Design for Social Innovation Supported by Social Based Technologies

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Abstract. The use and democratisation of new digital technologies have given visibility to groups of people and grassroots organizations that can be considered agents of change in the transition to a more sustainable world. Design plays an important role in the definition of strategies and in the development of innovative solutions to tackle some of the contemporary problems society faces. This paper aims to show several projects developed over the last 5 years in the subject Design for Social Innovation at the Master in Design and the Master in Engineering and Product Design at the University of Aveiro, and its relation to the new social media and technologies. By using Service Design tools to improve Social Innovations and the integration of new digital technologies, we design new and improved solutions to foster sustainable development. The creation of a DESIS Lab has also allowed to develop innovative design solutions within local communities. The methodology used is based on Learning-by-Doing with an important and relevant initial phase using ethnographic methods. The results are showed as academic projects that can be applied and replicated in different contexts.

Keywords: Design · Social innovation · Service design · Social internet of things · DESIS network · ID+ DESIS lab

1 Introduction

The transition from the industrial age to the age of knowledge brought about diverse changes in the way we live, and the progressive meltdown of the welfare state and globalisation have created new problems and, thus, new needs (Beck 2004; Giddens 1999; McLaughlin and Davidson 1985).

The initiatives promoted by groups of citizens and grassroot organizations are a response to everyday problems (like childcare, support of the elderly, healthy food, socialization, amongst others) and to the needs arisen by this new reality, working in a radically different system to the traditional one.

The Web 2.0 phenomenon makes it possible for millions of people to belong to a community, collaborate and share the contents produced in its midst. In virtual communities size is not a problem, in turn it's an opportunity for ever increasing the wealth of contents and broaden its scope of influence and reach. In fact, one of the decisive factors for P2P networks to work is its size: the bigger they are, the bigger the contents produced and shared, and the bigger their attractiveness to a wider audience.

This "mass-innovation", as Leadbeater (2008) puts it, is the characteristic of the XXI Century: more ideas being shared by more people than ever before, with the help of technology.

When we focus on groups of people that have to collaborate face-to-face, the smaller the better. As they work based in physical peer-to-peer interaction and local collaborative relationships, the bigger they are, the more unmanageable they become as the number of links between people rises much faster than the number of people themselves.

This problem can never be solved, only managed and in modern life the solution has been gathering people together into organizations (Shirky 2008). But the typical organization is hierarchical with members answering to a manager that, in turn must answer to a higher manager and so on. This simplifies communication, by avoiding each member having to communicate with everyone else. And to do this, traditional management needs coordination and needs to simplify it; otherwise the costs of directing the members can be higher than the potential gain from directing them. This is why Shirky (2008) refers that certain activities may have some value but not enough to make them worth pursuing in any organized way.

However, the emergence of new social tools is lowering the costs of coordinating group action. In his book, "Here comes everybody" (Shirky 2008), he argued that we were living in a world where groups of people are coming together to share, work together and take some kind of public action, and that for the first time in history we have the tools that allow it; and that will change society.

8 years later we can see that Internet of Things are shaping society and helping tackling some social and technical problems all around the world.

2   What Is Social Innovation?

Although the Social Innovation topic has been around for 10 years, it has just now reached the political limelight in Europe, be it via EU' s financing policies or via the adoption of social innovation strategies by many governments, especially in countries where the welfare state places a heavy burden on the system.

It is precisely due to a failing welfare state, particularly in Europe, that many citizens have organised themselves to collectively and collaboratively address problems that the Government is unable to tackle (due to an ageing population and declining birth rates, the lack of financial resources made more acute by the 2008 crisis, among other factors).

According to Mulgan (2007) innovation becomes an imperative when problems are getting worse, when systems are not working or when institutions reflect past rather than present problems.

As Saint-Simon[1] phrased it, history consists of a succession of social orders and the movement from one order to the next is triggered by the rise of a new class. Different ideas fit different periods of history. The first of the leading peculiarities of the present age is that it is an age of accelerated transition. Mankind has outgrown old institutions and old doctrines, and has not acquired new ones yet. What we are seeing is that society is trying to acquire new ones, and this is possible through the rise of new ways of doing things.

Among several definitions to explain Social Innovation, we can use the one from Mulgan (2007): new ideas that work to meet pressing unmet needs and improve peoples' lives or the one from DESIS Network[2]: social innovation can be seen as a process of change emerging from the creative re-combination of existing assets (social capital, historical heritage traditional craftsmanship, accessible advanced technology) and aiming at achieving socially recognized goals in new ways. A kind of innovation driven by social demands rather than by the market and/or autonomous techno-scientific research, and generated more by the actors involved than by specialists.

