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Can action research improve local journalism?

A critical evaluation of the EU Innovation Action INJECT Norway

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Abstract

This article considers the extent to which action research can help local stakeholders tackle the permanent technological disruption in the media sector by reshaping journalistic production practices with original design by examining a specific case. The INJECT Norway (Innovative Journalism: Enhanced Creativity Tools) project was part of an EU Innovation Action with partners that included universities, technology companies, business consultancies, and local newspapers. The objective was to design a new tool for creativity support in journalism and stimulate innovation competence through a business ecosystem. The article evaluates the collaboration between academics and local partners in the Norwegian ecosystem regarding the workability of the new designs and the credibility of the approach. The evaluation is written as a chronological narrative of the project's collaboration from optimistic beginnings to eventual failure. The main findings reveal a tension between the academic researchers and the local project partners. Despite these tensions, the article concludes with a hopeful note about the current action research ecosystem: harnessing the power of students to mediate the relationship between academics and local partners.

Keywords: action research, business ecosystem, EU Innovation Action, local newspapers, innovation competence

Introduction

Action research is a method for interdisciplinary problem-solving. Greenwood and Levin (2007) have written an introduction to what they call pragmatic action research, and we rely on it throughout. They say that "knowledge is generated through conscious attempts to solve practical problems" (Greenwood & Levin, 2007: 108), and the local participants

are considered the "problem owners" (Greenwood & Levin, 2007: 14). They expect the academic researchers to contribute to achieving results that are "useful for the local partners in gaining increased control over their own situations" (Greenwood & Levin, 2007: 117). In another authoritative introduction, Argylis and colleagues (1985) argue that action research is geared to improving the situation for the local people involved in the research project, for example, through re-education, equal participation, and free choice. Both these sources fundamentally presume that action research is conducted on behalf of partners outside academia, and that it differentiates between "what is likely to come about if no self-conscious action is taken and what other, possibly more desirable, futures may be available" (Greenwood & Levin, 2007: 118–119).

In the present article, we discuss an EU project that attempted to solve some of the problems facing local news media through action research. Following Greenwood and Levin (2007), we ask how local partners could gain increased control of the way they tackle the permanent technological disruption in the media sector and shape their products and services towards desirable futures.

In an op-ed piece for NiemanLab in 2021, the Director of the Reuters Institute for the Study of Journalism Rasmus Kleis Nielsen (2021: para. 1) says: "The news industry is a technology- and talent-based industry that has for decades neglected investment in both". It is worth quoting this problem analysis in more detail:

> [The news industry] has taken its tools for granted, relying on others to develop the technologies it relies on. [...] It has taken its people for granted, with little investment in lifelong training and professional development, and with the confidence – even arrogance – of having always been an attractive destination for editorial talent. [...] Having invested so little in its future, much of the legacy news industry is now finding that it may not have one. (Kleis Nielsen, 2021: para. 2–4)

According to Kleis Nielsen, the news media invests far less in research and development than most other industries. He refers to OECD research that puts research and development investment in the publishing industry at 0.57 per cent of gross value added, while, for example, the furniture industry invests more than twice that (1.17%) and textiles more than three times (1.73%). The average research and development share across all industries is estimated at 5 per cent – almost ten times the investments in publishing (Kleis Nielsen, 2021).

Adding to Kleis Nielsen's problem analysis, it seems clear that independently owned local newspapers are in particularly dire straits. Their limited size and resources, as well as the lack of technological synergy associated with being part of a larger corporation, inhibit the rate of innovation and make local newspapers vulnerable to disruption from global advertising media like Google and Facebook. The trade journal *Medier24* argued in 2018 that local newspapers increasingly need outside help to keep up with innovation. The editor of a local newspaper claimed the following: "We don't have internal development resources or finances to make it ourselves. This means we are dependent on technology providers, but even they can't keep up [translated]" (Michalsen, 2018). To summarise, it would be valuable for local newspapers to gain the ability to design new custom-made digital tools and to cultivate greater innovation competence in their editorial staff.

What can an action research project contribute with? Following Greenwood and Levin (2007), researchers should make socio-technical projects that build direct links between technology and work organisation and that can adjust one or both to improve the situation. Researchers should engage local partners in continuous innovation and improvement processes at the newsroom level, Greenwood and Levin (2007) assert. They address technology in a way that is highly relevant for the media sector:

> Given a specific technology to be used, one would have to recruit or train workers with the necessary skills for operating in that technical environment or design the technology with particular kinds of behaviors and group organizational features in mind. (Greenwood & Levin, 2007: 20)

The main result should be what Greenwood and Levin call workability. The test of any theory is its capacity to resolve problems in real-life situations, and the results of action research should allow the participants to figure out whether the solution they developed actually solves the problem they aimed to address (Greenwood & Levin, 2007). Their definition of workability relies entirely on the credibility of the solution among the local partners. A project's consequences in terms of altered patterns of action constitute a clear test of credibility, Greenwood and Levin argue, and local participants are unlikely to accept results as credible "if they cannot recognize their connection to the local situation or because local knowledge makes it clear that the frameworks are either too abstract or simply wrong for the specific context" (Greenwood & Levin, 2007: 67). Workability and credibility are difficult criteria to satisfy, as the evaluation below shows.

