinforcing logic. As Rochet and Tirole (2003) explain, platforms gain value through network effects: the larger the user base on one side, the stronger the pull for participants on the other. This mechanism increases concentration and structurally limits competition. Srnicek (2017) describes platform capitalism as a model based on the extraction and utilisation of data. Platforms not only act as intermediaries, but also enforce their infrastructure as a condition for market participation. This gives them control over value creation and information flows. Kenney and Zysman (2016) speak of a new industrial order in which platforms act as gatekeepers and displace traditional industrial structures.

This dynamic is ambivalent. On the one hand, platforms open up access to

knowledge, cooperation and innovation. On the other hand, they reinforce power asymmetries and create dependencies. Casas-Cortés et al. (2023) show that platform capitalism not only changes economic processes, but also cultural patterns of work, exchange and recognition.

This poses a double challenge for shared intelligence. Platforms can be hubs of collective knowledge, but without verifiable rules and open standards, they risk being reduced to proprietary logics. A culture of shared intelligence requires platform architectures that not only increase efficiency, but also ensure resilience and participation.

### **State of the Art: Collaborative and Shared Intelligence**

Collaborative and shared intelligence have become emerging fields in recent years. Mulgan (2024) develops the idea of Generative Shared Intelligence to strengthen government capacities in uncertain environments. His perspective emphasises governance and citizen involvement but remains largely focused on administrative contexts. Crowley et al. (2023) propose a Hierarchical Framework for Collaborative Artificial Intelligence, which addresses processes of cooperation between agents and technical architectures. While highly relevant, their framework concentrates on computational design principles rather than institutional and cultural preconditions. Schleiger et al. (2024) provide a broad scoping review of collaborative intelligence applications, highlighting the growing field but without developing a normative or systemic model. Finally, Friston et al. (2022) conceptualise ecosystems of intelligence based on first principles, which underline the systemic nature of collective intelligence but remain abstract and detached from empirical governance challenges.

This paper contributes to this debate by integrating institutional, technological and cultural dimensions into a coherent framework of shared intelligence. Unlike existing approaches, it does not restrict itself

to administrative or technical domains but emphasises the interplay of rules, architectures and values. In this sense, it complements the existing literature by providing a normative and political-economic model that links theoretical perspectives with empirical illustrations.

### **Collective intelligence and commons**

Collective intelligence does not arise from the sum of individual contributions, but from structures that pool and coordinate knowledge. Malone et al. (2010) show that groups are only capable of learning if they develop mechanisms that visualise and combine contributions. Bateson (1972) understands learning as pattern recognition in relationships and contexts. Holland (1992) describes complex adaptive systems in which innovation is generated through variation and selection.

Commons research makes it clear that collective resources disintegrate without rules. Ostrom (1990) demonstrates that sustainable utilisation only succeeds if access, monitoring and conflict resolution are institutionally secured. For digital knowledge spaces, this means that without governance, there is a risk of monopolisation and knowledge slipping into exclusive exploitation logics. Educational technologies make this ambivalence visible. Ferguson (2012) emphasises the potential of learning analytics to make learning processes transparent. Slade and Prinsloo (2013) warn that control without consent destroys trust. Nissenbaum (2009) reminds us that every digital architecture shapes normative orders and changes social relationships.

Collective intelligence thus remains a design project. Without rules, guiding principles and social practices, it remains in asymmetrical structures. „Only safeguards make it work. With them, it can turn into a common good: a driver of cooperation, a spark for innovation, a bond for social cohesion.

### **Research design**

The study follows a qualitative research design. It is not based on the collection of

new primary data, but on a theory-led literature analysis. The aim is to bring together central concepts from different research directions and to transfer them into a consistent framework model. The procedure corresponds to the approach of narrative reviews. Tranfield et al. (2003) describe the systematic review as an instrument for bundling and integrating knowledge. In this work, this logic is taken up, but not in the form of a strictly formal protocol with search strings and database analyses. Instead, the focus is on a theory-led selection, which makes it possible to contrast systems theory, institutional economics, platform research and commons approaches. The strength of this design lies not in quantitative completeness, but in analytical integration. It allows tensions between theoretical strands to be visualised and normative implications to be worked out. The research design is thus geared towards conceptual clarity and connectivity, not empirical generalisability. A narrative review was deliberately selected because the focus of this study lies on conceptual integration rather than exhaustive coverage. This approach makes it possible to connect foundational theories with recent research, to contrast disciplinary perspectives, and to derive a coherent framework model of shared intelligence.