These new ideas have been given birth to new forms of social organization, more innovative and in line with sustainable development and more active civic participation.

Observing contemporary society, cases of social innovation are continuously emerging in the form of new behaviours, new forms of organisation, new ways of living that indicate different and promising developments.

Social entrepreneurs and creative entrepreneurial communities are operating at a micro-level and have the potential to impact on society and profoundly change its character. What they have in common is that they are ordinary people that invent new ways of overcoming everyday problems and of participating in public and social life in an active way. This activity, not so common in a society mostly characterized by passivity, arises from the will to promote change and not to seat back and wait for traditional institutions to solve all everyday problems (Franqueira 2009).

Social innovations are very important because they advance behavioural changes, without which it is not possible to tackle the problems society as a whole faces. It is possible to find technological alternatives to minimise our carbon-foot print, for instances, but if peoples' behaviours are not changed, technology will eventually run out of options.

It can be acknowledged that the best way to manage change is not just through implementing new policies on whole populations but through testing and experiment on a small scale, often involving civil society and social entrepreneurs (Mulgan 2007).

This can be a major opportunity for the intervention of the Design community that is interested in developing innovative sustainable solutions for everyday problems and that wishes to promote, diffuse and eventually replicate those innovative ideas.

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[1] http://www.britannica.com/EBchecked/topic/518228/Henri-de-Saint-Simon.

[2] http://www.desisnetwork.org/about/.

3 Service Design and Design for Social Innovation

The difficulty to conciliate social wellbeing, as it is understood today, and sustainability concerns converges more and more towards a consensus on the absolute need to implement new policies and strategies based on sustainable development premises, and design cannot be a bystander in the process.

The approach to environmental subjects has been widely developed in the field of eco-design, aiming to minimise the environmental impact by merely redesigning existing products or designing new ones with recycled or eco-materials. However, trying to solve existing problems based on old methods can hardly lead to the implementation of an alternative successful strategy that can assure a truly new beginning. Instead it leads to the reinstatement of an old strategy, only complemented by a new constraint. What are needed are alternative strategies that imply new ways of knowledge and design thinking models, which are able to promote sustainable solutions for a new scenario building. However, the process to reach this aim is far from being simple and obvious, for it implies changes in the socio-economical models built up along the technical history of the post-modern man.

Considering that design has played an instrumental role in the creation of the current system of consumption, shouldn't it be promoting its re-invention, departing from more sustainable principles? That re-invention could be done namely through the empowerment of social innovations and the services created at grassroots level, or by the redesign of top-down initiatives that in its original form have failed to deliver the results needed (Franqueira 2009).

In 1995, Morello (1995) has raised the question of designer's lack of capability to design services, suggesting that the role of the professional designer should be renewed to embrace the new reality and arguing that renewal would entail a deep revisitation of design's conceptions.

Today, social innovation is generating a constellation of small initiatives. Nevertheless, if favourable conditions are created, these small, local social inventions and their working prototypes can spread. They can be scaled-up, consolidated, replicated and integrated with larger programs to generate large-scale sustainable changes. To do that, new strategies able to introduce new ways of thinking in Design are needed, in order to promote sustainable solutions in the formulation of possible scenarios. This is one of the statements underlying the Design debate nowadays, and the role of design must be updated to achieve that goal.

Indeed, social innovation processes require visions, strategies and co-design tools to move from ideas to mature solutions and viable programs. That is, they ask for new design capabilities that, as a whole, can be defined as design for social innovation.

The Design for Social Innovation course has the goal of developing new solutions (or improving existing ones) through Service Design and the incorporation of social innovation bases in the collaboration and participation of all the stakeholders. Even though there is a focus in the exploration of the analogic component that forms social relationships, it's unavoidable to include the new digital platforms and social media as a tool to activate people.

For those working in this field, there has been a debate about the excessive use of Apps and social media platforms by the students as part of the solution to tackle social problems. The power of social networks, Apps, websites, blogs, etc. can't be ignored in defining behaviours, in particular in the new generations and in the organization of bottom-up social initiatives. The intensive use of technologies and technological devices however seems to push them away of the main objective of the problems: the absence of face-to-face relations and how to improve people's lives regarding human relationships.

3.1 Social Innovation and the Internet of Things

The link between Service Design and Design for Social Innovation is inextricable of new technologies and of what its integration allows. The democratisation of access to information through digital platforms allows a growing number of people to use different technologies and media to organise activities and perform tasks.