In the following sections, we introduce the INJECT Norway action research project, specify the research questions for this article, and present the method, materials, and data used in the scientific evaluation.

INJECT Norway

The predicament of legacy news organisations is increasingly being acknowledged by the research community. In Europe, funding bodies and research councils address the problem with ambitious calls for collaboration across disciplines. In the Horizon 2020 framework programme, the EU Commission supports a range of such initiatives under the Innovation Action effort, primarily consisting of "activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services" (EU Commission, 2021: para. 1). EU Innovation Actions have as their main goal to encourage positive outcomes in small- and medium-sized enterprises. They are supposed to explore designs, work processes, and business models that can presumably increase the chances of success for ecosystems of companies, universities, and communities in the future. One way for local newspapers to improve their design skills and innovation competence, as called for by Kleis Nielsen and others, is therefore to participate in externally funded projects like EU Innovation Actions.

"Innovative Journalism: Enhanced Creativity Tools" (INJECT) was an Innovation Action attempting to contribute to the need for technological innovation in small- and medium-sized newspapers so that they could increase their chances of surviving the disruption of their existing business models and readership habits (Maiden et al., 2018). INJECT was organised according to action research principles in that it attempted to

improve the quality and profitability of journalistic practices in collaboration with local stakeholders in an open-ended design process (Wagemans & Witschge, 2019); and it was transdisciplinary in that it involved local newspapers, research institutions, and tech companies. The core presumption of INJECT was that new designs are more likely to be successfully implemented if there is collaboration in ecosystems rather than competition between individual companies (Anggraeni et al., 2007; Moore, 2006). The structure of the media markets within the different member countries of the European Union is highly diverse. It would have been difficult to start only one business vehicle for the INJECT tool to cover the whole marketplace and its linguistic, legal, financial, and media-cultural differences. Therefore, INJECT adopted an ecosystem approach. For selected regions in Europe, INJECT would seek to build up and maintain a separate ecosystem. The core participants in the ecosystem were invited during a dialogue that took several years and included negotiations with dozens of potential partners. In the media sector, it is increasingly common to have networks of collaboration "between academic researchers and industrial/private sectors for the purpose of product and technology development" (Klein, 2012: 5). Media clusters, media cities, and media labs are an indication of this tendency.

The Norwegian media context

Norway was considered a good market for the INJECT roll-out. In 2016, there were 227 local newspapers with at least one weekly edition (MedieNorge, 2022). As such, there was a large potential market for the creativity tool in question. According to UNESCO, Norway has the highest rate of newspaper readership worldwide. Norway also has strong social-democratic traditions, strong local communities, and government support of Norwegian cultural and historical values (Halvorsen & Stjernø, 2008). However, each national INJECT ecosystem would have the same basic structure, with companies and institutions at the top level and important tasks for designated individuals.

INJECT aimed to foster relevant journalistic technology development for independently owned local newspapers and to build a sustainable business ecosystem on top of the new technical product. The main presumption was that it is worthwhile for local newspapers to learn to develop tools in their local newsrooms and to commercialise them with local partners instead of buying them ready-made, one-size-fits-all from the shelves of big global suppliers. To fulfil these objectives, it was crucial to foster good collaboration between the partners.

There were three core academic research and development partners in INJECT Norway whose main tasks were to design, develop, manage, and report on the project. A British university and a Greek partner university provided the software technology and conducted all interface design, programming, and development. The same system was used for ecosystem experiments in France and Germany, but the Norwegian system was the core of the project. The British university furthermore had overall leadership over the Innovation Action. A Norwegian university oversaw the user testing and conducted contextual inquiries, focus groups, and other types of qualitative interviewing to learn about how journalists used the tool. Researchers from this university became the most "action research–minded" of the partners: They encouraged collaboration through many visits to the other partners and promoted the project in academic as well as journalistic

contexts. Students of journalism and media design were recruited as assistants.

Three local family-owned newspapers contributed as testbeds and initial customers for the INJECT creativity tool. The local newspapers had an ongoing partnership intending to explore possible innovations in their newsrooms, and they already had a line of communication with the Norwegian university involved. A commercial consultancy oversaw public relations, sales, and business development. The company explored ways of securing revenue from licences sold in the Norwegian market, as well as payment for services like technical installations, tutoring of journalists, and courses. It was responsible for growing the ecosystem and finding new revenue streams. The commercial partner also already collaborated with the university for internships in educational contexts.

The EU Commission was an important stakeholder in the project due to its financial investment through the grant. In this sense, the project had a centralised management structure. All partners were reimbursed for their efforts to develop, test, and improve the INJECT tool. The industry partners were compensated with 70 per cent of the costs for work performed during the action, and academic partners 100 per cent. The deliverables and review process in Brussels had to be approved before reimbursements were made.

