

Lawyers and Smart Technologies: Experiences of Apps' Development in a Justice Environment

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Abstract. The literature on smart cities (Albino, Berardi, & Dangelico, 2015; Kourtit et al., 2013) already focused on the conditions under which smart technological solutions are implemented with the aim of supporting public services and improve public value. For some smart city scholars (Kummitha & Crutzen, 2017; Scott, 2013), the private initiative for the development of smart technologies is supported by three levels of institutional layers (regulatory, normative and cognitive) and by four typologies of actors (government, universities, citizens and the private sector). The emergent phenomena of smart apps ideated by lawyers' private initiative acknowledges that other factors create the institutional humus necessary for the creation of intelligent technological proposals, as: the ubiquity of mobile technologies and internet of things, their modularity and in the same time, the absence of effective public services provided by public institutions. In the case of lawyers' app, developers have available the knowledge of the normative context, the social network and human capital (institutional setting); moreover, they are aware of the "demand" for a service that may be and it is not provided by public institutions. In addition, modern technologies and Internet of things are modular and allow ICT inexpert, as lawyers, to "think" solutions and services by combining different modules as the GPS or the vocal recognition technology. This paper investigates the institutional, social and technological conditions under which e-justice technologies are developed by lawyers for lawyers. To do so, it analyses the smart city and smart technology literature and the literature on organizational theory and ICT. The empirical analysis of an example of lawyers' app acknowledges that the lack of public services, the availability of modularized and ubiquitous technology and the awareness of the juridical context favor the development of these smart technologies.

Keywords: e-justice, justice administration, smart city, smart-technologies.

1. Introduction

The economy of high-tech innovations sees more and more as principle actors, private unknown inventors instead of industry colossuses. See for instance the 17-year-old Nick D'Aloisio, creator of the app Summly purchased by Yahoo for 30 million dollars or Shawn Fanning that at 18 years old launched the first version of Napster obviously passing through Mark Zuckerberg. With the

diffusion of internet of things and mobile technologies, an indecipherable number of apps that make life easier for users have been created: a few taps on the touchscreen and we take a “car sharing” car, arrange a bank transfer, pay the train ticket. The phenomena of apps’ and online services’ creation by privates also interested the legal context with the diffusion of apps and online technologies for justice professionals ideated by lawyers (Gershowitz, 2019; Hamm, 2013). Thanks to the availability and ubiquity of technological modules as mobile phone technology and GPS, it is possible that a lay user can ideate an app by combining different modules and exploiting the eventual availability of funds and ICT companies for the concrete development of IT innovation. These technologies are created in competition with technologies implemented by public administration and software houses. However, in some cases, as we will see later in this article, Information and Communication Technologies (ICT from now on) for justice professionals implemented by the private initiative of lawyers bridge the gap of public administration services that are incapable of keeping pace with technological evolution. These forms of innovation, as it happens in other areas of application, can be defined subject matter expert-driven IT developments (Potts, Griffith, Sharp, & Allison, 2010; Prior, Akram, & Mavris, 2011) (different from simple private-driven innovation) due to the legal expertise needed in order to propose such innovation.

This article wants to explore the conditions under which the private initiative brings to the design, development and introduction into the market of online and app technologies that provide services to justice professionals. In order to pursue this goal, the authors explored the previous literature’s analyses on the topic of private/expert driven IT innovation thus framing an interpretative framework useful to empirically analyse an example of app (and relative online service) for lawyers recently developed (COLLEGA, Italian app for searching and hiring a substitute for an hearing). The empirical analysis allows to enrich smart city’s literature conclusions on the conditions for smart apps’ development.

The article is organized as follows: first, we introduce the methodology of the research (section 2); second, the mentioned theoretical framework based on the literature review is described (section 3); third, the app selected for the case-study is briefly described (section 4); fourth, the app selected is analysed with the help of the interpretative framework (section 5); finally, a conclusive session wraps up the results of the analysis.

