MONITOR KEY ENABLING METHODOLOGIES 2025

A mapping of the latest methodological developments

November 2025 | A publication by CLICKNL programme
Key Enabling Methodologies (KEMs)

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KEM MONITOR 2025

A MAPPING OF THE LATEST METHODOLOGICAL DEVELOPMENTS

for research, practice and policy.

Methodological research is on the move. Across disciplines and domains, we see a growing focus on how methods can collectively drive systemic change and support societal transitions. The KEM monitor brings these developments together — tracing the emerging directions of a field in motion.

Key Enabling Methodologies are the methods, strategies, processes and tools that help shape transitions toward a more sustainable, inclusive, and innovative society. They equip professionals, academia, and government with approaches to explore complex societal challenges and develop interventions that can meaningfully contribute to societal change.

In recent years, much energy has been invested in strengthening the shared knowledge base around KEMs. This led to the updated **KEM Agenda 2024–2027** and the launch of the **KEM Network** in 2024, a growing community of researchers and practitioners working across disciplines.

The **KEM Monitor 2025** builds on this foundation. It is not another update of the Agenda, but a concise intermediary report that highlights the most relevant new methodological developments, insights, and questions within each of the eleven KEM categories. The monitor brings together the collective expertise of authors from research and practice, complemented by input from the wider KEM network through expert consultations. It also presents some general observations on cross-category developments and in the broader context. You'll find them on page 18. Finally, special attention is paid to the practical applicability of KEMs and to the challenges of valuing the impact of KEMs.

By bringing these insights together, the monitor offers a snapshot of the field today and encourages the community to consider which areas of knowledge need to be strengthened for KEMs to effectively address emerging societal challenges. Therefore, feel kindly invited to send us your thoughts and suggestions at **kems@clicknl.nl**.

The KEM monitor is an initiative of CLICKNL, in collaboration with the KEM network.

Download the KEM Agenda 2024-2027 here!

VISION AND IMAGINATION

KEMs within the category Vision and Imagination help map the current world, imagine alternative futures, and view issues from new perspectives. They offer approaches to explore possible and desired futures, fostering creativity and shared understanding. By broadening perspectives and generating visions, these methods support strategic decision-making and inspire change, guiding actions towards sustainable and inclusive societal transitions.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

During the past year we have seen the continued expansion and opening up of perspectives in this category, even if this has yet to mature into fully fleshed KEMs. Appreciation of the value of imagination to design practice in general is giving way to concerns about power and participation (Barendregt et al., 2024; Light, 2021), and a concomitant shift from focusing on the outcomes of visioning processes to the micro-dynamics and productive tensions inherent to the processes themselves (Matos-Castano & Baibarac-Duignan, 2025; Tironi, 2018). Visioning and imagination appear less expert-driven and more as everyday capacities that can be infrastructured (Potts & Facer, 2025).

In addition, buoyed by standpoint theory and pluriversal and decolonizing approaches, design futurists are opening up to non-Western ways to engage futures (Cheok et al., 2025). Inspired by the experiences of indigenous peoples, designers seem less committed to the pursuit of positive futures at all cost, and are more willing to frame futuring exercises around questions of decline, grief and loss (Lindström et al., 2021).

Another important development in this category is the introduction of **Generative AI tools**. These may augment the designer's toolkit but also raise questions about the very nature of human creativity and the possibility of distributed imagination. Futurists and designers are using GenAI tools to collect and analyse large datasets, to imagine and prototype possible futures, and to support ideation and creativity more generally (Hvitved & Holm Hansen, 2025; World Futures Review, 2020), with approaches such as in-context prompting and chain-of-thought prompting providing useful starting points. Importantly, opinions diverge on the extent to which GenAI tools may indeed support collective modes of sense-making (Doshi & Hauser, 2024), and we are also seeing growing calls to consider the ethical and environmental implications of using such technologies in research and education (Guest et al., 2025). We expect this debate to only intensify.

NEW RESEARCH QUESTIONS

- What are the benefits and risks of using GenAI tools specific to imagining futures? This includes questions about cognitive effects ('offloading'), model biases, quality of (often homogenised) outputs, and ethics.
- What are the implications of the incipient shift from visioning outcomes to imagination infrastructures? How would the assumptions and methods of design futuring change if we consider imagination as a social capacity, collective good or right?
- How can the impact of collective sense-making activities be evaluated? How do we translate the outcomes in ways that would support productive traffic with other design approaches and other disciplines?

PARTICIPATION AND CO-CREATION

KEMs within the category Participation and Co-creation provide methods and tools to involve a variety of people, organisations, and non-human entities in addressing societal issues, drawing on their competencies and experiences, creating shared ownership, and enabling responsibility. They help actors to engage and connect, and become sensitive to a plurality of voices and perspectives. Moreover, these KEMs support to streamline multi-actor (design) processes, understand the context of issues—including interests and values—bring about shared meaning-making and decision-making, and develop new propositions.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

Looking at the developments over the past year(s), we can detect several patterns. Firstly, the role of the designer is increasingly being reshaped, acting as an advisor, builder, or value creator and putting the 'user' in the lead, instead of acting as owner, manager or facilitator. This new reciprocal interaction catalyses non-human actors (e.g. **Methods-To-Be for Nature-Entangled Design Research**), (neuro)diverse 'lived experiences' (e.g. **Design Your Life**), new forms of relationality (e.g. **ESCollab**), and the designers/artists' own 'lived' experience and communities (e.g. **Taka Taka**).

