# A simplified thematic framework related to the co-design process of ICT4D projects: Case of co-design of a Territorial web portal of Settat city

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## Abstract

We aim to simplify a thematic framework, based on a literature review, to analyse the co-design process of ICT projects for community development. This literature review has focused on two notions of 'Co-design' and 'Development' and its applicability in the field of Information and Communication Technologies for Development. The studied case is the co-design of a territorial web portal of Settat city which is a major part of a project performed by the University Hassan 1st of Settat-Morocco

**Keywords:** *Co-design, Territorial web portal, local stakeholders, University, Territorial Intelligence.*

## 1. Introduction

Overall, local development authors admit that the projects based on Information and Communication Technologies for Development form an integral part of all development projects in a community.

These projects are the result of exchange and sharing process in the community, in particular among key stakeholders associated with the project and implementing partners. They are generally designed to be collaborative in nature, encouraging interaction between the parties involved.

In the context of development, the literature combines the success of these projects with an emerging concept: Co-design with communities. The co-designing of products means not just having the ability to integrate, not only the stakeholders in the design process (As was the case with in participatory design methods), but also to include the notion of daily use product by stakeholders in the product design phase. Co-design can be considered as «a term updated of participatory design", because it is based on its principle of involving all stakeholders in design process, in order to make sure that the final solution meets needs of the user, and has a high user adoption[1].

When they are interested in ICT4D, Davi, Sabiescu and Lorenzo [2] insist on that successful co-design process of ICT projects for community development means taking into consideration five themes: Actor, Context, Ownership, Social Learning and Sustainability.

In the first part, the purpose of this paper is to propose a simplified thematic framework strictly based on the literature reviews prepared by Davi, Sabiescu and Lorenzo for improving the co-design quality of ICT4D projects. Each theme is carried on two axes (vertical and horizontal), which are intended as a vectors to evaluate the intensity of variables from which are analyzed experiences in co-designing of ICT4D projects, and to characterize the pillars of co-design process of ICT4D projects.

This framework led to the hypothesis that the technical solution is not a "black box" in wich measures of success focus mainly on the quality of information and system and the use agreement [3].

The results and discussion section of the article describes the conditions that are currently being examined in the context of our project to start the co-design process of the territorial portal to implement in the city of Settat. The chosen thematic framework aims to guide the co-design of this project. The portal co-design is an important step of the research process conducted by the University Hassan 1st of Settat. This portal will initially be used to support the networking of the local actors, to achieve a common vision of the territorial issues and to crystallize the elements of a territorial project.

The case study is relevant by allowing us to validate the thematic framework as an effective alternative to delimit zones that practitioners and researchers should be focused

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on and taken into account to analyse future initiatives of co-design. In our case, and at that time of the preparation of the co-design process: this framework is designed to be a useful tool whose lone ambition is apprehending a complex reality in a coherent and organized manner. The importance of undertaking a co-design process in our project is taking into account all the various usage contexts on the territory which is characterized by its complexity. It aims to bring different stakeholders together in a mutual discovery time to avoid calling into question the portal at the moment of its setting up.

## 2. Methods

### 2.1 Towards a typological model to characterise the co-design of ICT4D projects

The importance of ICT4D is well known. The ICTs could be recognized as a mean of awareness and implementation of more efficient sustainable development policy [4]. Co-design approach in ICT4D is shaped by the concerns of practitioners, researchers and international development organizations [5][6]. Nevertheless, acceptance of ICT as a tool for local communities' development, especially in Africa, is opposed by giving priority to the traditional needs (food, drinking water, public health, education, roads, etc.)[7].

Co-design is thought of to achieve a better quality of system requirements, improving the system quality and the correlation between the system and the different stakeholders [8]. Literature Studies by Davi, Sabiescu and Cantoni on Co-design process of ICT4D projects identify five related concepts: Stakeholders, Context, Ownership, Social Learning, and Sustainability. We propose to simplify this thematic framework. It must be based on an applicable model for all the concepts linked with the co-design, each concept must be involved in change while allowing ownership by stakeholders. Thus, each theme is placed on two axes (vertical and horizontal):

Horizontal axis: Values (qualities) that is closer to stakeholders in the co-design process for a specific theme.

Vertical axis: Mechanism to consolidate these values (qualities) through the project management.

