

Exploring the Concept of “Tiers-Lieu” for Information Services: The Value of Conceptual Modeling

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Abstract. To be successful, Digital Transformation cannot be considered as a matter of a single department or a single organization, regardless of whether the organization is private or public. Its mission consists in providing new inter-disciplinary or even trans-disciplinary information services. Therefore, collective intelligence is a key for its success. A collaborative approach enabling innovation and co-creation is necessary to develop sustainable and democratic information services. As a potential solution, we propose a novel approach called Tiers-Lieu for Services (TLS), that we introduce in this paper. In addition, we consider conceptual modeling as the central underpinning technique for co-designing information services and succeeding in a TLS. In the paper we report on two experimental TLS conducted in the context of our continuing education program. Based on these explorations we will further study the concept of TLS and progress towards defining a method for conducting TLS.

Keywords: Tiers-Lieu for Services, Digital Transformation, Conceptual Modeling, Information Service.

1 Introduction

In the era of Digital Transformation, organizations are struggling to find new ways to develop and provide their services and products, and to transform their business models. They wish to innovate, to be first using new technologies, to be more efficient and attractive. But, Digital Transformation is not just about the adoption of new information technologies and computerization of human activities. It embraces much broader strategic ambitions and involves fundamental changes in the activities, structure and even culture of the organization [1], with the primary goal of innovating, creating value and gaining in sustainability. Digital Transformation is not only technology driven. New requirements also emerge from societal matters like ecology, energy, democracy, health, gender equality, education, transportation, etc. (see the SDG program of United Nations [2]). To be successful organizations would better join their forces and capabilities to reach grater and sustainable digital solutions.

The research question we ask in this work is: *What is an efficient way to make organizations and citizens to collaborate in the context of sustainable digital transformation?* As a potential candidate we consider the approach of Tiers-Lieu for Services

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(TLS), that we introduce in this paper. As we explain in this paper, TLS provides means to drive ideas from people, to put them in creative situations, to eliminate cognitive and social barriers, to foster their creativity and, the most important, to co-create democratic and sustainable information services.

The second question is: *What techniques are necessary to make a TLS efficient?* Here, we claim that conceptual modeling is the answer. Indeed, conceptual modeling is the underpinning technique for co-designing information services [3]. So, TLS should be driven by creating, discussing, refining conceptual models.

To sum-up, the research goal of this work is twofold: (1) to explore the TLS approach as a way to innovate in business and public activities with information services, and (2) to demonstrate the value of conceptual modeling for succeeding a TLS. In the following section we present the foundation of our proposal: the TLS approach and the role of conceptual modeling in it. In Sec. 3 we report on two tentative TLS, while in Sec. 4 we discuss the findings and limits of our study, and draw the research agenda. Section 5 concludes the paper.

2 Foundation

2.1 What is a Tiers-Lieu?

According to Burret [4], a “Tiers-Lieu” (TL) is: “a social configuration where the encounter between individual entities intentionally engages in the conception of common representations”. A “common representation” is considered here in a broad sense; it could be a conceptualization of a digital service or system, a business model, a bill of law, a public transportation plan, etc. A “social configuration” means that the goal of the TL is of interest to people from different horizons, different activity and social domains, representing public as well as private organizations or just themselves as responsible citizens.

The concept of TL was mainly developed in France and its usage is expanding [5, 6]. It is important to mention that the notion of Tiers-Lieu is not a literal translation of “Third Place” introduced in sociology by Oldenburg [7] to identify a social environment which is not the usual one of home (“first place”) neither the one of workplace (“second place”). A third place is any public physical or virtual place that enables a community life and facilitates broader and more creative interactions. It’s a place where people relax in public, meet friends and make new contacts. The ambition of a TL is much broader, it aims to offer a space where people with different backgrounds and having various skills and abilities can meet with the aim to co-create, not only to discuss and relax [4, 5]. A TL has a shared goal. As main characteristics of TL we identify:

- *TL as a community builder.* TL attracts conscientious and responsible people (citizens, business (wo)men, government agents, politicians) that adhere to the same goal – to make progress in the society, to advance private, business and societal well-being.

