



Project SOFIE workshop “Close and personal with SOFIE stakeholders” Report

Executive Summary

This report provides an overview of SOFIE workshop “Close and personal with SOFIE stakeholders” carried out in the form of interviews with our stakeholders. This report has been prepared for circulation to project partners but is also intended as a resource for those interested in SOFIE use-cases and our exploitation activities.

The H2020 project SOFIE (Secure Open Federation for Internet Everywhere) has developed a secure and open federation concept and software framework for the fast-growing Internet of Things (IoT) area, taking advantage of blockchains and interledger approaches. Through strengthening security and allowing users to control their data, SOFIE aims to diminish business and privacy concerns in data use and sharing, expand interoperability, increase IoT usability and support the emergence of an open market of IoT data, services, and innovative business opportunities. SOFIE facilitates the smooth creation of new IoT business platforms, expands their scope and increases super-linearly their relevance and value.

The project is driven by the needs and opportunities of real-world applications, relying on four pilots by established industrial partners, operating in three different business domains: the energy sector, the food supply chain, and mobile gaming. Taking the latter into account we focused on interviewing stakeholders relevant to the project’s pilots while delivering our workshop. Within this workshop, altogether thirteen interviews were conducted with the aim to:

1. investigate SOFIE solution’s suitability for end-users,
2. find matches/mismatches from the value propositions prepared for the end-user,
3. establish mutually beneficial and sustainable relationships with the interviewees.

The interviews of the workshop were carried out in four segments that correspond to [SOFIE pilots](#): energy data exchange, energy flexibility marketplace, food supply chain and mobile gaming. The grouping of the interviews was important because each SOFIE pilot has their own specific value propositions and stakeholders with whom they engage with. The value propositions of the pilots are as follows:

Decentralised Energy Data Exchange pilot (DEDE) offers data security and trust service (DEDE-Guard) that manages the authorisation, access control, revoking and evidence creation for a datahub. This middleware (connected through Open API) with SOFIE adapters enables to grant secure data access to the service providers, households and smart grid operators. The main control over data access will be handled to data owner (household) (eIDAS compliant). In SOFIE project the **DEDE pilot is led by Guardtime OÜ (Estonia)**.

Decentralized Energy flexibility marketplace pilot (DEFM) offers a rapid and user-friendly mechanism to negotiate energy flexibility requests and offers using decentralized smart contracts. DEFM offers to the DSO a platform from which create flexibility requests on the marketplace to balance the local energy network, according to the forecasts calculated using the data provided by the IoT smart meters, and to the Fleet Managers a reliable way to reduce the maintenance costs thanks to the incentives provided by the DSO and to the opportunity to select the most convenient energy retailer any time is needed. In SOFIE project the **DEFM pilot is led by Engineering Ingegneria Informatica SPA (Italy)**.

Food Supply Chain pilot (FSC) offers a decentralized, flexible, and secure business platform to transparently collect data from different administrative domains across the supply chain, to enable secure information sharing among them, to establish trust among them, and to open up opportunities for further analysis of their businesses and interactions. In SOFIE project the **FSC pilot is led by Synelixis Solutions (Greece)**.

Context-Aware Mobile Gaming pilot offers an understanding of DLTs usage for content ownership by players, enabling them to collect and trade in-game content with other players (e.g. characters, weapons, equipment, parts) and three prototypes: (1) Scavenger Hunt – a prototype of a BLE location-based game utilizing a hybrid server-DLT architecture; (2) Blockmoji – a prototype of a management application of virtual items stored on the blockchain and (3) Decent ID – a prototype of a decentralized identity management framework. In SOFIE project the **context aware mobile gaming pilot is led by Rovio Entertainment Corporation (Finland)**.

As a result, the workshop interviews provide the following key take-aways:

1. Most interviewees were able to articulate and discuss clear benefits of implementing SOFIE after they were introduced to the value offer and SOFIE project by the interviewers. They were able to see how they could incorporate the offered solution one way or the other now or in the future.
2. The most important benefits that SOFIE can provide according to the interviewees are access control, cross-country data access, simplicity, additional security (DEDE); flexibility and avoiding installation or upgrading of power lines (DEFM); food quality assurance, trust, traceability and gaining a competitive edge (FSC).
3. In general, the interviewees were unable to point out clear micro-level monetary benefits in connection to implementing SOFIE. Nevertheless, in the energy and food supply chain vectors the interviewees assessed, in a generalized way, that implementing SOFIE would cut their costs and/or produce more income.
4. The biggest barriers to implementing SOFIE according to the interviewees are technical integration aspects, potential additional financing requirements and general reluctance to use (and understand) emerging new technologies.
5. Out of the four pilots, the context-aware mobile gaming pilot affirmed their position that within Rovio Entertainment Corporation they do not have a viable business offer at this point for the pilot. All other three pilots confirmed that their value propositions match their determined stakeholders, and they continue their commercial work.

