

The IntelCities Project, part 1

The Community of Practice as a virtual organization



SmartCities

Smart Cities Research Brief
No.7

Abstract

This research brief outlines the IntelCities Community of Practice (CoP) in terms of the capacity-building, co-design, monitoring and evaluation exercises underpinning the (virtual) organization's eGovernment (eGov) service developments. It describes the CoP in terms of both the defining features and characteristics of the e-learning platform and knowledge management system developed under the IntelCities project.

1 Introduction

The notion of the intelligent city as the provider of electronically-enhanced services has become popular over the past decade or so (Graham and Marvin, 1996; Mitchell, 2000). In response, researchers have begun to explore the possibilities of using Communities of Practice (CoPs) as a means of getting beyond current 'state-of-the-art' solutions and use the potential such organizations offer to develop integrated models of e-government (eGov) services (Curwell, et.al, 2005; Lombardi and Curwell, 2005). This brief reports on the outcomes of one such exploration, within the IntelCities Project¹ and reviews the attempt made by a consortium of leading European cities to use the intelligence CoPs offer as the organisational means to get beyond current state-of-the art solutions. It describes the development of the IntelCities CoP under the leadership of Manchester and Siena.

An accompanying paper² examines the process adopted by the IntelCities CoP to develop the e-learning platform needed to meet the organization's knowledge management requirements

¹ See <http://www.intelcitiesproject.com>

² The IntelCities Project, Part 2: The Community of Practice in action



2 Communities of practice (CoPs)

The literature on CoPs reveals many different kinds of situated practices, all of them displaying quite varied processes of learning and knowledge transfer, gathered around distinct forms of social interaction. In this respect, Wenger's (1998, 2000) studies of CoPs is of the ways that insurance claim processors and other such occupational groups learn to be effective in their job. Orr (1996) also studies the importance of CoPs amongst photocopier repair technicians. Osterlund (1996) studies are of CoPs as learning organizations that cut across craft, occupational and professional divisions and which transfer knowledge between them. The collective representation of CoPs in the literature suggests such organizations have the following characteristics:

- sustained mutual relationships
- shared ways of engaging in doing things together
- the rapid flow of information and propagation of innovation
- absence of introductory preambles, as if conversations and
- interactions were merely the continuation of an ongoing process
- very quick setup of a problem to be discussed
- substantial overlap in participants' descriptions of who belongs
- knowing what others know, what they can do, and how they can
- contribute to an enterprise
- mutually defining identities
- the ability to assess the appropriateness of actions and products
- specific tools, representations, and other artefacts
- local lore, shared stories, inside jokes, knowing laughter
- jargon and shortcuts to communication as well as the ease of producing new ones
- certain styles recognised as displaying membership
- a shared discourse reflecting a certain perspective on the world

Table 1

Key characteristics of a community of practice

Source: Compiled from Wenger (1998)

Taking this representation of CoPs as a starting point for their examination, Amin and Roberts (2008) suggest there are four distinct types of inter-organizational learning and knowledge transfer. These being: craft, professional, creative and virtual³.

As Amin and Roberts (2008) point out, until recently it has been assumed that virtual organizations are not capable of promoting learning and transferring knowledge. Although, as it becomes easier to communicate with 'distant others' in real time and in increasingly rich ways, the resulting proliferation of online learning, means interest is now centering on how the knowledge of such organizations differ from CoPs dependant on social familiarity and direct engagement (Ellis and Vasconelos, 2004; Johnson, 2001).

³ While the title of the article by Amin and Roberts (2008) goes under the curious name of "beyond communities of practice", they use the phrase to suggest the need to "get beyond" the "undifferentiated" use of the term and requirement for more "contextualised" studies of the type set out in this brief.

3 CoPs as virtual organisations

As Amin and Roberts (2008) acknowledge, there are now two types of online interaction that merit close attention as spaces where CoPs engage in learning and get involved in knowledge transfer as virtual organizations.

3.1 Type: innovation seeking

Firstly, innovation-seeking CoPs that can involve a large number of participants and secondly, relatively closed interest groups which face specific problems and are consciously organized as platforms needed for learning about and gaining a knowledge of, how to build the capacity required to include 'distant others' as participants in such projects. As they say: open source software groups provide a good example of the first CoP. Typically, they involve short-lived projects that make source code freely available to technical experts who are motivated by the challenge of solving a difficult programming problem.

Successful projects of this kind are those guided by shared notions of the problem, guided by a core group of highly motivated experts who associate with one another to learn about the subject and creative in transferring the knowledge generated to distant others.

