eGovPoliNet: Experiences from Building a Policy Informatics Research Community

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Abstract Policy-making in the digital age is an area which needs knowledge that can be found in communities that traditionally do not connect with each other. The creation of a research community is a challenging endeavour and needs to address both physical and online elements. In communities, groups of people share some common interests and are often facilitated by interacting with each other through the Internet and face-to-face meeting (Stewart, Behav Inform Technol 29(6):555–556, 2010). The activities should results in a sense of feeling of belonging to the communities. In this paper we outline the community-building activities of creating a policy informatics community which were part of the FP7 eGovPoliNet project. The eGovPoliNet project community organized community building event and provided a platform for sharing experiences and knowledge, which addresses the fragmentation of research communities, as well as the fragmentation among different disciplines, by building a common network where researchers from different disciplines and countries can interact. The aim was to engage different stakeholder groups to work together in exchanging ideas and information. The focus was on e-Government, information systems, complex systems, public administration and policy research and social simulation research communities, although persons from other research communities were also involved.

The eGovPoliNet community building process consisted of three phases namely: Initiating (period 1), Growing (period 2), and Sustaining (period 3) In the initiating phase (period 1), the European and international multidisciplinary research landscape was outlined by identifying the key players in terms of ICT for Governance

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J.R. Gil-Garcia et al. (eds.), *Policy Analytics, Modelling, and Informatics*, Public Administration and Information Technology 24,
DOI 10.1007/978-3-319-61762-6_3

and Policy Modelling R&D and by determining the targeted communities. The growing phase (period 2) focused on developing the community by organising events by the project members and involving key players. New members were attracted by organising community building activities at various conferences, organising tracks, workshops, panels and PhD Colloquia. The sustaining phase (period 3) focused on maintaining the community through collaboration type events and PhD colloquia which resulted in further growth of the community. Finally, plans for future sustainability of the community were formulated. Community building is a time-intensive process, as people should gain a sense of belonging to the community. Different type of activities are appealing to different people. Following-up activities is essential, which involves people creating content and organizing events.

Abbreviations and Acronyms

BU	Brunel University London
CERTH	Centre for Research and Technology Hellas
COMPASS	The University of Auckland
CTG/SUNY	Center for Technology in Government/State University of New York
DG INFSO	Directorate General Information Society and Media
dg.o	Digital Government Society Conference
DGS	Digital Government Society
EC	European Commission
ECCS	European Conference on Complex System
ECEG	European Conference on e-Government
ECMS	European Conference on Modelling and Simulation
ESSA	European Social Simulation Association
ICDGS	International Conference on e-Democracy, e-Government and e-Society
ICEBEG	International Conference on e-Business and e-Government
ICEE	International Conference on e-Business and e-Government
ICEGOV	International Conference on Theory and Practice of Electronic Governance
ICT	Information and Communication technology
ICT4GOV	Information and Communication Technology for Governance
IFIP	International Federation for Information Processing
INNOVA	INNOVA SPA
IPR	Intellectual Property Right
IRSPM	International Research Society for Public Management
IS	Information Systems
ISA	International Sociological Association
IST	Information Society Technology
IT	Information Technology

MRSU	MOSKOWSKIJ GOSUDARSTVENNIJ OBLASTNOJ UNIVERSITET
MS	Milestone
PIDS	Project Information and Dissemination Service
PPP	Public Private Partnership
PPT	Power Point Presentation
PUC-PR	ASSOCIACAO PARANAENSE DE CULTURA APC
R&D	Research and Development
RC33	Research Committee on Logic & Methodology of ISA
RG	Rijksuniversiteit Groningen
SEO	Search Engine Optimization
TBC	To Be Communicated
TUD	Technische Universiteit Delft
TUK	Technical University Kosice
UCD	University College Dublin, National University of Ireland, Dublin
UKBRUN	Brunel University London
UKL	Universitaet Koblenz-Landau
ULAVAL	Universite LAVAL
UNU-IIST	UNU International Institute Software Technology UNUIIST
UTS	University of Technology Sydney
VOLTERRA	Volterra Partners LLP
VUB	Vrije Universiteit Brussel
WCSS	World Congress on Social Simulation
WP	Work Package

Introduction

The fields of governance and of policy modelling are fragmented as different disciplines meet at their own conferences in their specialist fields. Unfortunately, the distinct approaches to investigate the area have led to a wide set of definitions and understandings. Realizing that most policy problems are multidisciplinary, it is critical to stimulate scientists from different disciplines to align to define policy problems and develop effective research programs, therefore the FP7 eGovPoliNet aims to set up an international community in ICT solutions for governance and policy modelling. To achieve this, eGovPoliNet will build on experiences accumulated by leading actors bringing together innovative knowledge of the field (Majstorovic and Wimmer 2014; Janssen et al. 2015). This chapter focuses on the community building aspects in which the e-government, information systems, complex systems, social simulation and public administration & policy research domains were targeted.