- *TL as a means for coopetition* where business competitors collaborate and combine their forces for innovating, as this is the only way to progress quickly and accountably.
- *TL as a way to co-create*. By providing a dedicated context and conditions TL naturally fosters peoples' creativity.
- *TL as a multi-institutional and multi-disciplinary space* that gathers people from different professions, different institutions, having different responsibilities and skills, that aim to share their expertise and to co-create. They can participate as simple citizens or as representatives of their institutions.
- *TL as a cross-pollination space*. TL is not just about getting together and sitting around a table. It explores the collective intelligence of all participants.

2.2 What is a Tiers-Lieu for Services?

The goal of a Tiers-Lieu for Services (TLS) is to build information services [3] in a collaborative way involving actors from various domains aiming to innovate and co-create value as common information assets, and so, to contribute to the digital progress of Society. Information services built in the context of a TLS are not only novel, they are necessarily democratic, accountable and indispensable. As TLS is providing a multi-disciplinary and multi-institutional context, it enables the co-creation of interdisciplinary and inter-institutional services, and even trans-disciplinary and trans-institutional ones [8]. Indeed, the concept of transdisciplinarity is very relevant for TLS. According to Nicolescu [9], transdisciplinarity “concerns that which is at once between the disciplines, across the different disciplines, and beyond each individual discipline”. Therefore, trans-disciplinary/trans-institutional services do not belong to any particular discipline or institution. Nevertheless, they contribute to the progress of each of the disciplines and institutions concerned and go beyond their individual concerns.

TSL allows to overcome situations that would lead to an impasse the development of any individual organization. By acting together, organizations and individual citizens have much better chance to succeed. TLS transforms individual problems into common challenges by building common information assets – information services. To enable such co-creation, TLS provides a regulatory framework for the activities to be done as a part of it, that is for building democratic, accountable and inclusive information services. A TLS can be launched by any action fitting into the context of digital progress of Society. The nature of the action should be trans-disciplinary, trans-institutional or even trans-national. Conducting a TLS consists in four iterative steps:

1. *Formulating the intention of the TLS*: the initial definition of the TLS intention can be issued as an individual (citizen or organization) initiative or proposed by a consortium of organizations.
2. *Building a heterogeneous network of contributors*: contributors can be collected via a public announcement or by personal invitations, seeking to have all necessary skills and expertise, and representatives from all concernment parties.
3. *Conducting explorations* with the aim of achieving actionable results in the form of information services and related value propositions.

4. *Designing and setting-up information services*: based on the exploration results, deciding on the explorations to be materialized as information services and service systems, co-designing and setting up these services. The exploration and design sessions will use different co-creation and conceptualization techniques.

2.3 Conceptual Modeling and TLS

The main purpose of a TLS is to explore and co-design information services. In order to take consistent and responsible positions, contributors coming from heterogeneous horizons need to speak a common language allowing them to understand each other and build informational consensus. We claim that such language is a conceptual modeling. In fact, this claim is not so original as many researchers, notably Olivé [10, 11] insist that “conceptual schema should be the center of the development of information systems”. Similarly, in information service development a common representation is expressed in terms of conceptual models. The role of a conceptual model is to ensure a formal and unambiguous representation of a particular domain in view of digitalization.

Several types of models can be used in the information service design for representing the value and the content of information services [3, 8], their context, and how they serve different actors. Each of them expresses a particular view such as: the activity of the organization/institution (including its structure, roles, rules, goals, processes, economic situation, etc.), the digital systems (databases, architecture), the ontological representation of the activity domain, and the most important - the information (data, rules, activities, roles, responsibilities). Therefore, driving a TSL with the help of conceptual modeling allows:

- to facilitate reaching informational consensus between the parties involved,
- to guarantee responsible and agile digitalization of organizational/social activities,
- to explain the direction pursued by the informational propulsion induced by the co-creation of services,
- to maintain the co-creation action within the framework of the original TLS intention, and
- to facilitate building democratic, accountable and inclusive services.