There are comfort zones and areas of discomfort for the various components of the thematic framework. Comfort zones are those in which the co-design of an ICT4D project is well associated with each component of the thematic framework (Actor, Context, Ownership, Social Learning and Sustainability) to promote change and innovation. The discomfort areas are where these components introduce resistance to the co-design process.
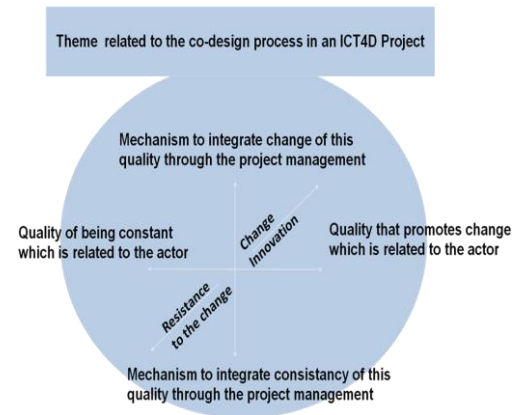


Fig. 1   Visual schematization of the themes affecting the Co-design in ICT4D Projects

### 2.2 Components of the Thematic framework based on the literature, plans to improve quality of co-designing ICT4D projects

#### STAKEHOLDERS

An actor is defined as an organization, a social group, a community or individual who can affect or is affected by the achievement of the objectives of an organization or an initiative [9]. On the one hand, some authors have highlighted the impact of ICT4D projects to the actors and their organization: They allow organizations to have a greater level of integration and their role in improving the coordination of activities and collaborative process [10]. They would promote exchange, transfer of knowledge and practices between internal stakeholders [11][12].On the other hand, local stakeholders also influence the success or failure of ICT4D projects. This influence can be characterized by the degree of stakeholder commitment in the co-design process of these projects. This commitment will depend on a contextual framework created by individuals, and their motivation to use technologies; these are not seen as an end in itself, but as a step to achieve a goal, to perform a task or to change in their lives [13]. The influence of stakeholders on ICT4D projects in the co-design process is also, in their ability to express their social and cultural knowledge during the design process, to provide information to designers about their local context [14]. It is therefore important to identify and to involve relevant stakeholders, who may not necessarily be identified by geographic location, ethnicity, or economic, but by their common interest to a project [15]. The vertical axis measures the degree of stakeholder involvement in the co-design process of an ICT4D project. It is necessary to take this commitment with the risk of an evident resistance

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among stakeholders to the process. Also, a weak commitment of the actors reduces the co-design process quality or slows down the process, while the other end of the axis shows a total engagement from the potential stakeholders to the project. The horizontal axis is about the capacity of the stakeholders to translate the local context and cultural habits to project designers. It should be noted that communities tend to not use items designed for their own benefit, in some cases, due to local beliefs and taboos [16].

## CONTEXT

The notion of context designates all the sociocultural and physical properties in which a social group live in. The importance of context is linked to the fact that the solutions, that were already being used in developed countries and exported to developing countries are often focus on the technology; do not focus enough on the local context. However, the value and the fit of these solutions in new cultural contexts can never be taken for granted [17]. The studies emphasized the importance of local context, favors a bottom-up approach, where appropriate co-design solutions are sought through local participation from the earliest stages of a development program [18].Within a local context, good design requires that solutions are adapted to the wants and needs of individuals, those who need to use them, which in turn, depends on a strong understanding of local context and constraints in people's lives. A central problem with ICT for the poor is that kind of understanding is often overlooked [19]. The component of the context aims to qualify if local context is accounted in the co-design process. Interactions around the project may be posted through a bottom-up or top-down approach (vertical axis). It also focuses on the importance of understanding the local context (the horizontal axis).

## OWNERSHIP

The concept of ownership is related to the success of the project and its potential to become sustainable. The co-design process creates a framework, in which a certain dynamic of interaction between stakeholders (local and external) is generated and maintained. Also, the literature on co-design indicates that the project cannot achieve these goals, when the consultation with community members not cause any reflection about final decisions, and decision making continues to be plagued by the top-down directives [20]. The vertical axis of the component "ownership" measures the degree of local actors' participation in the final decision-making. The horizontal axis refers to the capacity of the community to generate a sense of belonging to the project, by providing significant contributions in the

earliest stages of the design process, starting with the definition of priorities.