2. Methodology

The study here presented utilizes an interdisciplinary approach mixing social science, legal and ICT theories’ methods and tools. This methodology is adequate to investigate technologies developed in the justice context, which are cross-domain by nature. The investigation of the two case studies is based on the case study approach since this method has shown to be the most effective way to study ICT phenomena in the broad area of justice (Rosa, Teixeira, & Pinto, 2013; Velicogna, 2007). In-depth case studies are the preferred strategy when ‘how’, ‘who’ or ‘in which way’ questions are being dealt with, when the researcher/author has little control over events, and when the focus is on a contemporary phenomenon within some real-life context (Yin, 2003). Furthermore, the in-depth case study methodology allows the use of an interdisciplinary approach, which is particularly relevant in an area where multiple factors (such as legal, institutional, technological and practical) are deeply

intertwined (Velicogna, Errera, & Derlange, 2011). For what regards the analysis of the case-study, data have been collected through an analysis of the relevant documentation developed by the project (website, official description of the app, previous interview of developer on the media). The analysis of documentation has been associated to the administration and analysis of a semi-structured interview to a relevant actor (the developer of the app Collega).¹ Data collected through the analysis of documentation and the semi-structured interview have been cross-referenced in order to assess Collega's experience in terms of adherence to theoretical principles belonging to the smart city and e-justice literature described in the next section.

3. The Theoretical Framework

The characteristics of modern ICT technologies, as mobile phones integrated tools, or "Internet of thing" favour the phenomena of apps' ideation by non-ICT-experts. The mentioned technologies are ubiquitous, easily available and modular. Therefore, a "smart" idea, even if not supported by a technical ICT expertise, allows conceiving an application around a specific task.

The smart city and smart technology literature (Kitchin, 2014; Kummitha & Crutzen, 2017; Manolova, Eunni, & Gyoshev, 2008) explored the conditions under which the private initiative acts as the main lever for the creation of smart technologies. The smart city rationalist or pragmatic school of thought (Giffinger & Pichler-Milanović, 2007; Neirotti, De Marco, Cagliano, Mangano, & Scorrano, 2014; Toppeta, 2010) affirmed the importance of private initiative for the design and development of smart technologies. Scholars as Orlikowski (Orlikowski, 2000) switching the direction of the relationship between technology and human capital, affirmed that often the knowledge of communities and users are at the basis of the introduction of new technologies. This perspective has opened space for debates regarding the roles of various stakeholders that could lead to ideal planning and execution of smart technologies (Bunnell, 2015). For the smart city literature, the innovation arises from the involvement of stakeholders coming from different contexts and experiences. Cities in order to be smart should significantly emphasise innovative partnerships where various sectors and stakeholders come together to promote entrepreneurship and innovation among citizens (Giffinger, Fertner, Kramar, & Meijers, 2007). Also the e-justice literature has highlighted the aspect of stakeholders' and users' involvement for the design and implementation of technology by introducing the "psychological and political/power aspects" of technological change (Andrade & Joia, 2012; Lupo & Bailey, 2014; Mohr & Contini, 2014). With this concept, scholars as Lupo & Bailey (Lupo & Bailey, 2014) refer to the advantages of an iterative process that incorporates feedbacks from key stakeholders for the development of technology. In this way, stakeholders' acceptance and ownership of technological change is fostered (Bailey, Steeves, Burkell, & Regan, 2013; dos Santos Vieira, Coelho, & Luna, 2013).