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1. Introduction

The “Close and personal with SOFIE stakeholders” workshop was organized in accordance with the SOFIE project’s communication and dissemination plan, and as planned this workshop was dedicated to SOFIE’s exploitation activities, involving stakeholders’ interviews.

The interviews for this SOFIE workshop took place between October and December 2020. During this period the world was overtaken by a global pandemic, widespread of COVID-19. The latter was the reason why SOFIE consortium had to pivot from a classical workshop format and took an alternative approach to deliver the workshop that was originally envisioned to be an on location and face-to-face event. As SOFIE consortium was unable to have a live event with integrated interviews, we performed virtual interviews and combined them into the report at hand delivering it as a materialization of SOFIE workshop.

This workshop report summarizes the analysis of the qualitative data gathered from 13 interviews with stakeholders relevant to commercializing SOFIE results. The interviews were segmented into four groups according to SOFIE pilots and carried out by seven¹ SOFIE representatives who lead the work on pilots in the project. They inquired relevant stakeholders and field experts from their use-case perspective. Each interviewer had to interview 2-5 people and the interviewees were selected by the interviewers on the basis of relevance to exploiting pilot specific SOFIE offer and accessibility for interviewing.

Within this workshop 4 interviews were conducted by energy data exchange pilot, 2 interviews by energy flexibility marketplace pilot, 3 interviews by food supply chain pilot, and 4 by context-aware mobile gaming pilot. Two types of generated data were analysed to draw conclusions:

1. content of the open-ended interviews that followed a pre-posed interview outline (Annex 1).
2. the interviewers’ personal reflections about process of the interviews and gathered feedback.

The raw material of the conducted interviews was prepared for the analysis by respective interviewers and report compiler, Liis Livin (Guardtime). It must be noted that the interviewers were responsible for translations of the interviews in cases where the interviewee did not speak in English during the interview. All interviewees identified as male. Thus, this report occasionally refers to one or the other interviewee using the pronoun “he”. Other than that, the personal identities of the interviewees remain anonymous and the gathered interview responses will be stored in a privacy preserving manner.

¹ The interviewers were: Priit Anton (Guardtime) for energy data exchange pilot, Tommaso Bragatto (ASM Terni) and Giuseppe Raveduto (Engineering Ingegneria Informatica) for energy flexibility Marketplace pilot, Yannis Oikonomidis (Synelxis Solutions) and Antonis Gonos (Optimum) for food supply chain pilot, and Ahsan Manzoor and Max Samarin (Rovio Entertainment Corporation) for context-aware mobile gaming pilot.

2. SOFIE workshop interviews

This chapter offers a deep dive into each of the interviews conducted for this workshop. During the interviews the interviewees were asked general questions, followed by SOFIE specific questions. First, the interviewees had to give an overview of their occupation and scope of their company, explaining the tasks they fulfil at the company that they represent. After that, the interviewees got more precise questions that related to SOFIE. Among other things they were asked to describe the possible advantages and disadvantages of SOFIE. During the interview process the interviewer explained the value proposition to the respondents and promoted the SOFIE results in general in a way that was suitable for each separate individual. As explained above the value propositions were pilot specific and the interviews were conducted in the corresponding framework. For example, the focus of DEDE pilot interviews was on investigating the fit of energy data exchange proposition and did not tap into the offers of other pilots during the conversations.

2.1 Decentralized Energy Data Exchange (DEDE) pilot

The goal of Decentralized Energy Data Exchange (DEDE) pilot is to provide means to manage Distribution System Operators' (DSOs) and Transmission System Operators' (TSOs) datahub access to data with the data owners' consent and GDPR compliant evidence/audit trail and to place SOFIE adapters in data input and on each participant side. DEDE aims to secure authentication and control in a mobile device for each data owner and provide visual overview of access/revocation and "whitelist" between parties involved in data access.

The interviews for DEDE were carried out by Guardtime OÜ representative, who is the lead of DEDE pilot in SOFIE project. The strategic exploitation stakeholders for DEDE are energy sector regulators, GSPR related data protection agencies and potential customer segments e.g., smart meter datahub managers, the industry responsible for energy data consumption/production distribution, energy flexibility service providers.

For the purpose of the SOFIE workshop Guardtime representative interviewed four stakeholders: one integrator (AKKA), one service provider (Enoco), one DSO (Elektrilevi) and one DSO (Elering AS). All the profiles of interviewees responses precisely to the determined stakeholder groups for this pilot. This excellent fit is supported by the fact that the interviews showed that 3 out of 4 interviewees had previously heard of SOFIE and SOFIE's DEDE pilot, some even multiple times, and all of them were able to identify specific collaboration pathways.

