ekip White Paper

Innovation by Production: Performing Arts as Innovation Environments

Charlotte Lorentz Hjorth & Lena Holmberg, Lund University

Birgitta Persson & Katarina Scott, Future by Lund

September 2026

Funded by the European Union

This project has received funding from the European Union's Horizon (2021-2027) Research and Innovation programme under grant agreement No. 101112111.

About ekip

ekip is a collaborative platform designed to boost the development of innovation capacity in ecosystems to include the Cultural and Creative Industries (CCI).

Creatives are not just "nice to have" they are essential for driving progress on major challenges like the green and digital transformation and social inclusion. Their competences and skills are crucial for tackling complex innovation processes involving diverse stakeholders.

Rooted in open innovation, *ekip* brings together broad stakeholder groups to co-create and deliver evidence-based policy recommendations. Together, we're shaping smarter innovation policies for ecosystems where collaborative processes and cross and open innovation are standard practice. We believe this will empower the CCIs to become drivers of innovation, creating a better and brighter future.

ekipengine.eu/

The information in this White Paper was created by the *ekip* project consortium under EC grant agreement No. 101112111 and do not necessarily reflect the views of the European Commission. The European Commission is not liable for any use that may be made of the information contained herein.

Executive summary

Artistic production in theatre, music, dance and other performing arts is an under-recognised mode of innovation. New knowledge, methods, technologies, formats and relationships often emerge through rehearsal, composition, scenographic development, technical problem-solving, audience interaction, touring, adaptation and live performance. This can be understood as **innovation by production**: the process through which experiments and inventions generated through production itself are recognised, translated and developed into innovations with value beyond the production in which they originated.

The concept addresses a policy blind spot. Innovation systems often look for patents, start-ups, formal research outputs, scalable products or commercialisation pathways. Performing arts production, by contrast, frequently generates value as a part of solving technical, productional and artistic challenges within productions but also in situated and relational forms: embodied knowledge, new collaboration methods, accessibility solutions, audience formats, technical configurations, prototypes of experience and ways of reframing complex societal questions. These forms of innovation may remain invisible if they are not documented, translated, connected to wider ecosystems inviting more innovation stakeholders into the process.

Performing arts are important innovation environments because they combine experimentation, constraint, distributed expertise and public encounter. Experimentation and rehearsal functions as iterative testing; production teams bring together tacit, technical, artistic and organisational knowledge; and audiences create feedback loops around attention, interpretation, participation and meaning. Under these conditions, artistic production can generate technical, material, methodological, social, organisational, experiential and societal innovation. To realise this potential beyond individual productions, production-based findings and inventions needs to be recognised, documented and then connected and perhaps transferred to wider innovation ecosystems.

Innovation by production does not travel automatically. It is often held back by narrow innovation definitions, weak measurement frameworks, limited documentation, policy silos, short-term funding, insufficient brokerage, limited scaling pathways and weak intellectual asset management capacity. These barriers mean that valuable production-based knowledge can disappear when a production ends, or remain disconnected from research, technology, education, health, urban development and public-sector innovation.

A production may succeed while an invention remains invisible: once the performance, exhibition or event has been delivered, the immediate production problem appears to have been resolved. A **parallel innovation pathway** is therefore needed to recognise and capture selected outcomes without turning the artistic production itself into an innovation project or subordinating artistic autonomy to commercial or scaling requirements. However, not every experiment becomes an invention, and not every invention becomes an innovation. Innovation requires recognition, translation and further development beyond the immediate production context.

Policy action should therefore strengthen the ecosystem conditions around artistic production: recognition, shared skills and language, infrastructures for experimentation, access to finance, intermediaries and cross-sectoral networks, ecosystem building blocks as diagnostic tools, and intellectual asset management. The aim is not to instrumentalise the arts, but to enable production-based knowledge to be recognised, shared and adapted when relevant, while preserving artistic autonomy and cultural value.

This white paper builds on ekip's policy recommendation report *Cross-sectoral innovation with performing arts* (Peters et al, 2026).

Table of Contents

1 Framing innovation by production

Innovation by production begins with a simple but often overlooked premise: performing arts production is more than the delivery of an artistic outcome. It is a setting where experimentations, rehearsal, collaboration, constraint and public encounter generate knowledge, test ideas and create conditions for innovation.

Innovation is often described as the outcome of research, technological development or entrepreneurial scaling. In policy terms, it is associated with laboratories, firms, patents, start-ups and formal knowledge transfer. These are important, but they do not capture all the places where new ideas, methods, tools and practices are generated. In the cultural and creative industries, and particularly in the performing arts, innovation often takes shape through production itself: rehearsal, composition, scenographic development, technical problem-solving, live testing, audience interaction and collaboration across specialised roles. This way of working is part of performing arts and it operations.

This process can be understood as **innovation by production**. Production is not a final delivery phase after creativity has already happened, but a generative environment where knowledge is created, problems are reframed, prototypes are tested, relationships are organised and new forms of value are produced. In theatre, music, dance and other performing arts, production is iterative, situated, collaborative and experimental. It requires artists, technicians, designers, producers, institutions, audiences and partners to negotiate uncertainty, constraints and meaning in real time.

Production is a starting point, not merely the setting. Productions create opportunities because they combine a concrete objective, a fixed deadline, diverse expertise and real-world constraints. These conditions systematically generate challenges that require new solutions and therefore create recurring opportunities for experimentation and invention. Creative practitioners commonly begin because a performance, concert, tour or other cultural output must be realised, rather than with a research hypothesis, a technology or an explicit intention to innovate. The need to deliver the production generates artistic, technical, financial and operational challenges that must be addressed in practice. Production can therefore be understood as a temporary, goal-oriented and collaborative environment in which artistic ambitions and practical constraints create the conditions for experimentation, invention and recombination.

Building on ekip's *Cross-sectoral innovation with performing arts* report, this whitepaper shifts the focus from cross-sectoral policy priorities to the production process itself: how innovation is generated through artistic making before it is translated into wider policy action (Peters et al, 2026).

The need for this concept is partly a response to a policy gap. Cultural and creative sectors are increasingly recognised as important to innovation, regional development, social cohesion and societal transitions (Bakhshi et al., 2013; European Parliament, 2019). Yet much of their innovative capacity remains difficult to document and support because it does not always appear in conventional innovation settings and indicators. A production may generate a new technical solution, a new form of audience participation, a new collaboration model, a new method for engaging citizens, or a new way of working with digital and physical environments. However, if these outcomes are not patented, commercialised or translated into the language of innovation policy, they may remain invisible.