Starting from the concept of stakeholders' involvement and partnership, the smart city literature acknowledges that innovations are quite often inspired by a *triple-helix model* where universities,

¹ Semi-structured interview involving the following arguments: role interviewed; system description; system development; actors involved in development; test; system infrastructure; relationship with institutions; diffusion of the service.

industry and government engage with each other creating a productive infrastructure for the promotion of bottom-up interventions (Leydesdorff & Deakin, 2011). A supportive environment in which channels of communications, resources and technological infrastructure are guaranteed, favours the creation and proliferation of this ecosystem based on the connection of the three pillars (university, industry and government). Successively, smart city literature (Calzada & Cobo, 2015; Kummitha & Crutzen, 2017) further articulated this concept including a fourth pillar, the citizens. The *quadruple-helix model* traces the ideal path for innovation as it sees the cooperation between private sector, the government, citizens and universities. Nam and Pardo (Nam & Pardo, 2011) say that it is almost impossible to imagine an inclusive smart city where public institutions, private sector, voluntary sector and citizens do not cooperate with each other in innovative projects.

The inclusive approach of the smart city literature misses to take into account other environmental conditions that may positively impact on technological development and on the creation of services based on ICT and mobile technology. For instance, the case of smart app for lawyers here discussed, acknowledges that the lack of a public service supporting lawyers' interaction with tribunals, gives a push for lawyers to activate for filling the "public services" void by designing and contributing to the implementation of smart technologies. Lack of public services associated to a ubiquitous and easy to access technology, may foster the participation and involvement of citizens to smart city innovations.

The relationship between lack of service and private entrepreneurship to fill the void has been well described by Lanzara and his concept "negative capabilities". The scholar introduced the concept of negative capability² in his 1993 book that analyses the conditions under which human action creates innovation and values in critical and hostile environments (Lanzara, 1993). It is worth mentioning his analysis regarding services created by private citizens (as a small mobile coffee bar and the logistic system for gathering and distribution of rescue equipment) in the aftermath of the 1980's great earthquake in Irpinia, Italy. For Lanzara, the negative capability, that is the capacity of private citizens to adapt and create useful practices, services and routines in hostile environment, arises from the void of usual frameworks, infrastructure and services provided by government and public administration. Moreover, the private initiative, comparatively to government action, is more free and adaptive given that it does not (or it does so to a lesser extent) have to comply with the mechanisms and rules of complex bureaucracy (Ciborra & Lanzara, 2017). Lanzara's arguments provide an adequate framework for describing the private initiative of lawyers with an elementary knowledge of ICT that design smart technologies for their colleagues.

Lanzara's theses together with the inclusive approach of smart technology literature will provide the theoretical basis for the analysis of the selected case study „COLLEGA“ an Italian app for searching and hiring a substitute for a hearing. In the next section, we briefly describe the app and the history of its development and successively we analyse the case-study through the lenses of the theoretical framework.

² The concept "negative capability" derives from a quote of the poet John Keats that called negative capabilities "when man is capable of being in uncertainties, Mysteries, doubts, without any irritable reaching after fact and reason" (Keats, 1817; Lanzara, 1993).

4. COLLEGA: an App to Find a Domiciliary

Collega (in English colleague) ³ is an app born from the idea of an Italian lawyer that can be utilized in order to find a “domiciliary” that is a substitute for the hearing or a colleague who can carry out any kind of administrative activity in one of the Italian judicial offices. The app smartly combines several technologies and functionalities as geolocalization, internal chat, exchange of documents.

All lawyers registered to the Italian Bar Association can utilize the app. In order to have access to the system, users need to register by providing personal data and in particular the mobile phone number. The app sends a 4-digit code that together with the mobile number allows to access the application.

Once registered, users have access to the app’s functionalities through a set of dedicated screens: 1. Search; 2. Favourites; 3. Recent Activities; 4. Board; 5. Menu. In order to be able to pursue a search, the lawyer (or practitioner) needs to complete the profile with all the personal data and with information regarding the study as tax code and VAT number. These data are also necessary since the application allows to receive invoices in case of purchases, or invoices coming from colleagues. Once completed the profile, the user can activate the search function. In order to look for a substitute, the user needs to indicate the court, the activities to be performed, the time and day of the activity, the compensation offered (user can indicate a fee or select “to be agreed”). Other confidential information can be shared with the substitute through a dedicated section. The search can be geolocalized so that Collega will search exclusively lawyers who are at that moment in the selected office and who have activated the GPS functionality in the application. The geolocalization is one of the most interesting solutions applied by the application. In order to develop the lawyers’ localization functions, the Collega designers mapped all the Italian judicial offices in the Italian territory at all levels (first instance courts, courts of appeal, administrative courts, tax commissions, juvenile courts).