3 Exploring Tiers-Lieu for Services

We have conducted two exploratory TLS, one in November and the other in December of 2018, both in the context of our continuing education program, a Certificate of Advanced Studies (CAS), on Business Development with Information Services. This CAS, is dedicated to the practitioners willing to upgrade their knowledge and skills in the engineering and management of information systems and services, and to become responsible actors of digital transformation of their organizations. The CAS lasts one semester and awards 15 credits ECTS. The participants come from various organizations and have different roles such as business analyst, IS manager, project manager, IS designer, developer, or any other business activity demanding information services for

its execution. In total, 13 people, students of this program, participated in the experiments. Our primary goal was to offer the participants an experience of participating in a TLS and learning how to conduct one. By the way, one of the participants easily reproduced the experiment in the context of his business practice. The second goal was to demonstrate the value of conceptual modeling in a TLS – to assess its contribution to the success of the TLS.

Before the first TLS all participants had a short course on this subject. They also had courses and training of various design and creativity techniques such as Business Model Canvas [12], Creativity Triggers [13], Service Model Canvas [14], Design Thinking. Half of the participants had previously taken another CAS on conceptual modeling of information services and systems, and therefore had acquired corresponding skills (e.g. data, process, goal modelling).

Based on our observation and the appreciation of the participants and initiators of the TLS, we consider the results of the two TLS as successful. Participants learned a new approach to co-creating information services that they found very effective. The TLS process also demonstrated that conceptual modeling experts were more efficient than those who did not yet have this capability. We report on these two TLS in the following subsections. Pictures in Fig. 1 illustrate our exploratory TLS.



Fig. 1. Pictures from the TLS

3.1 A TLS for Exploring Technology Push

The goal of the first TLS was to explore the potentialities of implementing a novel digital artefact and to identify information services that could be developed based on this technology. The subject of the exploration was a technological approach aiming to improve the quality of life of elderly patients with neurodegenerative disease like Dementia or Alzheimer. The proposed approach is materialized in two devices: a wristband and a dolometer. The wristband allows to measure patients' vital signals like heart rate, blood oxygen, skin temperature, movements and other activities, and to detect behavior patterns. The dolometer indicates the level of pain or discomfort based on the data received from the wristband and the environmental parameters like noise, temperature, light, etc. It also serves for the pain assessment refinement and data storage.

In total, this TLS lasted 10 hours (6 hours on Friday afternoon and 4 hours on Saturday morning), and was organized as follows: First, the creator of the approach (a researcher of our university) presented the subject and the two devices. Then, the participants spent some time to clarify the subject by asking additional questions to the presenter. The rest of the time was divided into several brainstorming sessions where participants used various conceptualization techniques such as Business Model Canvas [12], Creativity Triggers [13] and domain conceptual modeling (class diagrams). The TLS ended with a concluding session during which the participants presented their proposal for information services to be developed on the basis of the explored technology.

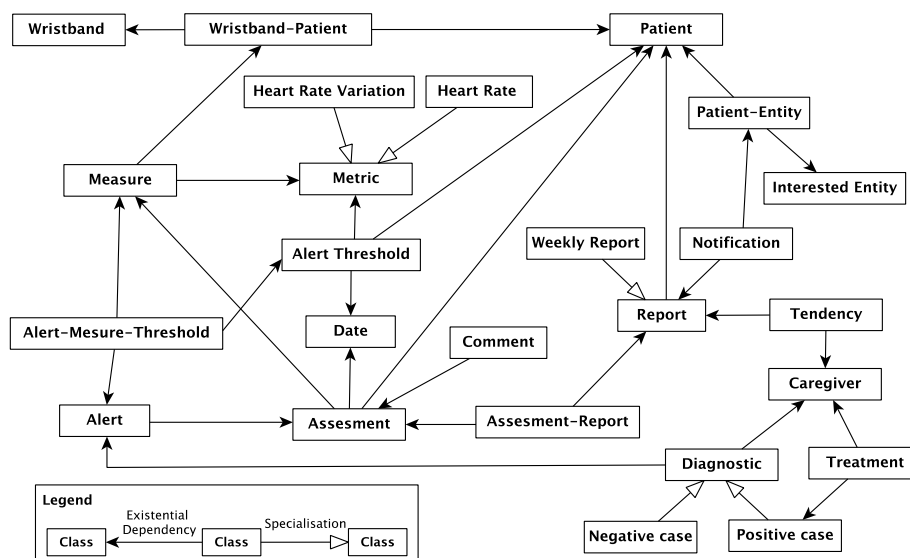


Fig. 2. Example of a conceptual model produced during the first TLS

The business model canvas approach was used first with the aim to better understand the value of the proposed technology. However, at this stage only very generic value could be assessed. To progress, the participants decided to try creativity triggers to

identify new value propositions and so new services. This led to the identification of several new but diverging ideas. Finally, the situation changed when the participants decided to draw a conceptual model of this domain. During this modeling session they created an information space (see the model in Fig. 2) that led to a common understanding of the domain and allowed to converge their ideas, and even triggered new service propositions. In particular, one complex service (service system), namely a platform for collecting the information by means of the two devices (wristband and dolometer) and sharing it with all concerned actors (caregiver, nurse, doctor), emerged as a potential value proposition.