Online communities can be defined as "computer-mediated spaces where there is a potential for an integration of content and communication with an emphasis on

member-generated content" (Hagel and Armstrong 1997). Communities refer in general to a group of people who share some common interests, interacting with each other through the Internet and are facilitated by face-to-face meeting.

Communities must preserve intimacy among members and a sense of membership continuity to make the community sustainable (Hagel and Armstrong 1997). Communities consist of generated content but also of hooks such as calendar events and membership directories, which encourage increased community interaction (Jones and Rafaeli 2000). Therefore creating community building activities was an essential part of eGovPoliNet project.

Within the EU funded eGovPoliNet project, one element was to address the fragmentation of research community, as well as the fragmentation inherent in different disciplines, by building a common network where practitioners and researchers from different disciplines and countries could interact. This effort involved setting up the necessary communication structures for ensuring multi-disciplinary research, and development. The aim was to engage all stakeholder groups to work together, through two-way interaction between various scientific communities. The focus was on research rather than practitioners.

eGovPoliNet sought to establish closer working practices between the target groups by starting the discussion of future projects. In period 1 the focus was on recruiting the initial members, whereas the main activities for periods 2 and 3 were related to the organisation of face-to-face and virtual meetings and extending and integrating scientific communities. While period 2 focussed on expanding the community, period 3 focussed on continuity and sustainability of the community.

Achievements

The community building strategy is shown schematically in Fig. 1 and consists of three main phases. The first phase (period 1) outlined the European and international multidisciplinary research landscape by identifying the key players in terms of ICT for Governance and Policy Modelling R&D and by determining the targeted communities.

The second phase (period 2), which took approximately 18 months, focussed on growing the community by organising events by the project members and involving key players. New members were attracted by organising community building activities at various conferences, organising tracks, workshops, panels and PhD colloquia. The final phase (period 3) focussed on sustaining the community through collaboration events and PhD colloquia, leading to further growth of the community.

In the third phase community building activities at various conferences were organised resulting in collaborations among members from different communities. Three PhD colloquia were organised at three different conferences to stimulate interdisciplinary research in this field. Also workshops and panels were organised, bringing together people from different academic communities and practitioners.

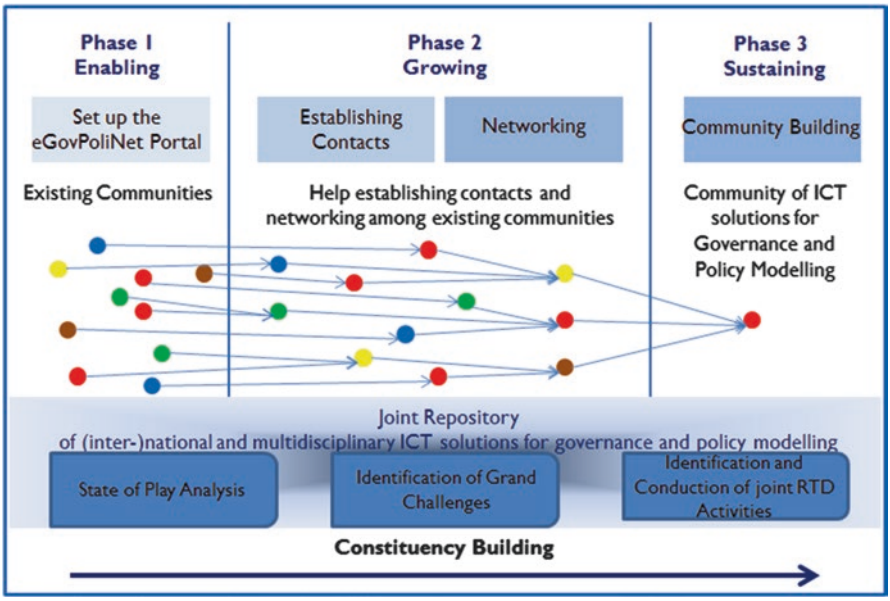

Fig. 1 Overall community building strategy for the eGovPoliNet project (based on eGovPoliNet (2001))

Over the duration of the project, the strategy of community building included online activities as well as face-to-face meetings:

- workshops and panels to engage researchers coming from different disciplines;
- joint papers, comparative cases and best practices;
- monthly virtual meetings between the eGovPoliNet partners to develop content, track events and coordinate activities.

Our premise was that content was needed to attract people and let them contribute to content development. Success depended on incorporating existing practices and exploring new practices. Progress was measured by collecting data at the end of each period and calculating the metrics for determining the status of the community, see Table 1.