Firstly, the interviewed project manager from AKKA, a large French system integrator and software solutions provider in Automotive, Aerospace, Railway, Energy, Telecom and Defence sector, brought out a clear connection between SOFIE and the *big data platform* that AKKA is developing, dedicated to serve as a centre point for energy flexibility trading between TSOs and DSOs in country and cross-country environment. He proposed that the use of SOFIE adapter to govern the access control for different parties involved in this *big data platform* could be investigated. He saw that the SOFIE adapter could be part of the service by sharing the subscription fee and delivering specific type of functionalities for the platform. These functionalities could be a) the easy integration with different data providers between platform and data source b) providing revocation functionality to parties involved c) provide additional security features, especially logging and evidence creation for data exchange and governance. He also added that SOFIE adapter seems to cover a very specific part of data access with the focus on minimal overhead to integration with AKKA platform as well as onboarding other service providers, which would be a huge advantage.

When discussing the barrier that might hinder implementing DEDE offered solution the AKKA respondent offered that setting up the framework and financing tool for SOFIE and AKKA *big*

data platform would be a challenge to tackle, as the 3rd party data sources and services will partially dictate the technical details of integration, the adaptation to these requirements is a challenge.

Secondly, Enoco's technical engineer also identified a clear fit for DEDE in their *Eurora platform/application*. Enoco is a Norwegian IT company in energy sector and their Eurora application is connected to dedicated infrastructure and sensors, providing 24h monitoring of energy consumption in buildings. It enables interaction (both manually and automatically) to change the power consumption and infrastructure setup. It also provides alerts to highlight anomalies (window left open, room temperature too high etc.). Although the interviewee had not heard of SOFIE project before, after having a dialogue with the interviewer who presented him with the value offer of DEDE, he managed to positively see the benefits of SOFIE and DEDE. He said that Enoco could use 3rd party access control solution for getting the data to *Eurora platform* and pay part of the subscription fee to use SOFIE adapters capabilities.

As possible implementation barriers the Enoco interviewee mentioned integration challenges related to separating the data access control and the hardware/devices control. SOFIE adapters provide access to data but not the control of devices. There is a risk that the control over devices and data is bundled together. Here he explained that this obstacle is embedded into Enoco's existing service setup in Norway.

As the third stakeholder, Estonian biggest DSO that operates the electricity distribution grid and 475k customers and their smart meters, *Elektrilevi*, was interviewed for this pilot. The interviewer inquired Elektrilevi's Head of Digital Services, who had prior knowledge of SOFIE, and the DEDE pilot's ambitions. For the interviewee the greatest potential of SOFIE for them would stem from a future perspective scenario where SOFIE adapters are already integrated to other markets/counties, because it would be beneficial for Elektrilevi to have easier entrance to the market and delivering its expertise in other parts of smart grid operation and setup. Elektrilevi's representative stated that in the current Estonian market *Elering Estfeed* platform is carrying out the governance and control for all high to low voltage grid and smart meters and thus already fills the functionality that SOFIE could offer to existing smart meter grid.

The Elektrilevi interviewee explained that currently Elektrilevi has more pressing challenges to tackle, before stepping into specific collaboration options with SOFIE. But he also suggested an easy workaround approach where Elektrilevi and Guardtime would cooperate to find financing mechanism several business cases with the same technical solution.

To cover all its bases, the project manager of *Elering AS* - the Estonian TSO that operates the high voltage energy grid, operates and provides digital services based on, previously mentioned, *Estfeed energy data exchange platform*, was also interviewed. The interviewee was familiar with the basic concept of SOFIE federated architecture, hyperledger and blockchain approach and how SOFIE components are to be used in different business verticals. He pointed out that for Elering the more relevant part is the work around energy data exchange solutions and technology supporting this. He explained that as Elering is responsible for cross-country grid connections with neighbours and sustaining the synchronisation and frequency control of Estonian energy grid. He highlighted the relevant part, where SOFIE adapters could play a role in Elering business model and support its partners in providing access control and governance in the submeter and submeter datahub and datasets level. He added that in Estonia Elering is already providing similar services that SOFIE energy grid adapters promise to deliver but SOFIE's value could be in enabling the support to subsystems, that are not connected directly. The 3rd party infrastructure, that is operated by smart grid providers, could use the SOFIE adapters instead of connecting directly to the *Estfeed*. He believes that this is especially valuable when onboarding parties outside Estonia.

The interviewee saw a challenge for SOFIE to make a viable business case in the situation where most functionalities are already working for Elering in Estonian market. Nevertheless, he said that this is different when we consider cross-country access and connection to other national datahubs. There might be a need to use SOFIE adapters in these cases. The challenge then is, that these solutions are developed in each country separately and drive to develop cross-border solution is weak. From the technical point of view the interviewee did not major difficulties to integrate SOFIE adapters to the existing system. The only challenge could be dividing the responsibility between parties when handling the energy metering data from the political level. If this is solved, the technological solutions should be reasonable to manage, he added.

