

CROSS FERTILISATION THROUGH ALIGNMENT, SYNCHRONISATION AND EXCHANGES FOR IoT

H2020 – CREATE-IoT Project

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ERL Evaluation and Discussion in European Parliament

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Table of contents

1. Executive summary	4
1.1 Publishable summary	4
1.2 Non-publishable information	4
2. Introduction	5
2.1 Purpose and target group.....	5
2.2 Contributions of partners.....	5
2.3 Relations to other activities in the project.....	5
3. Experience Readiness Level (ERL)	6
3.1 Concept	6
3.2 Protocol	6
3.3 Policy implementation	7
4. European Parliament Events	8
4.1 First and second attempts	8
4.2 Adaption to current pandemics	8
5. ITRE MEPs Interviews	9
5.1 Structure of the messaging	9
5.2 MEPs support.....	11
5.3 Follow up	11
6. Conclusions	12
6.1 Contribution to overall picture	12

1. EXECUTIVE SUMMARY

1.1 Publishable summary

The Experience Readiness Level (ERL) is a protocol grounded in artistically inspired experimental practices aiming at determining how engaging a technology can be from the point of view of human creativity and empathy. A sequence of activities around an artwork created as an exploration of a specific technology in a specific context supports adopters, developers, and policy makers in better understanding the characteristics of that technology.

ERL is a complementary approach to readiness level, along with Technology Readiness Level (TRL), a well-known tool used to describe the maturity of a technology. It was developed as part of the IoT Large Scale Pilots (LSPs) of the EU and results from the cooperation between the LSPs and the Science Technology and Arts Initiative of the Digital Single Market of the European Union (STARTS). By adopting ERL the EU could contribute to fulfilling the goal of making a Digital Single Market that puts humans at the centre.

The planned ERL evaluation and discussion event in European Parliament was cancelled due to the current COVID-19 pandemic situation. Therefore, the originally proposed was adapted to be a text associated video to be published in Euroactiv by Members of the European Parliament (MEP). However, the original target group still is the MEPs of the European Parliament Committee on Industry, Research and Committee (ITRE). They were successfully engaged and four MEPs, full members of the ITRE Committee stated their support to IoT, its intersection with the Arts and more specifically they expressed their will to support the implementation of ERL in the EU.

1.2 Non-publishable information

The document is public.

2. INTRODUCTION

2.1 Purpose and target group

The purpose of the work reported here was to expose Members of the European Parliament (MEPs) to the concept of Experience Readiness Level (ERL), discuss it and hopefully get their support to implement ERL across EU funded Research and Innovation projects. ERL was developed in the scope of the cross-sector IoT applications in its intersection with the Arts. It results from the Methodology to Integrate ICT and Art developed in the CREATE IoT project.

The original target group was and still is the MEPs of the European Parliament Committee on Industry, Research and Committee (ITRE). They were successfully engaged and 4 MEPs, full members of the ITRE Committee stated their support to IoT, its intersection with the Arts and more specifically they expressed their will to support the implementation of ERL in the EU. Follow up to these statements will happen in the context of the STARTS Towards Sustainability pilot project of the European Parliament (S2S).

Given the circumstance and the adaption of the discussion to become a publication in a major media hub in Brussels, the target group was widen to include other policy makers from IoT associated sectors such mobility, agriculture, water management, etc and the general public as well.

2.2 Contributions of partners

ARTS organized the (cancelled) events in European Parliament, engaged directly with MEPs to better explain ERL, its context and purpose, suggested the journalist Brian Maguire to work with CREATE IoT, invited MEPs for the video interviews and put them in contact with the journalist, supported the journalist and video editor in the production of the video and texts.

SINTEF supported the organization of the (cancelled) events in European Parliament, engaged the journalist in the works, liaised with the Commission for the production of the video, supported the journalist and video editor in the production of the video and texts.

FE refined the ERL concept and prepared a presentation for organized the (cancelled) events in European Parliament.

2.3 Relations to other activities in the project

The activities are related to the work on common methodology and KPIs for design, testing and validation presented in delivery D01.04 and the methodology for the integration of art and ICT defined in D03.01. In addition, it is related to WP03 (D.03.02, D03.03, D03.06, and D03.07) and the engagement of the LSPs.

