

Smart Neighbourhood Learning - the case of MyNeighbourhood

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Abstract. Smart Cities have often been associated with an extensive ICT infrastructure supporting citizens to learn. A Human Smart City focuses on its citizens and the human infrastructure they create being key actors of city making processes with a special attention on service design, development and delivery. A Human Smart City leverages technology to enhance citizen engagement and social innovation, thus activating learning processes driven by the experimental nature of smart solutions' design process. In this paper, we describe the case of MyNeighbourhood, an European project centred on the concept of Human Smart Cities and aimed at engaging neighbourhoods within four pilot cities. Four European municipalities engaged with their citizens to co-design services and foster a sense of identity and ownership in their neighbourhoods. The project focussed on sharing experiences across the neighbourhoods and the pilots with the aim of learning from each other. The experiences from this project show learning processes at different levels: individuals, groups and, in some cases, institutional. The focus of this paper is on neighbourhoods and cities that learn and innovate and on the opportunities and implications for cities.

Keywords: Human Smart Cities, Neighbourhood learning, Social Innovation, Co-design, Complex Learning Ecosystems.

1 Introduction

Smart City Learning and Smart Cities have often been described as learning or opportunities for citizens to learn, supported by an extensive ICT infrastructure and technologies. Thus, the concept of Smart Cities have often been described as ones that support such an ICT infrastructure, creating and facilitating opportunities for its citizens to learn as they go about their daily lives. Several authors have discussed the concept of Smart Cities and what "smartness" may imply at the city level; e.g. [1]. The role of ICT has been seen from many perspectives such as one that can transform the city into sophisticated systems that can "sense and act" [2]. Another perspective is ICT as an infrastructure complementary to the human capital, where smart cities are considered as ones with investments in human capital and changes in urban living practices and conditions [3]. Another perspective which also focuses on the human is one that describes smart cities as one that facilitates social interactions [4].

This paper reports the experiences from an European project, MyNeighbourhood [5], which focuses on the concept of Human Smart Cities aimed at bringing together

the human and social infrastructure through the use of ICT to engage citizens and support social innovation. The citizens are the main drivers of change and innovation in a Human Smart City [6]. The MyNeighbourhood vision aimed to transform cities, one neighbourhood at a time, through the active engagement of the citizen amongst the different stakeholders. The project focussed on sharing experiences across the neighbourhoods and the pilots with the aim of learning from each other. It yielded a wealth of experience that have been analysed and reflected upon which we share here to guide others in the implementation of the MyNeighbourhood vision in other neighbourhoods and cities.

The aim of this paper is to analyse the experiences from the MyNeighbourhood project and the lessons learned during the project from the perspective of learning and smart cities. In this paper, we have analysed the lessons learned during the project and the work conducted in the pilot cities to understand the learning aspects and to see who has learned and what has been learnt. We have analysed this from a neighbourhood perspective and discuss how this may affect learning at the city level and the challenges associated with that.

The rest of this paper is organised as follows: Section 2 discusses the concepts innovation and learning at the city level; Section 3 describes the MyNeighbourhood project; Section 4 describes learning in neighbourhoods in the MyNeighbourhood project and the learning process; Section 5 describes the good practices that were identified; Section 6 describes learning at the individual level; Section 7 describes learning at the group level; Section 8 describes learning at the institution level; and Section 9 concludes the paper.

2 Innovation and Learning

Both innovation and learning are processes hard to associate to cities as entire innovation and learning environments. Cities are very complex systems that can be described as compositions of many innovations and learning spheres, each acting on different interest and at very different city scales.

Innovation in urban environments is often associated with changes that are consequent to the introduction of already existing solutions. The introduced solutions can be simply transferred from other cities and often the firms that have developed them are key actors of the environments. Innovation, in these cases takes place as a transformation in urban practices and is mainly a process of practices adaptation. Practices adaptation often happens in cities and is the result of an innovation that does not involve the city itself as solutions are developed in closed conditions.