Performing arts offer a strong lens for examining this issue because every production brings together dramaturgy, choreography, music, sound, light, scenography, costume, digital tools, logistics, audience relations, institutional coordination and external partners. Decisions about space, time, bodies, materials, technologies, publics and meaning can create practical inventions and transferable insights: new

collaboration methods, spatial solutions, adaptive logistics, accessibility practices or forms of civic engagement.

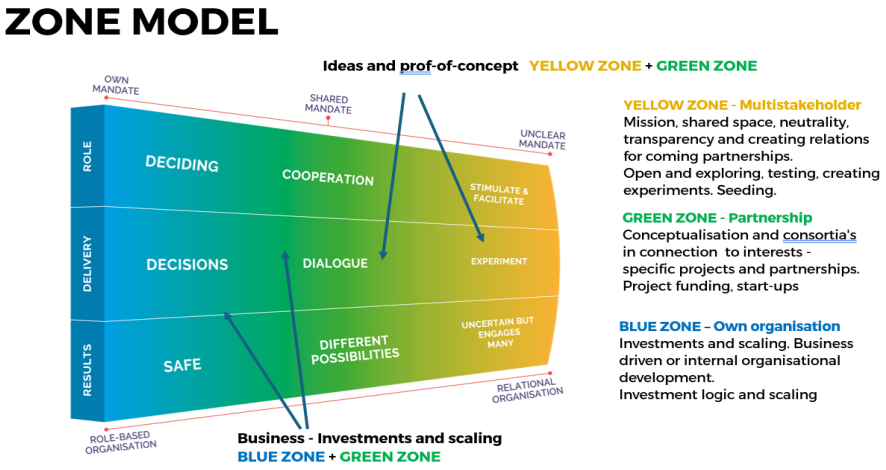
Recognising innovation by production does not mean forcing artistic work into economic or technological categories. On the contrary, it allows innovation policy to become more attentive to the distinctive forms of knowledge that artistic production generates: embodied knowledge, aesthetic judgement, tacit expertise, relational intelligence and the capacity to work with ambiguity. These forms of knowledge are central to artistic research and practice-based inquiry, where making, reflection and experimentation are understood as legitimate modes of knowledge production (Borgdorff, 2012; Nelson, 2013; Spatz, 2015). They are increasingly relevant in a time when innovation is expected not only to produce new products, but also to address complex societal challenges, support democratic participation, enable behavioural change and imagine alternative futures.

Key questions follow: how can artistic production be understood as an innovation environment, what kinds of innovation emerge through production, where can this innovation travel and grow, and what policy conditions are needed to make it more visible, transferable and sustainable? The aim is not to instrumentalise the performing arts, but to show that cultural production already contributes to broader innovation ecosystems in ways that remain insufficiently recognised.

This perspective is consistent with recent ekip work on open innovation, CCI engagement and cultural policy framing, which calls for cultural and creative industries to be recognised as active contributors to innovation ecosystems rather than peripheral beneficiaries or communication partners. It also connects to wider innovation thinking that emphasises openness, ecosystem interaction and the role of multiple actors in knowledge creation and transformation (Carayannis & Campbell, 2009; Chesbrough, 2003; Geels, 2002; Holmberg, 2026a; Holmberg, 2026b; Kraatari, 2026).

1.1 Innovation by production as open innovation

Innovation by production closely aligns with ekip's understanding of open innovation as a participatory, multi-stakeholder approach in which actors with a shared interest collaborate across organisational and sectoral boundaries. This approach to open innovation further emphasises the systematic engagement of cultural and creative industries in early-stage innovation and foresight-driven policy development. From this perspective, performing arts contribute not only artistic outputs but also methods, capabilities and environments for collaborative experimentation and knowledge creation (Holmberg, 2026a).



The zone model provides a practical language for understanding this process (Wise et al, 2023). The yellow zone is an open, shared and neutral space in which mandates, roles and ownership remain unclear and actors explore challenges and opportunities together. The green zone is the negotiated space between organisations, where shared mandates, roles, projects and partnerships are established. The blue zone is located within an organisation's own structures, where it has authority to develop, invest and scale. These zones describe different conditions of collaboration rather than a single linear pipeline. An innovation journey may move between them as questions, actors and responsibilities evolve.

Artistic production can activate all three zones. Early production challenges may open a yellow-zone space for shared exploration among artistic, technical, research, public and commercial actors. Selected outcomes may then enter green-zone partnerships for translation, validation and adaptation. When an organisation assumes a clear mandate for implementation, investment or scaling, development may continue in the blue zone. Innovation by production therefore shows how open innovation can originate within cultural and creative practice and connect to wider ecosystems without making external application the measure of artistic value.

1.2 What is innovation by production?

In ekip, the concept of innovation by production refers to invention and innovation process that emerges through the process of producing artistic work. It describes the knowledge, methods, tools, practices and forms of value generated while a production is being imagined, rehearsed, built, adapted, performed and shared. The focus shifts from finished artistic products to "details" and solution created within the production as well as production process itself as a site of experimentation and knowledge creation.

In many innovation frameworks, production is understood as a downstream activity that follows research, design or invention. In artistic practice, however, invention often occurs through the work of making something possible. Experimentations and rehearsal becomes inquiry. Technical constraints or new technologies tested become sources of invention. Collaboration reveals what no single actor could have produced alone. Audiences become part of the testing environment. Production is therefore not simply a route to delivery; it is a mode of innovation.

Four stages should therefore be distinguished. Production provides the surface, framework, purpose, deadline and use context. Experimentation responds to the demands of the production or new possibilities emerging – technological or societal. Invention may emerge as a technical, material, organisational or experiential solutions. Innovation requires that a selected solution is recognised, separated from its original context, further developed and potentially used within the sector or elsewhere. This distinction avoids equating every artistic experiment with innovation, while acknowledging that production creates a systematic source of experiments and inventions.

The distinction can also be read through the zone model. Production and experimentation often emerge in the yellow zone, where actors collectively explore an uncertain challenge. Invention may become more explicit in the green zone as partners negotiate roles, goals, combine resources and develop a shared project. Innovation may subsequently continue within one or more blue-zone organisations, or remain collaboratively governed, depending on its purpose, ownership and route to wider use. The zones should therefore not be treated as automatic stages, but as a way of identifying the support, mandates and funding appropriate to different conditions of innovation.

It is useful to distinguish between three related but different ideas. Innovation in production refers to improvements introduced within the organisational needs or production process itself, such as new staging techniques, effective touring, safety, materials, more efficient workflows, digital tools, accessibility practices or sustainable materials. Innovation by production refers to the systematic approach to identify

inventions, new knowledge and practices generated through production, whether or not they were planned as innovation from the outset. Innovation beyond production refers to what happens when these outcomes scales within the sector or travel into other sectors, such as education, health, urban development, organisational learning, technology development or public engagement.