3. EXPERIENCE READINESS LEVEL (ERL)

3.1 Concept

The Experience Readiness Level (ERL) is a protocol grounded in artistically inspired experimental practices aiming at determining how engaging a technology can be from the point of view of human creativity and empathy. A sequence of activities around an artwork created as an exploration of a specific technology in a specific context supports adopters, developers, and policy makers in better understanding the characteristics of that technology.

ERL was firstly described in *D03.06 ERL Policy memo and associated communication activities*, and further refined in *D03.07 Case study on LSPs*.

3.2 Protocol

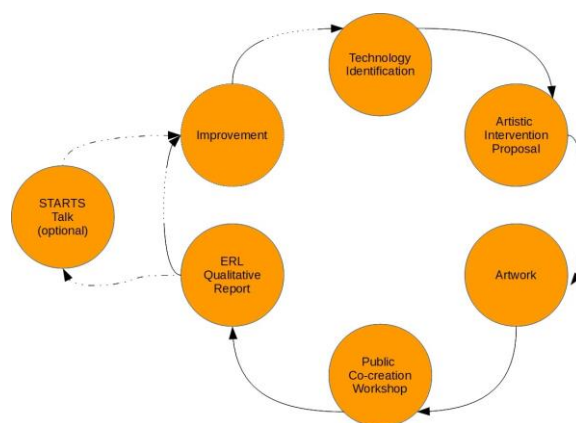


Figure 1: Sequence of steps of the ERL protocol

The ERL protocol is composed and can be offered as an experimentation service of six steps:

- *Technology identification* to determine what specifically can be experimented in the next step.
- *Artistic intervention proposal* in which a concrete artistic driven technological experimentation is proposed.
- An *Artwork* is the final product of the previous step to be used as the basis in the next step.
- One or a series of *Public Co-creation Workshop(s)* around the artwork bringing together a the companies involved in the experimentation – in digital transformation context typically a company that could be digitized and the companies that could provide the necessary services, investors that could finance the digitization process, policy markers whom could push policies supporting IoT and digitization and general public including other companies that are reluctant to digitize. The artist author of the artwork or an associated curator are the facilitators of the workshop.
- An *ERL Qualitative Report* is published by company organizing the whole sequence of events qualifying the technologies experimented having in mind its Improvement. The report is based on the following reference levels.
 - ERL 1 – Complex both conceptually and in technology. Hard to work or play with. Suggests rich area of questioning in areas of Why? What? and How?

- ERL 2 – Broad concept understood. Prototyping technologies, workflows, and interfaces. Mechanical elements still at component stage. Discovering the What? and How?
- ERL 3 – Technologies are more modular and formed. Networks, interconnections, and interfaces still being developed and extended. Prototyping with hard examples of usable technology possible, APIs under development and available, interconnectivity with other systems possible.
- ERL 4 – Total system ideated. Potential to reify end to end product. Playful tinkering with a well-formed system possible (see EaaS).
- ERL 5 – System or device robust and well defined. Well understood APIs and behaviour. Simple to use and integrate with other components / systems / networks.

Discussion in policy context are optional and should happen only when concrete policies could be implemented.

3.3 Policy implementation

The main aim is the EU wide implementation of ERL as complimentary to TRL. For instance, as TRL was adopted in Horizon 2020 and now in Horizon Europe so would be ERL. ERL is complimentary to TRL. TRL looks at technology from an engineering point of view. ERL looks at technology from an artistic point of view and aims at supporting EU endeavours to have more human centred and creative approaches to technology.

The first step was to gather the support of some MEPs towards the implementation of ERL. That was achieved as described below. Further steps are to have concrete experimentation on ground to be lifted up to policy making level. The knowledge gathered in CREATE IoT, including the case studies, will be brought further. The context available at the moment is the movement of spreading S+T+ARTS at a regional level, in the context of Digitization of European Industry, Digital Transformation Europe programme and more specifically the European Digital Innovation Hubs (EDIHs). Small scale creative experimentation will take place in the context of the STARTS Towards Sustainability European Parliament pilot project (S2S) employing and further developing the ERL protocol. Results will be presented and discussed in the Committee of Regions and in the European Parliament. S2S ends in May 2021. During the project, further opportunities to continue the work will be targeted.



Figure 2: Science Technology and Arts Initiative (IoT Week 2019)

4. EUROPEAN PARLIAMENT EVENTS

4.1 First and second attempts

There were two events planned to happen in European Parliament in Brussels. Both events were cancelled due to different reasons. The second one was planned as a substitution of the first one but ended up being cancelled as well.