Research questions

In this article, we evaluate the dynamics of collaboration in the INJECT Norway business ecosystem during the 18-month active phase of the EU Innovation Action in 2017 and 2018. According to Greenwood and Levin (2007: 109), the change process that gives rise to knowledge production must be conveyed from the involved actors' positions. We were involved in the Innovation Action, and our study addresses the wider academic community of journalism and design researchers. Järvinen (2007) – as well as Baskerville and Wood-Harper (1998) – recommends that the results of an action research study "should help to explain why certain actions resolved the problem setting and why certain actions failed to resolve the problem setting" (Järvinen, 2007: 53). Accordingly, the purpose of this study is to assess the extent to which the academic researchers in INJECT Norway were able to foster innovation abilities in collaboration with local journalistic and commercial partners. We address the following research questions:

- How workable was the action research?
- To what extent did it achieve the desired outcomes regarding tool design and innovation competence?
- What could we as academic partners have done better, and what could the local partners have done better?

The main part of this article is organised as an evaluation, followed by a discussion. The results of the evaluation are structured as a chronological narrative. The discussion addresses the efforts of the academic researchers and the local partners in light of Greenwood and Levin's (2007) ideals for action research. In a concluding section, we summarise the critical evaluation and formulate implications for future projects of a similar type.

We were central in the ecosystem activities, and our values and opinions obviously colour our interpretations as authors. This type of normative load is integral to action

research, where the aim is to improve situations and solve problems, and where pragmatic values and interests influence the research process (Sein et al., 2011).

Successful action research requires collaboration between involved partners. In the context of innovation, collaboration is a process where individuals and organisations work together to achieve a goal that transforms the current situation into a more beneficial one (Darsø, 2019: 29). According to Darsø, collaboration is vital to a successful new product: "The innovative product doesn't consist only of the technical result, but also of a new human infrastructure based on mutual trust and respect" (Darsø, 2019: 29). Such a human-oriented definition of collaboration in business ecosystems is particularly valuable in a small local community.

Method and data

In action research, researchers engage in goal-seeking collaboration, abandon their passive observing position, and take up an active attitude (Grubenmann, 2016; Järvinen, 2007). Researchers are supposed to become change agents for the chosen goal (Järvinen, 2007). This feature is the defining difference between action research and conventional scholarship. There is a decades-long differentiation between normal and post-normal science (Funtowicz & Ravetz, 1993); between knowledge production in mode 1 and mode 2 (Gibbons et al., 1994); and between science and research (Latour, 1998). The core difference is that conventional science addresses cognitive challenges constructed by the researchers, while action research addresses societal problems and problem-owners in the social world. This creates tensions that Latour (1998: 208) describes as follows:

> Science is certainty; research is uncertainty. Science is supposed to be cold, straight, and detached; research is warm, involving, and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions, and emotions; research feeds on all of those to render objects of inquiry familiar.

Transdisciplinary research is another term for projects that address societal problems by collaborating with extra-scientific actors. Its aim is to "enable mutual learning processes between science and society" (Jahn et al., 2012: 4) and to make the research maximally relevant for a common problem that is usually "real-world, as opposed to merely academic" (Holbrook, 2013: 1867). Transdisciplinary research "requires an uncommon willingness of individual scientists to learn and to think outside the disciplinary box" (Jahn et al., 2012: 8).

The ideals for collaborative problem-solving research strongly resemble the EU Commission's framework called Responsible Research and Innovation. According to von Schomberg (2011), responsible research and innovation is "a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products". According to Stilgoe and colleagues (2013), a responsible research and innovation project ought to be characterised by a critical anticipation that prompts researchers and organisations to ask "what if"

questions. The participants must consider what is known about their innovation goal, what is likely to happen, what is plausible but less likely, and what is possible but quite unlikely. "Anticipation involves systematic thinking aimed at increasing resilience, while revealing new opportunities for innovation", according to Stilgoe and colleagues (2013: 1570). As the evaluation of INJECT Norway shows, the process of critical anticipation was easier to accomplish and more fruitful at the beginning of the project than towards the end.

The results are reported chronologically, as, according to Greenwood and Levin (2007: 110), action research is typically communicated in the form of narratives because they are "inherently particular, revealing specific histories, processes, commitments, battles, defeats, and triumphs". This involves a risk, they add. Readers who are accustomed to conventional social science will take the strong presence of narratives to show that "action research is hopelessly 'unscientific' and incapable of producing valid knowledge" (Greenwood & Levin, 2007: 106). Research papers written with a chronological narrative can be unjustly identified as superficial by reviewers and risk being rejected even though, as this article shows, they may be just as carefully researched and argued as a more conventional paper.

Data

The main data material for the study is the corpus of official documents produced within the INJECT Innovation Action. During the 18-month project period, 13 deliverables were submitted to the EU Commission, with a volume of approximately 450 pages of text. Deliverables included specifications of the digital services and tools, formative and summative evaluations of the tool, descriptions of the innovation ecosystem in Norway at two stages, dissemination and communication reports, and two versions of a data management plan. In addition, the project proposal, as well as various types of materials in the form of PowerPoint presentations, newsletters, stories published on the INJECT website, and social media posts have informed the analysis.