Quite obviously, conceptual modelling was a way to facilitate group intelligence, to trigger most of the ideas and to better scope the identified services.

3.2 A TLS for Exploring Societal Push

The aim of the second TLS was to explore how societal goals could be reached with the help of information services. It had as subject “Digital service and regulation development for the collective design of Neighborhood Local Plans (NLP) in the Canton of Geneva”. The TLS took place in a co-working space in Geneva, and lasted 15 hours (10 hours on Friday and 5 hours on Saturday morning). The initiator of this TSL, a representative of the NLP initiative, presented the subject and the main issues related to defining NLP. In particular, he stressed on the difficulty of establishing collaboration between all parties involved in elaborating plans and related regulations, the length and rigidity of the process, the missing digital support, and so on. The participants were invited to answer the following questions:

- How to write a regulation (a normative document) in collaboration? What information services would be needed to support such collaboration?
- Can information services propel the collective conception of normative texts?

After a short brainstorming session, the participants organized themselves into 3 groups. The rest of the time was naturally split in 3 periods of co-creation with intermediate presentations of the progress in group work, and the final presentations. The group No2 had the most advanced skills in conceptual modeling. So, they naturally started with elaborating a conceptual domain model (see Fig. 3), which appeared to be a valuable means for identifying information services. They designed a service system – a platform providing services for managing roles, ideas and initiatives, collecting needs of inhabitants, studying feasibility, co-deciding, etc. The advance of this group was the most prominent. The group No1 focused on technical aspects of collaborative work and undertook the elaboration of an architecture for a platform supporting collaborative editing, change log, and document versioning, multichannel notification. The real progress was observed once the group elaborated a conceptual model with the help of a facilitator (one of the teachers). The group No3, mainly worked on defining roles and responsibility domains in NLP projects. During the last period of the first day they decided to merge with the group No2. Together, based on both inputs (the conceptual domain model and the role & responsibility model) they elaborated the responsibility space of each role and created a service model canvas [14] highlighting the value of their

information service platform for NLP. During the final brainstorming, participants realized that most of the ideas developed during the TLS could serve to design generic purpose information services supporting the co-creation of regulations. Because of the space limit we cannot show all the conceptual artifacts produced during this TLS; only a part of the domain conceptual model is shown in Fig. 3.

