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TagItSmart
Smart tags driven service platform for enabling ecosystems of connected objects

Grand agreement 688061

IMPACT CREATION ACTIVITIES REPORT

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1 Introduction

The aim of this D1.3 final report impact creation activities is to document the communication, dissemination and exploitation activities and their result, as well as a draft of the business plan for post project sustainability from M1 – M5 and present a plan of activities after the project duration. The overall objective of TagItLedger dissemination and community building is: 1) engage people and get insights and feedback, 2) knowledge sharing, 3) project validation (external), 4) build a community that would have a potential interest in the results of the project. This report outlines a report on impact creation activities for the aforementioned four goals focusing on scientific dissemination and the communication channels used to create visibility and engagement. This deliverable report and plans for the effective communication of the project concepts and its' outcomes. To achieve the aims, specific goals and measurable objectives the past 5 months of the project duration have been set. Table 1, below summarizes the three main objectives of TagItLedger project.

Table 1 - Objectives

Objectives	
Obj1:	Increase trust, traceability and assignment of responsibility between collaborating entities in a supply chain through documenting and maintaining a secure and unquestionable blockchain transaction history on a given Thng/product. Consumer engagement is heavily enhanced through the knowledge on the product's history and record available as a block in the blockchain implementation. The specific block chain functionality is not currently part of the TagItSmart platform.
Obj2:	Increase abstraction of the use of blockchain technology through seamless inclusion of the functionalities in the current TagItSmart (TIS) data flow. Furthermore, the technology should be application and asset agnostic, in order to be directly transferable to new application domains.
Obj3:	Engage UC and end users through co-creation activities in the context of TagItSmart in order to a) determine the usefulness of the abstraction layer b) decide on means of notification, rules generation and types of alerting.

The rest of this deliverable is organised as follows:

- Section 2 focuses on the impact created during the 5 months of the TagItLedger extension module presenting also the business model canvas
- Section 3 summarises all the dissemination activities performed during the project, from M1 to M5 with summarized plans for the project and concludes the report.

2 Impact Creation

2.1 Commercialization and Exploitation aspects

Ubitech has a long-standing tradition and portfolio on IT security and auditing services (such as the XCHANGE Data platform, Signing and Encryption services, Encrypted 2d barcode validation services etc.). The incorporation of self-managed, as a service private blockchains creation is considered a key feature for future business involvement and will aid the company to adapt and extend its portfolio into novel and flexible mechanisms adapted with the primary data sources of the customer. Given that blockchain technology is already in the trough of disillusionment of the Gartner Hype Cycle, with an estimated reach to the plateau of productivity in the next 5-10 years, and with the abundance of baseline technology and platforms on which one can build upon, it is an ideal candidate for future commercial solutions. What is extremely interesting in this case is the fact that because the technology behind blockchain is asset-agnostic, and one only needs to map the physical concepts to the blockchain ones, the amount of application areas (and thus potential customers) is extremely wide, ranging from currency solutions, IoT applications and devices (as in the case of IBM Adept), smart contracts (like Ethereum) to financial and insurance cases. Furthermore, consideration will be provided to the service's adaptation in environments beyond TagItSmart application and platform area. However common exploitation paths with the main TagItSmart platform entities will also be investigated in the course of the project.

To this end of validating participating transaction validators, link to existing Ubitech portfolio may be achieved through the X-CHANGE platform offering (https://www.x-change.io/#extensions), that may be used for validating the transaction validators identity, in a similar manner that currently is performed in document digital signatures on the main X-CHANGE platform functionality. Furthermore, XCHANGE may intervene and promote the service-oriented adaptation of third party systems, constituting a customizable mechanism for the dynamic generation of Web Services on top of any interoperating systems' data sources. On the one hand, it enables binding to any legacy systems' data sources and the ad-hoc definition of custom business objects out of their data models, providing a user-friendly wizard that permits graphical browsing and navigation of each data source model. On the other hand, it enables the deployment of any required Web Services facilitating interoperation with existing APIs or other software modalities to enhance integration with existing software systems.