There is an increasing tendency to work with positionality, plurality, reciprocity and continuity, through dismantling structural inequalities (e.g. **Somatic Laboratory**), putting other actors in the lead (e.g. **Autistic Lifeworld Design**), enhancing shared doing beyond norms and dominant voices (e.g. **Framework Just Sustainability Transitions**), stressing dialogic - meaning to maintain duality in unity- (e.g. **Dialogical Relations; Save the Debate**), taking non-humans seriously (e.g. **Interspecies Performances**), building relations to ensure sustainable impact (e.g. **Ground for Wellbeing**), and empowering citizens in urban planning through open data practices (e.g. **Citizen Voice**).

This shift needs accessible, democratic and equitable KEMs, which requires dissolving the categorised structure of KEMs, focusing on situated paths through a KEM landscape, starting from transdisciplinary and multi-actor perspectives. To not obscure the wide variety of participants' voices, it also requires different forms of communication, including room for practice- and art-based research (e.g. **Testing the Waters**), finding multiple narratives about distinct voices (e.g. **Sketchnoting**) including the designer's own voice (e.g. **Layered Annotations**), sharing work through movements and scores (e.g. Breaking apart together). Moreover, new technologies can support pluriverse participation, using technologies like Virtual Reality to experience other people's perspectives (e.g. Bubble Games), using AI as a collaborator (**Teaming with AI**), digital participatory platforms to stimulate situated participation (e.g. **Digital Participatory Platforms**), serious gaming and simulation as boundary objects (e.g. **Together We Flow**).

Next, there is a tendency towards larger consortia and movements involving public, private and civic partners, e.g. PONT, SIA-SPRONG (e.g. ESC and ViT) and the Van Gogh National Park academy, exploring other perspectives on reality and other ways of knowing. Finally, there is explicit attention how education can stimulate multi-actor participation to address the complexity of polycrisis (e.g. **Education for Societal Transitions; Carousel; Empathy Compass for Education).**

NEW RESEARCH QUESTIONS

- How to move beyond participation as consultation and placation in urban planning processes, and enhance citizens power by starting from alternative, just and sustainable ways of living that people are already creating in the here and now?
- How to organise and set-up co-design places, methods, tools, and data interpretations from the perspective of disabled and neurodiverse actors, challenging ableist norms?
- How to develop situated paths through a KEM landscape that support postdisciplinary co-creation and participation?

BEHAVIOUR AND EMPOWERMENT

KEMs within the category Behaviour and Empowerment focus on identifying target groups, mapping current and desired behaviours, and developing, testing, and validating interventions to support behavioural change. They address both explicit strategies—such as education and awareness—and implicit ones like framing and nudging. These methods also explore how to empower citizens to initiate change, design supportive environments, and determine what types and degrees of influence are desirable and ethically acceptable in societal transitions. Finally, these methods also involve the evaluation of the effectiveness of behavioural change designs.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

Although the major issues identified in the KEM agenda, such as empathy, ethics, and personalisation remain relevant to designing for behavioural change (Bay Brix Nielsen et al., 2024), the main energy in new developments in this KEM category recently has been in the interplay of designing for systems change and individual change. There has been a pendulum swing, steadily moving away from solely focusing on individual behaviours, and towards the role of the individual in the system.

This development, both in health, social change, and sustainability, affects the choice of target groups for designs: health care professionals rather than solely the care user, or policy makers rather than just individual citizens. It also affects the choice of behaviour change techniques, focusing on relationality and interconnectedness, and on personal and societal values, rather than trying to automatically steer single behaviours through nudges. On the level of methodologies for designing for behavioural change, there have been interesting developments in the application of system-level approaches, such as **Causal Loop Diagrams** (Nguyen et al., 2025), **Behavioural Systems Maps** (Parkinson et al., 2025), and **Setting-Driven Approaches** (Baxter et al., 2025).

However, there have also been the first signs of revaluation of the value of individual, voluntary behavioural change, for instance in pandemic preparedness research, where surprisingly, individual behaviour had as large an effect on curbing the spread of COVID-19 as large, system-wide measures had (Bussemakers et al., 2025).

NEW RESEARCH QUESTIONS

- How can we build tools and methods for integrating systems-level and individual behaviour change that best fit the needs of the creative industries and / or design research? Although much effort is currently going into integrating systems level and individual behavioural change work, there is still a lack of tools aimed at the knowledge needs, use cases, and ways of working of the creative industries. Furthermore, a disconnect exists between current efforts within the industry itself and academia. There is a need for projects that map current tools and uses and further iterate and develop system-level approaches specifically suited for the creative industries.
- How can we build usable tools and methods that make use of recent developments in the behavioural sciences around ontologies? These ontologies are systematic evidence-based overviews of behavioural change techniques and modes of delivery. They offer interesting possibilities for the creative industries, but there is as yet a lack of tools and examples of use that can inform creative practice, and there is an ongoing debate on the value of simply listing all existing behavioural change techniques. Projects that attempt to make these new developments usable for the creative industries and design research could help shed light on this issue.