## SUSTAINABILITY

Sustainability is defined as the ability of a project or an intervention to continue to exist after the implementing agency has disappeared [21]. In the studies reviewed, two aspects of the relationship between co-design process and durability can be identified. At the "classic digital divide", it should be taken into account in the co-design phase, for the long term, all the constant processes of de-qualification, which are produced by the constant evolution of technology [22]. Studies related to the management of virtual communities emphasize the importance of sustainability of technologies, which enable for these modes of exchanges to exist [23]. Economic or financial sustainability refers to the long-term ability of ICT projects to generate enough income to meet their operational and maintenance costs [24]. Another aspect of relationship between co-design and sustainability is induced by the co-design process itself, which can contribute to enhance the project sustainability. The people's involvement in design contributes to developing a sense of project ownership [25]. The horizontal axis illustrates the vision to have the project included in the short term or in the long term. The vertical axis illustrates the importance of taking into account long-term financial and technical management of an ICT4D project.

## SOCIAL LEARNING

It's a learning mode for sharing and collaboration with others, it based on the observation and solving group problems [26]. Indeed, the co-design phase generates a social learning process. This dimension reflects the position of social learning in the co-design phase and the ability of project managers, to innovate through previous experience in similar projects ICT4D. The horizontal axis illustrate the relationship between the designers of the solution and local stakeholders through social learning, which is seen as a process of knowledge advancement through exchanges between local authority and design team [27]. The vertical axis shows the importance to introduce learning for local stakeholders about the project. The vertical axis shows the importance to use local expertise for implementing the project.

# 3. Results and Discussion

## 3.1 A typological model to categorize the co-design process of the ICT4D projects

The research found that the innovative co-design process is marked by the capacity of stakeholders to:

- Better understanding and translating their context
- Their involvement in the co-design process which is based on a long-term vision for the project and their ability to develop a relationship with designers.

With regard to the management project, this research also highlighted that the successful co-design process of ICT4D projects is influenced by:

- The adoption of a bottom up approach;
- The recourse to local expertise;
- The identification of the right stakeholders and their participation in ultimate decision making;
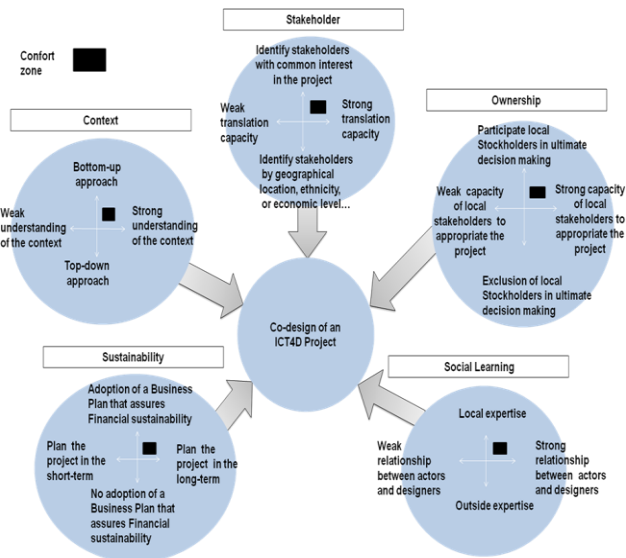- The adoption of a Business Plan that assures financial sustainability.



Fig. 2 A typological model to categorize the co-design process of the ICT4D projects.

## 3.2 Towards a typological model to categorize the co-design of the ICT4D projects: Analyzing the preconditions for co-designing a territorial web portal of the Settat City

**Project Overview**

The project is a part of the Action research performed by the University Hassan 1st of Settat and concerns the conception and the implementation of a territorial intelligence approach in the city of Settat. In the last six years, the University Hassan 1 st of Settat has organized several seminars, to give an impulse to set up a territorial intelligence approach in the City of Settat. It aimed to boost the relation between the University Hassan 1st and its socioeconomic environment, to favor the emergence of territorial intelligence culture and to establish the real approach of sustainable co-construction of the territory. A Cultural change to implement a governance network has proved necessary, to drive change. The design of a portal is an important step in our approach, to bring the different territorial stakeholders closer together in the territory and to provide a time of mutual discovery, exchange and reflective learning.