The distinction matters because it helps avoid two common misunderstandings. The first is to assume that innovation in the arts is only about new artistic content or new aesthetic forms. Artistic innovation is crucial, but production-based innovation can also be technical, organisational, social, experiential or methodological. The second misunderstanding is to assume that innovation only counts when it is transferred outside the arts. Innovation by production begins inside artistic practice, and its value should not depend solely on external application but also internal. At the same time, many of the capacities developed through artistic production are highly relevant beyond the cultural sector.

This distinction also points to two connected but separate tracks. The **production track** is governed by artistic, curatorial, experiential and delivery considerations. The **innovation track** is governed by transferability, usability, robustness, ownership, diffusion and scaling, solutions and services. The tracks interact, but they need not follow the same logic or timetable. An opportunity can be recognised during production and transferred into a separate development process, while knowledge generated there may later inform new productions. This dual-track model protects artistic purpose and integrity while creating a route for selected outcomes to continue along another pathway.

The production track is not confined to a single zone. It may begin through yellow-zone exploration and become organised through green-zone partnerships. The innovation track becomes distinct when selected outcomes acquire a clearer development mandate, whether through a partnership in the green zone or within a blue-zone organisation. This framing avoids presenting transfer as a simple handover: movement depends on changes in mandate, ownership, funding, responsibility and the readiness of an organisation or partnership to receive the outcome.

Innovation by production is especially visible in the performing arts because productions are temporary, complex and collaborative and repeatedly part of the workflow. They bring different forms of expertise together under conditions of uncertainty and constraint: stage productions may create new relationships between bodies, technologies, spaces and audiences; music productions may depend on listening, timing and distributed leadership; dance may generate embodied methods for movement, care or inclusion; and hybrid performance may test immersive technologies or participatory formats in live conditions.

These ideas connect the performing arts to broader theories of practice-based innovation. Much innovation does not emerge from formal research alone, but through doing, using and interacting (Jensen et al., 2007). It depends on tacit knowledge, situated learning, experimentation, feedback and collaboration across boundaries (Lave & Wenger, 1991; Schön, 1983). Artistic production exemplifies these dynamics because ideas are tested through material and embodied practice, and the meaning of an innovation is shaped through interaction with others.

Recognising innovation by production therefore requires a broader understanding of what innovation is. It includes new tools and technologies, but also new methods of collaboration, new forms of participation, new ways of structuring attention, new experiential interfaces and new capacities for imagining alternatives and asking radical questions. It is not always easily measured by patents, licences or firm growth. It may instead appear as a method that travels, a practice that changes how institutions work, a prototype that informs another field, or a relational capacity that enables people to address a shared problem differently. It needs to be seen and identified as a thing of its own, an invention.

For policy, the implication is significant. If innovation by production remains invisible, cultural and creative sectors are likely to be undervalued within innovation systems. By naming the concept, policymakers and

ecosystem actors can ask more precise questions: What was learned through this production? What solutions, services, methods, tools or relationships were generated? What could be documented, shared or adapted? What forms of brokerage or funding would allow these outcomes to travel without reducing artistic practice to an external instrument?

Moving from production logic to innovation logic is not simply a funding gap, but a translation process. Within production, a solution is judged by whether it realises an artistic vision, works in a particular setting and can be delivered within available resources. A subsequent innovation process asks whether the solution addresses a recurring problem, can function beyond its original context, can be documented or standardised, can be installed and maintained by others, and has clear ownership and stewardship. A solution optimised for a controlled performance environment may consequently require substantial redesign before it becomes portable, affordable or usable elsewhere.

This framing also connects to broader ekip work on innovation by, for and with the cultural and creative industries (Holmberg, 2026b). Innovation by production can be read as one specific pathway within that wider vocabulary: innovation generated through the practical process of artistic making.

1.3 Why artistic production is an innovation environment

Artistic production brings experimentation, constraint, expertise and public encounter into a concentrated process. Productions rarely move from idea to finished work in a straight line; they develop through radical questions, experimentation, rehearsal, testing, revision, negotiation and adaptation. These activities create conditions in which knowledge emerges through practice, making production a temporary but intensive setting for learning by doing, using and interacting (Jensen et al., 2007).

Experimentation and Rehearsal functions as iterative testing: ideas are tried out through bodies, voices, materials, technologies and space. A scene, movement sequence, sound environment or audience arrangement can be adjusted repeatedly in response to what becomes visible in practice. Failure is often part of the method, revealing new possibilities and helping the artistic team refine both form and question (Schön, 1983).

Artistic production also depends on **distributed expertise**. Performers, directors, composers, dramaturgs, technicians, designers, producers, stage managers, educators, audience specialists and external partners contribute codified, tacit and embodied knowledge. Inventions emerges when these forms of knowledge are brought into relation to solve a shared problem (Sawyer, 2007).

Constraints are another source of innovation. The combination of artistic visions, limited budgets, unusual venues, touring requirements, accessibility needs, environmental ambitions or technical limitations force new combinations of materials, methods and roles. In performing arts, constraints are not external to creativity; they shape the field of invention and can generate practical solutions that become valuable beyond the original production (Sennett, 2008).

The presence of an **audience** further differentiates artistic production from many other innovation settings. Performances are tested in relation to attention, interpretation, atmosphere, participation and emotional or intellectual response. Even when audiences are not directly involved in co-creation, their presence shapes the work. In participatory, immersive or community-based practices, this feedback loop becomes even more explicit. The audience is not only a receiver of the finished product, but part of the environment in which meaning, usability and relevance are tested.

The organisational form of cultural production is also **pulsating**. A small core may prepare a production over an extended period, after which a larger constellation of artistic, technical and operational contributors assembles temporarily and then disperses. Innovative capacity therefore does not

necessarily reside in one firm or institution; it is distributed across a production ecology of cultural organisations, independent practitioners, technical specialists, artists, suppliers, research organisations, intermediaries, public bodies and funders. The individual production is transient, but the wider ecosystem can retain knowledge, relationships and development capacity.

These features are relevant to contemporary innovation policy because societal challenges require forms of innovation that can work with ambiguity, conflicting values, behavioural change, public imagination and collective sense-making (Weick, 1995). Artistic production can create prototypes of experience, test new social relations, make abstract issues tangible and enable people to explore possible futures before they are fully defined.