### **Selection of literature**

The selection of literature follows an integrative logic that interweaves different strands. Works from the 1970s to the most recent research from 2025 were considered. Older foundations such as Bateson (1972), Holland (1992) or Ostrom (1990) provide basic concepts on learning, complexity and common goods. More recent contributions such as Srnicek (2017), Casas-Cortés et al. (2023), Manmohan and Prasad (2025) and Moch (2024) address current dynamics of digital platforms, AI technologies and institutional framing.

The selection covers several subject areas. Systems theory and complexity research explain feedback, self-organisation and

emergent patterns. Institutional economics and embedding theory emphasise rules, norms and trust as the basis for stable action. Platform research analyses the economic logic of digital markets and the power structures of data-based business models. Finally, work on collective intelligence, learning analytics and AI technologies sheds light on how shared knowledge processes are practically organised and technologically mediated.

Key terms such as collective intelligence, complex adaptive systems, institutional economics, embeddedness, platform economy, digital commons, learning analytics and artificial intelligence were used for the selection. The decisive factor was that the sources either provide theoretical foundations, clarify key terms or contribute empirical insights. The logic of the selection is deliberately interdisciplinary in order to combine economic, sociological, technical and philosophical dimensions. In this way, a literature foundation is created that secures the analysis of shared intelligence in its entire breadth and at the same time makes the systemic risks visible.

### **Procedure of the analysis**

The literature analysis follows a multi-stage process. Firstly, key concepts are identified, including embedding, governance, platform architecture, collective intelligence and resilience. In a second step, the concepts are contrasted across disciplinary boundaries in order to reveal similarities and contradictions. In a third step, the findings are synthesised, interpreted in relation to the research question and transferred into a framework model of shared intelligence. This approach corresponds to the procedure proposed by Tranfield and colleagues, which strives for theoretical generalisation through conceptual integration.

### **Limitations and validity**

The work relies on published sources and thus remains dependent on the selection and perspectives of the authors. There is no empirical collection of own primary data.

Validity is achieved through the deliberate triangulation of different theoretical strands, the methodological rigour of systematic reviews and the transparency of the selection criteria. Slade and Prinsloo emphasise that reflexivity is particularly important in data-driven fields in order to avoid blind spots. Ostrom also emphasises that robust institutions are not characterised by perfection, but by adaptability. Applied to the methodology of this work, this means that validity lies less in absoluteness than in the coherence and connectivity of the argumentation.

### **Literature analysis and findings**

#### **Institutional conditions of shared intelligence**

The analysis shows that shared intelligence is not created by technological innovation alone, but is dependent on institutional embedding. Granovetter points out that economic activity only becomes stable and productive if it remains embedded in social networks and norms. Without this embedding, interactions tend to ossify into abstract efficiency metrics and thus undermine social cohesion.

North describes institutions as rules, norms and enforcement mechanisms that reduce uncertainty and enable certainty of expectations. Ostrom uses the example of shared resources to illustrate that collective action is only sustainable if verifiable rules, conflict resolution mechanisms and monitoring are established. Applied to digital platforms, this means that without institutional arrangements, knowledge and data are quickly bundled into monopolistic structures, while participation and trust dwindle. In their study of educational equity, Gilead and BenDavid-Hadar (2025) show that systems based on complex-adaptive structures are better able to ensure social cohesion than rigid, centralised models. Similarly, work on the platform economy makes it clear that rules for access and distribution have not only economic but also social consequences.

This makes it clear that institutional embedding is a necessary condition for the development of shared intelligence. It stabilises trust, prevents the consolidation of asymmetrical structures and creates spaces in which collective learning and innovation can emerge in the first place.

#### **Technological architectures and platform logics**

The technological architecture of platforms determines how knowledge is bundled, distributed and made accessible. Rochet and Tirole show that two-sided markets are structured by network effects that control interactions and create dependencies. The stronger a platform grows, the higher the barriers to entry for new players, which consolidates market power.

Srnicek describes how platforms not only collect data, but also monopolise it as a central resource. They become infrastructures that set the conditions for participation and thereby gain control over markets and user groups. Kenney and Zysman argue that the platform economy is establishing a new industrial order in which companies dominate less through physical means of production and more through digital interfaces. Technological architectures thus not only characterise economic processes, but also the opportunities for collective learning. Ferguson points out that learning analytics only promotes learning processes if transparency and traceability of the algorithms are guaranteed. Slade and Prinsloo emphasise that data architectures without ethical guidelines can lead to asymmetrical power structures and undermine the trust of learners. The Industry 4.0 debate also shows that standards and interoperability are crucial for data flows between organisations to function. DIN and DKE (2022) emphasise that security, semantics and governance must be considered as cross-cutting tasks in order to make networked production sustainable. Kagermann and Wahlster (2022) see the strength of Industry 4.0 in the fact that

technological networking is coupled with organisational adaptability, resulting in resilient value creation networks (Moch, 2024).