EXPERIMENTATION ENVIRONMENTS

KEMs within the category Experimentation Environments (EEs) help set up and use spaces and ecosystems—physical, virtual, or hybrid—where diverse actors collaborate to address societal challenges. EEs are often platforms for multi-actor collaboration with shared resources. They enable rapid, real-world testing of ideas, interventions, and prototypes, fostering both technical and social innovation. Increasingly, they are acting as hubs for making, education, entrepreneurship, community building and placemaking. Their methods guide the design of conditions, processes, and resources for collaborative experimentation, and help determine when and how to scale successful approaches from local to broader contexts.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

An important recent endeavour in the practice of EEs has been aligning language between diverse actors by co-developing principles and context-relating practices for EE governance, value creation and impact (Schuurman et al., 2025). Simultaneously, designing space for friction and methods to enable processes of releasing old structures with stakeholders have taken hold (PONT, 2025). Another development is the ongoing contextualisation of EE methods, particularly to **Urban Green Development (Urban Living Lab**; Dijkstra & Joore, 2025), collaborative experimentation in rural areas **(Agroecosystem Living Lab; 2025 International Forum on Agroecosystem Living Labs | INRAE)**, **Applied Design Research** (Joore et al., 2024) and **Student Learning** (van Ooijen-van der Linden & Griffioen, 2024). Driven by the arts, design and engineering disciplines, **Makerspaces (Biolabs, Fashionlabs, Robotics Labs, AI Labs,** etc.) are fostering deeper innovations, particularly dedicated to emerging digital and bio technologies and the simulation of and experiment with alternative futures (Overdiek & Van der Laan, 2024).

Lately, EEs have been analysed at three distinct, but intertwined levels: the lab organisation/environment, lab projects/experiments, and actors' involvement/ecosystem (Journal of Innovation Management, 2025). They have been reflected in relation to **Civic Resilience** and **Social/Transition Justice** (Bouzarovski,et al., 2023) frameworks. Developing EEs **Impact Assessment** (Forbat et al, 2025; Leminen et al., 2025) moving beyond traditional KPIs towards more co-creative, bottom-up approaches to assess and demonstrate impact and value creation has also been prominent. Finally, upcoming special issues of important journals are dedicated to **Sustainable Impact** and **Systemic Change** through EEs (Buildings and Cities, 2026; Sustainability, 2026). In conclusion, it can be said that the EE KEM category is maturing, developing its own and diversified body of knowledge and skills.

NEW RESEARCH QUESTIONS

- How can inclusivity, social and epistemological justice be safeguarded in and by EEs? And how can non-human actors like animals and plants be represented in EEs? Deeper reaching questions about inclusion and representation of actors will be relevant for the legitimacy and impact of EEs in the future.
- How can making and transdisciplinarity in EEs foster the responsible development of emerging technologies (Artificial Intelligence; VR, XR)? And how can emerging technologies foster EEs? EEs already contribute to the responsible development of emerging digital technologies. More knowledge is needed about the theory and practice of this type of EE.
- How do arts- and design-based interventions enable transformation processes in multi-stakeholder collaborations? Curated and/or designed physical spaces foreground friction, dealing with power relations and the necessity for actors to let go of 'old and treasured' structures. We need to collect more knowledge about principles and skills contributing to this.

VALUE CREATION AND UPSCALING

KEMs within the category Value Creation and Upscaling support designing, testing, and scaling value creation in economic, social, cultural, and ecological terms. They build on broad business modelling to integrate multiple forms of value, beyond financial growth alone, and address adoption and diffusion challenges. These methods help combine stakeholder interests, expand from products to services or collective models, and align innovation efforts with mission-driven societal change at scale.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

Recent developments in the field of Value Creation and Upscaling show a growing emphasis on context-sensitive, multi-value and multi-stakeholder implementation and scaling approaches, visible in government-driven sectors ranging from healthcare to defense, and underscoring a departure from market-oriented scaling. In Dutch healthcare, the Green Deal Duurzame Zorg introduced an **Implementation Coaching** Programme to scale sustainable innovations, validated in practice and now extended to other domains (Nederlands Implementatie Collectief; Opschalen Gezondheidsinterventies). Public innovation initiatives such as GovUp! accelerate scaling through cross-ministerial **Breakthrough Teams** (leading to new research questions listed under 'Context-sensitive scaling strategies'). In the circular economy, projects such as RESET and Circular Cotton Cascade demonstrate how **Collaborative Business Models** and multi-stage reuse systems create ecological, social, and economic value across textile chains. Similarly, the WiCE project validated tools like the **Waardegenerator** to scale multi-value strategies in water management (giving rise to the questions under 'Operationalizing multi-value creation').

In defense, the Dutch Defence Strategy 2025-2029 embeds sovereignty and strategic autonomy as higher-level design principles instead of direct monetisable value, using systematic scaling methods like **Roadmap Development** and I**ntelligent Failure** (Defensie)–leading to questions under 'Strategic autonomy and sovereignty'. Research confirms scaling is adaptive, requires timing, ownership, and contextual fit, while new projects such as Living Labs for Biodiversity and Driving Urban Transitions aim to advance these methods (DUT).

NEW RESEARCH QUESTIONS

Context-sensitive scaling strategies

- How do value creation and scaling approaches differ across government, defense, business, and civil society, and how can they be transferred or enhanced?
- Which non-market scaling strategies can be developed and complement or replace market-scaling strategies?
- How can adaptive, non-linear scaling methods address timing, ownership, and institutional fit?
- How to set up governance around scaling, to achieve impact?
- What role do informal influence and strategic alignment play?

Operationalising multi-value creation

- How can economic, social, ecological, and strategic values be identified and balanced?
- Which tools best support decision-making in complex contexts? What commitments are needed for different phases?