3.2 Type 2: knowledge creating

More recently, however, we have seen a rapid rise in the development of the second type of CoP. These are established explicitly by professionals, experts, or lay people to create knowledge. Typically, they involve experts interested in developing and exchanging best practice, or lay people wishing to learn about and transfer knowledge on how to build the capacity for such electronically-mediated communication.

Here a CoP is seen to emerge once the technology for the virtual organization is available and their success is seen to emerge from the ability such platforms have to be creative in transferring knowledge. Furthermore, it is also stressed that with these CoPs the technology which is available to support the development of virtual learning organizations, has to be managed. For as Josefsson (2005) points out, such virtual learning organizations are successfully managed in accordance with a 'netiquette', where semantically-rich language is used to develop a culture of engagement replete with humour, empathy, kindness, tact, and support.

This way virtual learning organizations are seen to replicate the rich texture of social familiarity normally associated with CoPs marked by high levels of interpersonal trust and reciprocity, or collaborations built around strong professional or occupational ties.



4 The IntelCities Community of Practice

⁴ The CoP's members are listed in the Annex to this Brief

The IntelCities CoP is made up of research institutes, information, communication and technology (ICT) companies and cities, all collaborating with one another and reaching consensus on how to develop integrated models of eGov services⁴. Made up of researchers, computer engineers, informational managers and service providers, the IntelCities CoP has worked to develop an integrated model of eGov services and support the actions taken by cities to host them on platforms (in this instance something known as the eCity platform) with sufficient intelligence to be smart in meeting the e-learning needs, knowledge transfer requirements and capacity building commitments of socially-inclusive and participatory urban regeneration programmes (Deakin and Allwinkle, 2006).

As an exercise in CoP development, the organisation is particularly successful because the intelligence it sought to embed in cities and integrate within eGov service platforms, is inter-organisational, networked, virtual and managed as part of a highly-distributed web-based learning environment. If we quickly review the defining features of the IntelCities CoP, the value of developing such a learning environment should become clear. For CoPs are an emergent property of virtual organisations and the potential they offer for those seeking to exploit them are considerable.

5 Defining features of the IntelCities CoP

Made up of both open source software groups, experts and lay people, the IntelCities CoP provides one of the first examples of a virtual organisation set up to manage the learning needs and knowledge requirements of a technological platform. In this regard the CoP offers the means to:

- meet the learning needs, knowledge transfer requirements and capacity building commitments of the organisation;
- co-design them as a set of services that are socially inclusive and participatory and which allow users to learn about the availability of such services, how to access them and the opportunities they offer everyone to become engaged meeting the knowledge transfer requirements and capacity building commitments of their urban regeneration programmes;
- allow for the monitoring and evaluation of such actions.

There are three features that define the IntelCities CoP and which give it meaning and a sense of purpose. These are: building the capacity for shared enterprise, the co-design of online services and both their monitoring and evaluation.

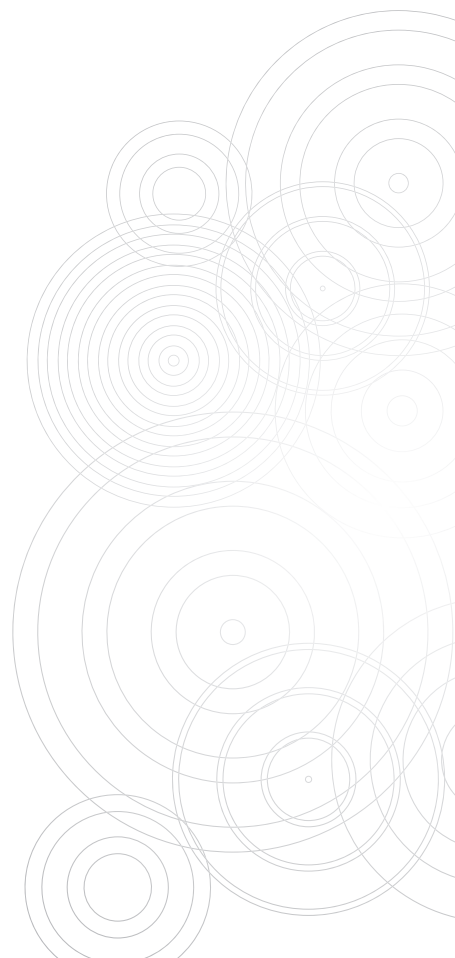
5.1 Building the capacity for shared enterprise

It is a CoP's e-learning platform that makes it possible for the online services under development to be integrated with the technologies which are needed for this to work as a shared enterprise. This allows citizens, communities, and organisations in question to collaborate and build consensus on the competencies, skills, and training needed for the development of the online services required. Together, the networks, innovation, and creativity of the partnerships responsible for organising the development of these technologies, skills, and training exercises make it possible to engage citizens and show how active participation is smart because it develops the social capital—norms, rules, and civic values—governing the ecological integrity and equity of a democratic renewal.