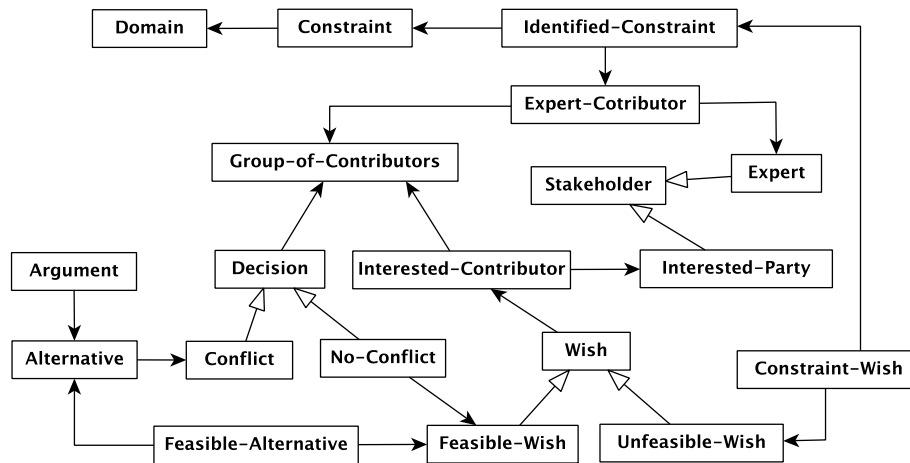


Fig. 3. Example of a conceptual model produced during the second TLS

4 Discussion

While the concept of Tiers-Lieu is gaining in awareness and finds more and more followers, its adaptation to the information service co-creation, that we call Tiers-Lieu for Services, is our original contribution. The TLS approach is not yet fully formalized, and needs further exploration, experimentation and validation. In this paper we present our exploratory work in the domain, our first steps towards a method for conducting a TSL. Our definition of TLS is based on the definition of TL as given in [4] and on our previous works in the domain of information service engineering [3, 8]. We are convinced that TLS approach allows to put in practice the inter-disciplinary and even trans-disciplinary co-creation of information services. We also consider it as a democratic, accountable and inclusive approach as it allows to take into consideration opinions and initiatives of actors from various horizons and having different responsibilities (private and public organizations, governmental institutions, citizens), everyone concerned by digital transformation with the help of information services. The two explorations demonstrate that TLS fits well societal as well as business purposes, and can be driven by a technology push as well as by societal goals. TLS allows to explore larger horizons and go beyond the capabilities of one person, one profession (discipline), one organization.

Our explorations clearly demonstrate that having skills in conceptual modeling has a direct impact on the success of a TLS. Of course, other techniques fostering collective

intelligence, such as Design Thinking, Creativity Triggers, Business Model Canvas, Service Model Canvas, are very useful. All together, the conceptualization techniques allow to better share the understanding of the domain.

The two TLS explorations are certainly not a formal proof of the effectiveness of TLS. Our intention was rather to explore the potentialities of this approach, with the aim of further formalizing it. Each TLS was based on a real case and was presented by its promoter, which, in our opinion, gives credibility to our study.

A potential threat to validity of the study is the origin of contributors. Indeed, we skipped the step of building the network of contributors as we already had our participants. There is no statistics on the best number of participants in a TLS. The main guideline is to select/invite contributors representing all concerned parties. Our participants already known each other and had collaborated together on small group projects in the context of the education program. Besides, they already learned a few design techniques and some of them had conceptual modeling practice. We do not know if similar results could be reached if none of the TLS members had design and conceptual modeling skills. However, the origin and background of the participants were sufficiently different (they work in different organizations and have different responsibilities) to consider that the context of our experiments were close to a real TLS setting.

Based on these explorations and foundations in service science [15], we aim to develop a method for conducting a TLS. Such method has to be situation-driven, flexible and democratic. By situation-driven (or situational [16]) we mean taking into consideration that the context of each TLS will be different, e.g. will have a different intention and scope, a different set of participants (including their number, origin, responsibilities, skills), a different location, etc. Accordingly, it will require a specific composition of method chunks to fit the situation. For example, if the TLS participants did not know each other, the method would recommend applying team building techniques at the beginning of the TLS. In another situation, where participants would have no conceptual modeling skills, a facilitator with such expertise could be invited. Indeed, having a facilitator is generally recommended in a TL. However, because of our position as teachers in this program, we decided not to intervene and let the participants self-organize, which happened to be quite successful. The facilitator is not supposed to co-create, just to manage the participation of contributors.

A TLS is not a one-off meeting, it usually requires several sessions, each with a specific purpose and a variation of participants (involving new ones, losing others). Therefore, the method has to be easily adaptable by selecting on the fly the most suitable method chunks. Finally, the democratic principle is fundamental for guiding a TLS. It aims to ensure that every participant has the opportunity to express his/her opinion and to be heard, that the opinion of each participant is valuable and seriously taken into account, and that there is no hierarchy or any other clustering of participants.

5 Conclusion

In this paper we introduce the approach of Tiers-Lieu for Services (TLS) as a novel way to guide Digital Transformation in a collaborative, democratic and responsible

way. In the context of our program of continuing education, we have experimented two TLS, each having a different intention and a different driver. The first was driven by a technology push – an introduction of a new device in the health care domain. Different ways to promote and use the device were explored and materialized in terms of information services. The second TLS faced a societal challenge – a co-development of regulations, and came-up with a proposal of a dedicated service platform. Both TLS demonstrated the value of conceptual modeling as an underpinning technique to succeed. Based on these experiments, we aim to further formalize the approach in terms of a situational method, that is a method easily adaptable to different types of TLS.

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