Productions can in this qualified sense function as distributed pre-incubation environments. They provide real-world problems, diverse teams, rapid experimentation and prototypes tested under demanding conditions. Unlike conventional pre-incubators, however, they may have no identifiable idea owner, aspiring entrepreneur, venture-oriented pathway or stable team. Ecosystem-level mechanisms are therefore required to identify, recognise, receive and further develop opportunities generated through collaborative work.

2 Value pathways and evidence

Production-based inventions may create value through multiple pathways. Technical solutions, artistic methods, organisational forms, experiential formats and societal responses can emerge through production and travel into other sectors when they are documented, translated and connected to relevant partners.

2.1 Pathways of inventions emerging from artistic production

Innovation emerging from artistic production can be understood through overlapping pathways in which different kinds of production-based inventions are recognised, developed, scaled and applied in new contexts. These pathways show why performing arts should not be reduced either to cultural expression or to economic spillover: production-based innovation may be technical, methodological, organisational, social, experiential or transformative (Chen, 2020; Fleming, 2015). Several forms often appear at once within the same production process.

Technical and material innovation can emerge when productions develop or adapt tools, materials, stage technologies, digital systems or spatial solutions. Theatre, music and performance frequently work with light, sound, movement, projection, scenography, costume, sensors, immersive media and hybrid physical-digital environments. Inventions may appear as a new technical configuration, a more sustainable material choice, an accessible design solution or a creative workaround that later becomes useful in other production contexts or sectors.

Method and process innovation concerns the ways productions organise inquiry, collaboration and decision-making. Devising, rehearsal, improvisation, dramaturgical feedback, collective composition and iterative prototyping are not only artistic methods; they are structured ways of generating knowledge. These methods can be relevant for education, organisational learning, participatory planning, design processes and interdisciplinary research, especially where problems cannot be solved through linear planning alone.

Social and organisational innovation may arise when production processes create new ways of working across roles, communities and institutions. Performing arts often depend on temporary organisations that must become effective quickly, manage uncertainty and coordinate different forms of expertise.

Productions may also develop new models for inclusion, co-creation, community engagement, shared authorship or institutional partnership. These models can inform wider debates on collaborative governance, workplace learning and civic participation.

Experience and interface innovation concerns the design of encounters between people, spaces, technologies and narratives. Performing arts are highly skilled at shaping attention, emotion, movement, participation and atmosphere. This capacity is increasingly relevant in fields such as digital experience design, public communication, health communication, museum development, tourism, retail, urban placemaking and immersive technologies. Productions can function as laboratories for testing how people navigate, interpret and respond to complex environments.

Innovation for societal challenges may take shape when artistic production helps reframe public issues, mobilise imagination or create new forms of participation around complex problems. Climate transition, health inequalities, loneliness, democratic trust and social polarisation are not only technical challenges; they involve values, habits, identities and collective meaning. Artistic production can make these dimensions visible and create settings where people can rehearse alternatives, encounter different perspectives and experiment with new forms of relation (Mazzucato, 2018; Schot & Steinmueller, 2018).

These pathways are analytical rather than fixed categories. Their value lies in making production-based outcomes easier to identify, document and discuss, and in giving policymakers, funders and intermediaries a vocabulary for recognising inventions that may otherwise remain hidden within artistic practice.

Across these pathways, outcomes may include new or improved technologies, adaptations of existing technologies, materials and technical configurations, software and data-related assets, production methods, accessibility solutions, organisational practices and applications that diffuse into other sectors. The central claim is not that every production generates a scalable innovation, but that the continuity and volume of production constitute a systematic yet under-recognised source of experimentation. Identification, recognition, selection and translation are therefore more appropriate policy aims than an expectation that all artistic experimentation should scale. A parallel process of scaling taking inventions to innovation can secure artistic independence and still bring new solution out for the benefit of the sector, society and businesses.

2.2 Cross-sectoral and cross-disciplinary value: where innovation travels

Production-based inventions can travel across sectors and disciplines when the knowledge generated in artistic practice is made visible, translated and connected to relevant partners. The performing arts are particularly well placed for such movement because they work with bodies, spaces, technologies, publics, narratives and collective experience. These are not marginal concerns; they are central to many contemporary challenges in health, education, urban development, digital transformation, public engagement and sustainability (European Parliament, 2019; Fleming, 2015).

As discussed through the ekip zone model, production-based outcomes rarely travel directly from artistic practice to wider application. They may first be explored in a shared yellow-zone setting, developed through green-zone collaboration and, where appropriate, adopted or scaled within a blue-zone organisation. Universities, intermediaries, public organisations, companies and cultural institutions may contribute at different points. The model therefore shifts attention from simple sector-to-sector transfer towards the changing relationships, mandates and support conditions through which innovation develops.

In **health and wellbeing,** artistic production can contribute with technology, safety applications, methods for embodiment, communication, care, rehabilitation, mental health and social connection. Performing

arts practices can create spaces where people explore movement, voice, memory, identity and relation in ways that complement clinical or social care approaches. The value does not lie only in performances about health, but in production methods that engage people as active participants rather than passive recipients.

In **education and lifelong learning**, production-based innovation offers powerful approaches to experiential, collaborative and reflective learning. Rehearsal, improvisation, performance and feedback can help learners test ideas, take perspectives, work with uncertainty and connect knowledge to action. These methods are particularly relevant for entrepreneurship education, professional development and transdisciplinary learning environments where students and professionals must learn to act before all answers are known.

In **urban development and placemaking**, performing arts can bring expertise in touring and contemporary setting, test how people experience and use public space etc. It may reveal hidden social patterns, activate underused places, create temporary communities or allow residents to imagine alternative futures for a neighbourhood. Because performance unfolds in time and in relation to an audience, it can expose dimensions of urban life that are difficult to capture through plans, maps or consultation documents alone.

In **digital and immersive technologies**, artistic production can operate as a demanding testbed stretching limits and use. Live performance places high demands on timing, presence, responsiveness, accessibility and emotional resonance. Technologies such as virtual reality, augmented reality, spatial audio, motion capture, AI-assisted tools and interactive systems are not only adopted by the performing arts; they are shaped through artistic experimentation. Asking radical questions, the production context can reveal what a technology enables, where it fails and how it might become meaningful for people.

In **public engagement and democratic participation**, performing arts can create formats and techniques for dialogue that move beyond information provision. Performance can make contested issues tangible, allow multiple voices to coexist and open spaces where people encounter perspectives different from their own. Such formats are relevant for citizen engagement, policy consultation, science communication and mission-oriented innovation, especially when societal challenges require legitimacy, trust and imagination as well as technical expertise (Mazzucato, 2018).