Such a shared enterprise is made possible because:

- The ICT-enabled networks develop an e-learning platform based on open-source technologies that are interoperable across online services.
- Satisfying the need for a formal learning community, this high-tech, digitally enabled network allows for the planning, development, and design of the online services needed.
- These partnerships, in turn, allow the ecological integrity, equity, democratic norms, rules, and values of the applications being demonstrated to be integrated with the e-learning, knowledge transfer and capacity-building technologies supporting the regeneration programs.
- The citizens and communities can then collaborate and build consensus on the competencies, skills, and training needed for the development of online services required to support the quintessentially civic values of this regeneration program.
- Together these networks, innovations, and partnerships create the trust needed to engage citizens and show how the active participation of communities in digitally-inclusive decision making is both intelligent and smart in developing the social capital—norms, rules, and civic values—of the ecological integrity and equity underlying the modernization.
- Here the ecological integrity and equity of the democratic renewal take the form of consultations and deliberations in government and citizen-led decision making that engages citizens as members of a community participating in this modernization.

The resulting platform supports the distribution, storage, retrieval of learning material, skill packages, and training materials needed for such engagement and participation to bridge the digital divides that currently exist, build the capacity which exists for inclusive decision making, and transfer the knowledge required for citizens to bond with one another as members of a community.



5.2 The co-design of on-line services

The IntelCities CoP sought to co-design eGov services by overcoming the limitations of a customer focussed approach through a user-centric strategy. (Lombardi, et.al, 2009). Here collaboration is not only based on notions of either a sovereign consumer, or customer, but on the consensus built between those citizens who participate in such a co-design process (Berger, 2002; Bergen, 2005). The informational and transactional-logic of mass customisation is seen as being supplemented with a process of participatory co-design that is more democratic in the way it goes about meeting personal preferences.

This strategy advocates that citizens participate in the co-design of products not as customers, but as users of the services and through their involvement in workshops which promote the authoring, self-documentation and recording of their creative experiences. Here the objective of the co-design strategy is not the mass customisation of products, or personalisation of service provision, but collectivisation of the process in ways that allow citizens to collaborate with one another as a community of subjects which govern over their use (Nicklaus et.al., 2008, Binder, et.,al., 2008).

5.3 Monitoring and evaluation

For those co-designing of eGov services, it is not so much customisation, or opportunities to offer multi-channel access to them, but use that is the bottom line and outcomes of the co-design process which ought to subject to monitoring and evaluation. This is because it provides a basic measure of value and demonstrates, not whether a service can be linked to a service, but if their connection is useful. Not in that sense of whether services can be linked to the transactional-based logic of customisation, but if they can be connected to the user-centric reasoning of social need which eGov services aim to meet the requirements of.

6 Characteristics of the IntelCities CoP

The defining features of the IntelCities CoP align with the characteristics highlighted by Amin and Roberts (2008).

Amin and Roberts:
<ul style="list-style-type: none"> • sustained mutual relationships
<ul style="list-style-type: none"> • shared ways of engaging and in doing things together
<ul style="list-style-type: none"> • the rapid flow of information and propagation of innovation
<ul style="list-style-type: none"> • absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
<ul style="list-style-type: none"> • very quick setup of a problem to be discussed
<ul style="list-style-type: none"> • substantial overlap in participants' descriptions of who belongs
<ul style="list-style-type: none"> • learning about and knowing what others know, what they can do, and how they can contribute to an enterprise
<ul style="list-style-type: none"> • a shared discourse reflecting a certain perspective on the world
As expressed by IntelCities:
<ul style="list-style-type: none"> • shared enterprise between research institutes, ICT companies and cities
<ul style="list-style-type: none"> • joint venture commitment to product development
<ul style="list-style-type: none"> • building the capacity for ICTs to be used as a means of bridging the digital divide
<ul style="list-style-type: none"> • the co-design of services
<ul style="list-style-type: none"> • shared commitment to social-inclusion and participatory urban regeneration programmes as a means to close the gap between the information-rich and poor
<ul style="list-style-type: none"> • support for the modernisation of local government service provision using technological platforms
<ul style="list-style-type: none"> • consensus-based decision making, consultative and deliberative in nature
<ul style="list-style-type: none"> • monitoring and evaluation

Table 2

defining characteristics of the IntelCities CoP

Table 2 underlines the importance of these as characteristics and adds another eight that have been exploited by the network to develop a virtual learning organisation capable of bridging the gap which exists between the Type 1 and 2 (innovation-seeking and knowledge creating) classifications of virtual CoPs offered by Amin and Roberts (2008). We argue below that the extra characteristics are those needed to span the divide between the transactional-based logic of Type 1 and the user-centric reasoning Type 2 adopts towards the co-design of eGov services.