Strategic autonomy and sovereignty as higher-level design principles

- How can societal and geopolitical values (e.g., resilience, autonomy) guide innovation design and scaling?
- How can sustainability and wellbeing-oriented innovations benefit from these principles?
- What methods move beyond economic efficiency toward long-term resilience?

INSTITUTIONAL CHANGE

KEMs within the category Institutional Change examine how formal and informal rules, norms, and values enable or hinder societal transitions. They guide the design of new institutional arrangements, the reform or removal of obstructive ones, and the facilitation of new governance models. These methods address the creation and abolition of organisations, rules, norms, and standards that support sustainable, equitable, and just transitions.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

While institutions have long been a core topic in social sciences for long, more recent thinking centres on the drivers of institutional change. The analysis of institutional change should include the analysis of institutional stability as well. Stability is not a given and has its own drivers (e.g. vested interests). In fact, understanding institutional lock-in and resistance to change is key to understanding why societies have been largely unable to transition towards a more sustainable, equitable, and just society as highlighted in the field of sustainability transitions (Fuenfschiling, 2019).

The question of institutional change is at the heart of current social sciences with several theories attempting to overcome the 'paradox' of actors and structure. Indeed, if actions would be determined by institutions, it is hard to explain why institutions can change anyway (Battilana et al., 2009).

Recent research has shown that institutional change towards a more sustainable, equitable and just society is as much dependent on technological innovation as on political mobilisation and new social movements. The rise of cooperatives in sectors like energy, housing, and digital platforms such as various nature conservation initiatives, exemplify this (Bauwens et al., 2022).

A second line of research emphasises the difficulties of governments in supporting–and in some cases–triggering change, as the institutional logic of the state tends to preclude risky, contextual, and activist action by civil servants. A key question holds how civil servants can be empowered to act as change agents in transition processes (Braams et al., 2022).

NEW RESEARCH QUESTIONS

- Which alternative institutional arrangements and legal innovations can support (sustainability) transitions?
- What is the role of regulation in fostering (sustainability) transitions? When does it empower niche actors and when does it empower regime incumbents?
- What is the role of social movements and citizen initiatives in driving institutional change, both in terms of social norms and practices and in terms of law and regulations?
- How can governments be more responsive in processes of institutional change as a legitimate and effective actor in (sustainability) transitions?
- What role do institutional entrepreneurs and institutional defenders play in (sustainability) transition processes and in what contexts are their roles supported or hampered?
- What can be learnt from informal practices for institutional change and what are the pros and cons of formalising informal practices?
- How can mission-oriented innovation policy be leveraged to foster institutional change to scale up solutions?

SYSTEMIC CHANGE

KEMs within the category Systemic Change explore the dynamics between micro, meso, and macro levels of societal systems. They help map interconnections, identify leverage points, and design coordinated interventions that embrace complexity. Methods include transdisciplinary approaches, reflexivity, and dialogue to align diverse perspectives and values. The goal is to guide systems toward desired transitions while enabling continuous learning and adaptation within changing societal conditions.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

In the past year, we saw an increasing number of publications covering theoretical models and elaborate cases aiming for systemic change in areas such as agriculture, mental health and biodiversity (Dorst et al., 2025; Schaminée, in press; Striegler & Hjort, 2025). All these books testify to the fact that (designing for) systemic change asks for:

1. a careful orchestration of a range of methods from various KEM categories, such as vision and imagination, participation and co-creation, and behavioural change and empowerment;
2. inter- or transdisciplinary inquiry, bringing together models, tools, and practices from various disciplines: transition management, behavioural sciences, public administration, and design methodology;
3. organisational change, where the conviction is growing that the public sector needs to reform its processes to foster transitions (Braams, 2023).

The last observation has resulted in a three-year program to strengthen collaboration between the Dutch government and change makers, called **PONT**. PONT aims to make it easier for the public sector to adopt a design-driven approach when addressing complex societal challenges.

One of the core competencies of designers when designing for systemic change is **Framing** (Van Arkel et al., 2024). Although frames typically open up new perspectives on an issue (Peeters et al., 2025), we also need to consider the acceptance of frames by the various stakeholders in a transition (Mazerant & Van der Bijl-Brouwer, 2024).

Systemic change also involves losses and letting go of habits and practices (e.g. flying, eating meat, etc.). As argued in the original chapter, we see an increasing number of publications stressing the importance of **Systemic Breakdown** and the need for tools and methods to support change makers in this process (e.g. Coops et al., 2024).

Finally, KEMs for systemic change can't function without a proper knowledge base. This has resulted in a search for **Systemic Design Principles** (Van der Bijl-Brouwer et al., 2024) or **Principles for Transformation**, at the intersection of design sciences and (pro-environmental) behaviour studies (e.g. Van Valkengoed et al., 2025).

NEW RESEARCH QUESTIONS

Mapping of the current system

- The ability to build a complete worldview, which also addresses personal development, fairness for all stakeholders, and acceptance of the worldview. What is your role as changemaker if you are not mandated to make all decisions? How far are you willing and are you allowed to go? How do you stretch your role, how do you navigate it?

Infrastructure for change

- Systemic change requires designers not only to maintain conceptual continuity but also to demonstrate administrative ingenuity and the understanding that the context within which they can design effectively usually does not yet exist and will also need to be designed (learning structure, learning agenda; building learning and transformative capacity).