The findings make it clear that technological architectures either promote openness, cooperation and resilience or reinforce exclusion, dependency and control. Shared intelligence therefore requires technical systems that guarantee transparency, interoperability and adaptive capacities instead of prioritising efficiency and scaling alone.

### **Cultural models and social practices**

Technical systems alone do not guarantee shared intelligence. The cultural models that determine how knowledge is interpreted, shared and utilised are crucial. Bateson emphasises that learning is anchored in patterns and contexts and that the ecology of the mind only emerges when relationships and differences are perceived and reflected upon. Holland shows that complex adaptive systems produce adaptation and innovation through variation and selection, but without cultural orientation this dynamic can slide into pure efficiency logic. Cultural models characterise whether platforms are geared towards cooperation or competition, participation or exclusion. Nissenbaum points out that digital technologies help to shape normative orders and directly affect issues of privacy, integrity and trust. In educational contexts, Ferguson and Slade and Prinsloo emphasise that learning analytics only make a contribution if cultural values such as transparency, responsibility and justice are embedded in their use.

Commons research shows that collaborative practices are not created through technical efficiency, but through shared norms and trust. Ostrom emphasises that collective action only remains sustainable if rules are culturally anchored and social practices are continuously maintained.

This makes it clear that shared intelligence is a cultural project. Without guiding principles that promote cooperation, diversity and social justice, it remains reduced to technical

instruments. With such a cultural orientation, on the other hand, it can become a process that strengthens social cohesion and enables emergent innovation.

### **Empirical illustrations**

#### **Learning analytics**

Contrast: Learning analytics can create transparency, but at the same time reinforce exclusion if deviating learning paths are normatively labelled as deficits. Learning analytics is an example of the productive and ambivalent use of shared intelligence. Ferguson (2012) describes how data analyses can make learning processes visible, support the exchange between teachers and learners and enable evidence-based interventions. However, this potential can only be realised if transparency and traceability of the algorithms are guaranteed. At the same time, Slade and Prinsloo (2013) point out that the use of learning analytics harbours considerable ethical risks. Without clear principles on consent, de-identification and purpose limitation, power asymmetries arise that undermine the trust of learners. Learning analytics thus illustrates that technical instruments alone do not ensure shared intelligence, but that institutional rules and cultural orientation are necessary.

A second finding concerns the issue of equity. Gilead and BenDavid-Hadar (2025) use the example of education funding to show that systems based on adaptive structures are better able to ensure social cohesion than rigid, centralised models. Applied to learning analytics, this means that a culture of shared intelligence must not only optimise individual performance, but must also take into account issues of distributive justice.

The analysis makes it clear that learning analytics can both serve as a tool for collective learning and contribute to the reinforcement of existing inequalities. The decisive factors are the institutional embedding and the cultural models that determine whether data enables transparency and participation or reproduces control and exclusion.

### Neuroadaptive interfaces

Neuroadaptive interfaces open up potential for symbiosis, but harbour risks of surveillance, manipulation and loss of autonomy. They link cognitive processes with technical control and thus create new forms of shared intelligence. Hopfield (1982) shows that neural networks develop emergent memory capacities through collective interactions. This principle forms the basis for systems that analyse signals from the brain or other physiological processes in real time in order to control machines or adapt learning environments.

Hassabis et al. (2017) illustrate that advances in artificial intelligence often result from analysing neurobiological mechanisms. Combining neural models with machine learning enables adaptive interfaces that adjust their behaviour to user needs. This results in a direct coupling between biological and technical systems and a new quality of shared intelligence.

This technology raises questions about governance and integrity. Nissenbaum (2009) emphasises that digital architectures help shape normative orders and directly affect privacy and autonomy. Neuro-adaptive interfaces have a profound impact on human-machine interaction and require institutional safeguards, transparent standards and cultural reflection. They only contribute to shared intelligence if they are not used as control instruments, but instead enable cooperative learning. The decisive factor is whether their architecture strengthens openness, trust and resilience or establishes new power asymmetries

### Citizen participation platforms

Citizen participation platforms expand participation, but can also deepen digital divisions and privilege organised groups. They show how digital technologies enable collective action and require institutional framing. Castells (1996) describes networks as new forms of social organisation in which communication and power circulate. Platforms embody this logic by organising deliberation, participation and knowledge production.