The first event was cancelled due to last minute unavailability of the hosting MEP, Angelika Winzig from Austria. She prioritized the sudden visit of the Austrian Ministry of EU Affairs to Brussels on the 17th of February of 2020, the exact same day as the one was the event would take place. Furthermore, MEP Eva Maydell, the moderator of the first round-table also cancelled last minute due to unexpected travelling.

Here is the planned sequence of interventions:

14.00 - 14.15 – Opening by hosting MEPs and Rolf Riemenschneider, EC (IoT)

14.15 - 14.30 – Introducing ERL – Ovidiu Vermesan

14.30 - 14.45 – The role of experience in innovation from the perspective of neuroscience – Beatrice De Gelder.

14.45 - 16.00 – Experimentation as Service in Smart Cities, Big Data and IoT

- Eva Maydell (MEP) – Moderator.
- Bo Fristed, ITK Lab Aarhus (STARTS Residency host).
- Walid Breidi, digital artist (STARTS Residency artist).
- Xenia Ziouvelou, III-Demokritos, Greece (Big Data DIH).

16.00 - 16.30 – Networking coffee break

16.30 - 17.45 – The potential role of artistic experimentation in the DIHs

- Angelika Winzig (MEP) – Moderator.
- Killian Gross, EC (DIHs).
- Ralph Dum, EC (STARTS).
- Paul Dujardin, BOZAR (STARTS Regional Centers).

17.45 - 18.00 – Conclusions and meeting closure.

The second event was planned to the 24th of March 2020 from 9 am till 1 pm. The event was cancelled as a consequence of the current pandemic. All external events were and still are forbidden in the European Parliament.

4.2 Adaption to current pandemics

In order to adapt to the impossibility of realizing the events, we opted to do individual interviews to the MEPs and then publish them in a well know news hub in Brussels. This option allowed us to have access to more MEPs because they contributed at their own availability. Furthermore, these specific MEPs are our main clients. They are all members of the European Parliament Committee on Industry, Research and Energy (ITRE) which is the committee that can support the implementation of ERL and continue support to IoT in general in the EU. Therefore, the fact that they were being interviewed one on one made them be fully focused on the matter and gave us the opportunity of long exchanges with their assistants in preparation for the interview.

5. ITRE MEPS INTERVIEWS

5.1 Structure of the messaging

A set of questions were elaborated to be asked to the MEPs in close cooperation with the Commission and SINTEF. They are presented below.



Figure 3: Interviews from MEPs

Preamble:

It seems the first wave of COVID-19 in Europe is reaching its end. Uncertainty on what is next and how it will develop accentuate the sense of urgency to act. We need to act fast before maybe going back to confinement.

COVID-19 demonstrates the high relevance of the digital in the uncertain world we live in. It allows us to keep working from our homes and reduce the impact in our economy. It reiterates that the digital transformation movement already in motion is one of the key priorities for the retake. Disruptions at borders and restrictions on movement have impacted supply chains down to a regional level. Confinement measures have affected especially supply chains in food and production, with its access to global markets to buy inputs and sell products. For example, instead of further investing in highly globalised supply chains of bulk-produced food, regions have seen the opportunity to start moving towards local, sustainable, and resilient food systems. It also had a strong impact on environment demonstrating it is possible to achieve our environmental target. But for that we needed to stop, and we cannot stop. Therefore, digital transformation is both an opportunity and a challenge for the EU in its aims to become healthier, wealthier, fairer, and greener. An opportunity because it will allow for enhancing and innovating our historically grounded industrial capabilities. A challenge because we have markets mostly composed of SMEs which are naturally reluctant to innovate.

Question 1:

The high importance of EU Regions has also been highlighted during the current pandemic. In the same manner they are crucial in containing its expansion, each Region's specificities are also crucial for the processes of digital transformation. Digital information systems for the rural

sector can help small and medium businesses to continue operations in a safe and transparent manner and boost local supply chains and markets. Furthermore, the pandemic demonstrates the role of emotions in all transformation processes of the humankind. In this respect, the collaboration between ICT and the arts can have an important role in stimulating creativity in developing the enablers we need to transform.

What is your perspective over the potential of focused regional initiatives in the EU, such as the European Digital Innovation Hubs that include the arts, to become catalysts of digital transformation?