In line with current definitions of CoPs as shared enterprises, the additional features clearly highlight these particular qualities and reflect their importance, but in addition to this they underline the technical-rational and social purpose of the virtual organisation in question. This suggests that in building the capacity to co-design eGov services, it is not possible for intelligent cities to develop as either Type 1 or 2 CoPs and this is because they have to be technical and social in equal measures. In other words rest on the transactional-based logic of (innovation seeking) customisation and the user-centric reasoning of (knowledge-creating) eGov services in equal measures.

The following examination of the IntelCities CoP shall to a large extent, reflect this position. It shall begin by examining the capacity that the CoP built to co-design an integrated model of eGov services and IT underlying the eCity platform, develop it as an intelligent solution for the virtual organisation's learning needs and knowledge transfer requirements. The search for intelligent city solution followed a step-wise logic adopted to meet the challenge the learning needs and knowledge transfer requirements posed by such virtual organisations. This led to the development of an e-learning platform, knowledge management system (KMS) and digital library developed for such purposes as described in the accompanying report.

7 Conclusion

This paper has argued the IntelCities CoP is innovation seeking in the sense the network provides an example of a virtual organisation co-designed to manage the learning needs and knowledge generating requirements of a technological platform.

The examination has suggested there are three features that define the IntelCities CoP and which give it a sense of meaning and purpose. These are: building the capacity for shared enterprise, the co-design of online services and both their monitoring and evaluation. The shared enterprise relates to the work undertaken by all members of the IntelCities CoP to develop an integrated model of eGov services. It has gone on to underline the importance of these as characteristics of the IntelCities CoP and in this aim has added another eight qualities that have been exploited by the network to develop a virtual learning organisation which is capable of bridging the gap which exists between the type 1 and 2 classifications offered by Amin and Roberts (2008).

This illustrates how the IntelCities CoP spans the divide between what are in crude terms representative of the transactional-based logic and user-centric reasoning underlying the innovation and supporting creativity of eGov service provision. The additional features referred to clearly highlight these qualities and reflect their importance, but in addition to this they also serve to underscore the technical logic and social rational (i.e. innovative and creative qualities) of the virtual organization responsible for delivering the electronically-enhanced services in question.

This suggests that in developing integrated eGov service models it is not possible for intelligent cities to develop as either type 1 or 2 CoPs because the shared enterprise and joint venture characteristics of such virtual learning organisations means they have to be co-designed in ways that are both innovation-seeking and which are also knowledge-creating (Deakin, 2009).

These developments are valuable because they provide the means to address the criticisms of the learning services currently available on city portals and offer the opportunity for the emerging technologies of the e-learning platform, KMS and digital libraries, to meet the learning needs, knowledge transfer requirements and capacity building commitments of the IntelCities CoP. This it has been suggested, marks a significant step forward in the development of eGov services and offers the opportunity for platforms of this type to develop as a KMS supported by digital libraries.



8 Annex: Members and functions of the IntelCities CoP

Type 1: Innovation seekers:

Cities as eGov service providers:

Siena	–	Social inclusion
Helsinki	–	Participation
Rome	–	Mobility
Dresden & Berlin	–	Environmental improvements
Marseille	–	Economic development
Manchester	–	Urban regeneration

Business as ICT suppliers for eGov service developments:

CSTB and CS (Nice) eCity platform developers
CSTB – ePlanningEuropean Dynamics – eBenchmarking

Type 2: Knowledge creators:

Universities as providers of learning, knowledge transfer, library and capacity building services:

Edinburgh Napier	–	eLearning, knowledge management and digital libraries
Karlsruhe	–	Back-office re-organisation and strategic management of front-end eGov service developments