In period 1 the initial members were recruited and several workshops and panels were organised. In periods 2 and 3 a large number of community building activities were conducted. The network grew considerably during the last period with a continuous stream of new members subscribing to the LinkedIn community. The increase in new members can be attributed to reaching *a critical mass*; once a sufficient size was reached it became more attractive for new members to join. In the second and third period, there was more collaboration among members than expected which resulted in a slight increase in the network density, despite the growth in members. In the second period the network closeness slightly increased, as there were many new members that did not know each other. In particular in the

Table 1 Overview of measures and values at the end of period 1, period 2 and period 3 (end of the project)

	Initiating (end of period 1)	Expanding (end of period 2)	Sustaining (end of period 3)
LinkedIn: number of members	267	1290	2740
Portal: number of members	0	53	163
Portal: number of unique visitors	0	219	612
Analysis of the social network			
Network size ('knowing')	160	485	513
Network size ('collaborating')	42	91	187
Network density	0.019	0.021	0.024
Network closeness (average geographic distance)	2.94	3.06	2.93
Analysis of the collaboration			
Number of joint papers	6	28	141
Number of workshops and panels	8 (2 panels)	12 (4 panels)	15 (4 panels)
Collaboration leading to a paper	4	28	59
Number of PhD colloquia organised	0	4	3
Number of PhD proposals at colloquia	0	33	13

LinkedIn community there were many members that did not participate actively and only followed discussions passively.

In period 3 the focus was on collaboration and ensuring the activities became focused on sustainability. Furthermore, non-eGovPoliNet partners were involved in the organisation of events to ensure that the activities would sustain after the project ended. As we were creating and shaping this new field, the need for having a solid knowledge base and a curriculum to translate the developments in existing education programmes arose. A book was edited laying the knowledge foundation for this **field** and a curriculum was developed which provides a reference for implementation educational programmes in this area. All these activities aimed to make a sustainable community that would continue after the project ended.

The policy-making 2.0 LinkedIn community has become a channel to announce activities and to share new ideas. Familiarity with members, perceived similarity with others, and trust in other members was demonstrated by Zhao et al. (2012) to be important in communities. In the community building process the familiarity among members has been built and members who were previously in different communities started collaborating. Not only continuing online, but also to keep organising physical meetings is important to keep the community running, which still continues.

The remainder of this chapter focuses on the development of the community and the events that are already planned for after the project ending. The structure is to first give an overview of the community building strategy in the next section. In the following section, the communities for period 1 and 2 are first discussed followed

by the events and community developed and the metrics for measuring the growth. In the final section, the community building events that were planned for taking place after the project ended are presented.

Community Building Strategy

eGovPoliNet was funded by the European Commission (EC) 7th Framework Programme and was aimed at setting up an international community in ICT solutions for Governance and Policy Modelling. The consortium partners were drawn from various countries both within and outside of the European Union (EU), working together to share ideas, experiences and practices in the field.

eGovPoliNet Objectives

eGovPoliNet had five key objectives: (1) To establish a global multi-disciplinary digital participation, governance and policy modelling research community. (2) To integrate the currently fragmented research in digital public participation, governance and policy modelling. (3) To stimulate joint research and practice in the eGovPoliNet agreed research areas. (4) To disseminate eGovPoliNet findings among public governance and policy modelling stakeholders. (5) To provide a barometer for effectiveness for public governance and policy modelling in Europe and worldwide by establishing a corpus of knowledge and lessons-learnt resources to evidence what kind of projects have delivered what kind of results and have thereby been considered effective for digital public governance and policy modelling.

To achieve these objectives, eGovPoliNet built on experiences gained by leading actors bringing together the innovative knowledge in the field. The intended activities were to:

- establish a dynamic network of researchers;
- encourage international community building of relevant stakeholders working in relevant areas;
- encourage multidisciplinary community building;
- expand the social networking and Web 2.0, as well as exploit mass cooperation platforms for networking stakeholders;
- identify new tools and technologies, concepts and approaches, good and bad practices which help address complex societal issues and provide findings at the eGovPoliNet portal;
- make efficient the collection of feedback from public sector organisations on the contents provided by the eGovPoliNet portal.

The aim of the eGovPoliNet was to grow towards an interdisciplinary community. Therefore, criteria were developed to evaluate the development of the network (i.e. demonstrate that the community is growing and collaborating, see Janssen et al. 2012). The added value of connecting different actors, from different backgrounds and operating in different communities lies in the idea that they can learn from each other in terms of background, methods, projects, and practices. This section provides a brief overview of a strategy for expanding the network.

Community Building Objectives

Within eGovPoliNet, the aim for growing the network was: *Seeking collaboration between different actors that are from different backgrounds and operate in different communities.* The specific objectives were:

- Expand the network to include more disciplines and to get a better representation of under-represented disciplines;
- Encourage collaboration between researchers of multiple disciplines;
- Expand the network to include more practitioners/policy makers and to get a better view of the networks they provide access to;
- Encourage collaboration between researchers and practitioners;
- Encourage international (comparative) research (many countries were represented; this provided a great opportunity);
- Encouraging the joint organisation of workshops, panels, special issues etc.