When discussing the subject of service costs and how implementing offered SOFIE solution could affect it, there were several interesting estimations that the interviewees were able to make. The integrator (AKKA) saw that the use of SOFIE could reduce the integration and operational cost of the onboarded systems (from 3rd parties) to AKKA platform. This would raise the parties that could be onboarded. The service prover (Enoco) said that hypothetically, if SOFIE adapters provide the key functionality related to data access and control then this functionality would not be required to be developed for each instance from Enoco (or its partners side), meaning that the CAPEX and OPEX of Eurora launch in another country would be reduced. SOFIE adapters could get paid (based on business agreement) for delivering these capabilities. TSO representative (Elektrilevi) commented that they charge for setting up, maintenance and operation of electricity and smart grids. The same rules would apply when using SOFIE adapters together with Elektrilevi solution. The reduced costs for setting up and operation from governance and control side would end up sharing part of the maintenance fees to use SOFIE adapters. Finally, from the DSO's side Elering said that the cost estimation and how it affects the services can be simplified to the 3rd parties cost (system integration and operational cost). If the company accessing the data from *Estfeed* gets some functionality through use of SOFIE adapters, there is some revenue share or subscription fee that these parties are willing to pay, but it would not affect the cost of Elering services.

To sum up, the key stakeholders of this pilot seem to be well aware of the work done in SOFIE and have a solid understanding of the framework and the future potential of energy exchange data side of the SOFIE project. Although, the interviewees expressed some concerns implementation SOFIE adapters or DEDE in general, they also clearly expressed that the value of DEDE is the potential to offer cross-border data access and open the gateways to other (inter)national energy markets.

2.2 Decentralized Energy Flexibility Marketplace pilot (DEFM)

The goal of DEFM to build a new decentralized, fair, transparent and secure marketplace, powered by the blockchain in which market operators can be sure that the best offers will be selected without any kind of bias, and, by interfacing directly with the smart meters on the grid, the payments can be settled in near real time without the need for longer verification times. In this way, electric mobility can act as a catalyst to improve the usage of renewable energy sources, acting not only as an “on-demand” energy storage but also as a novel “on-the-move” storage solution able to operate in a specific area and at a specific time contributing to the balancing of the entire network.

The DEFM interviews were carried out by ASM Terni and Engineering representatives. ASM Terni is a municipal electricity and gas distribution network operator. For DEFM the strategic exploitation stakeholders are local communities and stakeholders in the energy production/distribution/consumption pipeline and potential customer segments, e.g., DSO's, EV Fleet Managers, EV users, Energy Prosumers.

DEFM interviewed Pitwo-Solutions Srl CEO and an engineer from ASSEM SpA. The former being a consultancy firm and the latter being an Italian hydro, gas and electricity distribution system operator (DSO). The interviewees' responses reflect heavily their opposite ends of the stakeholders' spectrum.

Other than SOFIE being an interesting case during for business model analysis, the Pitwo-Solutions representative did not relate to the presented DEFM offer at all. Nevertheless, he emphasised that it is beneficial to know how SOFIE works because he can then explain it to his other customers. As he did not relate to the value proposition directly, he was unable to elaborate on issues related to cost benefits or potential barriers using SOFIE.

On the other hand, the DSO representative whose main task is to install and connect production plants and renewable energy sources related to DEFM value offer nicely and saw a clear way how the SOFIE solution could fit into his company's business model, explaining that SOFIE can assist in obtaining a level of flexibility instead of carrying out heavy interventions in residential areas. He also pointed out clear advantages of DEFM and connected it to the notion of wide-spread use of electric vehicles in densely populated centres. The interviewed DSO engineer found that the advantage would be mainly linked to having the possibility of postponing or possibly, following an in-depth analysis, of avoiding installation or upgrading of power lines. This advantage is even greater considering that carrying out an intervention in a central area is particularly difficult. He went as far as to compare the benefits for distributors in Italy, concluding that especially the small DSOs would have a greater advantage since the remuneration of the DSO is differentiated according to the number of users served: above 25000 users the remuneration is based on the investments made, under 25000 users there is a flat rate.

He saw no general barriers why the DEFM could not be implemented but from a DSO standpoint he also explained that the technical barrier within his company could be the ability to manage flexibility dynamically and automatically. On a small DSO charging scheduling and DSO requests can be managed and registered on the platform manually by an operator; in large DSOs, where the number of cases is high, there should be the possibility of automatically integrating the event on the network and the request for flexibility, ensuring that the tool integrates with the pre-existing ones.

When asked about future possibilities of utilizing this SOFIE solution amongst DSOs the interviewee estimated that in big cities the DSO will have to draw on flexibility services by exploiting the energy resources present on the network: DSO, prosumers and retailers will be increasingly intertwined, and their collaboration will be managed automatically. Furthermore, the energy market will be decidedly more dynamic, and the DSO will have to improve the management of the network resources that are increasingly growing (from generation plants and renewable sources to electric vehicles).