When the creation of the innovative solution is open, it is a very different case. When referring to innovation processes, the “openness” concept generally referred to is the definition given by Chesbrough [7] for the corporate environment: “Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market”. When referring to urban innovation the openness concept appears embedded in the nature of socio-spatial environments, but it is harder to achieve because it challenges the governance models and practices of such environments through relevant and complex principles

like active democracy, distributed decision-making and power delegation. Surely the biggest difference between closed and open innovation for urban environments stays in the exclusion or involvement of actors in the process who are not the direct solutions producers. Generally speaking, the involvement of users in the solutions design processes, allows the use of the term “open” to describe the innovation process. It is often referred to considering the capacity of the developed solutions to respond to users needs.

When dealing with urban environments, with cities, opening the solution development process to citizens may mean several things and at many different levels and scales. First, this means that citizens are considered owners of relevant knowledge for the solution. Second, it means that the solution development process is taking into account the citizens' experience related to the problem the solution deals with. Both these considerations sound obvious but they no longer appear obvious when the citizens are considered as archives of knowledge and information and are engaged in the process as co-designers. This adds much more to the perspective; as co-designers, citizens are involved in all the design steps: idea generation, prototyping, testing and solution adjustments. This means that they are no longer considered adopters of the solutions as in the case of innovation being a practices adaptation process, they are rather considered owners of the solutions. Engaged citizens are involved in the design and production of the solution and therefore actively share the process of new knowledge production: they share the learning process associated with the solution creation activity.

Innovation is often described as a learning process (see [8] and the concept of knowledge production in innovative firms) but rarely described as such when dealing with urban environments or solutions/products having cities as main users. It could be relatively easy to describe co-design processes as collective learning ones where citizens and institutions are involved. Still, the learning is restricted to those actors operationally involved in the co-design process [9]. They can be individual citizens or citizens' organisations; they can be individual city managers or public institutions; they can be individual experts or expert organisations (private firms or public operators); the related learning process can be easily associated to the degree of involvement of each individual or organisation and its measure is strictly related to the depth of the transformation they have to conceive when participating in the design process and actively contributing to it.

If we associate learning to innovation processes, we have to recognise that the learning processes do not achieve the urban scale; rather they achieve the scale at which different individual or collective actors are involved each in relation to their specific commitment (individual or organisational).

3 MyNeighbourhood Project

The EU MyNeighbourhood project focused on the human infrastructure and engaging citizens to facilitate bottom up social innovation through technology. The project aimed at using ‘smart’ ICT services and citizen/neighbourhood generated data to help recreate the social mechanisms which, in the past, ensured that urban

neighbourhoods coincided with a social system of connected and trusted communities, where people felt safe and happy with a true sense of belonging.

The project had four pilot cities; Birmingham in UK, Milan, in Italy, Lisbon in Portugal and Aalborg in Denmark. The city councils were partners in the project. Specific neighbourhoods from each city were identified as the pilots and citizens and all the stakeholders were engaged from the onset to foster a sense of ownership as well as to ensure that the design of services and technologies met the needs of the end users. Co-design, Co-creation and Urban Living Labs were central to the work of the project. The aim was to co-design a set of services for each pilot and to create a common technological platform to engage the citizens and to facilitate dialogue among the citizens and between the citizens and the city councils. Some of the services that were initiated as a result of the co-design activities included a volunteer service to visit and arrange outings for handicapped citizens (in Aalborg), Women on Wheels to encourage migrant women to cycle (in Birmingham), supporting entrepreneurs to create local students in a catering school (in Milan).



Fig. 1 Neighbourhoods on the MyN Platform

A Human Smart City platform for engaging citizens in neighbourhoods, the MyN Platform [10], was co-designed and developed in the project; see Fig. 1. The platform provided support for neighbourhoods within cities, to facilitate activities within neighbourhoods and groups or communities within neighbourhoods. Communities of Interest or Practice [11] were supported within neighbourhoods, where citizens with a specific interest, such as cycling, or the development of an specific geographic area, could engage. Some of the features of the MyN Platform that emerged through the co-

design activities included a local business directory that provided additional information that may be relevant to the different groups of citizens (e.g. wheel chair access), a market place for exchanging goods and services among neighbours and the possibility to announce events and find out if a neighbour is planning to attend. Over a period of one year, the MyN Platform had acquired more than 1500 users, grown from supporting 4 neighbourhoods to 25 and recorded more than 4700 contributions from its users.