Groups of people and grassroot organizations find in the social networks and digital technologies the means to reach more people to collaborate, not only in the digital space, but, and more important, in the physical space.

People and objects are part of these solutions where the main and common goal is to create social, economical, environmental and cultural benefits.

These relations between people and things, where people interact with each other and with things, and things interact with people and between it selves, creates a new meaningful "space" - physical and virtual where it seems everything flows to reach a positive impact in our daily lives.

There are many examples on how new technologies are supporting and helping communities, in western countries or in developing regions.

In fact, there are some clusters that benefits from these connections between people, devices, objects and digital and virtual platforms: the health sector, agriculture or education are some of those clusters.

Many elements of the IoT model, such as cheap sensors and wireless technologies, are well suited to conditions in developing countries. Organizations of all kinds are creating and using IoT networks to deliver new solutions that can increase living standards, and they are doing so without the need for large financial investments or the heavy involvement of state bureaucracy (Purdy and Davarzani 2015).

IoT offers us opportunity to be more efficient in how we do things, saving us time, money and often emissions in the process. It allows companies and governments to re-think how they deliver better services to their citizens.

The European Commission and EU member states are committed to developing strategies to support experiments and the deployment of IoT technologies and services.[3] One of the key strategic goals of Europe regarding the IoT is to promote a human-centred IoT where European values empower citizens rather than machines and corporations.

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[3] www.paneuropeannetworks.com.

Involving citizens in the definition of a better, smarter and collaborative city, is key to have a more participatory and more responsible civil society, where each and everyone can and should contribute, where grassroot organizations can flourish and where governments and corporations have a responsible and ethical approach to welfare and environmental sustainability.

4   ID+ DesisLab and the Course of Design for Social Innovation

Assuming design as an activity of creation - through its interventions, and with social and cultural responsibility, having a strategic role in reducing superfluous consumption in the contemporary society - the course (Design for Social Innovation) now assumes a clear focus on the design of services that promote economic growth through an ethical and responsible approach and an active citizenship through collaboration and co-design practices.

This special focus on the creation of product-service systems allows the bridge between scientific education and the practical extent and points to the need for students to adopt a sensitive approach to the dialogue between design and society, environment and economy. This method aims to provide and develop specific design skills, delivering students essential knowledge about the holistic process of design and the critical analysis of reality, structural to the acquisition of essential knowledge for an innovative design praxis.

This is an approach we develop under the influence of our activity as a DESIS Lab, the only in Portugal and hosted by the Research Institute for Design, Media and Culture [ID+], a multidisciplinary research structure anchored in two institutions: The University of Aveiro (Department of Communication and Art) and the University of Porto (School of Fine Arts).

Named ID+ DESIS Lab and a member of the DESIS Network since 2011, this research lab aims to stimulate design-led sustainable social change initiatives, to map creative communities by gathering case studies of social innovation in Portugal and to promote social innovations and sustainability among the Portuguese design community.

It was within this context, and perceiving that by 2009 courses of "Design for social innovation" in Design Schools, at undergraduate and graduate levels, were almost inexistent in Portugal — and all over the world — that our teaching in this domain began, in this initial phase under the name "Social Ergonomics of Design", an optional course of the Master's Program of Design.

Assuming a role of transition from the well-recognized and established practices, such as product and graphic design, to the emergent reality of service design, the "Social Ergonomics of Design" course allowed us to progressively include the Design for Social Innovation topic on the daily vocabulary of students, colleagues and various stakeholders with whom we established strong collaborations since the beginning of our activity. This condition also promoted an internal debate about the relevance of this new fields of the Design activity and their connection with traditional methods of Design teaching.

The progressive formation of the DESIS Network, with examples of DESIS Labs being created in other universities around the world and projects being developed by other former PhD students, provided positive support in order to overcome local difficulties by indicating that the "Design for Social Innovation" was being constituted as an affirmed field in Design theory and practices. It also worked as an example to be showcased at the University of Aveiro.

DESIS Labs are based in Design Schools and design-oriented universities and can be extensions of already existing entities or new ones. This statement was considered in the constitution of the DESIS Lab in the ID+ Institute. The institute was already established as a research unit in 2011 and included not only social innovation, but also other areas of design theory and practice in its activities. The ID+ DESIS Lab[4] was founded in 2011 as a research group, to operate as part of the +ID Institute. The ID+ DESIS Lab is organized around the following main themes (among others) that are related to social innovation:

service design and strategic design for sustainability;
education for creativity and innovation;
design for the empowerment of local economies and local knowledge.