Ubitech also has three large commercial deployments of our portfolio in terms of either document management with the Argentinian National Registry and the International Commission for Civil Status in Strasbourg (with relation to the X-CHANGE platform) and the Greek Police (with relation to document indexing solutions). Given that private permissioned

blockchains have a very good potential for these kinds of usages, pitching of the enhanced blockchain based solution developed with TagItLedger has a very promising prospect.

More specifically, our business model canvas is presented below.

1. Customer segments: Who will use the "product"?

- Supply (cold) chain entities that need to regulate and validate the relationships between them, while tracking responsibility for product handling (Case A)
- End users that need to be certain of the origin of the purchased good (and the representatives of that respective chain that want to reassure these end users) (Case B)
- Civil services for document management can be a primary target, based on Ubitech's current portfolio that includes three such clients (Greek Police, International Commission for Civil Status in Strasbourg and Argentinian National Registry) (Case C) and given the large applicability of blockchain technologies in this domain

2. Value proposition: Why will they use the "product"?

For Case A, applicability of the solution will minimize friction and legal claims between entities, thus reducing costs and simplifying business relations

For Case B, applicability of the solution will enhance customer relations and increase trust in the overall product chain

For Case C, applicability of the solution will enable easier management, optimized user engagement with limited need for physical presence, increased security as well as a distributed mechanism for document storage with full traceability[1], enabling the implementation of the Once Only principle in e-Government.

Given that TagItLedger relies on the private blockchain principle, no external validators are needed (aka miners).

3. Channels: How will TagItLedger be delivered to the customers and suppliers?

TagItLedger framework is envisioned to be delivered to suppliers as an extension of the main TIS platform (or specifically the EVRYTHNG IoT platform), as an added value service for cases where validation between different members of the supply chain is needed. Current platform users will be able to choose the extra added value service addon.

TagItLedger will act as an external merger of information by creating and maintaining an intermediate fabric to join data coming from TIS and storing them to the private blockchain instance (for envisioned cases A and B). To this end, its API will be available where needed and it will exploit the existing API of TIS (and mainly EVRYTHNG) to integrate and obtain the

[1] Steve Cheng, Matthias Daub, Axel Domeyer, and Martin Lundqvist , "Using blockchain to improve data management in the public sector", February 2017, McKinsey, Available at: https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/using-blockchain-to-improve-data-management-in-the-public-sector

aforementioned information. A blockchain instance participant will be able to obtain the respective information at any time based on the authorization scheme and respective access rights.
Delivery to end users (in terms of validation of product origin for Case B) will be performed through a simple REST interface to scan the QR code and download the product's history that guarantees its authenticity.
It is necessary to stress that while this is the primary focus in the context of this project, the offering can also be applied in any blockchain related context with the proper adaptation of the data input layer. For example, current Ubitech customers may be interested in a document storage and management type of blockchain (Case C of question 1). In that case service-oriented calls will be used in order to enable operations such as ledger views and insertions.

4. Customer relationships: how will you develop and maintain contact with your customers in each segment?

The role of the commercial partners of TIS is critical, in order to exploit their current customer basis, but also act as the commercial proof of concept, along with the current customer basis of Ubitech, which is revolving around document management, one of the most prominent private blockchain areas of application. During this communication some key points need to be stressed, such as the added value of using TagItLedger, as well as more practical issues like simple and generic user interfaces, abstraction of the overall process, immutability/validation of stored information, simplicity of management etc. Online presence will be targeting relevant groups and business social media, while communities in each case will be identified and addressed.

5. Revenue streams: How is revenue generated from which customer segments?

Sources of revenue for TagItLedger are primarily based on the SaaS model and may include:

- Monthly subscription fee for Case A (supply chain entities) as an individual external service to which EVRYTHNG account owners offer the application role for interacting with the data. Different plans may also exist based on the number of scans per month as well as commission strategies between Ubitech and TIS partners
- Forming of a business agreement between Ubitech and TIS partners in which TagItLedger will be completely hidden behind TIS (or EVRYTHNG) thus acting as a white label solution. In this case pricing may be determined at a connected account basis, number of registered products basis or number of scans basis.
- For Case B (end users validation of purchased goods), this may be performed on a per scan basis exploiting the TagItLedger API, or even as a percentage of confirmed purchases for which scans were performed (similar to the mainstream advertisement per click models).
- For Case C, given that in the civil services domain the number of documents for inclusion may be extensive, this can be another way of charging. However, for this case the primary candidate is a contract-based (deployment and support type of) offering based on the anticipated number of users.