**Analyzing the preconditions for co-designing a territorial web portal of the Settat city**

Two reasons for the need to have the analysis of the preconditions for our co-designing process:
- This project place great importance to co-design phase, which characterized by the multitude of stakeholders.
- The project initiated by the university, in an environment marked by mistrust. Also the local actors are not interested in innovative activities, especially, ICT projects.

Table 1: Analyzing the preconditions for co-designing the territorial portal of the Settat city

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| Theme /Axis | Results and perspectives |
|---|---|
| **Stakeholders:** Identify stakeholders with common interest in the project | It takes time, especially, for the creation of a collective system in an environment marked by a lack of trust between territorial actors. The invitation to the various editions of the seminars was extended to all potential local actors of Settat city. **Perspectives:** In the forthcoming period it is planned to establish an association of the territorial intelligence in Settat city. It guarantees a big flexibility in its organization and its management. |
| **Stakeholders:** Developing Translation capacity of the context among Stakeholders | The first editions of seminars and meetings have enabled all participants better to express themselves freely about their territory. During this phase, the use of animators like Mr. Thierry Moniquet, Consultant in Strategic Intelligence, was important to help local stakeholders to clarify their perception on their territory. **Perspectives:** In order to better reflect the needs of the Stakeholders, we opted for the preparation of interactive workshops on the content of territorial portal. |
| **Context :** Top down and / bottom-up approach | The project is part of a bottom-up approach. It initiated by the University Hassan 1st. Some seminars were animated by central directors. The 5th edition was marked by the intervention of the moroccan spatial planning director. **Perspectives:** Actually, Opt for a hybrid approach, open and responsive to central guidelines. This experience is enabled by Moroccan political moment characterized with an aim to found an advanced regionalization. |
| **Context :** Strong understanding of the context | An understanding of the context depends on the advance of the expression of stakeholders aims. **Perspectives:** animation work is necessary, to clarify and structure the local stakeholders' perception. |
| **Ownership:** Participate local Stakeholders in ultimate decision making | Our approach is guided by the basic principle that the community development doing by the community itself [28]. The final decision will be taken by the local Stakeholders. **Perspectives:** The final decisions depend on the advance of previous steps. |
| **Ownership:** Capacity of local stakeholders to appropriate the Project | The University Hassan 1st accompanied this dynamics of seminaries through the launching of master's degree courses on the themes of territorial intelligence and its tools. **Perspectives:** this aspect needs to be taken into account in The future workshops co-design. |
| **Social learning :** Local expertise | The portal will be developed by the laboratories of the University. **Perspectives:** Research is under way on what should be included in a territorial portal over the territorial intelligence paradigm. |
| **Social learning :** Relationship between actor and designer | **Perspectives:** advancing the process of knowledge between local actors and the design team through the future workshops of co-design. |
| **Sustainability:** Adoption of a business plan to assure financial and technical sustainibility | Project ownership will come under the association of the territorial intelligence. Perspectives: this aspect needs to be discussed in the future workshops co-design. |
| **Sustainability :** Plan the project in the the long-term | The project is included in long-term .That is completely guaranteed by its nature. It is a platform to promote a territorial project as long-term project. |

## 4. Conclusions

Today, Co-design seems indeed to be as inescapable solution to enhance success of ICT4D projects in the world. The local development context and the analysis of design approaches enhance the integration of the stakeholders in early-design stage of a building ICT4D project. However, even if the user-centered design or the participatory design approaches appear as a first solution, they do not really involve the actors as full-fledged co-designers.

In the context of our research, we are encouraged to increase the stakeholders' participation and to take into account their diversity. Therefore, the implementation of a territorial web portal, designed by and for the actors, to correspond it to the representation which they make of their territory, leads us to attach a pay attention to the project framing.

The thematic framework (Actor, Context, Ownership, social Learning and Sustainability) that we have simplified upon a strong theoretical foundation was well used in our empirical research. It has provided the basis for establishing of an organized and delimited terminology about conditions to be met in order to begin our co-design process.

In the literature, this thematic framework is associated not only with conditions that must be satisfied to achieve a successful co-design process, but also it is linked to the impact of the co-design processes implemented in ICT4D projects.

Future work includes the validation of the thematic framework through pre-positioning of some international experiences of co-design that have already been completed. This framework will thus be able to mark both conditions and impacts of a successful co-design process of ICT4D projects.

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