MONITORING AND EFFECT MEASUREMENT

KEMs within the category Monitoring and Effect Measurement (ME) are crucial methods for legitimising, guiding and evaluating societal transitions. For transition studies, it is relevant that ME methods consider the long time horizon and unpredictable nature of (changes to) systems by monitoring the effects of interventions and evaluating and reflecting on outcomes. This can directly feed back into the process, thus supporting iterative development, adjustments, and scaling up.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

While this is a mature KEM category, current developments in mission-driven and transformative innovation policy point out a lack of use of systemic and reflective methods to reliably measure and monitor the societal and economic impact of innovations and progress within transitions (Rohracher et al., 2023). Three areas have received specific attention in the past year.

First, it is increasingly recognised that many missions and transitions are characterised by inherent uncertainty, complexity and ambiguity (Wanzenböck et al., 2020). Consequently, ME approaches are on the rise that interpret progress and insights in relation to strategic end goals, which are gradually refined and (re-)negotiated (Janssen et al., 2025; Larrue et al., 2023). Such monitoring and effect measurement approaches should be able to support decisions to adjust or revise programmes, projects or objectives to reflect developments and changes (Buckton et al., 2025; Haddad et al., 2023). This makes monitoring and effect measurement more forward-looking and a means to enable mission-steering (Geurts, 2025).

Second, there is increasing emphasis on the need for systemic and integrated ME approaches: monitoring and effect measurement should be aimed at understanding the functioning and effects of mission-driven and transformative policies in relation to broader, large-scale system changes (Haddad et al., 2023). Systemic change is, however, difficult to map objectively and comprehensively and requires a deep understanding of its dynamic nature. For instance, decisions towards investments in renewable energy sources do more than reduce CO2 emissions as they can also increase reliance on the energy grid or cause energy poverty. Therefore, ME approaches are appearing that accommodate the systemic and dynamic nature of transformative change processes, and that enable policy- and decision making from an integrated perspective (European Commission, 2025; Pontikakis et al., 2025).

Finally, and in relation to both developments, we see an increasing emphasis on the need for rich and appropriate indicators to concretise and operationalise missions and transitions and understand the effectiveness of interventions, policies and investments so that policy and resources can be adjusted promptly (Rohracher, 2025). As such, ME approaches are exploring not only aggregated impact indicators, but also system-descriptive indicators or transformative process-indicators in order to develop a set of meaningful and situated indicators for monitoring and effect measurement of missions and transitions (Larrue et al., 2023; Schuch, 2025).

NEW RESEARCH QUESTIONS

- Are missions and transitions heading in the right direction? Are new insights emerging that require a strategic shift?
- How are transition processes interrelated? How do interrelated transition processes interact and align over time? What is the cumulative effect of all efforts and interventions? What are their (un-)intended consequences?
- Are we measuring the right things? Are we measuring correctly? How do we define progress? What are relevant indicators? How to attribute impact?

ETHICS AND RESPONSIBILITY

KEMs within the category Ethics and Responsibility integrate ethical reflection and accountability into design and innovation processes. They address moral dilemmas, value conflicts, and societal responsibilities in mission-driven projects. Methods range from assessment to accompaniment and help teams navigate ethical considerations in practical, engaging ways. The aim is to ensure that technological and social innovations align with societal needs, values, and long-term responsibility.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

The Ethics and Responsibility chapter in the KEM agenda outlines 26 methods, from theoretical approaches to example techniques, that foster responsible practices. This year's update focuses on initiatives that deepen the original dimensions: theoretically grounded–flexible and assessment–accompaniment.

As participatory approaches, transdisciplinary research and citizen science gain traction, it becomes increasingly necessary to adopt and adapt conflict-driven methodologies that productively address tensions and conflicts among stakeholder perspectives. Leiden-Delft-Erasmus Center for Bold Cities, which stimulates the public debate on the use of urban technology with academics, city governments and civic society, launched a citizen science project about the contestability of surveillance cameras in Rotterdam. The project, titled Start Making Sense, aims to develop a camera register of and for the people of Rotterdam through public scrutiny. This approach is in line with **Adversarial Design** (DiSalvo, 2012) in our chapter. Related to this, NWA-ORC 2024 call for proposals actively included questions on 'dealing with frictions and conflicts' (e.g. how can we deal with friction and conflicting interests in complex societal challenges?) to help shape new types of partnerships between civil society, government and knowledge institutions. These two concrete instances call for deepening the research into conflict-driven methodologies, particularly those within the participatory tradition where consensus-driven approaches still dominate.

Simultaneously, a discussion took place at the 2024 Society of Philosophy of Technology conference that compares two democratic theories (deliberation of Rawls and Habermas versus pragmatic experimentation of Dewey and Addams) and associated design approaches **(Value Sensitive Design, Scandinavian Participatory Design, Di Salvo's Design as Democratic Experiments**). This discussion is exemplary in showing how philosophy and design can be complementary when conceptualizing or deepening the theoretical grounding of design methodologies. Another such example is the **Socio-Technical Imaginaries** of Rattay, Rozendaal and Shklovski (2024), which provide tools to better understand the ethical worldviews underpinning value-driven design methods, and thus, advancing the theory and application of such methods.