4 Neighbourhood learning

The MyNeighbourhood focussed on increasing interactions among neighbours and other entities within a neighbourhood. The work involved a no. of stakeholders: the municipalities, various organisations and institutions, citizens and the researchers in the project. The codesign process with stakeholders and the interactions and collaborations among the stakeholders in their attempts for a better neighbourhood led to learning among individuals, institutions and the city as a whole. Taking the social constructivist approach [12], the citizens' engagement in their neighbourhood experiences provided them a better understanding of their neighbourhoods. The continuous dialogue and interactions among the different stakeholders fostered reciprocity where each actor learned something in the process. The co-design process had strong elements of reciprocal learning [13], where the stakeholders, the designers and developers in the project worked together to reach a consensus.

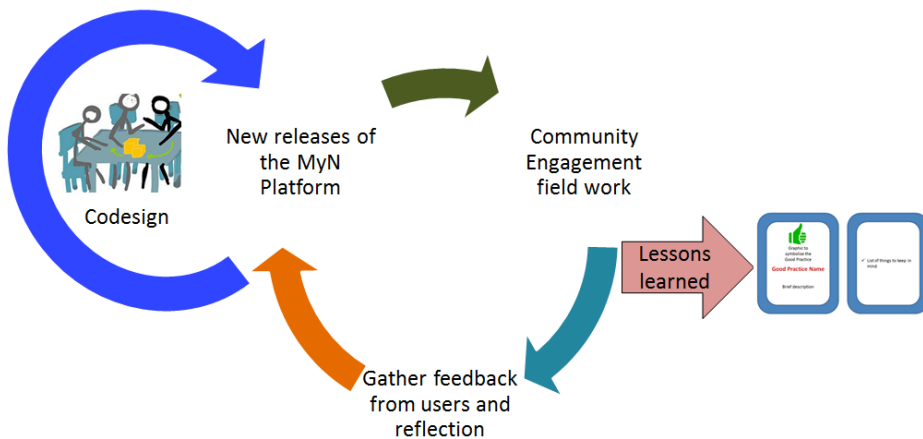


Fig. 2 MyN learning process – Co-design, community engagement and reflection

The learning process in the MyNeighbourhood project consisted of co-design, quick releases of services and technologies, feedback, reflection and improvements as shown in **Errore. L'origine riferimento non è stata trovata.** For example, some of the features of the MyN Platform were a result of the co-designed scenarios. Several co-design workshops were conducted, where several stakeholders participated and

contributed. The MyN Platform had several releases based on the feedback from the users. The project team had weekly meetings to analyse the data that was available through the MyN Platform and to discuss the feedback from the people who were working closely with the users. The four pilots shared their experiences with each other and this served as a learning arena for all. Reflecting upon what was happening through the data and content available from the MyN Platform and the feedback from the users and the project partners doing the field work was a central part of the learning process. A continuous cycle of reflection was essential to ensure neighbourhood learning [14]. The feedback and the outcomes of the reflection were the improved features on the platform as well as user engagement activities both in the field and on the platform.

Enormous efforts were made to create synergy between the user engagement activities in the field and the activities through ICT, on the MyN Platform. Through this process, the neighbourhoods have learned a number of things that could be beneficial to other neighbourhoods and cities aiming to build on the Human Smart City concept.

5 Lessons Learned and Good Practice

The experiences and lessons learned were gathered from the four pilot neighbourhoods. These included experiences of the people working closely with the pilots, the results of the evaluation studies and the data that was automatically logged in the MyN Platform. These were analysed and reflected upon to identify a set of good practices. The analysis focused on identifying patterns for generalization to create good practices. An overview of this process is shown in Fig. 3.