5 Academic Projects

The last five years showed us that most of the principles previously mentioned were on the foundation of the Design for Social Innovation course, and allowed us to implement new praxis methodologies where students can use, reinterpret and expand most of their traditional design skills acquired during the undergraduate program in Design. The opportunity to work in real contexts and social issues, with people they can interact with, stakeholders eager to collaborate and seeing results having impact in people´s life, revealed us that this is a highly rewarded process for students, teachers, stakeholders and the community where the projects are developed and implemented.

The following projects are just some examples of how students tackled selected briefs, in what way they settled strategies to enhance communication between communities and how new technologies are essential in the establishment of these practices.

5.1 Title: Conta" (Tell")

Course edition: 2014/2015
Students: André Silva, Dirce Russo, Jorge Madeira, Luca Gorgoglione, Sara Rizza
Description: A collaboration project with Museu Marítimo de Ílhavo (Maritime Museum of Ílhavo) regarding the preservation of the collective memories of cod fishermen.

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[4] http://www.idmais.org/desislab/.

Students developed a service where the local community could participate in co-design workshops, based on the storytelling of old fishermen experiences and supported by a network of local institutions, such as schools of Art and Design, schools of Tourism and Hospitality and schools of Performative Arts.

The outcomes of the workshops, might result in gastronomic experiences, exhibitions or performances, among others, could then be enjoyed by the museum's visitors (Figs. 1 and 2).
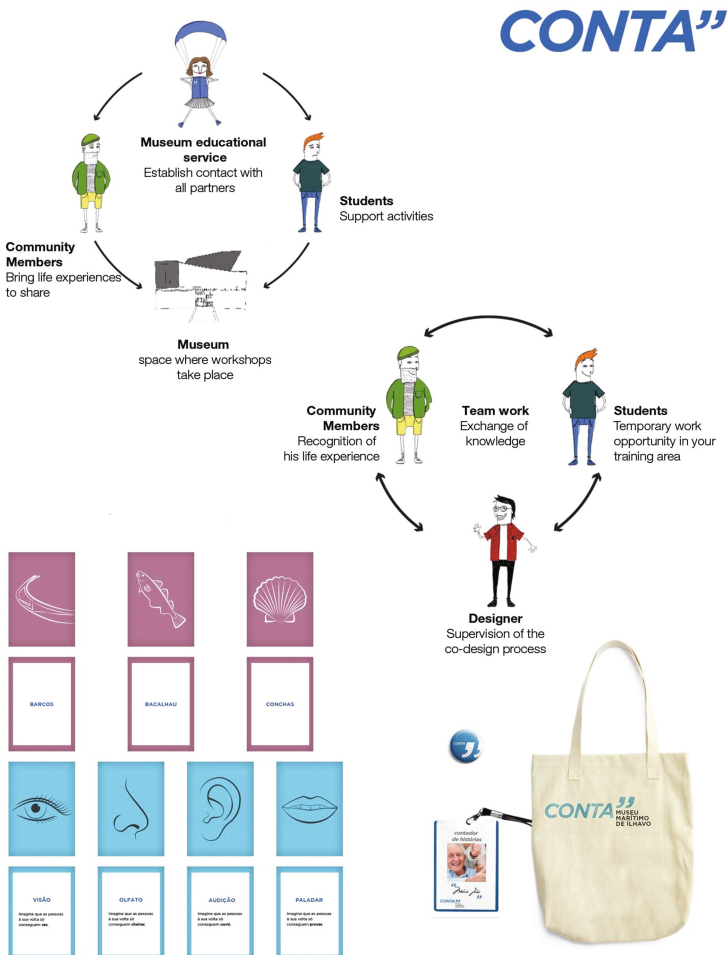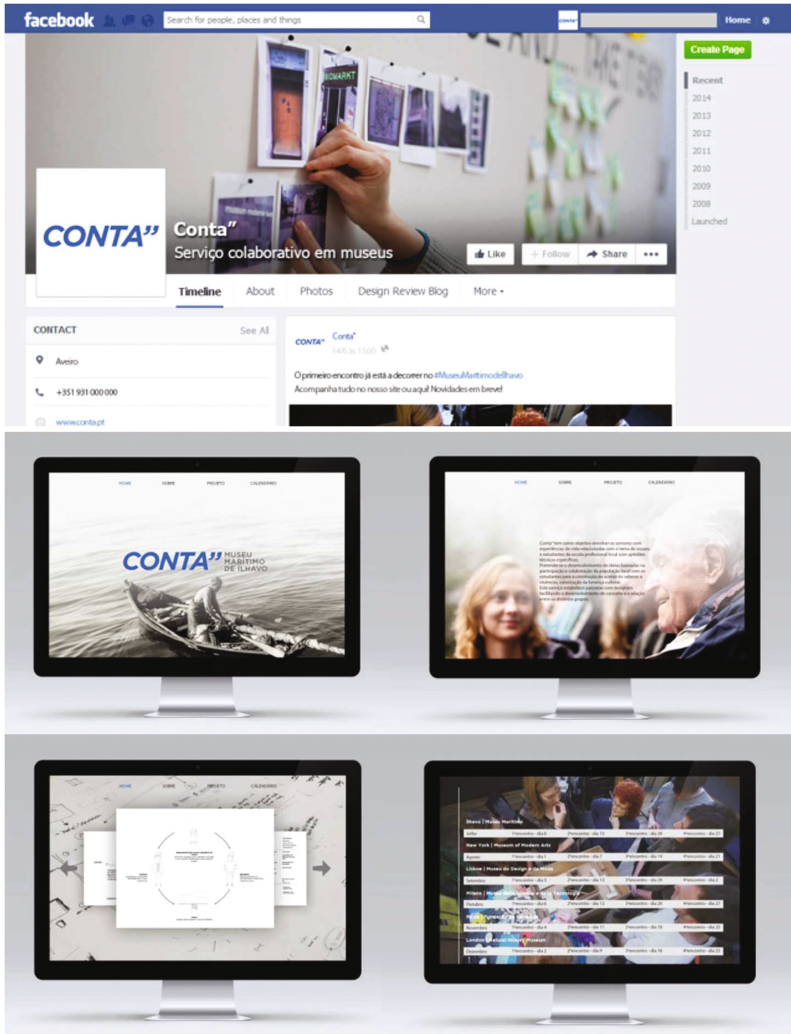