We stress that we do not evaluate the full suite of technologies and competences stimulated by the INJECT project. The creativity tool lives on as part of a product portfolio called JECT.AI (Maiden, Zachos, Franks et al., 2020). During the active phase of the project, there were also emerging regional ecosystems in the Netherlands and France (see Wagemans & Witschge, 2019). In this article, we evaluate the dynamics of collaboration only in the Norwegian business ecosystem and mainly draw on the four deliverables that deal most actively with the Norwegian innovation ecosystem. Corresponding to requirements set up by the terms of the project, these deliverables dealt with the initial version of the first INJECT ecosystem, the sustainable version of the first INJECT ecosystem, the first INJECT ecosystem "business & exploitation plan", and finally, the dissemination report for the evolved INJECT ecosystem. We use additional information from the four research articles that have been published from the project (Maiden et al. 2018; Maiden et al. 2019; Maiden, Zachos, Brown et al., 2020; Wagemans & Witschge, 2019).

To reduce exposure, we do not use the names of any of the institutions but give them labels such as "The British university", "three local newspapers", and "the commercial partner". The identity of the participants in INJECT Norway are anonymised in much

the same way as the narrative about the town development scheme presented in Green-wood and Levin (2007); however, those who were involved in INJECT Norway will probably understand which companies, leaders, researchers, and journalists we refer to in our analyses. It is not a breach of confidence if someone with previous knowledge about the INJECT Norway project identifies people we refer to in the analysis, since all partners were aware of this possibility when they joined the project.

Defining a business ecosystem

As described above, INJECT Norway was organised as a business ecosystem consisting of many companies and institutions. It is therefore important to define the concept of ecosystem within the project. Moore (1993, 1996, 2006) established the idea of business ecosystems as a strategy to promote continuous innovation in a disruptive marketplace where conditions regularly change. A business ecosystem is "an economic community supported by a foundation of interacting organizations and individuals", according to Moore (1996: 26). The strategy of establishing business ecosystems points towards an intended increase in the overall public good emerging from the community. The ecosystems are in themselves intended as "collaborative, innovation-furthering public goods", Moore (2006: 35) argues. In general, "the fundamental public good offered by business ecosystems is the taking of a challenge that requires coordination and find-ing a way to take it out of a firm and bring in more participants", according to Moore (2006: 48). In more specific terms, a business ecosystem for innovation in journalism may be expected to result in public goods such as a more participatory local public, higher quality exposure of corruption or other forms of wrong-doing, and a more en-lightened citizenry.

Moore presumes that the success of a business ecosystem fundamentally depends on the collaboration it can achieve:

> For every advance there are complementary innovations that must be joined for customers to benefit. These complementary advances often must co-evolve across company lines because no single firm has all of the required specialized knowledge and managerial resources necessary for the whole system. (Moore, 2006: 31–32)

Collaboration also means that companies must "find ways to align their visions, so that research and development investments are mutually supportive, and capital investments and operating processes are synergistic" (Moore, 2006: 34). Over time, the ecosystem partners presumably co-evolve their capabilities and roles and tend to align themselves with the directions set by one or more central companies (Moore, 1996):

> Companies must establish interfaces and protocols for putting together their contri-butions. Most importantly, they must dialogue closely with customers so that what is created is what the customer wants and is willing to pay for. (Moore, 2006: 34)

Also, motivation is vital to the development of technical solutions, to both testing and implementation and to feelings of personal engagement and community (Moore, 2006). It is important to ensure that the group is open to ideas no matter where or how they originate and that it doesn't discriminate against some potential contributors and favour others. To achieve this, various kinds of talent are needed, and no single organisation

can oversee the work, maintains Moore (2006). As the evaluation shows, this became a difficult ideal for INJECT Norway to accomplish.

Results

The following sections report the results of the evaluation in a chronological way, focusing on the workability of the design and innovation activities in INJECT Norway.

Step 1: Co-designing the tool itself

The INJECT software was intended to support journalists in discovering creative angles on news stories and to discover them more quickly than with existing search tools like the Scandinavian newspaper archive Retriever or Google Search. There would be increased efficiency and profit for the journalism partners if the newsroom spent less time on writing each story and readers spent more time on reading and enjoying them more (for details about the INJECT tool, see Maiden et al., 2018; Maiden et al., 2019).

The design and testing of INJECT was a co-design process in line with the collaborative ideals of action research. According to Järvinen (2007: 15), action research and design science are similar in that both are "primarily oriented at solving the local problem in close collaboration with the local people". Early in 2017, several British, Dutch, and Norwegian journalists and journalist students were invited into the design process. First, paper-based sketches were discussed, and then digital wireframes were developed and presented. Journalists were interviewed again to discover problems and further requirements.