Furthermore, cost relates also to the primary integration of a data source with TagItLedger. This may be a flat rate fee or it can be minimized if the estimated number of scans for the specific use case is higher than a limit.

6. Key activities: What are the key things that you need to do to create and deliver the product?

Development and dissemination activities will be performed by TagItLedger as indicated in this document. The final product (namely its results) will be delivered and validated through the project workplan and especially by the evaluating commercial partners in the last phase of the project. Integration with TIS data sources is one of the main aspects that need to be delivered (such as linking with different accounts, obtaining data streams, mapping to the role model of TIS etc), as well as adaptation to the data formats from these. Definition of the pricing plan is also one key factor in order to support deployment configurations in a sustainable manner, given that it also affects a number of implementation aspects. Finally, necessary UIs need to be developed in order to drive user participation in a number of actions, ranging from permissions granting to reporting/observation of the current state.

7. Key resources: What assets are required to create and deliver the product?

Main assets that are required are the baseline blockchain software as well as the integration fabric code for maintaining product related information in the ledger. Moreover, computing resources are needed for product delivery in order to undertake the validation of the ledger's state at each point in time, as well as service-oriented mechanisms for their management, which are available from Ubitech's participation in relevant projects. Finally, extension to adapt the XCHANGE module is needed.

8. Key partners: Who will you want to partner with (e.g. suppliers, outsourcing)?

Key partners are very crucial to the successful development and rollout of TagItLedger as their experience directly affects the demonstration of TagItLedger's exploitation benefits. As such, specific TIS use cases have already been identified based on the maximization of TagItLedger impact (namely brand protection, dynamic pricing and/or digital product partners). Furthermore, EVRYTHNG has also been identified as a key partner, in order to integrate with the respective platform for obtaining scanned information.

In general, key partners are considered

- IoT platform owners given that they offer the main integration point, as well as existing clientele to which TagItLedger can be demonstrated as a value proposition for Case A
- Retailers that have access to end users that will want to validate the product origin, especially for high end, expensive artefacts for Case B
- Government agencies for Case C, for which contact points and contracts are already available based on Ubitech's current customer basis
- Key Resources acquired from partners: cold chain/retail scan data from their current deployments for Cases A and B, for Case C given that we already provide the

existing solution to them, a comparison between the current state and the benefit from using the private blockchain approach is needed

- Key Partner Activities: enable redirection of scanned information to be used by TagItLedger and exposed to their end users

9. Cost structure: What are the main sources of cost required to create and deliver the product?

The main sources of cost for creating the product refer to the implementation of the intermediate fabric for joining the per case data sources with the back end private blockchain implementation. Given the fact that this will be performed in the context of the project, the costs after the project end relate mainly to the maintenance and support of the software as well as the running costs. The latter include also the necessary resources to run the per blockchain validators, given that this is a private and permissioned approach, however this alleviates also from the need to incentivise external participants like in the case of public chains. Thus, this resource cost should be included in the business scope, as mentioned with the charge per scan or operation case in Question 5 (Revenue streams). For this purpose, relevant experiments should be performed in the context of the project in order to determine the scalability of the solution and the number of scans that the candidate resource type would be able to accommodate, in relation to their baseline cost.

New applications of the private blockchain as a service will primarily include the creation of similar data integration and transformation layers, which will be performed per case and order of the product instance, given that they relate to the adaptation to the primary source of data in the respective case.

2.2 TagItLedger Impact

To further promote openness and transparency TagItLedger promotes open source software solution. The fact that the TagItLedger is distributed as open source should foster the further development, even after the project has ended. This will ensure that the TagItLedger ecosystem will grow beyond the existing contributors. TagItLedger is based on open source model in order to get rapid and widespread uptake. A key aspect of an open source software project is to make the software discoverable, searchable and referenceable to the largest possible number of communities.

