vertigo

"Adding socio-economic value to industry through the integration of artists in research and open innovation processes"

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Executive Summary

EPFL+ECAL Lab has submitted a scientific contribution to the Siggraph 2019 Conference on January 29th 2019. If accepted, the submission leads also to a peer reviewed article in Leonardo-MIT Press. This article analyses the contribution of STARTS Residencies to set a full and scalable framework for artist residencies in high-tech environment. The preparatory work gather also references, data, interviews and observations for further analysis, by external researchers, as suggested by the project's Advisory Board in October 2018. It provides also references and content for the dissemination efforts.

Artist Residencies for Innovation: Analysis of a Full Framework.

1.1 Abstract

Artists can play a major role in the success of innovation. The European program STARTS aims to increase their impact in high-tech environments. An international consortium has the mission to implement 45 residencies and set a complete framework for such partnerships. We identified methodology gaps from the literature and observe how they are filled by the STARTS action. We discuss the impact of the implemented solutions, providing the first global study on this large-scale action. The resulting residency framework, including the methodology and its associated tools, will be released in open source.

1.2 Context

History shows the capacity of artists to drive innovation. In 1919, the Bauhaus called painters and sculptors to redefine the very notion of building along with architects. Embracing the rational approach of industrialization, they were able to rethink our relation to technology, functionality and aesthetics: modernism drove the detachment from the idea of Nature in favor of the idea of Machine and Innovation [8]. In the fifties Roberto Venturi initiated a new disruption: postmodernism, reconnecting with ornament, popular references and diversity. The radical design movement pursued the revolution in the late sixties, involving more utopias. New movements of artists immersed themselves in unexpected contexts and started to use their techniques, like Fuxus or E.A.T (Experiments in Arts and Technologies). In universities, Hippie Modernism activists pushed for a social vision of computers and networks [3]. The involvement of artists has taken different forms: from being a full member of a team, like at the Bauhaus, to strong independence and preserving a critical attitude, like Nam June Paik [8].

Artist residencies have been established since before the 20th century to bring artists to work, during a limited time, in a specific context [7]. In the early 60s, the idea of residencies in a scientific context emerged, as a way to capitalize on artists' disruptive thinking about new technologies. E.A.T is renowned as a pioneer for such collaboration on a large scale. Whereas the Palo Alto Research Center's Artist-in-Residence program [6] is usually set as a reference, Europe and Japan have also been considered as driving places in the 90s, with initiatives like Ars Electronica or ZKM. Since then, the practice has grown exponentially, taking advantage of digital media and mobility [9].

Several researchers have studied residencies to develop knowledge on co-creation between artists and scientists. Some key success factors emerge from the literature:

• Common language: The setting of a shared vocabulary could help artists to grasp the technology and preserve their own creativity [1] while helping technologists to better understand their visions [2].

• Common environment: Creativity can be significantly influenced by the environment in which it takes place [4]. It should be to considered as an in-between space, accepting heterogeneous identities and allowing a mutual access to artefacts [4].

• Knowledge exchange as a motivation driver: "The unknown, the new and the challenging tasks seem to be the ones most likely to motivate the expert." [1].

• Common objective: Reaching an overall goal while having achieved personal ambitions is a co-creation driver [2]. To generate this mindset, actors must express the interest and the need for something they can't supply themselves [1].

• Respect for expertise: co-creation should allow for "the recognition of artistic research as a valid practice in the production of knowledge" [5].

• Unpredictability: unexpected results are a factor of creativity both in science and art, but in different ways. Therefore, creativity cannot be rushed, and requires time [4].

1.3   Five Gaps in the Residencies Methodology

State of the art and literature allowed us to identify five gaps which need to be filled in order to set a global framework for artist residencies:

• A mediator should facilitate the dialogue between artists and scientists. They can help to preserve "the integrity of the boundaries of their respective cultural domains and identities, from which they can then interact." [9].

• An integrated methodology, considering artists' and engineers' perspectives, would clarify the relationship and induce a dynamic flow throughout the co-creative process. It must include the selection process, the launch of the interaction, the outreach and the evaluation.

• The evolution of innovation contexts and digital tools modify practices [9]. Thus, guidelines shall accompany this evolution and be adapted to it.

• The goals of art and engineering co-creation must be specified: potential for disruption, social impact, economic impact, etc. are known to be strong common drivers.