The first functional interface was only available in English. A contextual inquiry in the summer of 2017 involved Norwegian journalists trying out this interface by testing the functions for international news stories (e.g., Brexit, Donald Trump). The journalists reported that INJECT seemed quite useful for in-depth journalism, but that it did not make much of a difference for breaking news. However, it could give creative support for reportage, background analyses, or portraits and could help them to discover new interview sources and complement established and over-used sources of information. The contextual inquiry also revealed that journalists wanted INJECT to be integrated into their content management systems for easy access. They also wanted to enable the INJECT to search in the newspapers' own internal archives for more relevant and precise creative prompts. On top of this, journalists wanted INJECT to be able to process municipal websites, national statistics, and posts from social media like Facebook, Instagram, and Twitter.

After the test phase, the INJECT tool was adapted to the identified, Norway-specific needs with translations of the user interface and other modifications to fit the national context. In the autumn of 2017, a new version of INJECT was launched, with improvements based on the contextual inquiry. It now had a Norwegian-language interface and was functional in WordPress, Google Docs, and Adobe InCopy. It could be connected to internal archives and would at a later stage also be connected to Facebook profiles and other social media outputs. The INJECT tool at this time accessed over 3.5 million indexed English-language articles; over 300,000 Norwegian-language articles; and 62,160 Norwegian-language articles from the archives of the three newspapers.

The design team, accustomed to co-designing with primary users, worked directly with the journalists. However, journalists and designers didn't necessarily understand each other that well; the British and Greek designers didn't have in-depth understanding of the work practices of local journalists in Norwegian fjords and valleys. Likewise, journalists don't necessarily understand or acknowledge the processes involved in inclusive co-design. Initially at least, they had an expectation that the INJECT tool would work effectively as soon as it was activated. The design team also learnt something about the hierarchy of newsrooms. Journalists had no power to make decisions about technology uptake. The editors and CEOs make decisions based on the need for productivity and cost-effectiveness, which is not necessarily the primary need of the journalist. However, there was a bottom-up pressure from journalists that influenced what editors decided to prioritise. Overall, the INJECT design team felt that they were co-designing for two different groups: journalists who are using the tool in the newsroom and leaders who are making strategic decisions about purchasing tools for the newsroom.

Step 2: Testing and improving the tool

Next, INJECT was introduced in the newsroom, with the aim of learning something about technology design and increased innovation competence, as well as newsroom leadership, by the ways in which the editors and journalists reacted.

At first, there was noticeable enthusiasm among the editors, CEOs, and journalists from the three newspapers. The entrepreneurial spirit of the British and Greek team was contagious and created an optimistic mood among the editors and researchers in the Norwegian ecosystem. They saw that the collaborative innovation process adopted in INJECT had real potential and that the prototype became more useful as the dialogue progressed. This mobilising power of an EU Innovation Action among local stakeholders hence proved to be substantial; however, it is also a perishable resource that may lose its effect over time.

It was well known that one of the greatest barriers to innovation in journalism is people's unwillingness to adapt to new tools in their workday. There was therefore a two-part strategy for involving the participants: First, representatives from the commercial partner organised tutoring and workshops to help increase the adoption of INJECT and followed up by telephone and e-mail. New users were guided through the features of the system and were encouraged to adapt an open mindset towards INJECT. Second, the journalism partners appointed champions, or "agents of change", in their newsrooms. Journalists in each newsroom that came across as genuinely interested in INJECT and other innovative technologies were given the role of first movers in their newsrooms. The idea was that these enthusiastic early adopters would train their colleagues to use INJECT.

Innovation champions in the newsrooms are important, and journalists who saw the value in INJECT and were prepared to act as internal influencers for its uptake and support were valuable. Typically, it was the younger journalists more experienced with various technologies who were open to INJECT. People who are relatively new in the journalism world – and who have grown up with digital technologies – are typically more open to exploring how these technologies can be adapted for news. Young journalists wanted to explore novel possibilities, while older journalists were sceptical. This

tendency was also noted by Grubenmann (2016: 168), who says that journalists had spent very little time studying international examples of digital journalism and trends before their participation in the research project: "Most of the journalists seemed to lack the resources and/or the motivation to follow these developments as part of their daily work".

Next, time is an enemy of innovation trials. After the initial enthusiasm in the spring of 2017, the newspaper participants increasingly lost interest. Even though the EU Innovation Action's budget had an earmarked post to reimburse the newspaper partners for making their journalists use INJECT actively, the pressure of other journalistic tasks did not diminish during the project, and journalists engaged far less with INJECT than the editors and researchers expected when the project started.

The increasing lack of engagement with INJECT from some fractions was quite detrimental to the innovation efforts. Some journalists considered it yet another tool on the desktop and didn't feel they had time to use it – and even less so for contributing painstakingly to its development through design iterations with teams in Britain and Greece. In fact, there were fractions of seasoned journalists who seemed to actively undermine the engagement with INJECT in the newsroom. Our impression was that they felt their expertise was threatened by the new tools that the younger people in the newsroom handled better. They made fun of the tool's ineffectiveness at an early stage – when it could not be expected to function optimally. The positive vibes surrounding INJECT were slowly morphing into negative ones. In the spring of 2018, it became clear that most journalists in the local newspapers had no interest in continuing the attempt at growing a bigger Norwegian ecosystem. Indeed, in one newsroom, the mere mention of the word "INJECT" caused consternation and negativity among journalists.