To sum up, the interview that was targeted to DSO was more insightful and proved that DEFM pilot has a viable and suitable value proposition for this stakeholder, seeing as the interviewee was able to articulate SOFIE benefits and discuss the proposition from his standpoint.

2.3 Food Supply Chain pilot (FSC)

The goal of FCS pilot is to demonstrate a provenance chain Business Platform (BP) that secures information sharing and value exchange between organizations which participate in the food supply chain without the need of a third-party intermediary to establish trust,

coordinate interaction and supervise products flow over the chain. The BP provides end-to-end product traceability services to all involved companies as well as food consumers.

The interviews for FCS pilot were carried out by representatives from Synelxis Solutions and Optimum, the pilot participants in project SOFIE. For FCS the strategic exploitation stakeholders are retailers, supermarkets, consumers associations and their potential customers are Vivartia group, 7Grapes coop, Sklavenitis group.

All interviewees from FCS interview group were the direct stakeholders determined for this pilot. The FCS interviewed a self-employed farmer, a representative of Barba Stathis SA - the leading food company in Greece that belongs to Vivartia Group, and a representative of Delta Foods SA - the leading company of dairy food in Greece.

For the farmer the most important value of SOFIE stemmed from the need to prove to the customer the quality of the products he grows. Providing this proof for the customers gives extra value and helps to price the products higher and earn more profit, and also to achieve competitive advantages in the market. On the second hand, he sees a barrier of actually deploying the SOFIE system in the perceived reality that not everyone in his family business would be knowledgeable enough to use a new system, indicating that they are used to more traditional approaches while doing business. The interviewee also raised the trust issue, fearing that if the reselling companies selling his products do not trust the SOFIE system or do not use it for other reasons, then for him there would be no increased price for the products, advantages to gain.

The interviewed representative of Barba Stathis SA was an IT business analyst who showed high level of understanding of SOFIE even without ever having heard of it before the interview. After the interviewer explained the functionalities of SOFIE the Barba Stathis representative identified clearly that SOFIE has advantages in the production (farms, producers) and in the transportation of the products. The specific advantages for his own company he felt could be firstly financial, as the information for the conditions of the location where a product is grown is very important to them. Especially the possibility to notify the producers to take actions that will preserve the quality of products. And in the case of transportation, it is very important to monitor the state of the vehicles in a trusted manner. In this way a company-owned fleet could be avoided. Secondly, from a legal perspective it helps to avoid privacy and GDPR issues, that are raised due to the fleet monitoring platforms that monitor many things that are not acceptable by the drivers (location for example). It was hard for the interviewee to give any estimation on the pricing as he could not foresee whether and what kind of costs might arise from implementing SOFIE. As a barrier for using the FCS system he identified the lack of general knowledge of people and perceived reluctance to adapt to new technologies.

Delta Foods is a large Greek company that collects data from the milk producers to the end stores (supermarkets, etc) and is involved in the establishment of technology assets for quality monitoring in the whole supply chain. It has established data/information collection across the chain, where databases are owned by different parties or managed by different departments. The Delta Food representative felt that in terms of quality monitoring, traceability, auditability, there are already solutions established, but as they are fragmented SOFIE could be potentially useful in aggregating the fragmented data. As potential barrier to implement SOFIE, the interviewee identified two main hurdles: the difficulty to migrate from a solution that already works to another if there is no decision from the business/marketing/sales department of the company, and the training and motivating people to properly use the new solution. Here he, like other respondents, highlighted the fact that Greek farmers and producers rather lean towards traditional technologies and ways while doing business.

To sum up, all interviewees in pilot segment saw potential benefits of FCS offer even when they were unable to implicitly calculate the exact cost benefits they might gather. The most

important thing for all stakeholders in this group was the mechanism to assure the customer the quality and traceability of products, as this assures higher market value and upper hand in competition. The interviewed stakeholders are a great match for FSC pilot and collaborating with them in order to push this pilot further into the market will continue.

2.4 Context-aware mobile gaming pilot

The goal of mobile gaming pilot is through iterative prototypes, tests and calculations, we evaluate the technical fit, performance, gameplay experience, and business potential of the use cases that Rovio identifies. The aim has been to experiment and understand whether DLT and IoT can provide new kinds of compelling player experiences.

The interviews for mobile gaming pilot were carried out by the representatives of Rovio Entertainment Corporation. As Rovio does not plan to pursue the pilot beyond the SOFIE project and has thus not developed specific target customer segments. Nevertheless, stakeholder who could be interested in the work produced for this pilot are game developers, gamers, mobile game service providers.

For the mobile game pilot, Rovio representative interviewed a game developer, head of studio of mobile games, technology director for mobile games and game designer. All the interviewees were from Rovio Entertainment Corporation but external in a sense that they belong to other branches of Rovio and/or to different departments compared to the pilot lead who runs the SOFIE use-case for context-aware mobile gaming. One interviewee was from the Stockholm branch and another from Copenhagen branch, two were from Espoo.