However, research on the platform economy shows that such infrastructures are not neutral. Srnicek (2017) argues that platforms determine access and control through their architecture. Kenney and Zysman (2016) point out that platforms are economic, political and social arenas at the same time. Citizen participation can thus promote democratisation or create new dependencies. Ostrom (1990) shows that sustainable participation requires clear rules, conflict resolution and monitoring. If these structures are lacking, there is a risk of symbolic participation or unequal distribution of power. Empirical studies show that adaptive systems make collective action more flexible. Rasheed, Al-Hinkawi and Sherzad (2024) show that urban systems become more resilient when platforms act as integrative nodes.

Participation is not a sure-fire success. A culture of shared intelligence requires institutional safeguards, technological transparency and cultural anchoring. The ambivalence of shared intelligence becomes evident in the case studies, summarised in Table 1.

*Table 1. Overview of Opportunities and Risks of Empirical Case Studies*

Case Study	Opportunities / Potentials	Risks / Challenges
Learning analytics	Optimisation of learning processes, increased transparency	Exclusion through standardisation, devaluation of individual learning paths
Neuroadaptive interfaces	New forms of human-machine symbiosis	Surveillance, manipulation, loss of autonomy
Citizen participation platforms	Broadened participation, stronger involvement of civil society	Digital divides, dominance of organised interests

*Note.* Own elaboration based on Section 5.

## DISCUSSION

### Testing the hypotheses

The first hypothesis is that shared intelligence only realises its potential if it is institutionally embedded and secured by verifiable rules, transparency and participation. The literature analysis supports this assumption. Granovetter (1985) shows that economic action is only stabilised in social networks and norms. Ostrom (1990) demonstrates that community resources can only be utilised sustainably through institutional rules and monitoring. Examples from learning analytics illustrate that transparency and consent are prerequisites for trust, while a lack of rules reinforces power asymmetries (Ferguson, 2012; Slade & Prinsloo, 2013). The findings suggest that institutional arrangements are essential for shared intelligence.

The second hypothesis states that platform architectures that promote cooperation, resilience and open standards generate more sustainable innovation dynamics than systems that are solely focussed on efficiency and scaling. This hypothesis is also supported. Platforms centralise. Srnicek (2017) shows how data-driven models concentrate power and limit innovation. Industry 4.0 moves the other way. Kagermann and Wahlster (2022) describe adaptive networks that thrive on resilience, flexibility and innovation capacity. Rasheed et al. (2024) illustrate that urban systems

become more resilient when they develop adaptive structures that open up collective room for manoeuvre.

The analysis confirms this basic assumption and points to institutional rules and cultural orientation as supporting factors. The findings thus confirm the normative core of the work, according to which governance, resilience and social embedding are central conditions for a culture of shared intelligence. Governance in shared intelligence means transparent rules and verifiable mechanisms; resilience stands for the ability to absorb crises and find new balances. Only through interaction do structures emerge that ensure trust and remain adaptable at the same time.

Power asymmetries arise when platforms control data and access. Empirical examples such as learning analytics or citizen participation show this: Without institutional rules and open standards, participation turns into control. Participation therefore requires transparency and cooperative models, otherwise exclusive structures will become entrenched, blocking collective learning and undermining social justice. The analysis makes it clear that a culture of shared intelligence is not sustainable without mechanisms to limit power asymmetries. Participation requires open standards, verifiable rules and cultural models of cooperation.

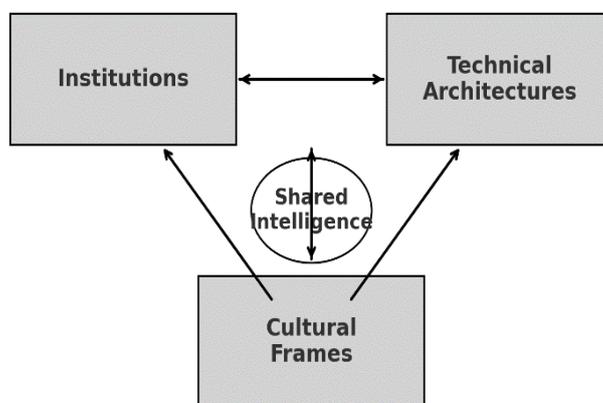


Figure 1. Conceptual framework of shared intelligence.

Note. Own elaboration, integrating institutional economics, platform theory, and commons approaches.