Cross-sectoral value does not travel automatically. Many innovations remain embedded in the production that generated them because mechanisms for documentation, brokerage, evaluation and translation are weak. Artistic teams may lack time, skills and resources to capture learning; partners may not recognise the relevance of artistic methods; and funders may support the production but not the pathways that allow its knowledge to be adapted elsewhere. Often the only way is to become an entrepreneur yourself and make to make the journey. It is a difficult path and not systemic.

Strengthening innovation by production therefore requires connective infrastructure. Intermediaries, cultural institutions, universities, innovation agencies, municipalities and funders can help identify production-based knowledge and identification of innovation, then support innovation and translation across sectors, create spaces for experimentation and build longer-term partnerships. The goal is not to extract value from the arts, but to create conditions in which artistic production can contribute to wider innovation ecosystems while retaining its artistic integrity, critical autonomy and cultural value.

The intermediary role is more substantive than brokering introductions. It includes helping production and artistic teams notice inventions with potentially transferable outcomes, documenting what has been developed, distinguishing the artistic work from a transferable technical, organisational or experiential component, convening users and development partners, supporting decisions on ownership and stewardship, translating between artistic, technical, public-value and commercial logics, connecting

opportunities to suitable support, and enabling collaborative contributors to participate in subsequent value creation. Intermediaries provide continuity across temporary productions and institutional logics.

In zone-model terms, intermediaries help actors work appropriately within each zone and cross the boundaries between them. In the yellow zone, they can maintain neutrality, facilitate exploration and help participants share risk and knowledge. In the green zone, they can support negotiation of roles, mandates, ownership and joint action. Where outcomes move into the blue zone, they can help connect the receiving organisation to the production ecology and preserve recognition, access and benefit-sharing arrangements. This production ecology resembles a swarm: a temporary but coordinated network of actors that assembles around shared challenges and opportunities. Their role is therefore part of the infrastructure of open innovation, not an optional addition.

The same logic appears in ekip's broader open-innovation framing, where cultural and creative industries are understood as contributors from the earliest stages of innovation and where ecosystem conditions such as infrastructures, funding, governance, skills, social value, competitiveness and technologies shape whether collaboration can take root (Holmberg, 2026a).

2.3 European examples of innovation by production

The following European examples show how innovation by production emerges from specific artistic challenges, production settings or local ecosystems, and how performing arts can generate knowledge, methods, technologies and partnerships that travel beyond the original cultural context.

Personalised digital concerts as an innovation portfolio: In southern Sweden, **Kalaudioscope**, coordinated through Future by Lund, explores how live concerts and performing arts events can be streamed in ways that allow digital audiences to choose camera angles and zoom in on both image and sound. The production challenge is not simply how to record a concert, but the components of how to create an interactive, personalised and artistically meaningful digital live experience. The portfolio brings together Malmö Live, Malmö Symphony Orchestra, Malmö Opera, Science Village Hall, Helsingborg Arena and Scene, Future by Lund, Lund University and companies such as Axis, Amazon Web Services, Capgemini, Cinfo, Sony and OnStageAI. The innovation lies in the whole production chain: capture, sound, image, user experience, legal frameworks, accessibility, artistic formats and business models (Future by Lund, n.d.-a).

The case illustrates how performing arts production can become a living lab for cross-sectoral experimentation combining cutting edge technology to audience experience. Through the Lund University Digital Interactive Concert Hall initiative, recorded and streamed concert tests with Malmö Opera and workshop formats such as the Take gatherings have brought together students, researchers, developers, artists, producers, companies and audience representatives. The result is a portfolio of tests around immersive live experiences, audience agency, rights management, new test formats and artistic formats.

AI and XR for theatre and dance: The Horizon Europe project **PREMIERE**, coordinated by the Athena Research Centre in Greece, brought together partners from several European countries to explore how artificial intelligence, extended reality and 3D technologies can support the full lifecycle of performing arts. The project worked with theatre and dance as production environments for digital tools that support creation, performance, archiving, reinterpretation, accessibility and audience engagement (PREMIERE, n.d.).

PREMIERE demonstrates innovation by production through enriched performance archives, VR environments, live capture, virtual streaming, remote rehearsal, motion capture and dance-based AI/VR

creation tools. The performing arts are not passive users of technology; they provide demanding production contexts in which digital tools can be tested, adapted and made meaningful.

Sign-language avatar theatre as accessibility and research infrastructure: Another Swedish example is Riksteatern Crea's production of **The Canterville Ghost**, performed at Lund City Theatre and on tour in Sweden. The production created a real-time 3D animated sign-language-speaking avatar that could interact with actors on stage. A sign-language-speaking actor backstage controlled the avatar through motion capture, developed in collaboration with Lund University Humanities Lab. What began as an artistic challenge — how to make a ghost appear live on stage in sign language — became a technological and methodological innovation for theatre, accessibility and research (Future by Lund, n.d.-b).

The case shows how production constraints can generate research value. The solution had to be affordable, tourable and precise enough to capture linguistic features of sign language, including facial expression, eye gaze and hand movement. It strengthened motion-capture workflows for multimodal communication research while opening new possibilities for accessible performance and deaf-led technological innovation.

Tampere as a city laboratory for cross-innovation with performing arts: In Finland, the ekip city case on Tampere shows how performing arts can be connected to technology, social sustainability, education and city development. Tampere has a strong performing arts ecosystem, including education in theatre, music, film and cultural production, and hosts Tampere Theatre Festival, the largest theatre festival in the Nordic countries. The local challenge identified through ekip is that innovation support structures are more developed in technology-driven fields than in the cultural sectors. Policy prototyping and portfolio sensemaking were therefore used to explore how performing arts could become part of a wider local innovation ecosystem.

The Tampere example focuses on the local conditions needed for transfer: cross-sectoral networks, shared test environments, policy instruments, skills development and funding mechanisms. Rather than treating performing arts as a single project, the city case frames them as part of an innovation portfolio and asks what infrastructures would allow artistic production to contribute to education, social sustainability, digital services and urban development.

Together, these examples show that innovation by production is not limited to one sector, technology or national context. It emerges when artistic production becomes a setting for experimentation, collaboration and problem-solving, and when the knowledge generated through that process is made available beyond the original production. The wider value lies in the capacity to connect artistic practice with research, technology, policy and societal needs without reducing the arts to an instrumental role.

3 Ecosystem conditions for recognition and transfer

Identification, recognition and transfer depend on the surrounding ecosystem. Skills, mandate, role, infrastructures, finance, brokerage, governance and intellectual asset management shape whether innovation by production remains hidden inside individual projects or becomes part of wider cultural, research and innovation systems. These conditions influence not only whether production-based knowledge is captured while it is still active, but also whether it can be interpreted, valued and adapted across institutional and sectoral boundaries. When definitions, funding structures and evaluation models are too narrow, innovative methods, tools, relationships and insights generated through artistic production may disappear when a production ends or remain valued only within the cultural context in which they first emerged. Stronger and systematic ecosystem support can make these outcomes more visible, create pathways for responsible transfer and position performing arts as recognised contributors to open, cross-sectoral and future-oriented innovation.