These specific objectives were used to formulate the detailed strategy for community building.

Strategy for Community Building

Community building is ill-researched and there is a limited number of strategies available. Brown (2001) successfully applied three phases for community building in distance learning classes. Each of the phases should result in a greater degree of engagement.

1. *Making friends*: connecting on-line with others with whom the students felt comfortable communicating.
2. *Conferment*: making participants' part of a long, thoughtful, threaded discussion on a subject of importance after which participants felt both personal satisfaction and kinship.
3. *Camaraderie*: only achieved after long-term or intense association with others involving personal communication

Researchers and practitioners need to work together in order to tackle policy challenges by integrating different perspectives, developing comparative studies, and sharing their experiences. Zhang et al. (2011) identified a number of challenges.

1. a lack of shared interests and sense of urgency to collaborate;
2. issues with forming and maintaining personal relationships (Zhang et al. 2011; Kraut et al. 1986);
3. disciplines have different traditions, norms, values, whereas interdisciplinary research has relative fewer established outlets for publication

The more varied the potential members of the community are the more difficult it might be to create a coherent community. Of vital importance is that the potential members have something in common like shared interests, experiences, goals, values or vision (Brown 2001). Successful communities "are well-balanced systems that oscillate between exploring new practices and exploiting existing ones "(Probst and Borzillo 2008). There are 3 dimensions that are important for communities (Zhao et al. 2012):

1. The *structural dimension* can be reflected by the extent and quality of relationships and familiarity. Familiarity is "the extent to which members of a community know each other based on interaction" (Lu et al. 2010). Familiarity with other community members is viewed as a condition for developing the community.
2. *The relational dimension.* This dimension looks at personal relationships between individuals which develop through repeated interactions between members. This contributes to building trust among participants. In the community building activities, the fostering of personal relationships is key to growing the community.
3. The *cognitive dimension* relates to perceived similarity among members. Similarity is defined as "the extent to which that community members perceive sharing common characteristics such as shared goal and vision one perceives with other members" (Lu et al. 2010). Similarity is important, but members should also be sufficiently different to foster variety and to add value to the eGovPoliNet community by bringing in their expertise and knowledge.

By having a focal point on policy-making problems as experienced by practitioners, a clear and shared objective is created in which different disciplines should contribute to the same practical challenge. The forming and maintaining of personal relationships is accomplished by having online and face-to-face community building. By having a 3 year strategy consisting of various phases the difference in values should become accepted.

eGovPoliNet therefore exploits online and face-to-face meetings to connect and establish the community. Physical meetings will mostly serve to strengthen the community through social relations. These meetings were organised in conjunction with important conferences and other events relevant to the community and served as points of reference, where results and information gathered in the recent period

were discussed, structured and amended, and plans for the subsequent period were confirmed from the work plan or revised accordingly. Regular virtual discussions (online and by phone) were used to support the achievement of eGovPoliNet's objectives to strengthen the community.

A key part of the strategy was that partners seeks collaboration with other parties. For each partner, it was expected that they recruited additional members to the (online) network and that each partner organised a workshop (at different conferences and events) with people from other communities. In the first project period, partners invited people from other communities to a workshop or event. In the second and third periods, workshops were organised in communities to which people from other communities were also invited.

Strategy of Events for Community Building

eGovPoliNet aimed at letting the community grow. Relevant players from various communities were targeted. The community building activities were always targeted at a minimum of two communities. The event ensured that people from at least two different communities are involved (see Fig. 2), to ensure that these communities started to get to know each other and joint activities were stimulated. Figure 2 summarises the events organisation protocol. Each event should result in a *measurable output* of the event and report this in the template. The mechanism used to track this was a 'community building template' (see Appendix: Community Building Activities). Ideally the template should be filled in before *and* after each activity. However, in practice the template was often only filled after the activity took place. The advantage of filling in the template before the activities took place was that it can be used to explain, share and discuss the plans. After the activity the template should have been filled in to evaluate the actual impact (this must be very specific such as the list of participants, outcomes like joint papers, cases etc.). The community building reports delivered by partners were used for the social network analysis and collecting other metrics.

The reports contain the participants list, sometimes pictures of the events and titles of the papers/abstracts/PhD proposals. This provided us with insight into who attended the events and what the direct effects of the events were. There might be indirect effects (for example writing joint project proposals) which are harder to measure and are only known afterwards (such as, when a project is accepted).