Question 2:

The IoT is an enabler that cuts across and has useful applicability in all areas of socioeconomic activity. In response to disruptive events, the level at which IoT are used to enable flexibility, agility, and become more important and needs to be raised dramatically and immediately. In the current circumstance, IoT is crucial in bringing the tools to create the adaptability needed to react to whatever is coming towards us. It can enable fast production line re-configurability and help to secure the good activity of farming in rural areas as well as the sustainability of food suppliers around the EU.

Would you agree with this vision that the IoT has a crucial role in processes of digital transformation in sectors such as farming, energy, and manufacturing where the EU is lagging behind its competitors?

Question 3:

Creative experimentation and the experiences it allows for have historically proven to deliver transformative inventions. Would you support the implementation in the EU of the Experience Readiness Level (ERL) which looks at technology from the human perspective?

The questions formed the basis for the interviews the professional journalist, Brian Maguire, made to four MEPs of the ITRE Committee:

- Eva Kaili, from Greece.
- Eva Maydell, from Bulgaria.
- Carlos Zorrinho, from Portugal.
- Maria da Graca Carvalho, from Portugal.

The journalist then selected quotes from each MEP to specific section he defined in his base script for the video. Those quotes were mixed with images from the LSPs project and STARTS.

MEP Eva Kaili put forward an op-ed article to which the video will be associated with. Here is the base structure of the article:

- IoT and IIoT enablers for digitising industry, society, green deal, sustainable goals.
- IoT European Large-Scale Pilots Programme addressing these in a number of sectors (short overview).
- Accelerating innovation through a new concept ERL – Experience Readiness Level to addresses technology readiness from the beginning of the IoT pilots' phase.
- Collaboration arts and technology. STARTS + IoT European Large-Scale Pilots Programme novel approach by introducing Arts into innovation technology projects.
- IoT as part of a digital future and how this was emphasized during the crisis.
- COVID recovery plan and the role of IoT/IIoT and innovation. An opportunity with the recovery package to take up good practice from the IoT/IIoT deployments. "Do not waste the "good" experience from a crisis". Use it to build a better future!
- COVID accelerated use of digital, which in turn lead to dive even deeper into digital, e.g. being more connected, more pervasive, IoT/IIoT in daily activities.

- Arts as a tool to boost curiosity of people and drive innovation, creativity, acceptance, and imagination to accelerate the digital transformation with more IoT/IIoT/ applications, more services, more virtual, digital cyber experiences.

The article and the video form a good outcome of the efforts to push for ERL as a policy and for further support to IoT in the EU in general. The video and the article are published via the [EURACTIV Media Network](#). The EURACTIV Media Network acts as a bridge, gathering media organisations in more than 12 European capitals. The network is driven by quality journalism, and share researched content between trusted experts, united by a brand and core values (media independence, transparency, languages, pro-European, and constructive).

5.2 MEPs support

All four MEPs were very supportive of the ERL as a future policy, of the interaction of IoT and the Arts and more importantly of the importance of IoT. It became clear for them the role of IoT as an enabler for better society and economy. In special MEP Eva Kaili, gave further reasoning to the implementation of ERL as policy. She stated the need for technologies to adapt to humans and of the role the arts can have in that. She believes ERL could be very useful as tool for putting humans at the centre and impact of the European Digital Innovation Hubs, for example. She and as well MEP Eva Maydell referred the importance of the arts and ERL for experimentation for managing risk and the unexpected.

“Quantifying uncertainty allows to improve the risk management and to mitigate the danger of a ‘black swan’.” MEP Eva Kaili

5.3 Follow up

A number of follow up actions will take place. Both the article and the video will be pushed through the communication networks of the partners of the LSPs as well as S+T+ARTS. MEPs themselves – some of the MEPs involved have a very strong social media traction – will push the message forward through their own networks. Further one to one, meetings with the involved MEPs will take place to find what possible action could be taken to push for ERL as a policy. Part of those action will be concrete experimentations in the context of the S2S project as referred above.

6. CONCLUSIONS

The adaptation to the current pandemic in reality resulted in a much more impactful action than predicted. More MEPs were contacted about ERL than originally planned, in a closer manner which allowed the message to be better conveyed. The close engagement with the Commission and professional journalists refined and significantly improved the quality and content of the messages conveyed.

A final high-quality professional product composed of an article and a video in a very important media hub in Brussels significantly widened the targeted audience. It not only went beyond the IoT ecosystem but went beyond the targeted MEPs and reached other policy makers and the general public.

6.1 Contribution to overall picture

The works significantly contributed to widely communicate the EU efforts of IoT and opened doors for further policies to be implemented to its support.