Fig. 1. Conta": Service description, workshop cards, merchandising

Fig. 2. Conta": facebook page and website (homepage, project description, workshop description, calendar)

5.2   Title: Pé Na Ria

Course edition: 2015/2016
**Students**: Andrea Taverna, Hélder Azevedo, Marta Gonçalves
Description: A tourism service where the heritage, cultural and natural resources of the "Ria" de Aveiro lagoon were enhanced through the connection of memories,

knowledge and traditions from the local community, particularly the fishing activity, and the fishermen themselves. Its main objective was to provide a bigger link between the visitor and the city by proposing a new touristic experience with the guidance of retired professional of several activities associated with the "Ria" de Aveiro lagoon.

Managed through a web platform that allowed the customization of the service, tourists could engage in fishing activities, salt harvesting and gastronomical practices supported by a network of stakeholders that ensured the success of the service (Figs. 3 and 4).

Fig. 3. Pé na Ria: service description, support equipment.
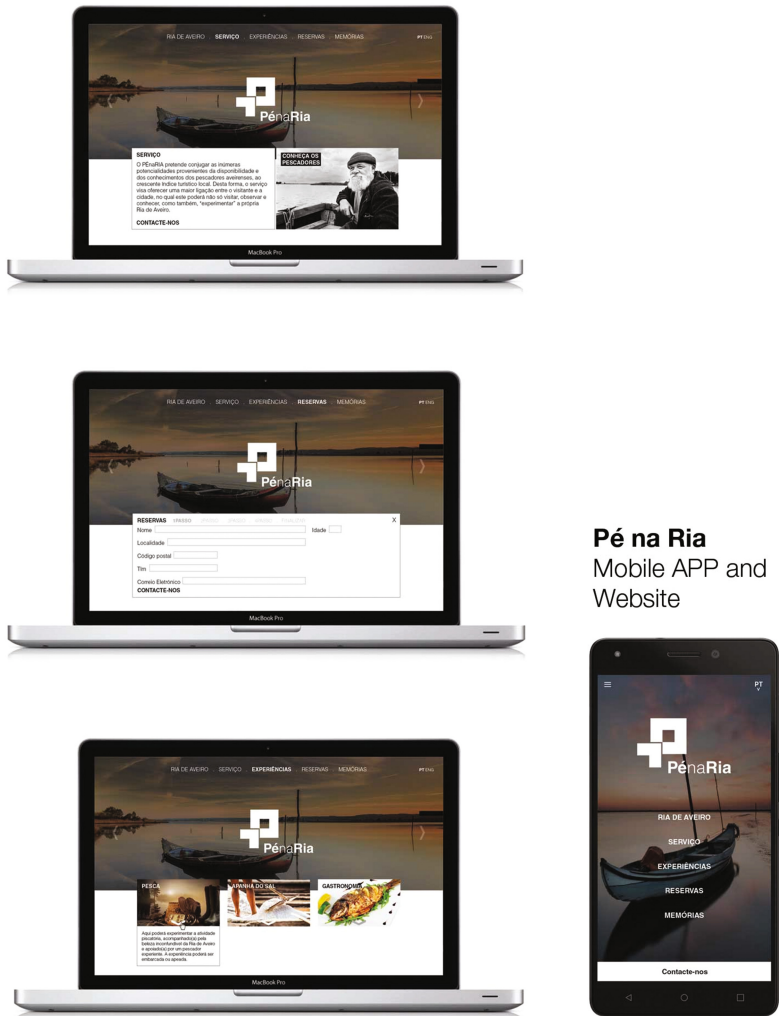
Fig. 4. Pé na Ria: website (service description, register page, past experiences) and mobile app.