Each newspaper received EU funding to be part of the INJECT project and signed a contract stipulating that signing partners would participate professionally. Given that the funds were there to support involvement, not to underwrite non-INJECT activities and internal losses, their lack of involvement towards the end of the funding period caused tension, but it did not lead to acute conflict.

Step 3: Implementation of the tool – resistance from third-party service providers
Technology development and maintenance in local newspapers are often assigned to external companies. This likely increases homogeneity among newspapers and results in a low capacity to innovate. INJECT Norway was an opportunity to imagine new ways of organising local newspaper ecosystems so that the low capacity to innovate could be overcome, but this turned out to be a substantial obstacle despite all good intentions.

Small newspapers rely on large companies for their data infrastructure, and there is a tendency toward homogenous infrastructure in the Norwegian news market. Technical specifications are comparably similar across the sector, and for INJECT, this meant that an integration into one newsroom could potentially facilitate integration into several others. The three newspapers all subscribed to data services from the same company, and at first this homogeneous infrastructure aided the INJECT innovation efforts – when something worked well for one newspaper it worked well for all three.

In January 2018, the last design iteration was about to start, and the result of these trials was supposed to corroborate the use value of INJECT to potential customers and

investors. All three newsrooms were supposed to use INJECT through their InCopy text editor for easy access. However, it turned out that the company that designed and maintained the newspaper archives and online publishing system failed to integrate the INJECT tool into the newspapers' content management systems, so the journalists in the three newsrooms had to use the web application version of INJECT in a separate browser window. This was a sub-optimal situation that influenced the usability of the tool. It was very difficult to do the adjustments that allowed INJECT to browse the archives, and it was not possible to search Facebook and other social media. It turned out that the contract between the news organisations and the technical company did not include support for services originating outside the company's own ecosystem.

The lesson learned from this step is that many smaller news organisations outsource the maintenance of some technologies to third-party businesses. INJECT was deploying new technologies but could not rely on the news organisations to be in control of technical support. The wider ecosystem of technologies and businesses around any newspaper's operation must therefore be known by innovators for them to assess whether a technological integration is contractually possible or not.

Step 4: Pitching the tool to potential customers

As the INJECT tool matured, it became more important to expand the ecosystem to include more news media and improve market penetration. The commercial partner was the primary point of contact for potential new clients and users. There were three elements in the commercial infrastructure: the legal entity that will sell the product; the support network that supports those who buy the product; and the pricing model that differentiates between customer needs. A range of pricing models were discussed before a three-level model was decided upon:

- Creative newsroom (initial setup: EUR 2000, then EUR 50 per user/year). It includes the INJECT tool integrated in the customer's editorial software, search functions for the internal news archive, professional tutoring, maintenance, and follow-up.
- Connected newsroom (initial setup: EUR 2000, then EUR 150 per user/year). It includes the creative package plus search of selected public databases and connection with collaborators.
- Prime newsroom (initial setup: >EUR 2000, then EUR 250 per user/year). It includes the creative and connected packages plus interactive fact-box engine, data visualisation widgets, and other customisable features.

A series of events was held to pitch the INJECT tool to potential customers. These events were well received, especially in the Norwegian academic community, and were noticed in media trade journals. An online user community was considered central for onboarding new customers, offering a place for information, community building, raising awareness, and facilitating engagement with the brand and the tool. An INJECT Norway landing page was created to serve as the basis for this engagement.

Ultimately, INJECT was supposed to be a self-sufficient organisation, by onboarding new paying customers into the ecosystem and avoiding the need for continuous third-party funding. At the same time, the promotion dialogue revealed that the pricing model was

too high for the local newspaper market, which put the profitability of the venture at risk.

Moore (2006: 33) describes the ideal function of business ecosystems as being "communities of economic actors whose individual business activities share in some large measure the fate of the whole community"; this was not the case with INJECT Norway, where the partners had different interests and priorities, and none were experts on the local newspaper market structure in Norway. Newspapers are relatively careful with investments, and it was not easy to persuade them to try new tools that cost as much as INJECT did. The Norwegian university partner was supposed to promote the product too but was not accustomed to acting as a sales unit. The three newspapers could potentially promote INJECT in the newspaper community, but they were hesitant to recommend the tool – their main activity is to sell subscriptions and advertisement space, not software. Finally, the British management team were too far away culturally and geographically to keep up with the pressure.

The ecosystem was dependent on external funding, and when the funding ended, the Innovation Action ended too. Temporary income, in this case from the EU Commission, can hence be considered a risk in similar projects. The deliverables required all partners to do predefined tasks. For some partners, this by far exceeded the budget and locked them into a workload that was more costly than beneficial. Despite hard work, careful construction of the business ecosystem, and EU support, the INJECT tool did not generate income at the end of the project period. When the external funding ended, newspapers had to choose between continuing with their private funds or ending the engagement. The commercial partner was unable to go on, and the local newspapers were hesitant. They were unable or unwilling to recommend INJECT to their newspaper partners, and the ecosystem was therefore not able to expand in Norway.