The system notifies to the lawyers available and present in the selected office, that a search has been activated. The lawyer looking for a substitution can select only colleagues who, after reading the search, declared to be available to perform the service. Once the contact is established with a colleague, the system provides with his/her telephone number; user can also communicate with a colleague through an internal chat. The app also allows to file and send any document to the colleague that accepts the assignment. The app keeps track of the tasks awarded and the collaborations accepted, and of all the colleagues with whom a lawyer collaborated. This function helps also to create a “Favourite” contacts group so that it is possible to circumscribe the search for a substitute only in the preferred group. Within the favourite group, a lawyer can also include other users directly via the phone book. The app also takes advantage of a convention with the *Italian Association of Young Lawyers* (in Italian *Associazione Italiana Giovani Avvocati – AIGA*). ⁴ Thanks to the

³ The information provided in this section derives from the Collega Official website (www.collega.it) and from the semi-structured interview with the creator of the app.

⁴ AIGA is an association constituted by young lawyers that aims to protect the rights of the lawyer, guarantees to practitioners and young lawyers a suitable professional training, contributes to foster the specialization of young lawyers and to facilitate their access to the exercise of the legal profession.

convention, users part of the AIGA benefit from the section reserved for them in the application, and register via the link contained in the email sent by the association. Additionally, searches can be restricted to the AIGA members.

The registration to the service and the first four tasks assigned are for free. From the fifth task awarded it is necessary to pay a yearly subscription (11,99 Euro), which allows to receive and assign an unlimited number of tasks, for the entire duration of the subscription ⁵. The fee can be paid directly through the app and with a regular credit card. At the moment, it is not possible to pay the professional services of colleagues directly through the app. The subscription fee allows to keep the app without advertisements, even though some previous versions of the app and of the related website use to show banners and adverts.

A further useful functionality of the app is the bulletin board of the courts and of the bar associations in which users can publish, after approval, a short announcement as offer/search for rentals, colleagues' services, collaborations etc.

5. The Analysis of the App COLLEGA

The story of the development of the app Collega represents a characteristic example of the realization of a technological idea in the absence of typical ICT skills and of public service. On the one hand, the creator of Collega is a lawyer with an amateur knowledge of ICT and with no skills in terms of computer programming. Despite this, the availability and ubiquity of technological modules as mobile phone technology and GPS, allowed Collega's creator to develop the mentioned app. On the other hand, in the case of Collega, the private initiative has been able to adapt and create useful practices and services in order to fill the void of public institutions' services. The concept of negative capability is reflected in the ability of Collega's creator of ideating a technological solution under critical circumstances. Therefore, the Collega's experience allows to integrate the triple helix model of the smart city literature that focuses on the engagement of universities, industry and government for creating a productive infrastructure for the promotion of bottom-up technological ideations (Leydesdorff & Deakin, 2011). As we will see further in this section, the creation of the app, if from one hand sees the intervention of industry (the ICT company that practically realized the technology) and of human capital skills as the knowledge of law and practices related to lawyers' activities (a knowledge typically spread through university institutions), on the other hand, sees the absence of the government given that the app fills the void of a service not provided by public institutions; additionally, the interaction with official institutions has represented for the app's creation a barrier rather than a source of opportunities.