With reference to the economic impacts of the outputs, even if, at the present early stage, it is not possible to have a complete view of the future of the TagItLedger project, we will try to give a partial evaluation of the economic benefits brought by some of the short-term outputs already produced. The most relevant economic impact of the project is related to the effects on technological advances, especially in terms of potential cost reductions achievable through the commercialisation of its outputs. The project is expected to reduce software development costs by 70%. This 70% cost reduction is related to the increment in software re-usability and reduction of cost related to compliance with regulatory/legal business and

legislation/policies constraints. Finally, the project's outputs have already generated the submission of 3 new project proposals. The most relevant substantial economic impact will be presumably obtained 1 year after the end of the project.

3 Summary, Conclusion and Future Activities

This deliverable presented the current status of the TagItLedger project in terms of impact creation and dissemination activities. This dissemination strategy provides the TagItLedger project with a solid framework against which to begin disseminating project deliverables and activities. TagItLedger poses particular challenges for effective dissemination, given the variety of stakeholders involved. TagItLedger strongly believes that informing engaging the broader community is the only realistic way of ensuring the project's legacy after its nominal duration. Therefore, project promotion and ecosystem development activities should and are taken seriously to maximize the potential and value that the pioneering ideas of TagItLedger can bring to many different aspects of our daily lives, strengthening the European economy and improving the quality of life of citizens.

The main goal of dissemination is to raise awareness of the project activities in order to make TagItLedger a successful and sustainable project extension. This is carried out by using various communication channels and materials such as press releases, website updates along with the face to face information. The key objectives of the dissemination strategy are: to make known as widely as possible the findings and recommendations of the TagItLedger; to engage with and elicit feedback from stakeholders on the project's deliverables; and to strengthen the research and knowledge base of both researchers and end-users.

After the end of the project the focus will especially be to publish in computer and business-oriented papers in order to reach wider audiences. The major objectives achieved of TagItLedger regarding dissemination are as follows:

- To communicate and disseminate the knowledge produced by the project and all relevant knowledge available
- To exploit the results of the project after its lifetime

Table 2, summarises in numbers all the dissemination activities done or are in progress until now.

Table 2 - Summary of activities

Dissemination Measure	Scope	Action	Status
Website content	General	2 posts in website https://www.ubitech.eu/research/research-projects/ https://www.ubitech.eu/ubitech-wins-the-tagitsmart-open-call-for-project-extensions-and-additional-modules-introducing-a-private-blockchain-network-for-smart-tags/	Done

Blog Articles	General	1 posts in relevant forums (e.g. LinkedIn) https://www.linkedin.com/feed/update/urn:li:activity:6386325956843364352	Done
Social Media	General	1 dedicated twitter account, linked with TIS and Ubitech account https://twitter.com/tagitledger	Done
Social Media	General	1 dedicated YouTube account, linked with TIS account https://www.youtube.com/channel/UC0Vvc-9lR5Vl40uY13rkhKA	Done
Social Media	General	5 posts on Twitter	Done
Material & Demonstration	General / End users, Business Audiences	1 dissemination video that demonstrates TagItLedger features https://www.youtube.com/watch?v=_k1BaCZOF9E	Done
Material	General	1 open source repository https://github.com/sofiannasof/TagItLedger	Done
Co-creation, Demos and Presentations	End users, Business Audiences	1 co-creation activity participation in the context of the project and 1 presentation on TagItLedger Architecture. TagItLedger's core idea, possible interactions with TagItSmart platform and the NXT blockchain we use presented in a co-creation workshop.	Done
Open Access publications	Technical results	1 white paper/publication of the main concepts and scope of the implemented mechanisms. Ubitech's research division is extremely active in the scientific publication domain [ubiresearch] "TagItLedger: Tag Driven Supply Chain Ledger Service for Enhanced Product Transparency" paper is in progress.	In Progress

4 References

[D6.1] TagItSmart D6.1 deliverable “Communication and dissemination plan and report on activities v1”, April 2016 http://www.tagitsmart.eu/D6.1.pdf
[D6.2] TagItSmart D6.2 deliverable “Communication and dissemination plan and report on activities v2”, January 2017 http://www.tagitsmart.eu/D6.2.pdf
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