It is possible that INJECT Norway could have had more success if it were organised as a business cluster where the collaborators were geographically close to each other (see D'Este et al., 2013). Such industry clusters have proven to, on average, encourage innovation, but the quality of the results vary considerably. Important factors that influence the outcome are industry type and geographical region, as well as internal factors such as concentration within the cluster. A few economically large companies in a cluster have a less positive effect than many smaller companies, and more specialised clusters have better results (Fang, 2015).

Step 5: Discussion and lessons learned

The INJECT Innovation Action project reveals the challenges related to managing the local-global dimension. The project showed the need for intermediaries and translators in the local newspaper ecosystem to make "global" innovations accessible and adaptable to the local context, not only language-wise, but also in terms of local organisations and ways of working. This lesson is particularly important as universities increasingly reinvent themselves as entrepreneurial universities in triple helix collaborations where the state provides innovation funding, the private sector provides business opportunities, and the universities provide highly skilled technical experts (Etzkowitz & Zhou, 2018: 7). The Norwegian university sector must become better able to translate between the global and local actors if future action research projects are to become successful.

The project also showed that a dilemma with EU Innovation Actions is that the leadership of the ecosystem can be too far from the local context, and therefore less

able to make stakeholders feel heard and to motivate their local innovation efforts. An ecosystem can be artificial in that it must be upheld from a distance with strong communication abilities instead of by everyday interaction near each other. In the case of INJECT, the ecosystem reached the last stages of planning, and the actual implementation was imminent, there was a marked increase in the volume of project communication via e-mail and Skype, and through physical meetings in London and Brussels. As the frequency of communication increased, the complexity of the relationships between participants increased too. In the end, it became almost impossible for the newspaper partners to communicate their local interests in a way that fit with the requirements of the ecosystem leadership's communication practices. The collaboration felt increasingly artificial to some of the partners. There was a sentiment along the lines of "we could just as well have done it in our own way all by ourselves".

An innovation project organised as an 18-month EU project can be too rigid to develop organically along the lines of validated insights. Objectives were set out in advance, schedules, partner roles, and activities were predetermined, and these all had to be delivered according to the official plan. The funding relied on satisfactory written reports in the form of project deliverables. While this seems reasonable from an administrative point of view, it makes it difficult for the management to allow partners to pivot, follow new ideas, and in other ways explore what seems the best possibilities. This was a point of contention for all partners, but nobody was outspoken about it.

Despite this bureaucratic rigidity, the leadership of the INJECT project was able to adjust the ecosystem strategy. The less-than-expected involvement of the three newspapers led to a reorientation of the project toward the end of the funding period. The leadership pivoted towards more resourceful partners in the consortium and evolved ecosystems in the Netherlands and Germany, leaving the Norwegian ecosystem behind. In a sense, the newspapers contributed to their own narrative that INJECT was not useful for them. In a competitive game, opportunities will move elsewhere, leaving those who don't engage behind.

The importance of collaboration

In general, action research should cultivate a group dynamic that can withstand the tensions of developmental processes, rather than breaking down as tensions rise (Greenwood & Levin, 2007: 17). As our evaluation shows, the project failed in achieving this goal. Looking back at the project, the main parties showed a lack of collaboration abilities during the project.

True action research requires academics to transform

Action research requires investigators to possess personal and professional abilities that inspire credibility among the local partners. According to Greenwood and Levin (2007), action researchers should be friendly outsiders radiating a basic optimism about themselves and their collaborators, and they should be able to discuss failings in the local group's practices and perspectives on innovation in a way that is experienced as supportive rather than negatively critical or domineering. "Too much feedback", according to Greenwood and Levin (2007: 125) "can block a group; too little can pre-

vent the group from moving ahead". It turned out to be almost impossible for INJECT academics to embody these ideals.

The academics in INJECT organised project meetings in Brussels, London, Amsterdam, Paris, and Bergen. Due to the cost of transport, no meetings were held in the towns where the newspapers were located. This seems to have created a sense of distance for the local partners: They were never on "home turf", and the dialogue suffered from this. Furthermore, the meetings were organised as academic seminars instead of problem-solving meetings. The agenda consisted of speeches and group activities that were often quite unrelated to the most burning issues at any given time.

The friendly outsider is supposed to be a diplomatic coach, not a director or a boss; the INJECT academic team was likely too hierarchical. Greenwood and Levin (2007: 126) assert that the last thing most local groups who are stuck in difficult situations need is someone else telling them what to do. Action researchers must be "personally secure enough to admit ignorance and uncertainty and yet be able to advocate their own understandings and hopes" (Greenwood & Levin, 2007: 128). The INJECT academics were most likely not sufficiently empathic and involved in the perspectives of the problem-owners, and this seemed to make the latter frustrated. "Complex projects with diverse stakeholders in highly charged situations do not yield to quick fixes or magic bullets", argue Greenwood and Levin (2007: 128). In hindsight, we acknowledge that the challenges faced by local newspapers regarding innovation in news production and audience engagement were more complex and also more subtle than we expected.