The basic idea of realising this strategy is that each partner organised community building activities. Activities target always at least two communities to bring them together. For these activities *persons* (name, email address, affiliations) were identified from the communities that should be involved. If papers, abstracts or PhD proposals were part of the output, then these were uploaded in the portal whenever possible (i.e. sometimes copyright issues prevent this). The ambition is that at least the title, author(s) and abstract are uploaded to enable community members to know each other.

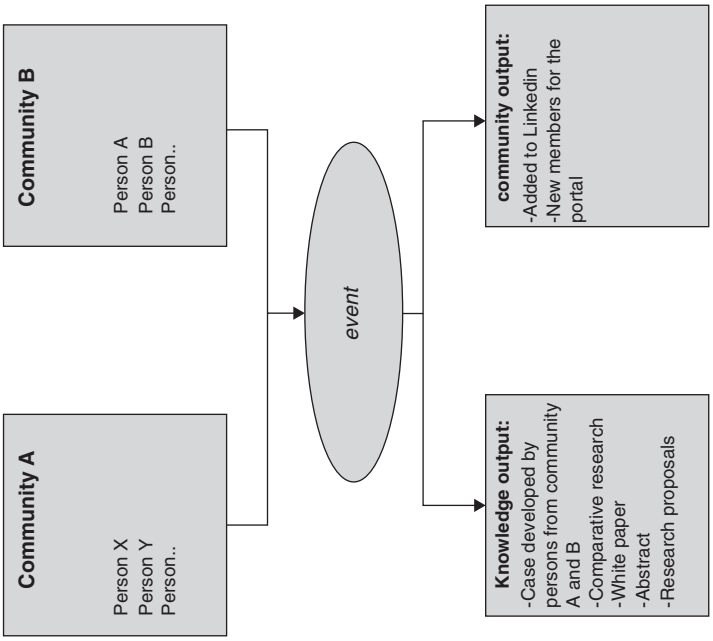

Fig. 2 Event organisation protocol

Online Community Building Strategy

The online community consists of two types of community building focus points. One activity was open to everybody and was used to create awareness of the network, show some of the activities and stimulate discussions. For some persons this would be what they desire, whereas others wanted to collaborate with each other in-depth. Therefore, the second online community building was focussed on in-depth knowledge exchange, the sharing of findings and detailed activities. The results of the community building activities should be that members are confident in contributing, feeling valued and feel part of the community and that they learn from each other.

The LinkedIn eGovPoliNet community group 'Policy Making 2.0'[1] aimed at attracting a large user base of people who are interested in bridging scientific communities. Online community building requires the setting of some conditions to make it work. We used the following guidelines (based on Brown 2001).

1. Strategies to create an environment that fosters openness, respect and trust.
2. Create interest, support, sincerity, and understanding of the existing disciplines.
3. Share relevant experiences as well as information helpful to others.
4. Formulate responses positively, even when provocative ideas and opinions are presented.
5. Provide timely feedback, provide support and stimulate discussion by asking questions.
6. Continue threaded discussions that were going and to keep them alive.
7. Communicate with individuals directly if necessary.

In the beginning, the community was kept small to enable the eGovPoliNet partners to create content and prepare. In this way the community can be made attractive before inviting people and having a large user base for which limited content can be offered. In future years the goal was to boost the online efforts and all partners were asked to follow a plan and contribute in four different ways.

1. To post a comment concerning the eGovPoliNet related research one is working on. This could be an example, development, reference to relevant report or an open discussion on a specific topic.
2. To recruit somebody from an external research community to post something. Community building requires the involvement of other organisations than those who are part of the consortium. The member should recruit somebody from another community and ask them to post something in that week
3. This is similar to 2, with the exception that this is targeting the practitioners' community. Somebody from practice should be recruited to post something.
4. Comment on a posting (contribute to discussion on this topic and make it lively).

[1] See https://www.linkedin.com/groups/4165795 (last accessed 11/05/2016).

These actions should ensure that the community shows activities and is attractive. Once there are activities of non-eGovPoliNet partners the community should become self-sustainable.

The *portal* is aimed at stimulating sharing among eGovPoliNet members who are actively working on integrating communities by working on best practice and research crossing communities. Traditionally, people tend to do things in their own disciplines. Coalitions having participants from various disciplines might breed new ideas, have more problem solving capacity and view the problems from different disciplines. The portal is first filled with more information before a large number of members was invited. A certain critical mass of knowledge is necessary before these can be developed.

To stimulate this collaboration and in-depth knowledge sharing, virtual meetings took place each month. In these meetings two partners were asked to give a short presentation of their contribution as a case, paper or other community building activities. The virtual meeting space (Clickmeeting) offers a collaborative, interactive, and mobile learning environment. It helps to create virtual classrooms, offices and meeting spaces that offer the opportunity to talk (voice) and see each other (video), present slides, chat and work together on a shared whiteboard. These facilities should stimulate collaborations among eGovPoliNet members. The meetings were recorded, minutes were made and the minutes, slides and recordings were stored in the shared workspace.