5.3   Title: Avós E Nós (Grandparents and Us/Knots)

Course edition: 2015/2016
Students: Joana Silva, Joana Carvalho, Mónica Carvalho, Tiago Gomes
Description: With the constant average life expectancy increase searching for better practices and solutions that promote wellbeing for elderly people became one of the main issues in modern societies. Raising awareness to ageing among younger

generations was at the core of this service where the challenge stood in achieving intergenerational relations on a "win-win" perspective, simultaneously improving the actual living conditions of elderly and allowing youngers to outlook their own future. The final solution proposed consisted of a web platform — where register members could offer or request specific services — and a "loyalty card" where members might save the total or part of the income from the services provided. This "plafond" could later be used on amenities from nursing homes or health care institutions (Figs. 5 and 6).
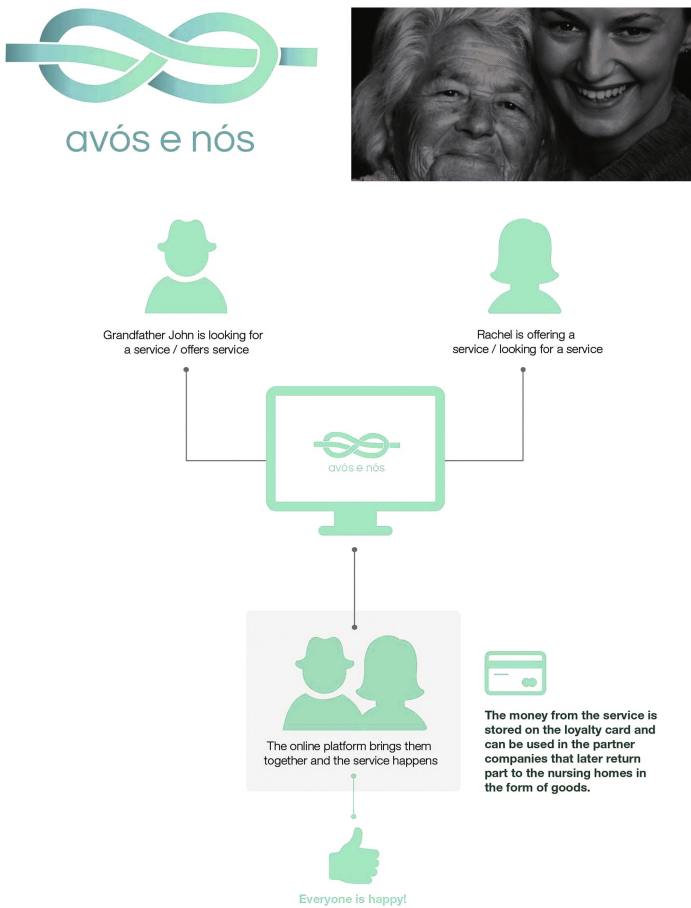