9 References

1. Amin, A. and Roberts, J. (2008) Knowing in action: beyond communities of practice, *Research Policy*, 37: 353-369.
2. Arias, E. G., & Fischer, G. (2000) "Boundary objects: Their role in articulating the task at hand and making information relevant to it". *International ICSC Symposium on Interactive & Collaborative Computing (ICC 2000; University of Wollongong, Australia)*, 567–574. Wetaskiwin, Canada: ICSC Academic Press <http://www.cs.colorado.edu/~gerhard/papers/icsc2000.pdf>
3. Berger, C. Möslin, K., Piller, F. and Reichwald, R. (2005) Cooperation between manufacturers, retailers, and customers for user co-design: learning from exploratory research, *European Management Review*, 1:70-87.
4. Binder, T., Brandt, E. and ; Gregory, J. (2008) Design participation(-s) – a creative commons for ongoing change, *CoDesign*, 4, (2): 79-83
5. Campbell, F. and Deakin, M. (2005) Cities as leading examples of digitally-inclusive knowledge societies: the e-citizenship course, representative users ,pedagogy and engagement matrix, in Osborne, M. and Wilson, B., *Making Knowledge Work*, Stirling, Stirling University.
6. Curwell, S., Deakin, M., Cooper, I., Paskaleva-Shapira, K., Ravetz, J. and Babicki, D. (2005) Citizens expectations of information cities: implications for urban planning and design', *Building Research and Information*, 22, (1): 55-66.
7. Deakin, M. (2009) The IntelCities Community of Practice: the eGov services model for socially-inclusive and participatory urban regeneration programmes, in Riddeck, C. ed., *Research Strategies for eGovernment Service Adoption*, Idea Group Publishing, Hershey.
8. Deakin, M. and Allwinkle, S. (2006) The IntelCities community of practice: the e-learning platform, knowledge management system and digital library for semantically-interoperable e-governance services, *International Journal of Knowledge, Culture and Change Management* 6, (3):155-162.
9. Deakin, M. and Allwinkle, S. (2007) Urban regeneration and sustainable communities: the role of networks, innovation and creativity in building successful partnerships, *Journal of Urban Technology*, 14, (1): 77-91.
10. Deakin, M., Van Isacker, K. and Wong, A. (2004) Review of the IntelCities Knowledge Capture Requirements Using a S.W.O.T. Analysis, Edinburgh, Napier University.
11. Ellis, D., Oldridge, R., Vasconcelos, A. (2004) Community and Virtual Community, *Annual Review of Information Sciences and Technology* 38, 146-186.
12. Graham, S. and Marvin, S. (1996) *Telecommunications and the City*, London, Routledge.
13. Johnson, C. (2001) A survey of current research on online communities of practice. *Internet and Higher Education* 4, 45-60.



14. Josefsson, U. (2005) Coping with illness online: the case of patients online communities. *The Information Society*, 21, 143-153.
15. Lombardi, P. and Curwell, S. (2005) INTELCITY Scenarios for the City of the Future. In D. Miller and D. Patassini, *Beyond Benefit Cost Analysis*, Aldershot, Ashgate.
16. Lombardi, P., Cooper, I., Paskaleva, K. and Deakin, M. (2009) The challenge of designing user-centric e-services: European dimensions, in Riddeck, C. ed. *Research Strategies for eGovernment Service Adoption*, Idea Group Publishing, Hershey.
17. Mitchell, W. (2000) *e-Topia: Urban Life, Jim But Not as You Know It*, Cambridge Massachusetts, MIT Press.
18. Nikolaus, F., Keinz, P., and Schreier, M. (2008) Complementing Mass customization toolkits with user communities: how peer input improves customer self-design, *Journal of Product Innovation Management*, 25 (6): 546-559.
19. Orr, J. (1996). *Talking About Machines: An Ethnography of a Modern Job*, New York, IRL Press an imprint of Cornell University Press.
20. Star SL & Griesemer JR (1989) "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology", 1907-39, *Social Studies of Science* 19(4):387-420
21. Wenger, E., (1998). *Communities of Practice: Learning, Meaning, and Identity*, Cambridge, Cambridge University Press.
22. Wenger, E., (2000). *Communities of practice and social learning systems*, *Organization*, 7, (2), 225-246.
23. Wind, J., and Rangaswamy, A. (2001). Customerization: The next revolution in mass customization *Journal of Interactive Marketing*, 15, (1): 13-32.

www.smartcities.info

www.epractice.eu/community/smartcities

The Smart Cities project is creating an innovation network between cities and academic partners to develop and deliver better e-services to citizens and businesses in the North Sea Region. Smart Cities is funded by the Interreg IVB North Sea Region Programme of the European Union.

Smart Cities is PARTLY funded by the Interreg IVB North Sea Region Programme of the European Union. The North Sea Region Programme 2007-2013 works with regional development projects around the North Sea. Promoting transnational cooperation, the Programme aims to make the region a better place to live, work and invest in.