Rovio Entertainment Corporation is a mobile gaming company whose products are available world-wide. Out of the four interviewees only the game developer saw that SOFIE components could fit the company's business model. According to him, for example the SOFIE framework components Identity, Authentication and Authorisation (IAA) and Privacy and Data Sovereignty (PDS) could be used to provide login services in the games, but from the business point of view not being able to track users might rise problems. Nevertheless, from a user point of view this would be useful.

The responses from all the other interviewees saw no immediate benefits from SOFIE, explaining that their gaming systems do not interact with other systems like IoT and thus do not support, from the technical point of view, openness and decentralization. Another issue is the scalability of DLT, because mobile games need to scale large, the DLT and blockchain performance issues are considered to hinder reaching those wide scales according to the replies of two of the interviewees.

To sum up, from the interviews it became clear that the current SOFIE offer does not fit immediately into Rovio's business model and there are no concrete cases where SOFIE could be implemented. It was also brought out that from an outsider's perspective SOFIE image and offer is very R&D oriented and for this specific stakeholder group (gamers, game developers) it was difficult to understand the value offer. On the other hand, the interviewees also noted that things might change in the future, e.g. when there appear specific suitable use-cases where SOFIE could be implemented.

3. Experiences from interviewers

This chapter reflects on what the interviewers learned and gained from this workshop progress where they got to interview the stakeholders important for their pilot's exploitation. This chapter brings out the most important aspects, gained knowledge and results from the interviewers' personal perspective and offers some future perspective for the connections that were formed as an inherent result of this workshop.

3.1 Decentralised Energy Data Exchange pilot (DEDE)

For the DEDE interviewer the interviewing process of this workshop provided some interesting results of conducting the "close and personal" onboarding of stakeholders through virtual environment only. For DEDE interviewer Priit Anton (Guardtime), the main goal of the workshop was to interact with each potential stakeholder in depth. He took this into account while preparing and execution the set of interviews. The previous experience with SOFIE workshops had showed, that when presenting the wide SOFIE approach, it is challenging to attract interest of specific subgroup of stakeholders, e.g., the DSOs and TSOs. Thus, during this SOFIE workshop he prepared to take a narrower approach and be very stakeholder specific while introducing SOFIE.

The selection of the interviewees was based on the most relevant stakeholders, that could potentially follow up the activity after the end of SOFIE project and start using the SOFIE DEDE adapters. The interviews were set up as one-on-one calls preferably with persons, that had overview of both: the business logic and services relevant to DEDE and the high-level technical understanding of the solution as well. Taking into consideration that the interview process was arranged during the intensive Covid19 pandemic, it was challenging to get attention from stakeholders. It was crucial to have a on point value proposition ready, to get interviews ongoing and open up the dialogue. The following two aspects were helping to achieve this goal. Firstly, the value proposition from DEDE adapters, was focusing on higher rate of digitalisation and future online services. The global unfortunate sequence of events, that have hit energy sector (and other sectors as well) have paved way to relay more on digitalisation, automation and less human interaction. So, in a way there is synergy on the global drive and what SOFIE DEDE adapters want to achieve. Secondly, the previous activities of Guardtime have resulted in an excellent list of Energy sector contacts (both innovation projects and production grade solutions). These connections were invaluable to establish contacts and execute the plan.

The interviewees willingness to cooperate with the interviewer was very good. The interest to elaborate on the challenges and how using SOFIE adapters can solve several problems was mutually engaging. As an outcome DEDE pilot achieved to make concrete steps to commercially exploit SOFIE results further and to potentially test the SOFIE adapters in the future. Although, the 4 interviews did not lead to contract and commercial commitment, they did provide pathways to follow-up activities to continue pursuing the target.

3.2 Decentralized Energy Flexibility Marketplace pilot (DEFM)

With respect to Decentralized Energy Flexibility Marketplace pilot, the interview process was a good opportunity for the interviewers to involve relevant stakeholders for future developments and deployments of DEFM. Stakeholders were interviewed by ASM and ENG representatives (Tommaso Bragatto and Giuseppe Raveduto). As already reported in the previous section, different standpoints were collected.

From ASM point of view, the productive conversation with another DSO, which operates under similar conditions as ASM (i.e., distribution of electrical energy to a limited area in Italy), validated the work carried out by ASM during project lifespan. Indeed, as already outlined in SOFIE's technical deliverables, ASM is willing to test and integrate EFM in its business operations in order to tackle the effects of envisioned widespread of e-mobility in Italy. In particular, the involved DSO agree on the assumptions discussed during the pilot validation, namely the expected amount of connected charging stations will need huge capital investments on the electrical grid, that could be not sustained by the DSOs, therefore the usage of flexibility resources will be mandatory for a secure and stable network.