New interdisciplines and transdisciplinary methodologies are emerging that can broaden the resources for thinking about ethics and responsibility in mission-driven innovation. For instance, **Future Studies** are increasingly adopted by public and private sectors and uses conceptual and methodological frameworks drawing on various disciplines such as sociology and cultural and critical studies. It is interesting to examine and expand methods such as **Speculative Design** and **Design Fiction** based on insights and principles from Future Studies. Alternatively, on the assessment end of our spectrum, a 2025 review of **Delphi studies** (Alon et al., 2025) on the future of AI reveals key ethical, societal, and economic challenges in AI integration and proposes recommendations for the methodological improvement of Delphi studies.

NEW RESEARCH QUESTIONS

Please see the original chapter as the research questions outlined there are still timely and relevant.

MEANING AND AWARENESS

KEMs within the category Meaning and Awareness draw on artistic methods, strategies and approaches to make complex societal challenges tangible, evoke emotional engagement, and foster inclusivity. They inspire behavioural change, enable reflection, and build connections between people, their environment, and societal issues through creativity, storytelling, and collaborative art practices.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

Over the past year, significant progress has been made in recognising and developing artistic methods as KEMs. The **Collectie Artistieke Methodes (CAMs),** initiated by the kunst≈onderzoek platform, offers a growing collection of artistic (research) methods including **Photographing, Writing, Mapping, Listening**, and **Scoring.** Each method is documented with practical examples, literature suggestions, and exercises for education and research.

Several large-scale projects demonstrate the application of artistic methods in practice. Climate Imaginaries at Sea uses visual arts, participatory and performative interventions to address sea-level rise. The SPRONG Verbeelding in Transities consortium investigates how artistic and design methods contribute to sustainable urban transitions, whilst SPRONG Creating Cultures of Care explores transdisciplinary collaboration between arts and care sectors through co-creative CARE Labs. Testing the Waters examines how artistic methods can contribute to mission-driven innovation without losing their critical and imaginative power. Finally, the 2024 NWA ORC call Art research for new perspectives on climate justice references the KEM agenda and its Meaning and Awareness category, recognising artistic methods as essential methodologies for addressing complex societal transitions.

At the SIA Congress 'Het Kompas van Praktijkgericht Onderzoek', art educators and researchers discussed how KEMs connect with artistic methodologies, addressing questions about the role of artistic methods in societal transformation and bringing together different disciplinary ways of 'knowing' without hierarchy.

NEW RESEARCH QUESTIONS

On the nature and scope of artistic methods

- Artistic methods often transcend the category of Meaning and Awareness. This raises questions about how these methods operate across and within KEMs, balancing their roles in knowledge generation and problem-solving, and what this reveals about their relation to other methodological approaches.
- How can artistic methods invite growing awareness of the situated, relational and context-dependent nature within other KEM categories, such as Vision and Imagination, Participation and Co-creation or Ethics and Responsibility?

On instrumentality and autonomy

- What can artistic inquiry afford or bring to the table in responding to complex societal challenges, and what can it not do?
- Do alternative framings such as "toolbox", "compass", or 'ecosystem' better acknowledge artistic methods as instruments for orientation rather than as prescribed pathways or instruments for change?
- Do the five typologies of artistic methods (Temporal, Situated, Embodied, etc.) exhaustively cover the ways artistic methods have value for society?

On inclusivity and access

- How can equitable access to artistic methods be increased, and what role can artists' play in societal transformation when the professional field is characterized by precarity and structural inequality?
- How can artistic methods help address power dynamics, historical legacies, and colonial structures embedded in science and societal challenges?

On frameworks and evaluation

- What frameworks are needed to evaluate artistic methods without reducing them to simplified models of impact and validation?
- How can the affective, relational, and long-term transformative effects of artistic interventions be demonstrated and acknowledged?

DATA FOR INQUIRY AND EVIDENCE

KEMs within the category Data for Inquiry and Evidence combine human-centred design with data science to generate insights that inform design processes and outcomes. They include explorative and evidence-driven approaches, using data to inspire creativity, reduce uncertainty, and validate decisions. These methods address data selection, collection, and integration, emphasising context and quality. They also explore challenges and risks of working with data to support meaningful, mission-driven innovation.

NEW DEVELOPMENTS WITHIN THE STATE OF THE ART

This KEM category has more than tangents with technology, data as a material relies on technologies of various kinds to generate, capture, connect, store, use, analyse, interpret, and share. An example of nurturing and developing such technology in the last year was the Open Design Data Infrastructure (ODeDaI) project led by TU/e ID, with collaborators from TUDelft, UTwente, SURF and eScienceCenter. ODeDaI is about developing and open-sourcing the Data Foundry platform, a novel design data infrastructure developed for data designers, design researchers and many other practitioners. Data Foundry has been used in design education and research both in TU/e and TUDelft, and with the move to an open-source distribution, supported by NWO under the TDCC-NES scheme, the consortium hopes to build a strong community related to this KEM category.

Over the last year, several PhD projects in the area of data-centric (Gomez Ortega, 2024) and data-enabled design finished (Noortman, 2025; Lövei, 2024). Their work adds critical pieces to the state of the art of data-design approaches, in particular for storytelling and worldbuilding based on data narratives and contextual insights, and automating contextual inquiry. Connecting to these advances we see groups of design researchers extend the scope of data-enabled design for medical applications in remote patient monitoring, and in the high-tech industry with Canon Production Printing.