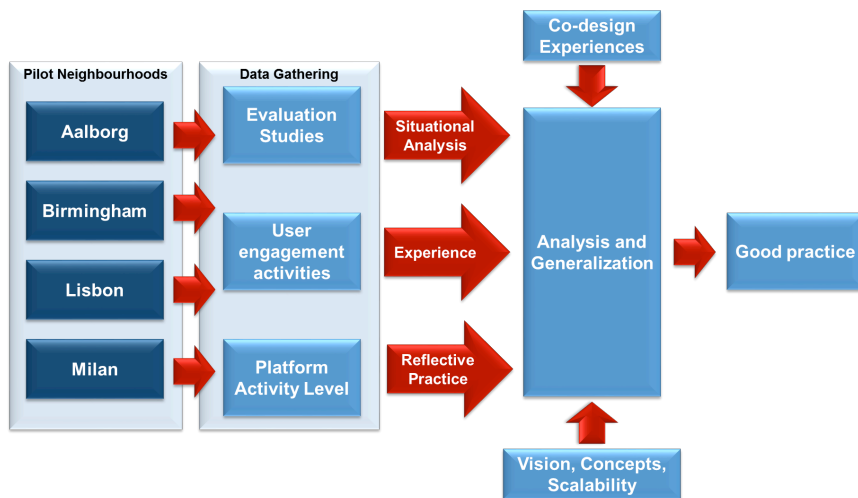


Fig. 3 Methodology for defining Good Practices

The data that was gathered yielded a good understanding of the situations, an insight into the tacit knowledge of the team and a reflective practice, which were essential in generalising them to good practices:

- **Situational Analysis.** The analysis of the data and information from the perspective of understanding the socio-spatial context of where the activities took place. This involved having an analysis of the stakeholder maps, a calendar of activities being carried out, use of key performance indicators, and benchmarks;
- **Experience.** The tacit knowledge of the team involved in both the user engagement activities and the evaluation studies. The team discussed with the developers and researchers on a weekly basis, discussing observations from the activities and disclosing insights into what worked and what didn't work;
- **Reflective Practice.** The team reflected on the experiences and based on the situation analysis, reflected on the lessons one could derive, thus improving for the subsequent activities in the field and shaping the software development outputs.

Additional sources were also considered during the analysis and generalization processes; the work carried out in the co-design activities and the overall vision and concepts of the MyNeighbourhood project. These provided a framework for the learning from the data gathered.

The good practices were designed as a set of cards, see Fig. 4. The picture on the left hand side of the figure shows one side of the card which contains the name of the good practice, a brief description of it and a simple picture that symbolises the good practice. The right hand side of the picture shows the other side of the same card which contains a list of things that describe the good practice, which could be considered as a check list to ensure that the good practice is followed. In addition, a quick reference guide to applying these good practices were provided, which included general rules of the thumb that would help implement the good practice. Warnings were included and wherever possible, the role of technology in implementing the good practice was highlighted.

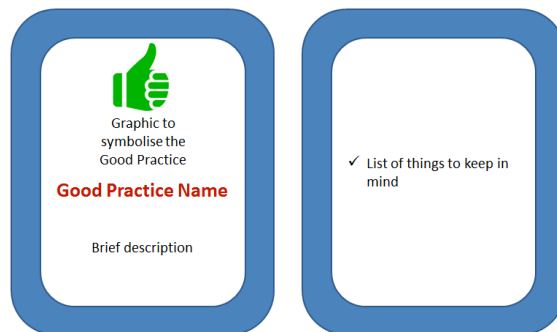


Fig. 4 MyNeighbourhood Good Practices

A list of the good practices that were identified are listed in Table 1. These were lessons learned at the individual, group and institution levels.

Table 1 MyNeighbourhood Good Practices and Learning

Good Practice	Description	Ind. Learning	Group Learning	Inst. Learning
Key local actors	Identify actors who have the trust of the local communities			X
With Municipalities	Cooperate with the Municipalities or get them involved with your initiatives	X	X	
Problems as resources	Problems of different resources can be matched as reciprocal resources		X	X
Innovation Frugality	Most problems do not need big and expensive solutions. Combine existing resources and use them creatively with simplicity	x	X	X
Technology as Utility	Ensure the development of Human Smart City platform at the onset of transforming neighbourhoods	X	X	X
Technology as enablers	Enabled by which technology plays a central role	X	X	X
User Engagement	Establish user engagement team responsible to plan and execute field interventions to ignite the neighbourhood		X	X
Relevance to people	Focus on events and activities that are relevant to the people		X	X
Events with clear aims and audiences	Careful design of events is necessary for the right impact	X	X	
Co-design	Empower, encourage and guide citizens to develop solutions for themselves		x	X
User Incentives	Apply behaviour psychology, game mechanics and patterns to influence citizen behaviour change		x	X
Acting on feedback	Any feedback received from citizens only gains value when it prompts action in a timely manner, thus giving recognition to the citizen's voice			X
Lean development	Iterative and lean short cycles for development of services and technology platform		x	x