The idea of creating an app that facilitates the search and find of a substitute lawyer for the hearing or a colleague who can carry out any kind of administrative activity in one of the Italian judicial offices, derives from the creator's experience in the context of routine activities of legal practice with reference to the search for a substitute. The Italian code of civil procedure provides for the possibility for any lawyer in Italy who cannot attend a hearing to appoint a procedural substitute,

⁵ The app does not deduct the four free tasks if they are granted to favorites.

who will perform the functions of the appointing lawyer. ⁶ Collega's creator was stunned by the loss of time necessary to find a colleague that can replace him in court: this activity consists in looking for a lawyer that is authorized to operate in the district, appeal or cassation court ⁷, get in touch with him or her or with the secretary, ask for availability to replace him in a hearing, describe the nature of the case, agree on a rate, send the documents related to the case. All these actions have to be repeated if the lawyer is not available for the substitution and each time a substitution is needed, with a considerable loss of time for lawyers. The app creator, with his idea, wanted to provide a more practical and faster system that would allow him to manage the search for a replacement. The interview with the creator of Collega acknowledged that he has been inspired by the apps available at the time of Collega's development that allowed to create a match between a user in search of a specific service and another user acting as a provider of the service. In the specific, Collega's creator has been inspired by *Uber*, an app offering services that include peer-to-peer ridesharing, ride service hailing, food delivery, and a micro-mobility system with electric bikes and scooters. On the one hand, the apps inspiring Collega's development were born in the context of the diffusion of sharing economics initiatives that review the traditional economic model with a new one in which independent individuals rent or "share" things like their cars, homes and personal time to other individuals in a peer-to-peer fashion. The intuition of the Collega's creator is that also legal activities can be shared in a peer-to-peer manner with the support of a phone and online app. On the other hand, the choice of basing technological development and ideation on already existing models reflects the concept of installed base (Ciborra & Lanzara, 2017; Hanseth & Lundberg, 2001; Hanseth & Lyytinen, 2016; Kallinikos, 2009; Lanzara, 2009; Lupo, 2013; Velicogna & Contini, 2009) belonging to the ICT literature. The concept of installed base refers to the technological solutions, institutional arrangements, organizational practices, and legal frameworks that are already in place when a new e-justice system is developed (Kallinikos, 2009). Hanseth and Lyytinen (Hanseth & Lyytinen, 2016) posit that designers may reduce adoption barriers and safeguard capabilities already in place by basing the implementation stage of an information system on an existing installed base (Hanseth & Lundberg, 2001). However, relying on an installed base can also produce problems. For example, some installed base components are resistant to change and may hinder the evolution of a technology. Lanzara (Lanzara, 2009) describes the dual character of the installed base: on one hand, it "constitutes a pool of available resources that can be turned into convertible and usable materials"; on the other hand, it can foster inertia and hinder "the development of new configurations" (Lanzara, 2009). In the case of Collega, the installed base is constituted both by the existing apps of the sharing economy that inspired its ideation and by the technological components as web server, geolocalization and chat technology that are combined in the app.

Collega's creator involved an ICT firm in order to practically realize his idea. The interaction between the ICT firm and the creator was based on the exchange of information regarding the legal practice of the research and appointment of a replacement and the software solutions that could

⁶ Article 81 of the Italian Civil Procedure Code.

⁷ Italian lawyers registered to the national bar associations can defend before any district court in the Italian territory. However, lawyers, in order to defend before superior courts (Constitutional Court, Supreme Court of Cassation, Council of State of the Italian Republic, Superior Court of Public Waters) have to be registered in the list of lawyers authorized to practice before higher jurisdictions.