NEW RESEARCH QUESTIONS

- How to create relevant design-specific data and give it 'thickness' and depth, especially in the presence of AI tools? This is a recurring topic, which is worth revisiting and deepening as more AI-enabled tools and methods emerge.
- How can we fluently work with generated data in creating interfaces and dataful experiences that allow us to project data into a given design process without losing context and meaning? We still lack sufficient low-threshold means to engage with design data and meaningfully apply it to construct design knowledge.
- How can we go beyond simple datasets to match the complexity of real-world applications in industry and healthcare? Industry needs data design and we need to scale available methods to the level of complexity that is inherent in industrial datasets and applications. This ideally involves structured forms of data, information, and knowledge representations.
- What is rigour in design data practices and how should we protect emerging data practices in design from potentially less rigorous AI-based approaches?

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CROSS-CATEGORY OBSERVATIONS

Even though the updates from the different KEM categories are not extensive, they nevertheless allow for some interesting observations and open reflections on cross-category and general dynamics in KEM research. Four stand out, as they emphasise a growing sensitivity to the contexts in which KEMs are developed and applied.

1. Across most categories there seems to be a tendency **to look at KEMs through the lens of systemic change.** The chapters Participation and Co-creation, Behaviour and Empowerment, Experimentation Environments, Value Creation and Upscaling, Institutional Change, Systemic Change, Monitoring and Effect Measurement, and Ethics and Responsibility all point to the challenge of operating within complex, interdependent contexts. Across these categories, the focus seems to be shifting from applying KEMs to change isolated elements while leaving the system largely untouched to understanding and transforming the systemic conditions that sustain or hinder change.

2. Connected to this, multiple chapters highlight an interest in **understanding how KEMs can work collectively,** across disciplines, contexts, and categories, to generate—again—system-level impact. For example, chapters on Value Creation and Upscaling and Institutional Change show how different KEMs (behavioural, participatory, design, and evaluation approaches) are increasingly being combined to address institutional barriers and create broader, system-level value. In itself, the wish to deepen our knowledge on the collaborative use of KEMs is nothing new. However, our previous observation does inspire us to add a new question to those raised in the KEM agenda (Cohesion Among the KEMs, page 111):

   how do different KEMs and categories complement one another in understanding and influencing system-level change?

3. A few chapters also briefly touch on the **fluid boundaries between KEM categories.** While the categorisation was never intended as a rigid division of methods or expertise, the growing interest in systemic approaches appears to blur these boundaries even further. In practice, methods from different categories (increasingly) converge and influence each other. For instance, artistic methods (Meaning and Awareness) are mentioned to often transcend their category. In many cases approaches are interwoven with and being used alongside visionary, co-creation, participatory, and ethical methods to address complex challenges.

4. Finally, the **difference in focus on developments in research and practice** should be mentioned. Some chapters highlight developments in academic research, while others chose to focus on learnings in real-world settings. This does not imply a lack of activity on either side. However, as the attention to systemic change grows, it seems natural for key research to increasingly take place in real-world contexts that reflect such complexity. Hence, the practical applicability of KEMs and learning by doing are becoming more relevant to KEM categories.

KEMS IN THE BROADER CONTEXT

In addition to the category-specific updates and observations, it is relevant to consider the wider context in which KEMs take shape. The KEMs are part of an evolving ecosystem of national and European innovation programmes that share a focus on societal transformation.

KEMS AND THE NATIONAL TECHNOLOGY STRATEGY

Today's society shows an urgent need for transitions towards a healthier and sustainable society. Innovations and new technologies play a major role in these emerging systems, as well as to increase our earning power[1].
The National Technology Strategy[2] guides technology investments that aim to increase the earning power of our economy. However, the development of new technologies alone will not suffice for transitions to succeed. What is needed is societal innovation, including technological ánd social innovations[3].

Key Enabling Methodologies (KEMs) guide societal transitions and foster innovation. They represent robust academic and applied, often transdisciplinary, methodologies that drive the uptake of (technological and social) innovations in societally embedded transitions.
Over the past six years, the wider field of KEMs has become established in the knowledge and innovation landscape.
The KEM agenda has become a cornerstone in programmes such as the KIA Maatschappelijk Verdienvermogen[4], PONT[5], and of TNO[6].

EUROPEAN PERSPECTIVE ON KEMS

Although the concept of KEMs has not fully landed (yet) in the European policy arena, methods and tools for transformation processes have already been a recurring topic in the Horizon Europe research and innovation program for years, especially in pillar II. Here we find six thematic clusters covering the three main strategic orientations towards a (1) Green transition, (2) Digital transition, and (3) a more Resilient, Competitive, Inclusive, and Democratic Europe. In the draft work programme 2026-2027 for Cluster 2 (on Culture, Creativity and Inclusive Society), we for example find calls on 'Government in transition –how governments change the way they work' and 'Artistic intelligence: harnessing the power of the arts to address complex challenges'. KEMs for transformation also play a prominent role in EIT Culture & Creativity, the institutional partnership dedicated to helping European cultural and creative sectors and industries (CCSI) to become more sustainable, resilient, and competitive.

CLICKNL KEMs programme

The CLICKNL KEMs programme connects researchers, designers, policymakers and other professionals to exchange knowledge and strengthen methodological innovation. Together with the growing KEM network, it now focuses on improving how methods are applied and shared in practice.
Sign up for the newsletter and stay informed about all our activities!