Neighbourhood replication	To achieve a city transformation, one needs to promote neighbourhood replication			X
Scalability	Ability to handle growth in a capable manner			X

6 Learning at Individual level

One of the important things that individual citizens have learned from the MyNeighbourhood experience is about their role in their groups and neighbourhood, that they have a voice and the possibility to initiate bottom-up innovation. In this respect, the MyN Platform played a central role as enabling technology that provided the means to engage as a neighbour and facilitate the engagement of others. In the neighbourhood called Godthåb in Denmark, a citizen who was relatively new to the area created a new community to get to know his neighbourhood better and to engage his neighbours (<http://www.my-n.eu/node/4191>). This neighbourhood, although relatively small in population compared to the other neighbourhoods on the MyN Platform, very quickly became one of the most active neighbourhoods, thanks to the efforts of a single individual. He continues even today to stimulate and encourage and his neighbours and initiate neighbourhood events.

The role of the municipalities is crucial in achieving urban development. Developing a partnership with municipalities and doing this right from the start is one of the most important things for citizens to feel encouraged and that their voices are heard. The principles of participation and citizen-driven innovation, their presence, involvement, engagement and sponsorship represent the measure of the long-term perspective of the initiative. There were a no. of situations where individuals in different roles were affected by the interest shown by the municipality. The first one was “negative” and was experienced in Mouraria, Lisbon, where the distance between the Administration and the citizens was too big to be covered in the project timeframe and recovering from the lack of interaction over a long time would require a dedicated process. A positive example came from Marvila, where the Lisbon administration surprised the citizens by intervening in the neighbourhood immediately after they published on the MyN Platform a comment on a broken lamp in a public space. Citizens touched with their hands what a direct dialogue is like and became more available to be engaged. This is a wonderful example where feedback and reciprocity functioned as a dialogue between the individuals and the municipalities where citizens gave feedback to the municipality on the status in their neighbourhood and the municipality reciprocated this by taking timely action. The citizens learned the value of keeping this dialogue channel open and alive, which in time will build trust with the administration and foster healthy partnerships between citizens and the administration.

7 Learning at Group level

Learning at the group level was in many ways related to the services that were offered, which was a part of the MyNeighbourhood project. One such service was the *Ó Vizinho!* service in Lisbon, aimed at promoting and helping closer relationships inside the neighbourhoods by establishing connections between all type of associations, organizations, businesses and citizens. *Ó Vizinho!* literally translates to “Hey Neighbour!” and it is a very traditional expression that can be heard in small villages and neighbourhoods in Portugal, symbolizing closeness, sense of belonging and trust in one's neighbours. Some of the activities within this service helped the different groups learn more about each other, their neighbourhood and how they can all contribute to improve the neighbourhood. One such example was the Urban Art Initiative where a group of local artists decorated a wall in a neglected area, stimulating revival of the area through engaging the local citizens. This initiative sparked a no. of initiatives that fostered inter-generational interactions and participation, urban art tours to see the murals graffiti on the wall (an example of problems as resources) and young artists taking care of a vandalised wall of a local association. One of the important elements that groups also learnt was the importance of working with the Municipalities. The presence and support of the municipality was significant and appreciated at the group level also.

User engagement was a significant part of the MyNeighbourhood project and this often took place at the group level. In Birmingham, the service Women on Wheels, to encourage immigrant women to cycle, demonstrated some of the learnings at the group level. It was important to organise events that were relevant to the people to engage, with clear aims and audiences. One of the events organised by the Birmingham team was a day trip to a nearby seaside. This dedicated event was designed for the specific audience and proved to be a success, encouraging more participation and interaction among the group members.

Frugality was an important aspect, where problems and challenges can be resolved through the little resources available, through creativity and innovation. Women on Wheels in the Birmingham pilot was an example of this, where the focus was on using existing resources; i.e. the women in the neighbourhood to benefit themselves and the other women. Thus, in addition to utilising the existing resources, they also enhanced the pool of resources to enhance the service at hand and future services. The MyN Platform's varied uses for supporting user engagement activities such as the photo competition are other examples of frugal use of technology.