Considering the potential for a commercial exploitation, the transition toward a more innovative legal framework represents a trend the DEFM could take advantage of the interviewers agreed on lack of regulatory framework that currently does not allow transitions among DSOs and final customers. Nevertheless, their interest is promising for new development on DEFM solution.

3.3 Food Supply Chain pilot (FSC)

Planning the interviews, the pilot's goal was to approach people from all different segments of the food supply chain (farm, transportation, warehouse), that are quite active in their domain, and also have an overview of the operation of their business domain. It was also important that the interviews represented well the current state in Italy where Synelixis and Optimum operate. In all cases, the interviewees were people with whom there the pilot leads already a close relation in place. Hence, they were very eager to listen and provide their sincere opinion on what was presented to them. That last part was the most valuable characteristic of those interviews because they all expressed their real view on the discussion points that were raised. The discussions were quite complete, touching aspects of the real business operations.

The outcome of the interviews was quite helped to understand the points that Synelixis and Optimum need to focus on in the future so as to present an improved value proposition to potential customers. As takeaways from the interviews, the interviewer took two main things:

1. the fact that companies and people in the business are reluctant to move to and adopt new technologies/solutions unless they have to, or the profit is quite substantial for them long-term and is worth investing (time and capital).
2. the necessity to bring on-board key market players that will drive other companies (companies they cooperate with but also their competitors) to join the platform.

From the above, the pilot lead will focus their efforts (a) on adjusting our value proposition so as to make it more attractive in terms of profitability and (b) on bringing key players as adopters of the pilot platform.

3.4 Context-Aware Mobile Gaming pilot

For the SOFIE mobile gaming pilot, the interviewing process provided some interesting results regarding the use of DLT and IoT in mobile games. The main goal of these interviews was to interact with gaming experts in-depth and discuss the potential benefits of using the SOFIE framework in the gaming industry. From Rovio, the interviewers were Max Samarin and Ahsan Manzoor. They selected the interviewees from the Rovio internal studios which were either leading a studio or were senior developers in-game projects.

The interviewees were sent reading material to give an overview of the high-level technical understanding of the SOFIE solution and the mobile gaming pilot implemented by Rovio. Overall, four interviews were conducted over a period of three weeks. The interview process was arranged in such a way that there was a free-form discussion on the SOFIE platform, and the interviews were recorded for later use. The previous activities of Rovio such as implemented use-cases and research papers were also shared with the interviewees for in-depth discussion.

The interviewee's willingness to cooperate with the interviewer was very good. The interest to elaborate on the challenges and how using the SOFIE platform could solve problems was mutually engaging. As an outcome, Rovio got clear and detailed responses on using DLT and IoT technologies in mobile games. Although Rovio decided not to pursue the gaming pilot beyond the SOFIE project, the key insights from these interviews will help to shape the future of mobile gaming.

4. Conclusions

This workshop report provides the results of analysis of thirteen interviews conducted by the representatives of SOFIE pilots. The aim of these interviews was to engage with the stakeholders and investigate how the SOFIE value propositions respond to the stakeholders needs and expectations, and to find out what could be the bottlenecks hindering the potential implementation of SOFIE. The interviews for this workshop were carried out in accordance with SOFIE's real-life use-cases on the fields of energy data exchange (DEDE pilot), energy flexibility marketplace (DEFM pilot), food supply chain (FSC pilot) and mobile gaming (Context Aware Mobile Gaming pilot). The responses of the interviews were analysed by SOFIE projects' WP6 lead Liis Livin (Guardtime).


During the interviewing process the interviewees were highly responsive and collaborative, although many of them confessed that they had not heard (much) about SOIFE before. This was different only in the DEDE interviews segment, where three out of four interviewees were well informed and knowledgeable, having had previous connection with SOFIE (e.g. seen a presentation about it etc.). Moreover, in most cases the interviewees were able to expand the discussion at hand and think along with the interviewer, as well as exhibit deeper interest towards the specific value offer under discussion. The interviewees were not explicitly aware of any similar solution to SOFIE, at least not as much as to be able to name them.

As a result of the workshop, it was determined that the value offers of DEDE, DEFM and FSC match the stakeholder's expectations at large but their targeting of the offer could be improved with fine-tuning the proposal with stakeholder/use-case specific needs and conditions. Mobile gaming pilot confirmed its position of not pushing forward with commercialization of their pilot. In the energy and food supply chain vectors the interviewees assessed that implementing SOFIE could cut their costs and/or produce more income. Nevertheless, it was difficult for most interviewees to give specific financial estimations as they did not know if and what kind of costs would accompany the potential integration of SOFIE. The potential added cost to integration was also mentioned as one potential barrier to use the offered solution. Additionally, the technical integration aspects and general reluctance to use (and understand) emerging new technologies were some of the challenges identified during the interviews.