• A generic framework should be scalable: the number of residencies can be increased at reasonable costs, to allow their implementation as a regular practice in innovation.

1.4 Experimental Ground

The STARTS Residencies action, planned from 2016 to 2020, provides an operational ground to study a full framework for artist residencies in scientific environments, dedicated to innovation. It is supported by the European Commission as part of the STARTS program, which has two objectives:

• Support collaborations between artists, engineers and researchers to develop more creative, inclusive and sustainable technologies.

• Profit from the creativity and the critical thinking of artists to reflect on novel uses of technology and allow technology to be more seamlessly integrated into society.

STARTS Residencies is organizing 45 residencies, through 3 annual calls. It has also the ambition to provide:

• A full methodology, to promote such collaborative work in research centres and industry.

• Tools, based on a web platform, to implement the methodology.

• Knowledge to understand success factors.

Its methodology is structured along three phases:

1. Identification of high-tech challenges. Scientists propose technologies and describe the ambition of the project. They express their expectation from the artist and the available resources. A committee of experts validates the proposals.

2. Identification of artists and team assignments. Artists are invited to select a validated high-tech challenge and propose a contribution. An independent jury evaluates the proposals, using 5 factors: artistic relevance, convergence of expectations, implementation plan, innovation potential, technical approach.

3. Implementation and impact. A mediator structures the residency along three steps:

• The inception meeting, to launch the co-creation. It ensures mutual understanding of goals, deliverables, resources, planning, tools. It includes a formal part with a contract to emphasize mutual responsibilities. It also allows individual expression of initial feelings.

• The mid-term review to check the ongoing co-creation process, adapts the work plan and discuss dissemination opportunities.

• The closure meeting to discuss the residency outcomes and its documentation. It marks the end of the co-creation work plan.

1.5   Results and Observations

During the 3 calls, 99 tech projects (from 18 countries) were validated and made available on the digital platform. Call 1 resulted in 10 residencies; call 2 in 17 residencies and call 3 (applications completed) is expected to result in 18 residencies. The whole workflow is active, from call procedures, jury, mediator teams, co-creation monitoring, up to outreach. The outreach is performed through the online platform, as well as events (Centre Pompidou, Cebit, Festival d'Avignon, ICT Vienna, etc). To provide a perception of the residency outcomes, we describe the artefacts delivered by 4 teams.

ATLAS brings artists Yann Deval & Marie-Ghislaine Losseau to work with WeKit, in Oxford. WeKit develops wearable experiences for knowledge intensive training, in particular through the use of AR. Their common goal is to produce three levels of interconnected realities. The first one shows tiny wooden houses hand-made by children during workshops. The second allows the user to explore the same world in virtual reality. The third one takes advantage of virtual reality to mix the different contributions in a single experience, joining digital and real-world expertise. It has led to a functional installation and principles solving vision perception for AR glasses.

Figure 1. Atlas: the user is wandering in a world of hand-built wooden models, in different layers of reality – currently AR through a Microsoft Hololens. (© STARTS. Photo: Yann Deval & Marie-Ghislaine Losseau)

Pollution Explorers is a collaboration between artist Ling Tan and hackAir. hackAir aims to monitor, collect and improve air quality information. Rather than using conventional sensors, Ling Tan asks groups of citizens to express their perception of air quality, through a library of gestures. The residency leads to a new generation of lightweight sensors inducing community behaviour and public impact.

Figure 2. Pollution Explorers: children are expressing their perception of air quality using specific gestures monitored by the wearables, during a community-engagement workshop in Tower Hamlets, London. (© STARTS. Photo: Ling Tan)

In Plant Sense, artists María Castellanos and Alberto Valverde have built an interactive installation allowing to experience the language and behaviour of plants. They have taken advantage of the technical framework and knowledge of Flora Robotica, a transdisciplinary team exploring "symbiotic relationships between robots and natural plants (...) to produce architectural artefacts and living spaces".