3.1 Barriers: why innovation by production remains invisible

Innovation by production remains difficult to see not because artistic production lacks innovative capacity, but because existing systems often fail to recognise how that capacity is generated. Many innovation frameworks still privilege formal innovation journeys with research, technological invention, patents, start-ups and scalable products. They overlook starts from experimentation, learning and problem-solving in rehearsal rooms, concert halls, studios, festivals, cultural institutions and temporary production teams. The result is a mismatch between where invention happens and where policy looks for evidence of it.

Narrow innovation definitions are a first barrier. When invention to innovation is understood mainly as technological novelty or commercial growth, production-based innovation risks being treated as inspiration, communication or cultural value rather than as knowledge creation. A theatre production that develops an accessibility method, a dance process that generates rehabilitation technique and insights, or a concert experiment that tests immersive audience interaction may produce invention, but not always in forms that fit established policy categories. This makes it hard to move from invention and scaling into innovation,

Weak measurement frameworks reinforce this invisibility. Conventional indicators look for outputs that are countable, comparable and economically legible, such as patents, licences, company formation, investment, productivity or export growth. Production-based inventions first need to be identified and may also appear as a method, relationship, capability, prototype, change in practice or experiential format. These outcomes matter, but they are harder to capture with standard tools (Fleming, 2015).

Limited documentation is another obstacle. Production processes are intensive, time-bound and resource-constrained. Knowledge and outputs are often generated in decisions, technical problem-solving, audience negotiation, venue adaptation or collaboration with non-artistic partners. Once a production closes or moves on, much of this learning can disappear unless there are resources and routines for capturing it.

Policy silos further limit recognition. Cultural policy, innovation policy, education policy, health policy, digital policy and urban development policy often operate through different institutions, funding logics and evaluation criteria. Performing arts may be valued in cultural policy as public culture, artistic excellence or access, while innovation policy may focus on technology, firms and research commercialisation. When these policy areas do not connect, artistic production can fall between them: too experimental (What) to fit conventional cultural funding (Who, Why), yet too culturally embedded to be recognised by innovation agencies (Kraatari, 2026; Malmström, 2026).

Fragmented and short-term funding makes it difficult to build pathways from production to wider application. Many funding schemes support the creation of a work, a premiere, a festival presentation or a limited pilot, but not the translation, evaluation, adaptation and partnership-building that would allow solutions and knowledge to travel. Cross-sectoral innovation also requires time for trust-building between artists, researchers, technologists, public agencies and communities. If funding stops when the production ends, the innovation potential often remains unrealised.

The separation between cultural funding and innovation funding is itself a structural barrier. Cultural support enables artistic production, while innovation support may fail to recognise production as a source of invention. Cultural funding does not need to become innovation funding, but interfaces are needed through which promising outcomes can move from one funding logic to another. Any expectation that production teams identify such opportunities should be accompanied by time, resources and support, rather than becoming an unfunded additional responsibility.

Insufficient brokerage and intermediary capacity are related barriers. Production-based inventions rarely transfer automatically from performing arts into innovation and into health, education, technology, urban development or policy. It needs people and organisations that can identify inventions, recognise relevant knowledge, translate between professional languages, connect partners, design suitable experiments and support follow-up. Without such brokerage, artistic production may be admired as creative, but its transferable methods and insights remain disconnected from the systems that could use them.

Limited scaling pathways also reduce visibility. Innovation by production does not always scale through replication or rapid market growth. An experiment and testing method, accessibility practice, participatory format or immersive interface may need to be adapted carefully to new contexts rather than copied directly. This makes scaling different, relational and context sensitive. Standard innovation systems may misread this as limited impact, when in fact the innovation requires different forms of diffusion, such as networks, training, open methods, residencies, demonstration sites, communities of practice or policy learning. Without systematic support, individual entrepreneurship and start-up formation may become the default route, while the potential to use existing organisations and markets as leverage is missed.

Weak intellectual asset management capacity can further limit transfer. Production-based innovation can generate intangible assets such as methods, formats, data, code, technical configurations, documentation, know-how and collaborative practices. If these assets are not identified and managed early, partners may be uncertain about ownership, access, licensing, reuse or future development. This can discourage collaboration with universities, companies and public-sector actors, or leave cultural organisations with limited control over the value they helped create. Scaling inventions into innovation becomes risky and difficult to invest in when ownership is unclear.

Ownership is especially complex because ideas and solutions commonly arise through collaboration among artistic, technical, production and external partners. The relevant unit of analysis is therefore the production ecology rather than an individual entrepreneur. Support must be able to clarify who contributed essential knowledge, who may take a result forward, how responsibilities are allocated and how value is shared. This is also a question of value appropriation: creative and technical contributors need the capacity to negotiate recognition, rights, permissions, access to data and content, benefit sharing and the retention of value within creative ecosystems, including when working with larger technology and AI actors.

Under-recognition of tacit and embodied knowledge is perhaps the deepest barrier. Much of what artistic production generates cannot be fully separated from practice, bodies, relationships, timing, atmosphere, judgement and context. This does not make the knowledge less rigorous or less valuable, but it does make it harder to identify and translate into policy language. Innovation systems tend to reward knowledge that can be easily identified, codified, owned and transferred as a discrete asset. Performing arts often generate knowledge that is enacted, relational and situated.

These barriers reinforce one another. Narrow definitions shape what is measured; measurement influences what is funded; funding determines whether documentation and translation are possible; policy silos limit shared infrastructures; and weak brokerage makes it harder for artistic production to connect with wider innovation ecosystems. The consequence is not only limited recognition for performing arts, but lost access to methods, tools and ways of knowing that could support broader transformation.

This is also the core problem addressed in ekip's policy work on cross-innovation with performing arts, where theatre, dance, opera and immersive live experiences are framed as contributors to research and innovation through real-time interaction, audience engagement and experimentation. The barriers

identified there can be read through ekip's innovation ecosystem building blocks: infrastructures and networks, investment and funding, regulation and governance, skills and competences, the social dimension, sustainable competitiveness, and research, techniques and technological solutions. They also point to the need for a swarm logic, where temporary constellations of artists, technicians, researchers, intermediaries, public actors and companies can assemble around emerging opportunities and then disperse, while the ecosystem retains knowledge, relationships and pathways for further development (Peters et al,2026; Holmberg, 2026a).