The basic idea was that eGovPoliNet partners would contribute in cooperation with someone from another community (practitioner, scientific). In this way the activity itself already contributed to the community building activities. All activities were summarized using the template presented in Appendix: Community Building Activities Template. This enabled partners to understand the events and to determine its impact. Some of the results of these activities were stored and made available in the portal. This provided the content of the portal to make it attractive for others to join. The basic idea was that others who used the content would also start contributing to the portal and the activities would become self-sustainable (after period 3).

Face to Face Community Building Strategy

Apart from the online community building there were face-to-face meetings to share ideas, to gain understanding and appreciation of other disciplines. Therefore monthly online meetings were organised in which partners discussed their activities face-to-face. Physical meetings were used to build the community through social relations. These meetings were organised in conjunction with important conferences and other events relevant to the community and served as points of reference, where results and information gathered in the recent periods were discussed, structured and amended, and plans for the subsequent period were confirmed from the work plan or to be revised accordingly.

An important task of the face-to-face community building meetings was the organisation of PhD Colloquia. PhD research provides the basis for any scientific field. Stimulating research in this field, providing feedback, and ensuring the various disciplines are considered in the research to provide a foundation for the eGovPoliNet field.

Resulting outputs were the results of both online and offline community building strategies. Output was created by members of different communities who used the output to work together. The type of output typically contained comparative work which compared practices or compared efforts within communities. This was aimed at analysing differences and similarities among communities.

Other output was joint work in which persons from different communities collaborated with each other. This had different forms, such as a description and analysis of a policy-making practice, writing a white paper, writing a scientific paper to be published at a conference or journal or a special issue containing input from different disciplines.

For each output contribution, the following three requirements should be satisfied.

1. The work should have been conducted within eGovPoliNet;
2. The work should contribute to the objective of eGovPoliNet community building;
3. The work should result in community building (outcome).

The latter requirements should be described by each community building activity. How it contributes to the community building. Finally, having tracks, special issues and writing of proposals between members of the formerly fragmented communities demonstrated the collaboration between various communities and should ensure long term sustainability.

Community Development

An overview of the community development over the years is presented. Periods 1 and 2 are summarised, whereas the events for period 3 are presented in detail.

Targeted Communities

To mitigate the risk of targeting a too broad range of communities which are less relevant, the focus has been on targeting five communities that provide the core field for ICT-enabled Policy-making. A summary of the main communities targeted is given in Table 2.

Table 2 Main communities targeted

Main communities	Contributing insights to the domain
E-government (EGOV)	E-government is the interdisciplinary field that tackles ICT and public administration aspects in a broad sense (this includes integrated service delivery, web 2.0, etc.). E-government is considered to be interdisciplinary by nature and is open for eGovPoliNet type of work which needs elements from public administration, policy-making, simulation, and complex systems. Within this field the IFIP WG8.5 working group on Public administration & ICT, international community on theory and practice of governance (ICEGOV) and digital government society (DGS) were targeted
Information systems (IS)	Information systems bridges business and computer science and studies both the technical system as social system. The Association for Information Systems (AIS) serves society through the advancement of knowledge and the promotion of excellence in the practice and study of information systems. This field is targeted by focussing on the European Conference on Information Systems and UKAIS conference
Complex systems (CS)	The study of systems built of individual agents that are capable of adapting as they interact with each other and with an environment, and especially the attempt to understand how the individuals affect the system-level responses (Auyang 1998). In recent years, CS has attracted much interest in management and organisational related literature. Complex systems view organisation as an entity that emerges over time into a coherent form, and adapts and organises itself without any singular entity deliberately managing or controlling it
Public administration & policy research	Political science studies the political system and political behaviour of state, government, and politics. It aims to analyse and understand, revealing the relationships underlying political events and conditions. Public administration houses the implementation of government policy and an academic discipline that studies this implementation and that prepares civil servants for this work. Public administration is "centrally concerned with the organisation of government policies and programs as well as the behaviour of officials (usually non-elected) formally responsible for their conduct". The focus is on International Research Society for Public Management (IRSPM) and Association of Public Administration (APA)
Social simulation	Modelling, simulation and visualisation provides the instruments and tools for being able to gain an understanding of the phenomena and being able to visualise what is going on. The focus of these communities is often not on policy-making, but on advancing the modelling constructs and visualisations. The focus is on The Society for Modelling and Simulation Europe (SCS)

The 'Community' in Period 1 (start)

A qualitative and quantitative survey was conducted during the start of the project. The survey consists of two parts: first, for each respondent it inventories disciplines, core communities, known communities, collaboration communities, research topics, methods used and expectations of the project. Secondly, it inventories relationships with members of the international network, serving as the initial measure for

the social network analysis of the survey that will be repeated multiple times in the course of the project.