The final prototype monitors different electrical and biochemical signals from plants. It turns them into multisensorial feedback to humans and pattern behaviour for robotic plants.
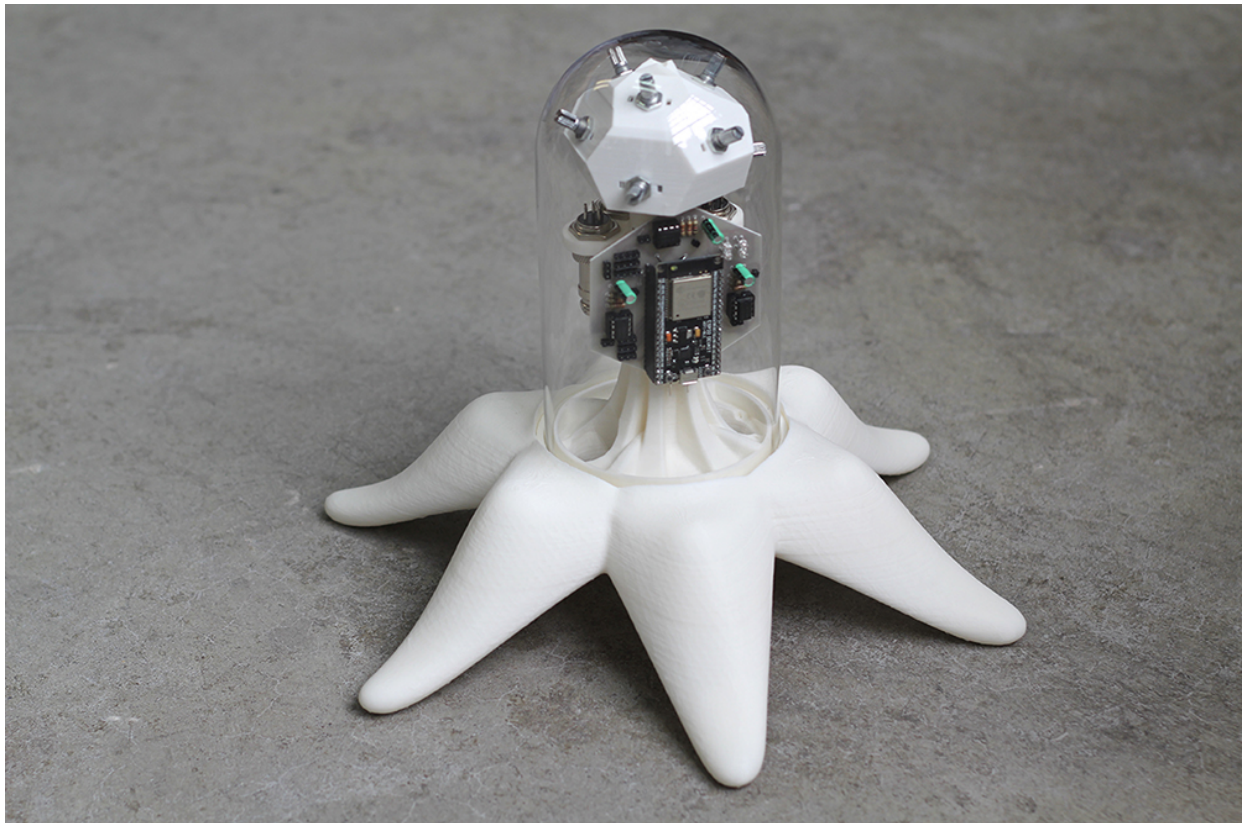
Figure 3. Plant Sense: detail of a sensor developed by the research project encapsulated in an organic-looking structure designed by the artists for the final scenography. (© STARTS. Photo: Maria Castellanos & Alberto Valverde)

The Magic Lining residency brought together MagicShoes, a scientific project that explores how wearables generating sound can alter our body perception, and Kristi Kuusk, an artist working with sustainable smart textile. Kristi Kuusk proposed to consider the full body of the user and the garment to explore new areas of impact. This has opened new perspectives for MagicShoes in terms of emotional impact, but also aesthetic expression. Eventually it led to a prototype showing innovative wearable solutions for tracking body signals (movement, physiology) and delivering sound while people are on the move.

Figure 4. Magic Lining: excerpt of the final shooting of the wearable textiles developed during the residency. (© STARTS. Photo: Kristi Kuusk)

1.6 Discussion: Filling the Gaps

STARTS Residencies provides assessment on the residencies' implementation and requests continuous feedback from the actors involved in the co-creation process. It combines informal discussions, interviews, formal questionnaires and monitoring from the digital platform. These quantitative and qualitative data have been analysed according to the methodology gaps previously identified.