The challenge is not to prove that every production is innovative, nor to force performing arts into existing innovation categories. The challenge is to develop frameworks that can recognise production-based innovation when it occurs, support the conditions that make it more likely, and create pathways for learning to travel without weakening artistic autonomy.

3.2 Policy recommendations for ecosystem support

Policy should recognise artistic production as a legitimate environment for research and innovation. The ekip report Cross-sectoral innovation with performing arts identifies priorities that are directly relevant here: improving attitudes towards performing arts as innovation partners, strengthening skills and competences, developing supportive infrastructures, improving access to finance and expanding cross-sectoral and cross-disciplinary networks (Peters et al, 2026).

1. Recognise performing arts and artistic productions as innovation partners. Innovation policy should move beyond treating theatre, music, dance, circus and live performance as cultural outputs or communication tools. Performing arts contribute embodied, aesthetic, affective and experiential knowledge relevant to research, technology development, public engagement, education, health and social innovation.

- Policy action: include performing arts organisations as eligible and named partners in innovation calls, living-lab programmes, testbed initiatives and mission-oriented funding schemes.

2. Strengthen skills and shared language. Cross-sectoral innovation requires artists, cultural organisations, researchers, companies, public bodies and intermediaries to understand one another's methods, values and constraints.

- Policy action: fund short cross-sectoral learning modules, peer-learning formats and facilitation roles that help artistic, scientific, technological and public-sector actors collaborate from the start.

3. Build infrastructures for experimentation. Rehearsal rooms, stages, concert halls, festivals, digital platforms and city-based test environments can function as living labs for new methods, technologies and forms of participation.

- Policy action: support cultural testbeds and demonstrator environments where performing arts institutions, universities, companies, municipalities and communities can prototype together.

4. Develop integrated funding pathways from production to innovation. Funding should support the full innovation pathway: early identification, matchmaking, co-design, production, experimentation, documentation, translation, validation and adaptation. Cultural funding does not need to become innovation funding, but interfaces are needed through which promising outcomes can move from one funding logic to another.

- Policy action: design funding schemes that cover pre-production exploration, production-based experimentation and post-production translation. Test innovation vouchers linked to productions, dedicated follow-up resources, co-funded programmes spanning cultural and innovation

portfolios, and shared innovation functions that connect cultural organisations with universities, industry and public actors.

5. Invest in intermediaries and cross-sectoral networks. Production-based innovation needs brokerage to identify transferable inventions, knowledge, connect partners, design experiments, set-up innovation support and support follow-up. This requires skills in collaborative multi-stakeholder invention-to-innovation journeys, risk-handling and operations.

- Policy action: resource intermediary organisations, university collaboration offices, cultural clusters and regional innovation agencies to broker partnerships beyond individual projects.

6. Use ecosystem building blocks to guide policy action. The ekip innovation ecosystem building blocks – infrastructures and networks, investment and funding, regulation and governance, skills and competences, the social dimension, sustainable competitiveness, and research, techniques and technological solutions – help identify where support is missing (Holmberg, 2026a).

- Policy action: use the building blocks as a diagnostic checklist when designing calls, policy labs, regional strategies and evaluation frameworks for CCI-related innovation.

7. Support movement across innovation zones. Open innovation depends on actors being able to explore uncertainty, form partnerships and move selected outcomes into contexts with a clear mandate for further development.

- Policy action: support programmes, intermediaries and collaborative platforms that help recognise, translate and adapt production-based innovations across yellow, green and blue zones. Align seed funding with exploration, project funding with inter-organisational collaboration and investment with organisation-led implementation, while allowing non-commercial, public-value and collaboratively governed pathways where appropriate.

8. Establish a parallel pathway from production to innovation. Artistic production should retain its autonomy, while selected outcomes can enter a separate process for recognition, documentation, translation and further development.

- Policy action: fund post-production discovery and translation phases that assess transferability, usability, robustness, ownership and wider application without imposing commercialisation goals on the artistic process.

9. Strengthen knowledge of intellectual asset management. Cross-sectoral open innovation with performing arts requires capacity to identify, manage and share intangible assets generated through production and its ecosystem, including methods, formats, technical solutions, data, know-how, rights and agreements. This is especially important when collaborating with large corporations with strong commercial interests, different logic, where asymmetries in legal capacity, bargaining power and routes to market can affect how value, ownership and future use are negotiated. Existing work on intellectual assets, finance, learning, innovation and intellectual property rights in the cultural and creative sectors provides useful foundations for this capacity-building (Creative FLIP, n.d.; Petrusson, 2004).

- Policy action: provide guidance, advisory services and model agreements for ownership, access, licensing, data, know-how and reuse.

10. Support collaborative ownership and equitable value creation. Innovation opportunities generated through production may have several contributors but no obvious owner or organisation able to lead the next phase.

- Policy action: resource intermediaries and advisory services to clarify contribution, stewardship, rights, responsibilities and benefit sharing early, and strengthen the capacity of cultural and creative actors to negotiate with larger partners. Policy action: provide guidance, advisory services and model agreements for ownership, access, licensing, data, know-how and reuse.

The aim is not to make every production serve external innovation goals, but to create conditions where knowledge generated through artistic production can be recognised, shared and adapted when relevant. Stronger attitudes, skills, infrastructures, finance, networks and intellectual asset management capacities would allow performing arts to contribute more fully to open, inclusive and future-oriented innovation ecosystems.

Together, these recommendations call for stronger recognition, better ecosystem conditions, integrated policy frameworks and improved intellectual asset management so that performing arts and other cultural and creative industries can contribute more fully to open, cross-sectoral and future-oriented innovation (Holmberg, 2026a; Holmberg, 2026b; Kraatari, 2026).

3.3 From overlooked practice to recognised innovation capacity

Artistic production is already a site where future-oriented innovation takes place. In rehearsal rooms, workshops, artistic labs, concert halls, theatres, festivals and digital performance environments, new methods, technologies, relationships and forms of public engagement are developed through the practical work of making. These innovations often begin with artistic questions, experimentations and production constraints, but they can generate value for research, education, health, urban development, digital transformation and democratic participation.

The challenge is no longer whether performing arts can contribute to innovation, but whether innovation systems can identify and recognise the forms of solutions and knowledge they produce. Production-based innovation is often tacit, embodied, relational and situated. It may appear also as a method, prototype, collaboration model, accessibility solution, audience format or way of reframing a societal issue. These outcomes require documentation, brokerage, funding and evaluation that capture more than technological novelty or economic growth. It needs a parallel innovation track.