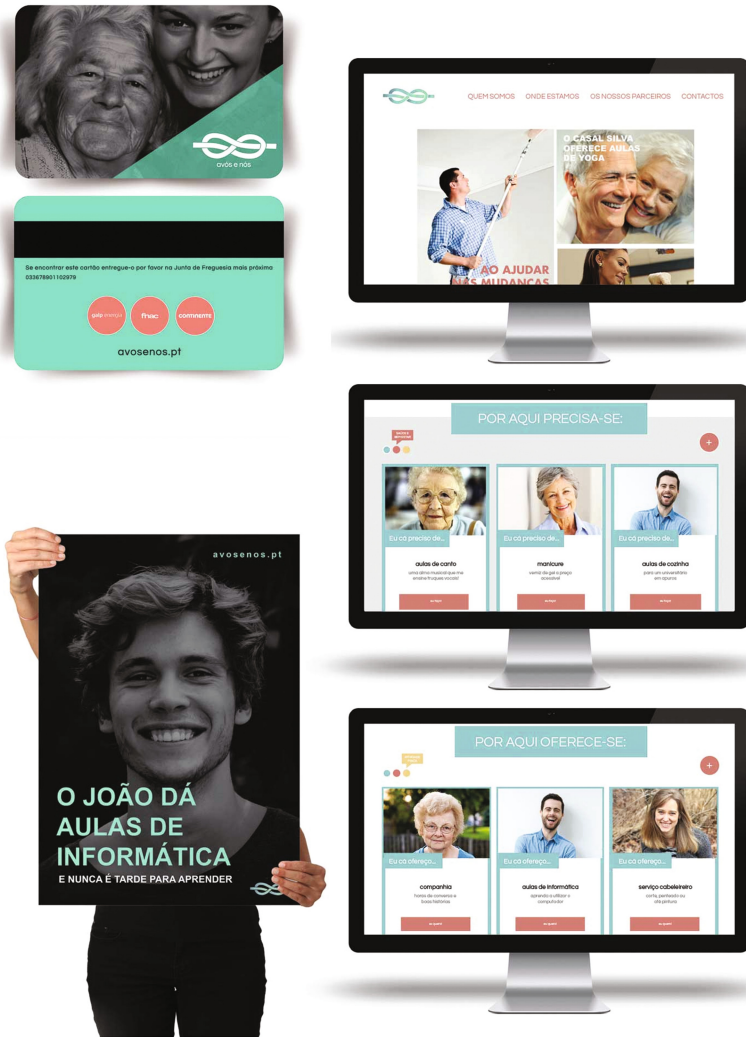**Fig. 5.** Avós e Nós: service description

Fig. 6. Avós e Nós: loyalty card, website, advertising

5.4   Title: Cãovida

Course edition: 2013/2014
Students: João Merendeiro, João Jacinto, Carlos Eduardo Pereira, Joana Pires, Cristina Fernandes, José Nogueira
Description: Consisting in the redesign of a pre-existing service, the "Cãovida" project was initially developed with the objective of promoting good health habits in kids by walking a dog. Aimed at younger generations with obesity problems the original service consisted in a kit with a manual, a pedometer, a leash and a scarf.

Identifying several problems, such as the obligation of having a dog, the lack of tracking of the proposed activities and motivational issues, students proposed a "game based" solution where all the tracking activity were registered trough an app with diverse community challenges, where members could compete among themselves. Besides that, dog kennels were included as stakeholders where members could borrow a dog if they don't have their own (Figs. 7 and 8).
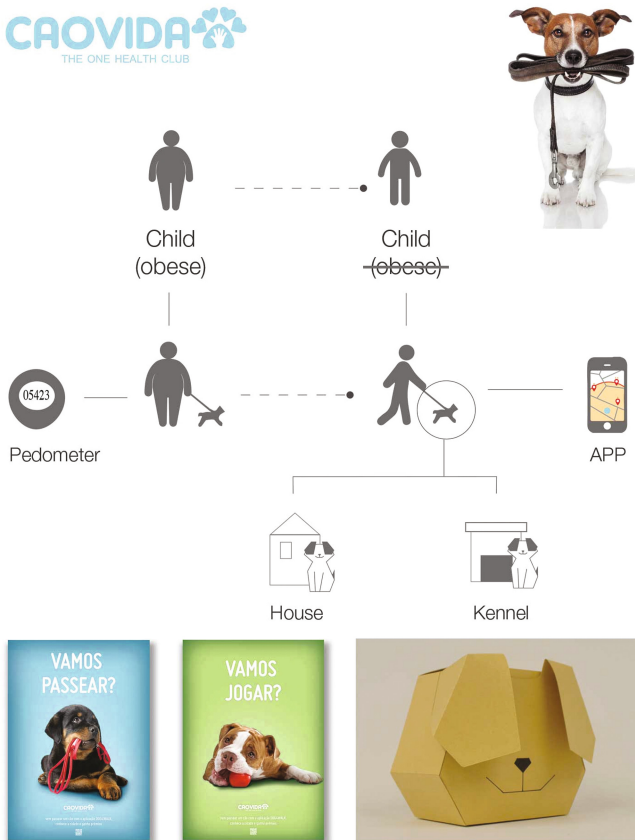