Social network analyses were carried out using *NodeXL* (Smith et al. 2010), an MS Excel based open source based tool which has been used for conducting similar analysis (Welser et al. 2009), and has integrated visualisation options and can be learned within a short timeframe (Hansen et al. 2011). Figure 3 shows the network from the start as analysed using NodeXL. The nodes represent the people who are part of the eGovPoliNet network and their relationship with each other. This graph shows that most of the people who took part in the project then already knew each other, or at least several other people in the network. There were also exceptions, i.e. people who only knew a few other people.

Figure 4, shows the network after period 1. The data is based on the participants of the events organised. In the first period key people in the targeted communities were identified to connect to and events were organised to facilitate this. Figure 4 shows that several communities have been connected to the core of eGovPoliNet by focussing on key stakeholders (linking pins). For example, the red nodes are the information systems community, which shows that four eGovPoliNet partner representatives are connected to this community (ie, the four lines originating from the centre of the red cluster) and six key people from this community are involved (ie. the six red dots in the cluster).

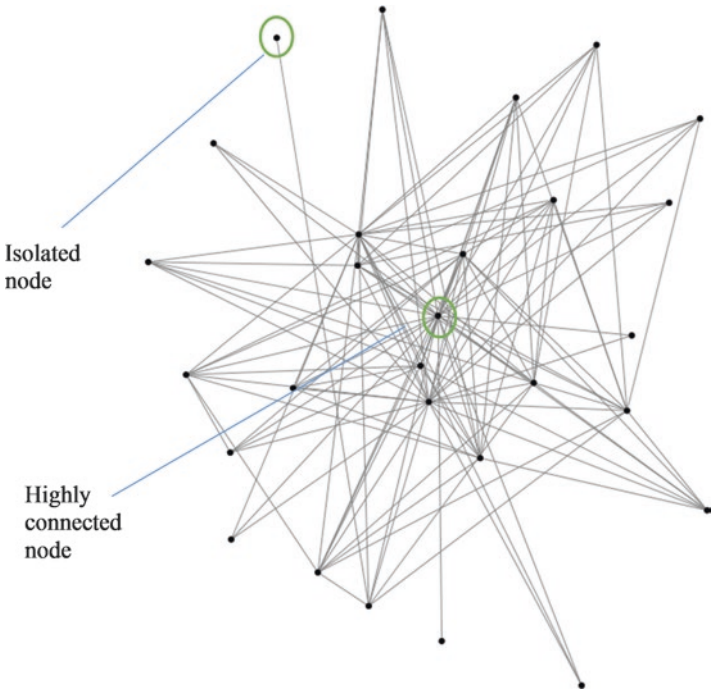

Fig. 3 Social network analysis of the eGovPoliNet members at the start of the project

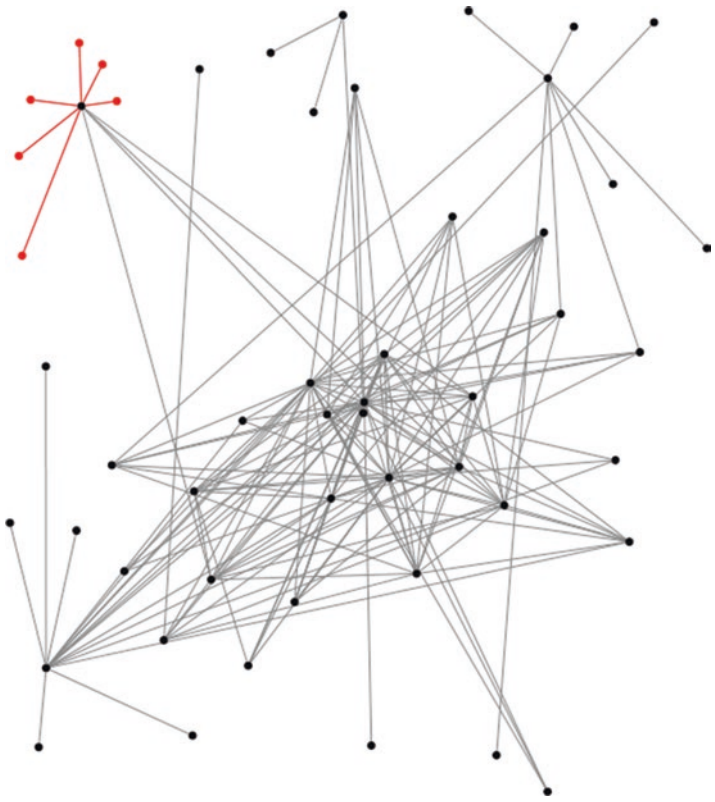

Fig. 4 Social network analysis of the eGovPoliNet members after period 1

Overall, there are seven groups/communities pre-defined in the analysis, (1) eGovPoliNet (the partner representatives), (2) eGovernment, (3) Information Systems, (4) Complex Systems, (5) Public Administration & Policy research, (6) Social Administration (only those who are connected are included in the analysis, as not all persons within these communities are known and can be added) and (7) Practitioners (those who participated in events). The connection to the e-government community is strong, whereas the connection to complex systems community is the weakest.