The principal policy deficit is therefore not an absence of creative activity, but an absence of structures that can identify and recognise transferable outcomes, build a parallel innovation track, protect the integrity of artistic production, manage collaborative ownership and connect selected opportunities to further development, diffusion and scaling. Policy attention should shift from not only encouraging the sector to innovate but towards building the capacity to identify, recognise and support the process of turning inventions to innovation.

Recognising innovation by production would also change the relationship between cultural policy and innovation policy. Instead of treating the arts as peripheral to innovation ecosystems, policy could position artistic production as a strategic environment for experimentation, sense-making and cross-sectoral learning. This requires infrastructures, funding, shared skills, intermediaries and governance arrangements that allow artistic, scientific, technological and civic actors to collaborate without reducing the arts to an instrumental service.

The wider opportunity is to build innovation ecosystems that can work with complexity, ambiguity and human experience. Performing arts are particularly valuable in this regard because they combine disciplined experimentation with imagination, embodiment, collaboration and public encounter. If these capacities are made more visible and better connected to other sectors, innovation systems can become more inclusive, reflective and responsive to societal change.

Innovation by production offers a way to identify and recognise solutions and knowledge generated through artistic practice and to understand how it can travel responsibly through innovation ecosystems. Within the broader ekip framework, it demonstrates how open innovation can originate within cultural and creative production itself. The zone model clarifies the changing conditions under which actors explore together, establish partnerships and assume mandates for development, while also showing that innovation journeys need not follow one linear route. The future task is not simply to encourage more invention followed by innovation process, but to strengthen ecosystem capacity to identify, recognise, support and connect inventions to innovation process already emerging through production while preserving artistic autonomy, collaborative contribution and cultural value (Holmberg, 2026a; Schot & Steinmueller, 2018)..

References

Bakhshi, H., Hargreaves, I., & Mateos-Garcia, J. (2013). A manifesto for the creative economy. Nesta. https://www.nesta.org.uk/report/a-manifesto-for-the-creative-economy/

Borgdorff, H. (2012). The conflict of the faculties: Perspectives on artistic research and academia. Leiden University Press.

Carayannis, E. G., & Campbell, D. F. J. (2009). Mode 3 and quadruple helix: Toward a 21st century fractal innovation ecosystem. International Journal of Technology Management, 46(3/4), 201–234. https://doi.org/10.1504/IJTM.2009.023374

Chen, C.-L. (2020). Cultural product innovation strategies adopted by the performing arts industry. Review of Managerial Science, 15, 1139–1171. https://doi.org/10.1007/s11846-020-00393-1

Chesbrough, H. (2003). Open innovation: The new imperative for creating and profiting from technology. Harvard Business School Press.

Creative FLIP. (n.d.). Finance, learning, innovation and intellectual property rights for the cultural and creative sectors and industries. https://cultureactioneurope.org/projects/creative-flip-finance-learning-innovation-intellectual-property-rights-for-the-ccsi/

European Parliament. (2019). Culture and creative sectors in the European Union: Key future developments, challenges and opportunities. Policy Department for Structural and Cohesion Policies. https://www.europarl.europa.eu/RegData/etudes/STUD/2019/629203/IPOL_STU(2019)629203_EN.pdf

Fleming, T. (2015). Cultural and creative spillovers in Europe: Report on a preliminary evidence review. Arts Council England. https://www.artscouncil.org.uk/sites/default/files/download-file/Cultural_creative_spillovers_in_Europe_full_report.pdf

Future by Lund. (n.d.-a). Personalised future of digital concerts. https://www.futurebylund.se/en/portfoljer/personalised-future-of-digital-concerts

Future by Lund. (n.d.-b). Teateruppsättning ger språkforskare nya möjligheter. https://www.futurebylund.se/nyheter/teateruppsattning-ger-sprakforskare-nya-mojligheter

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case study. Research Policy, 31(8–9), 1257–1274. https://doi.org/10.1016/S0048-7333(02)00062-8

Holmberg, L. (2026a). Open Innovation 3.0: Empowering Europe through cultural and creative industries. ekip.

Holmberg, L. (2026b). Innovation by, for, and with the culture and creative industries: Strengthening Europe's innovation ecosystems through CCI engagement. ekip.

Jensen, M. B., Johnson, B., Lorenz, E., & Lundvall, B.-Å. (2007). Forms of knowledge and modes of innovation. Research Policy, 36(5), 680–693. https://doi.org/10.1016/j.respol.2007.01.006

Kraatari, E. (2026). Stop putting on acts, make a difference! Time to (finally) frame policies for culture, creativity, and innovation. ekip.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge University Press.

Malmström, B. (2026). Understanding cultural policies and innovation policies: Differences, overlaps and societal benefits. https://ekipengine.eu/understanding-cultural-policies-and-innovation-policies-differences-overlaps-and-societal-benefits/

Mazzucato, M. (2018). Mission-oriented innovation policies: Challenges and opportunities. Industrial and Corporate Change, 27(5), 803–815. https://doi.org/10.1093/icc/dty034

Nelson, R. (2013). Practice as research in the arts: Principles, protocols, pedagogies, resistances. Palgrave Macmillan.

Peters, T., De Voldere, I., Vuijlsteke, C., Janssens, J., Poprawski, M. (2026). Cross-sectoral innovation with performing arts. ekip. https://ekipengine.eu/wp-content/uploads/2024/11/Cross-sectoral-innovation-with-performing-arts-1.pdf

Petrusson, U. (2004). Intellectual property and entrepreneurship: Creating wealth in an intellectual value chain. Center for Intellectual Property Studies. https://libris.kb.se/bib/9869653

PREMIERE. (n.d.). Performing arts in a new era: AI and XR tools for theatre and dance. https://premiere-project.eu/

Sawyer, R. K. (2007). Group genius: The creative power of collaboration. Basic Books.

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.

Schot, J., & Steinmueller, W. E. (2018). Three frames for innovation policy: R&D, systems of innovation and transformative change. Research Policy, 47(9), 1554–1567. https://doi.org/10.1016/j.respol.2018.08.011

Sennett, R. (2008). The craftsman. Yale University Press.

Spatz, B. (2015). What a body can do: Technique as knowledge, practice as research. Routledge.

Weick, K. E. (1995). Sensemaking in organizations. Sage.

Wise, E., Lorentz Hjorth, C., & Scott, K. (2023). Strengthening governance in place-based ecosystems: Lund Model for Innovation Ecosystem Portfolio Tracking. I Academic and Practitioner Proceedings of the 2023 UIIN Conference series: challenges and solutions for fostering entrepreneurial universities and collaborative innovation (Vol. 2023, s. 146-162). University Industry Innovation Network