• Mediation has been implemented in each residency. Mediators report that the inception meeting is critical to align the objectives of both parties and start to define a common language. This dialogue is required to move from personal interest driving the application, to a common interest driving the project.

• The participants have expressed no remaining gaps in the methodology. All the residencies of the first yearly call have delivered results perceived as satisfactory. However, several artists perceive the methodology and procedures as burdensome. On the one hand, it sets an incremental workflow inducing a mutual understanding between different forms of creativity, as underlined by several participants, like Yann Deval. On the other hand, the number of artists application remains limited.

• Co-creation guidelines reflect recent literature references and digital tool perspectives. It can be perceived through the submission form, the way tech projects and the artists are selected and the inception meeting. The aforementioned incremental flow allows to better anticipate needs and show faster results. The Magic Lining residency, for instance, quickly identified the technology gaps to be filled and was able to address the needs early on.

• The definition of a global objective — innovation in a high-tech environment — brings clarification to the co-creation process, while the digital platform — Involving standard inputs along a dynamic flow — defines a clear narrative and facilitates creativity and mutual understanding

• Scalability is about anticipation. The content and flow required by the STARTS digital platform reduce the need for mediator involvement. But they remain critical for the three main contact points. Scalability must therefore count on a mostly fixed cost for the platform and the methodology, but also include a small component proportional to the number of residencies intended to implement. As mediation is mostly focused on the key meeting, STARTS Residencies has shown no significant cost increase related to the duration of the residency.

The project raised some additional issues beyond the identified gaps. An independent jury, with balanced competences, contributes to the acceptance of unexpected teams and topics, enhancing the creativity potential. For instance, the WeKit project did not identify artist Yann Deval as a first choice. The assignment was performed by the Jury. At the end of the residency, the results led to an ongoing collaboration between the partners in such a situation, as with the hackAir project, the mediator has an increased role in launching the co-creation process.

Also, the technical level of the artist remains an open question. Some Tech Projects require very specific level, although this may not allow the development of new perspectives, since both parties may have similar skills and aligned perspective. A deeper evaluation will be performed at the end of the STARTS Residencies programme, to see if any correlation is emerging.

1.7 Conclusion

STARTS residencies is setting a full environment for artist residencies for innovation. The task is complex, as it must face contradictions. For instance, creativity is boosted by the diversity of applicants, but co-creation is improved by following a well-established framework and reporting tools. Also, scalability is key to get large impact, but human involvement with a mediator enhances success. STARTS Residencies provide an experimental and operational framework to address these issues. Based on the learnings, the initiative will release, in open source, tools and methodologies for other residency initiatives.

1.8 References and Notes

1. L. Candy, E. Edmonds, "Creative Expertise and Collaborative Technology Design", Proceedings of the 6th Asia Pacific Conference on Computer Human Interaction (2004) 60-69.

2. L. Candy, E. Edmonds, "Modeling Co-Creativity in Art and Technology", Proceedings of the 4th Conference on Creativity and Cognition (2002) 134-141.

3. G. Castillo, A. Blauvelt, E. Choi, A. Clarke, H. Dubberly, Hippie Modernism: the Struggle for Utopia (Minneapolis: Walker Art Center, 2015).

4. E. Edmonds, L. Candy, A. Weakley, M. Fell, R. Knott, S. Pauletto, "The Studio as Laboratory: Combining Creative Practice and Digital Technology Research", International Journal of Human-Computer Studies 63, No. 4, 452-481 (2005).

5. D. Foresta, J. Barton, "The Souillac Charter for Art and Industry: a Framework for Collaboration", Leonardo 31, No. 3, 225-230 (1998).

6. C. Harris, Art and Innovation: the Xerox PARC Artist-in-Residence Program (Boston: The MIT Press, 1999).

7. K. Lehman, "Conceptualizing the Value of Artist Residencies: a Research Agenda", Cultural Management: Science and Education 1, Vol. 1, 9-17 (2017).

8. Y. Mirande, N. Henchoz, Design for Innovative Technology: From Disruption to Acceptance (Lausanne: EPFL Press, 2014).

9. M. Rita Vargas de Freitas, International Artists-in-Residence 1990-2010: Mobility, Technology and Identity in Everyday Art and Practices (Jyväskylä: University of Jyväskylä, 2016).