digitalize this procedure. The involvement of the ICT firm reflects the triple helix model (Leydesdorff & Deakin, 2011) when it supports the involvement of industry and technological human capital for innovation. The ICT firm has based the development of the app on the existing technologies available at the time and combined several components (web server, geolocalization system, database management system, chat technologies) in a unique online service. As it happens with recent phone and online apps, developers take advantage of technologies available in cellular phones (as microphone, geolocalization technology, internet connection) and in personal computers connected online. Also the combination of several components in a technology reflects a tenet of ICT design principles, that is modularity. Hanseth and Lyytinen (Hanseth & Lyytinen, 2016), Lanzara (Lanzara, 2016) and Lupo (Lupo, 2013) have all indicated that system development based on an infrastructure composed of different loosely-coupled layers (or components) connected by gateways can be essential to positive outcomes (Contini & Lanzara, 2008). Such an infrastructure fosters rapid evolution and a change in one system component does not require the modification of the entire infrastructure. Moreover, the failure of a single component in a modularized architecture does not undermine the entire system (Baldwin, Clark, & Clark, 2000; Contini & Lanzara, 2008; Lanzara, 2009; Simon, 1962). The modular composition does not concern only the connection of technological elements but the integration of technology, “human” and organizational components. The interconnection among such types of components as consumer technologies, developers’ involvement, users’ legitimation, institutional commitment reflect the concept of assemblage (Cooper, 1998; Lanzara, 2009). On the bases of the “assemblage” concept, performing technologies are the result of integrated and different loosely-coupled components (Contini & Lanzara, 2008) – organizational, technical, institutional, regulative – connected to each other. Also the assemblage type composition is not always an advantage. Every assemblage can change suddenly as a consequence of changes affecting one or more components: in this case, it is necessary to find a new alignment to maintain the performativity of the system (Contini & Lanzara, 2014). Also *Collega* can be considered an assemblage given that technological components not only are connected to “human components” as the ICT developers managing the app, but the same service supports the creation and maintenance of a net of lawyers connected through the infrastructure.

The development of *Collega* which took almost one year, consisted in several stages. First, a simplified version of the system has been developed with less functionality than the actual version. Successively, the app has been tested with real users and other functionalities, as the internal chat, have been included. From the interview, it is clear that the difficulty of practically developing the app consisted in realizing a version for each operating system available in cellular phones and personal computers that is IOS, Android and a version for Internet browsers.

The history of *Collega*’s development also highlights that the implementation of an app by one of its main users brings an additional advantage: the developer can act as a user and directly test the systems in the first place. Aside this, more than usual reiterated tests, the app developers took advantage of reviews and suggestions directly coming from real users in order to modify and to improve the app. ICT design principles, indeed, support the idea of users’ involvement for the development of technology (Lupo, 2014). Best practices emphasize the advantages of a staged, iterative process that incorporates inclusion and feedback from key stakeholders (Fersini, Messina, Archetti, & Cislighi, 2010). This has two advantages: first, the inclusion of stakeholders allows to

take advantage of users' knowledge and suggestions; second, it expands prospects for stakeholder's acceptance of technological change and it increases ownership in and championing of the success of the project (Bailey, Burkell, & Reynolds, 2013; Lupo, 2014).

The triple and quadruple helix smart city model (Calzada & Cobo, 2015; Leydesdorff & Deakin, 2011; Nam & Pardo, 2011) that describes the environment in which technological development is favoured considers the importance of the role of governments and institutional actors. As anticipated, in the case of *Collega's* development, the role of institutions represented instead an obstacle for development. The interview acknowledged that *Collega's* creator looked for the support of the national bar association⁸ in order to realize his idea. In particular, the bar association, by making the data on registered lawyers available, would have made it possible a more reliable method of identification. The bar association did not provide its support also because at the time of *Collega's* development it was already planning the development of a similar application that successively did not achieve the desired development and dissemination objectives. Due to the missed collaboration with the bar association, *Collega's* method of identification does not automatically check if the lawyer using the app is registered to a bar association or not (in Italy only lawyers registered to a local bar association can represent a client in a court). The development of the app despite the missed support of institutions well reflects the idea of negative capabilities (Ciborra & Lanzara, 2017; Lanzara, 1993, 2009) already discussed. Negative capabilities' concept describes the critical circumstances under which a person activates new resources and ideas and travels new routes in case the traditional ones are inaccessible (Ciborra & Lanzara, 1990; Lanzara, 1993, 2009). In the case of *Collega*, his developer, in order to circumvent the unavailability of the national bar associations, looked for new collaborations activating a partnership with the Italian Young Lawyers Associations (AIGA - in Italian), which provided special support for the technology and for the dissemination of information on the app. As described previously, users part of the AIGA benefit from the section reserved for them in the application: AIGA users register via the link contained in the email sent by the association and searches can be restricted to the AIGA members. The *Collega's* experience also emphasize the importance of human capital in order to activate capabilities in an hostile environment. In this case, negative capability refers also to the capacity of the app's creator to take advantage of his legal expertise and of the potentials of cross-fertilization between separate domains (the one of the law and the one of ICT; Lanzara, 2016) The cross-fertilization concept assesses the importance of combining different expertise when designing and developing ICT applied in social and institutional contexts.