[1] M. Draghi, The future of European competitiveness, 2024.
[2] Ministerie van EZK, De Nationale Technologiestrategie, 2024.
[3] TNO Vector, Agenda voor actieonderzoek naar maatschappelijke innovatie, 2023.
[4] Kennis en Innovatieagenda Maatschappelijke Verdienvermogen.
[5] De Publieke Ontwerppraktijk.
[6] TNO, Strategisch Plan 2026-2029, 2025.

EMERGING QUESTIONS FROM PRACTICE

Over the past few years, much effort has gone into strengthening the knowledge base around Key Enabling Methodologies (KEMs). With the updated KEM Agenda and the launch of the KEM Network, a solid foundation has been established. The next step, however, lies in practice: how can we make effective use of KEMs to address, scale, and accelerate societal transitions? After all, the knowledge base only becomes truly valuable when we succeed in moving from paper to practice.

Since 2024, the KEMs programme has therefore in particular focused on the practical questions surrounding the **selection, application, value, and impact** of methods. Through events, expert sessions, and collaborative workshops—involving nearly 200 researchers and practitioners from different disciplines—key insights and challenges were shared and explored. These conversations resulted in two publications:

- *Ten Guidelines for Selecting and Applying Methods (KEM Magazine, June 2025)*
- *Framework for Discussing the Value and Impact of Methods (November 2025)*

TEN PRACTICAL GUIDELINES FOR SELECTING AND APPLYING THE RIGHT METHODS

1. Appropriate mindset
2. Slowing down at the start
3. Know your boundaries
4. Know your options
5. Right people at the right time
6. Prioritising together
7. Space for an orchestrator
8. Incorporating flexibility
9. Learning together
10. Changing course

READ ALL TEN GUIDELINES HERE

SELECTING AND APPLYING KEMS

The KEM Magazine From Paper to Practice presents ten guidelines for selecting and applying the right methods. During the KEM Year Event From Insights to Impact, researchers and practitioners were invited to reflect on these guidelines: which proved most crucial in their work, and which were most challenging to apply? The discussions showed that many participants prioritised the same ones, leading to a shared top three that continue to raise important questions in practice. These three are outlined below to inspire further research and reflection.

#1. Slowing down at the start

Taking time at the start of a project to align on goals, roles, and expectations builds trust and prevents friction later on. Early involvement of KEM practitioners ensures that methods are chosen consciously and suited for the real challenge. This raises questions about how teams can create the time and conditions needed for this early alignment, given structural pressures such as short timelines and limited resources.

#2. Appropriate mindset

Every project follows an approach, whether explicit or not. Recognising and discussing this from the outset helps ensure all partners value and support the thoughtful use of methods. This raises questions about how a shared mindset can be developed among partners with differing priorities, expectations, and levels of methodological awareness.

#3. Incorporating flexibility

Every KEM project operates in dynamic conditions where outcomes cannot be fully predicted. The success of a method depends on how well it fits the specific context and people involved. Allowing for flexibility—both in design and execution—ensures that projects can adapt effectively to real-world complexity. This raises questions about how such flexibility can be built into projects and funding structures while still maintaining clarity, alignment, and accountability.

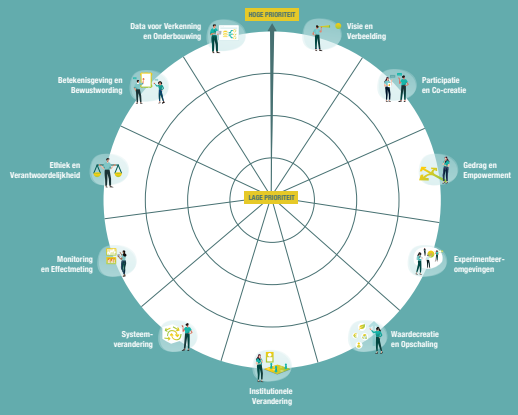
THE VALUE AND IMPACT OF KEMS

The *Framework for Discussing the Value and Impact of Methods* brings together key insights to support constructive conversations between practitioners and project stakeholders about the value and impact of methods. It is based on input from breakout sessions during several KEM events and ten in-depth interviews with practitioners and their clients.

Across these conversations, it became clear that questions about the 'impact' of KEMs arise frequently and often in terms of objective, quantifiable data. Unsurprisingly, many actors find these questions rather complicated and not easy to answer. But more importantly, it turns out that in many projects the stakeholders hold different views of the value of using particular methods and that those values are not static, but rather shift and arise during the course of the project — in interactions between the different stakeholders.

The developed Framework helps to structure a meaningful conversation about the value and expected impact of KEMs throughout a multi-stakeholder project. It helps to assess different views and expectations and their (potential) influence on the course of the project. We see this as a first step in an evolving domain concerned with understanding what difference the use of a particular KEM—or set of KEMs—actually makes to the results of a project. We realise this work is only beginning, and many (research) questions will arise along the way. But as the KEM community, we should be confident we're getting there.

DOWNLOAD THE FRAMEWORK HERE



THE KEM COMPASS

Navigating towards a shared and effective approach.

The KEM compass is a discussion tool for project teams to jointly determine an effective project approach. This often takes place at the start of a project, but it can also be a valuable activity during the process, as a means to reflect or adjust course.

READ MORE IN THE KEM MAGAZINE

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CLICKNL – CREATING IMPACT TOGETHER: THE NEXT STEP

Societal transitions are complex and require courage, vision and collaboration.

Successful change demands strategic cooperation, shared knowledge and a solid foundation. A designerly approach is essential to ensure applications are integrated into society with support and legitimacy.

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