## **Outlook**

### **Prospects for a platform culture of shared intelligence**

The findings of this study show that shared intelligence does not emerge by itself, but is the result of institutional framing, technical architecture and cultural orientation. This results in perspectives for a platform culture that goes beyond efficiency and aims at cooperation and resilience.

Castells (1996) describes networks as the fundamental organisational form of the information age. A platform culture of shared intelligence would have to organise this logic in such a way that power is not only concentrated in central nodes, but is distributed through open standards and participatory mechanisms. Malone et al. (2010) show that collective intelligence only arises when mechanisms exist that visualise, coordinate and combine contributions.

Commons research offers orientation for the design of such mechanisms. Insights from institutional theory help to illuminate the governance of digital platforms. Ostrom (1990) highlights that durable institutions are grounded in rules, monitoring and conflict resolution. Applied to digital infrastructures, this suggests that governance must not only define technical standards but also allow for deliberation and social regulation. At the same time, such a platform culture must incorporate cultural models of justice and participation. Gilead and BenDavid-Hadar (2025) show that adaptive systems can promote social cohesion if they are geared towards justice and inclusion. Applied to digital infrastructures, this means resilience and fairness must stand alongside efficiency as equally important design principles.

### **Political and social consequences**

Shaping a culture of shared intelligence has direct political and social implications. Platforms are no longer neutral intermediaries, but central infrastructures that structure communication flows, markets and social relationships.

Srnicek (2017) makes it clear that platform capitalism is based on the concentration of

data and control power. Without regulation and institutional counterweights, there is a risk of power asymmetries becoming entrenched, undermining social participation.

Political consequences therefore concern the regulation of digital markets and the safeguarding of open standards. Rochet and Tirole (2003) show that two-sided markets exhibit structural tendencies towards concentration. Three tasks are politically central: effective supervision to limit power, open standards for interoperability and transparent access for participation. Castells (1996) also points out that networks create new centres of power that require democratic control. Social consequences lie in the question of how collective learning is organised. Slade and Prinsloo (2013) use the example of learning analytics to illustrate that data-driven control without ethical guidelines destroys trust. Gilead and BenDavid-Hadar (2025) emphasise that adaptive systems only promote social cohesion if justice and inclusion are institutionally safeguarded. These findings can be applied to platforms that only ensure participation if access, control and benefits are organised transparently.

Finally, there are consequences for the resilience of social systems. Scharte (2024) argues that adaptive capacities are crucial for cushioning crises and achieving new equilibria. A culture of shared intelligence can contribute to this by promoting diversity, enabling cooperation and creating institutional arrangements that allow for flexible adaptation.

The political and social relevance of the topic therefore lies in the dual task of limiting power and ensuring participation. This is the only way to prevent shared intelligence from remaining trapped in proprietary logics instead of becoming a resource for collective learning and social innovation.

### **Limitations of the work and need for further research**

This study is based on a systematic literature analysis. It integrates key contributions from

systems theory, institutional economics, platform research, the commons debate and learning and AI research. This creates a broad theoretical framework, which, however, has several limitations.

Firstly, the analysis remains dependent on published sources. Primary data from empirical field studies or our own surveys could not be included. The validity of the findings therefore depends on the quality, selection and perspective of the existing literature (Tranfield et al., 2003).

Secondly, there is a focus on westernised theories and case studies. Works by Castells (1996), Srnicek (2017) or Kenney and Zysman (2016) primarily shed light on global platforms and Western markets. Perspectives from the Global South or from non-industrialised contexts are underrepresented. This limits the generalisability of the findings, and thirdly, there is a methodological limitation. The literature analysis allows concepts to be contrasted and patterns to be identified, but it cannot prove causal relationships. Statements about institutional embedding or technological architecture remain theoretically based conclusions, not empirically tested causal models.

The limitations of this study point towards the next steps. Future research should look closely at how platforms shape governance and participation in different cultural and political environments. Equally relevant is the exploration of neuroadaptive interfaces in concrete applications, as these technologies open possibilities but also raise risks. A promising path lies in mixed methods. By linking quantitative breadth with qualitative depth, it becomes possible to empirically examine how institutional embedding, resilience and power asymmetries are formed and contested. The limitations make it clear that this work is primarily to be understood as a theoretical foundation. It lays the framework within which further research can be conducted in order to not only describe a culture of shared intelligence conceptually, but also to empirically substantiate and practically shape it.

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Enrico Moch holds a doctorate in economics and teaches as a lecturer at various universities, including the DHBW Ravensburg and as an assistant professor at

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