To sum up, the suitability of SOFIE pilots value propositions to the stakeholders was confirmed in the cases where the pilots have had business interests throughout the project (DEDE, DEFM, FCS). These pilots will carry on their work to during and beyond the project to push their assets to the market.

5. Annexes

Interview questionnaire



Section 1 of 4

An Interview with SOFIE

Thank you for dedicating your time for this interview!

This interview is a part of a survey that project SOFIE is conducting. We interview relevant experts and stakeholders in three domains: energy, food supply, and mobile gaming sector, in order to investigate the applicability of the SOFIE solution. The results of this survey will be used to determine how stakeholder can get the best benefits from the SOFIE project (e.g. start using SOFIE right away etc).

The analysis of the interviews will be compiled into a report that will be made available online (primarily on SOFIE website). We are committed to ensuring that Your personal information is protected. Your personal data (name and e-mail) will be used internally only and will not be shared to third parties. The recordings of the interview (written, audio or any other form) will be kept separate from the final report and will be not published.

This interview will take 30-60 minutes. It will be conducted in English.

Section 2 of 4

SOFIE value propositions in four domains

Food Supply Chain pilot (FCP)

Food supply chain involves several parties and actors. What is common among all of them is the lack of trust between each other. In our pilot we solve this issue by using blockchains-enhanced and non-intrusive technology that replaces trust between different parties, and also adds quality monitoring, traceability, and auditability features to products along the route; from field to fork.

Energy data exchange pilot (EDEX)

In the national and regional energy grid level the DSO/TSO have to grant access to energy consumption/production data in a secure way and be GDPR compliant. We have built a data security and trust service (EDEX-Guard) that will manage the authorisation, access control, revoking and evidence creation for your datahub. This middleware (connected through Open API) with SOFIE adapters enables you to grant secure data access to the service providers, households and smart grid operators. The main control over data access will be handled to data owner (household) (eIDAS compliant).

Energy flexibility marketplace pilot (EFM)

Distributed renewable energy sources and high peak consumptions requested by Electric Vehicle (EV) charging may bring new challenges for the energy distribution networks. In particular, Distribution Service Operators (DSO) may benefit from EV charging smart schedule to balance and keep stable the grid, while EV users may benefit from the usage of renewable sources for charging their vehicles, reducing operational costs and CO2 emissions. In our pilot, we have built a decentralized energy marketplace powered by blockchain smart-contracts, in which DSO, EV users, fleet managers and energy retailers may cooperate. EV users will help the DSO in keeping the network stable, by charging their vehicle where and when it is needed and being compensated for the flexibility they provide. Thanks to the smart-contracts and the IoT smart meters, the process is easy, quick, and transparent.

Context Aware Mobile Gaming

The focus of the mobile game pilot is to explore how Distributed Ledger Technologies (DLT) can be used to provide new gaming features for players, as well as to validate the potential of location based IoT games. We have developed a prototype to understand the use of DLTs for content ownership by players, enabling them to collect and trade in-game content with other players (e.g. characters, weapons, equipment, parts). We also looked at the interoperability of assets between games where players can leverage their avatars in multiple games. DLTs can provide players with true ownership of the asset, transparency, assets trading and consistency of asset attributes and transactions.

After section 2 Continue to next section

Section 3 of 4

General Information about the Interviewee

Description (optional)

Date of the Interview

Month, day, year



First Name

Short answer text

Surname

Short answer text

Gender

☐ Female

☐ Male

☐ Other...

What is your occupation?

Short answer text

Who is your employer? What organization/enterprise etc do you work for?

Long answer text

Where is the organization you represent located (country, city)?

Long answer text

Please describe your main job responsibilities.

Long answer text

Before this interview, had you ever heard about the solution(s) SOFIE offers?

☐ Yes

☐ No

If you replied "yes" to the previous question, what did you know? Please describe.

Long answer text

After section 3 Continue to next section

Section 4 of 4

SOFIE specific questions to the interviewee

Description (optional)

Please, describe the field and scope of your company.

Long answer text

Please, describe your company's product/service.

Long answer text

Please, describe your company's value offer for the client.

Long answer text

Please, describe the part in your business model where SOFIE fits (or could fit) in. In case, SOFIE does not have attributes to fit into your business model, please describe the reasons.

Long answer text

Do you know any other service/solution that does the job SOFIE aspires to do? Please describe.

Long answer text

In your opinion, what are the advantages of SOFIE for your company?

Long answer text

What is your estimation how using SOFIE would affect the costs of your service?

Long answer text

In your opinion, what are or could be the barriers that hinder implementation of SOFIE in your company?

Long answer text

What part of your company's exciting operating system SOFIE fits (could fit) in? What are or could be the technical challenges when integrating the SOFIE solution to your existing systems? Please describe.

Long answer text

Other questions and answers. Please indicate question with letter "Q" and answer with letter "A".

Long answer text

THANK YOU! Your feedback is invaluable.

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