Also, action research requires everybody involved to be risk-takers, according to Greenwood and Levin (2007: 127). While conventional social scientists are "trained to avoid risks and to try to look good, no matter what happens", action researchers must be willing to risk personal failure by supporting a local group that may or may not succeed. If not, they "will not provide the necessary moral support and confidence to people who are trying to persuade themselves to take risks as well" (Greenwood & Levin, 2007: 127).

While the creativity software developed in INJECT is now available in the international journalism market and can be considered a successful design based on action research, the university partners failed to cultivate long-term innovation competence among the local stakeholders. The academic researchers involved in INJECT Norway were good at designing new technology, but not so good at behaving like true action researchers.

Keeping local partners interested

It was difficult for the local partners to keep up the positive engagement as the project proceeded. The INJECT creativity tool did not solve their immediate problems with efficiency but would require a long-term engagement to reach its potential in the local newsrooms. This is understandable, because as Greenwood and Levin (2007: 104) maintain, since "local stakeholders take action in their own environments, the consequences of errors are both significant to them and often rapidly apparent". The academics were at a safe distance from the everyday stress of the newsroom and did not appreciate the negative implications of tests and trials for the work environment.

In addition, the established hierarchies in the newsrooms worked against appreciating the value of the INJECT novelties. Greenwood and Levin (2007: 125) argue that local

modes of thinking might cause groups to "shut down or to cycle unproductively over issues without resolving them", and they also point out that "local people, because of their history together […] often are unable to tell each other uncomfortable things that they clearly are aware of [… and they] overlook some important resources for change" (2007: 125–126). Editors listened to senior members of the editorial staff, who were very knowledgeable, as well as sceptical, about the sudden cultivation of digital innovation competence. Younger staff members, who showed greater interest in the INJECT tool, were not listened to in the same way by the editors. Nobody brought this dilemma to the attention of local leaders. If young members of the editorial staff had been given a stronger role as problem owners, the outcome might have been different. Greenwood and Levin (2007: 129) point out that if conflicts arise between local stakeholders, or between them and the researchers, the process should be recalibrated. The leadership of INJECT was unable to recalibrate after learning that the local hierarchies worked against our innovation efforts. The commercial partner made several personnel changes during the active phase, and we noticed too late that this inadvertently marginalised them in important decision-making processes. Furthermore, this partner was concerned that they spent more work hours than they were reimbursed for and signalled a lack of interest in taking risks in the attempt to make the product successful. Seen together in hindsight, these dilemmas and conflicts were more substantial than when we were able to recognise during the active phase.

The local newspapers finally lost all interest in the project and focused their attention on other possible innovation partners. One of the three newspapers who participated in the INJECT Norway project has now entered into a publishing agreement with Amedia and no longer has responsibility for its technology or future technology development. From the perspective of the INJECT leadership, the local participants did not make the necessary effort to cultivate innovation competence in their editorial staff. Ideally, they ought to have had more patience and to have been better able to suffer setbacks and keep going regardless.

Conclusion

This article has evaluated the dynamics of collaboration in the INJECT Norway business ecosystem that ran from 2017 to 2018, financed by an EU Innovation Action. A business ecosystem is supposed to be an "opportunity space" – "a future domain of business activity that may not exist today, or that exists only in nascent form" (Moore, 2006: 53). The critical evaluation above has shown that while there was initially an opportunity space, it shrank as the project moved forward. At first, both the academic and local partners were open and positive to the design and innovation activities, but after a while, tension grew apparent. The most hierarchical attitudes dominated among the academics, and the most sceptical attitudes dominated among the local stakeholders, and this led to a less and less workable collaboration.

There are positive outcomes. The INJECT Norway experience shows that it is difficult to organise a successful innovation project even with rather generous funding. Business ecosystems are likely to become sustainable if they grow organically out of local collaboration on the grassroots level, rather than being established formally with

set duration and an absolute deadline. The organic grassroots ecosystem may be able to endure variations in activity over longer time periods. Companies and persons have an economic interest in successful outcomes for activities in the community where they live. It proved impossible to turn the INJECT Innovation Action project into an organic, self-supporting business ecosystem in just 18 months.

Maybe the most significant lesson was that students can play an important practical and social role in a transdisciplinary project like INJECT Norway. We had several student groups working for us. They were felt to be somewhere between the academics and the locals and stimulated good moods during project meetings between the Norwegian academics and the local partners. They turned out to have a diplomatic function that nobody had foreseen.

The status for the action research in the residual INJECT Norway ecosystem is encouraging in 2022. Two universities are involved in long-term collaborations with two of the newspapers that took part in the INJECT action, and a new commercial partner has joined the ecosystem. This organic entity has successfully received regional and national funding for research and development of innovative technical solutions (Nyre, 2022). The ecosystem engages students in small, explorative design projects, for example, making a mobile app for news tips and a system for long-tail local advertising (Nyre, 2022).

These efforts draw on the experience with INJECT Norway and indicate that action research for local journalism can survive setbacks and regain its strength in new configurations. If the partners are genuinely concerned with solving societal problems, they will be able to sustain a mutually trustful collaboration and be a force for improvement in their local communities.

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