Fig. 7. Cãovida: service description, advertising, kit box.
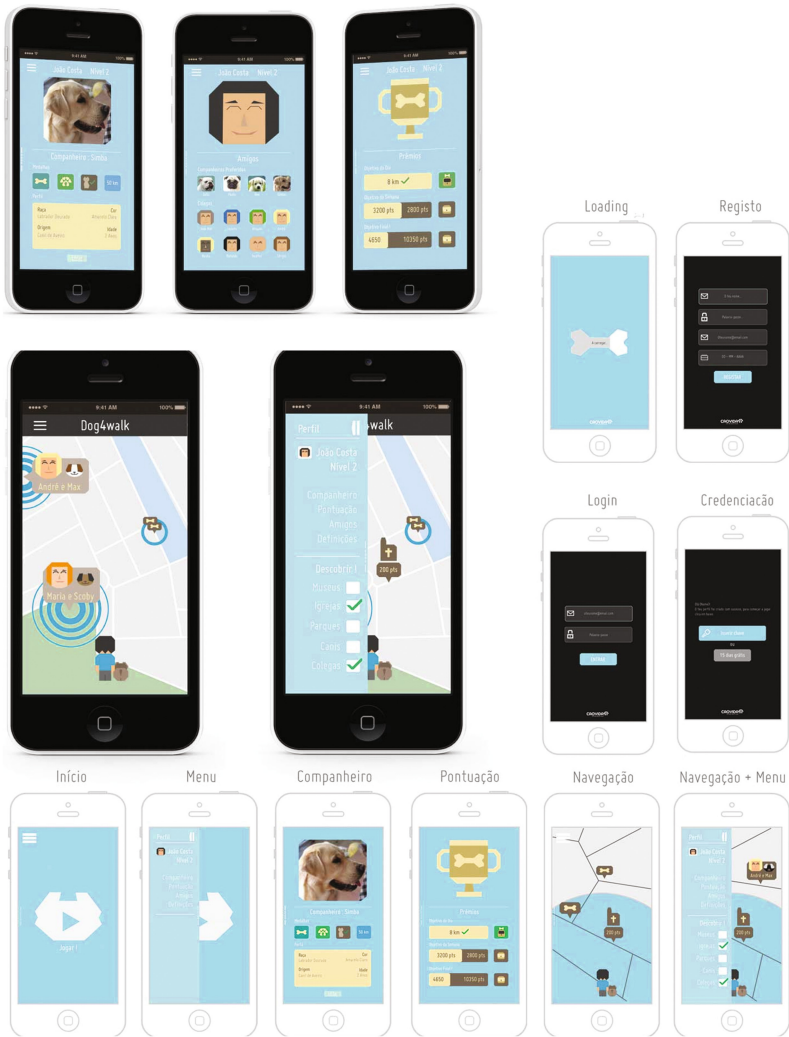
Fig. 8. Cãovida: mobile app screenshots

6 Conclusions

Latest advances in technology, that brought us less expensive ways of mass communication, low-cost hardware, crowdsourcing and internet of things, also provided new ways of (re)envisioning sevices and public services with the potential to have a strong social impact in such different fields as healthcare, environmental sustainability, education, transport, political representation, housing among others. To empower citizens in new ways that, until now, were only accessible to a small minority, with this tools,

stimulates dipper level of involvement on their communities and allows them to engage in innovative practices of civic action.

The academic projects presented showed us a diversity of circumstances where distinctive technologies were used to support social actions, either as a back-office infrastructure — when they provide a structure for the service to develop — or as tangible interactive tool that encourages new habits and practices —– as showed on the "Cãovida" where the gamification project was the actual response to one specific social need.

Nowadays it is almost impossible to design a service without using social technologies as an important add-on. All the cases we showed take advantage of some of the most usual tools available for everyone. Digital social networks platforms are currently an important and immediate way of reaching people, as we could see on the "Conta" and "Pé na Ria" examples; dynamic websites are fundamental systems of assuring the flow and speed of communication between providers and users of a service, as presented in the "Avós e Nós" case; and mobile devices — with all the new capabilities that today thousands of individuals have at their disposal in their pocket — also offer new functions like geo tracking, step monitoring and real-time exchange of information, among others, like in the "Cãovida" example.

This is a "brave new world" where technologies learn from humans but also humans have a lot to learn from technologies. Teaching someone to be a twenty first century designer is a task that cannot ignore this reality. In this way, training a designer to develop meaningful social services requires a border interpretation of the notion of social realm, not limited to the social relations between individuals but also between individuals and… things.

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