Summing up, *Collega* is a modular technology that combines several technological components easily available to the public through smart phones and personal computers in order to provide a useful service to lawyers. The history of its development acknowledges mechanisms of using

⁸ In Italy, the National Bar Association is a professional body established in every district of the appeal courts and is a non-economic public body as it carries out a public-law activity with public-law tools for general purposes). The main function of the National Bar Association is to represent the legal profession at the institutional level. In detail, it carries out numerous tasks: providing for the lawyers registers' management, exercising the disciplinary function, publishing the list of members, supervising the practice and the dignity of the profession, establishing the list of public defenders.

negative capabilities and the importance of personal users' initiative for innovation. The development of the app represents also an important move towards the digitalization of lawyers' routine procedures and the support of legal practitioner's activities through technological applications. The diffusion of the app between lawyers, 10000 lawyers are using the app (around 5% of Italian lawyers), acknowledges the success of the technology.

6. Conclusions

The analysis of *Collega*, presented here, allowed to put in evidence some worth mentioning patterns. The technology has been developed by a lawyer that aside being passionate for new and smart technologies, does not have an ICT background. As already mentioned, ubiquitous, easily available and modular technologies allow a "smart" creator, even if not supported by a technical ICT expertise, to ideate the assemblage of an application around a specific task by connecting different modules as GPS or chat technologies. We highlighted in the paper how the assembly of different components reflects different principles of ICT design and development's literature, as "installed base use" (Ciborra & Lanzara, 2017; Hanseth & Lundberg, 2001; Hanseth & Lyytinen, 2016; Kallinikos, 2009; Lanzara, 2009; Lupo, 2013; Velicogna & Contini, 2009) and the "assemblage of different loosely-coupled components" (Contini & Lanzara, 2008). On a more global scale, it seems that these processes, as the assemblage of different modules, are not new to the development of apps in the sharing-economy market from which the app were inspired.

The analysis of the application acknowledges also that the involvement of the creator/user in the development of the app leads to some advantages. First, despite the lack of ICT background, the creator/user, in our case a lawyer, contributes to the project with his or her knowledge of the app's operational background (in the case of *Collega*, the legal background), essential for the conception of the project idea and for its success. Second, the creator/user needs to involve ICT technicians for the effective development of the technology creating the basis for cross-influence between different expertises and allowing the creation of a multi-disciplinary team. Third, the case-study acknowledges that the implementation of an app by one of its main users brings the advantage that developer can act as a user and directly test the system in the first place.

Aside these aspects, the analysis allowed comparing the triple and quadruple helix model (Calzada & Cobo, 2015; Leydesdorff & Deakin, 2011; Nam & Pardo, 2011) with the reality of smart app creation by designers/users. In *Collega's* case, the role of private sector, government, citizens and universities demonstrated to be important for creating the basis of apps' development. However, and in addition to smart cities tenets previously mentioned, the case-study put in evidence the propulsive thrust of the lack of an efficient public service for the design of smart app. The absence of a public service and additionally, the lack of institutional support, represent the adverse conditions under which negative capabilities allow to design and develop a smart idea as the app analysed. In a context in which public institutions are not capable of providing adequate services (Ciborra & Lanzara, 2017), the private initiative manages to provide for this absence by taking advantage of negative capabilities, in order to design and develop successful technological innovation.

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