9 Learning at Institution level

Citizen engagement was a significant part of the MyNeighbourhood and Human Smart Cities. One of key lessons learned was the role of key local actors or local champions and how important it is to reach the citizens through them. Entering a community or a neighbourhood, gaining the trust, and starting collaboration are often challenging and complex goals. Identifying key actors that have the trust of local communities and/or act as local leaders, making them spokesmen of your initiatives,

and showing them the perspective that your initiatives may have on the neighbourhood are effective ways to create opportunities to speed up the entrance to the community or the neighbourhood's social life. In the Milan pilot, for example, assigning to the president of Vill@perta (the assembly of local associations) as main manager of the Quarto Oggiaro neighbourhood on the MyN Platform affected positively the growth of users on the platform, as well as the no. of people simply doing things on the platform. Similarly in Marvilla, in the Lisbon pilot, the engagement of well-known street artists as active decorator of the neighbourhood was a viral initiative which activated other similar activities in the neighbourhood.

Different problems of different groups can be matched and transformed into a solution based on problems reciprocity; thus transforming problems into resources. Often problems are faced as they were isolated worlds, but they are not. Problems are deeply interconnected with the socio-digital environment they are experienced in and other problems in the same environment can share the same solutions that transform one problem into a resource or an opportunity for the other one. The *CiboVicino* (translated as food nearby) service developed in the Quarto Oggiaro neighbourhood in the Milan pilot, brings together very different and disconnected problems: on the one hand, the elderly's solitude, difficulties to shop for food and their lack of enthusiasm for cooking; on the other hand, a hotel management school looking for opportunities for its students to practise cooking and food service. The need for the school to develop practical opportunities for them appeared as a big resource which turned out to be the perfect answer to the challenges experienced by the elderly. This was an idea proposed by an ex student, during discussions at a meeting about the elderly, which indicated that problems were not always seen or resolved from within, but rather through a macro perspective at the city or neighbourhood level.

One of the most important realisation at the institution level is for the municipalities or the administration to be visible and in touch with its citizens; to reciprocate the citizens actions by acting in a timely and appropriate manner, providing feedback and looking out for opportunities to do this effectively. The Lisbon pilot learnt that an effective way of being visible and identifying opportunities was to be there when and where it happens; participate in the events in the city and be a part of it. This proved to be a successful strategy for Lisbon and sparked a no. of initiatives with positive feedback from the citizens.

Technology plays many significant roles in a Human Smart City and facilitating learning at all levels in the city. In the case of MyNeighbourhood, the MyN Platform was an enabling technology that formed a significant part of the landscape of technologies and services that supported a Human Smart City. The synergies among the technologies no doubt strengthen the support that is available, avoiding isolation of the various initiatives. Similarly, it is important to be aware of the role of the technology and how it will be utilised for the benefit of the envisaged activities right from the onset.

9 Conclusion

The MyNeighbourhood project aimed to transform the city governance by engaging citizens in an open, transparent and trusted dialog, enhancing and easing the interaction with the city administration. Pilot activities were conducted in neighbourhoods in four European cities with the aim that there will be a viral effect that spreads the solutions and ideas across several neighbourhoods and other cities. This effect can be seen from the number of neighbourhoods that are currently active on the MyN Platform.

The main challenge experienced during the project was in engaging citizens to be active and to participate in the activities in the neighbourhood. Technology, while it's an important enabler, did not by itself engage the citizens nor portray itself as the medium for interaction for the entities within a neighbourhood. The careful design of technology and the activities that utilise the technology is an important factor in the success of Human Smart Cities and creating opportunities for citizen driven social innovation. The visions of a Human Smart City no doubt poses challenges in the governance models of the cities by putting emphasis on transparency, public-private partnerships, participatory democracy and empowering citizens and decentralising decision making. It emphasizes the need for trust among neighbours and trust in the city administration.

Similar to a neighbourhood, a city is a complex system with many actors, relations and interactions within it. In the MyNeighbourhood project, the individuals, groups and institutions that participated in the activities of the project learned from the experience and the interactions. However, it is not clear if learning happened at the city level. Infact, learning at the city level needs a careful analysis of the city as a complex ecosystem of several entities and interactions among them. In the future, we plan to analyse the experiences from the MyNeighbourhood project from a learning perspective to understand better how a city learns.

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