The 'Community' in Period 2

In period 2 a variety of events were organised. In Fig. 5, as in the figure from period 1 the red nodes are the information systems community, which shows the growth from this community into the eGovPoliNet community. It shows an increase in ties to the starting communities (on the right hand side in the figure). The graph also shows that only a few members from this community are connected to other communities (i.e. the one at the top is linked to the complex systems community).

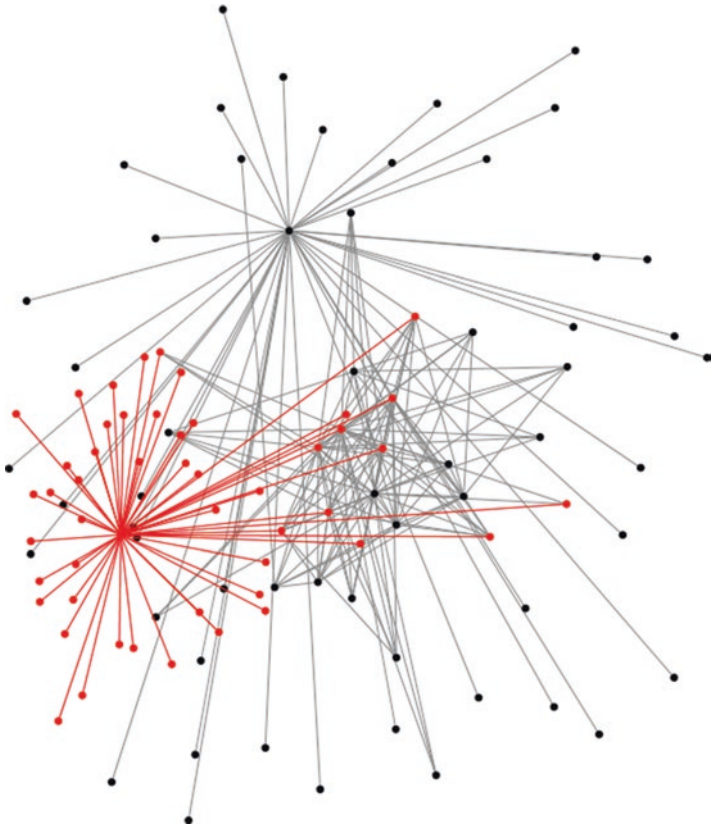

Fig. 5 Social network analysis of the eGovPoliNet members after period 2

The *network density* is the proportion of direct ties in a network relative to the total number of possible ties (Emirbayer and Goodwin (1994) cited in Zhang et al. 2011). Although we expected that the network density would have decreased due to the growth of the network, it did not. There was more collaboration among members than expected, which results in a slight increase in the network density.

Collaborative ties between actors refer to things such as writing papers together, writing grant proposals together, collaborating in a project. Just knowing each other is enough for having ties, but not sufficient for collaborative ties. Whereas the network closeness is calculated by the distances between pairs of actors (Hanneman and Ridddle 2005). The network closeness has slightly increased, as there are many new members that do not know each other. In the LinkedIn community there are many members that do not participate actively and only listen. Community building activities and collaboration in period 3 should result in a decrease in the distance among members, so a more coherent community will be created.

Community Building in Period 3

In addition to recruiting persons at the individual level, a large number of community building activities has been organised. Three types of community building activities can be distinguished:

1. Community building events: aimed at letting the community grow;
2. Community building events for collaboration: Aimed at stimulating collaboration within the community;
3. Community building events for PhD student: PhD Colloquia aimed at involving PhD Students in this field;

Community Building Events

This type of community building events are aimed at recruiting members for the community and keeping existing members active. At all events the participants have been asked to fill in a presence list including their name and email address. These lists are used to invite participants to the LinkedIn community and become active. In total 485 attendees participated in the events (see Table 3). From these persons, 29 became new community members for the LinkedIn group. Indirectly there might be more members, but we are not able to trace this. Also a large number of participants were already a member as most events are a continuation of the events organised in the previous period (and as such could not be added again).

Please note that one person can be involved in multiple events. For example the panel and plenary discussions at ICEGOV has likely overlapping audience as the total number of conference attendees was about 350 people. We tried to take this into account, but had to make guesses as no detailed attendance list was available. In period 3 the number of new participants added to the LinkedIn community due to these activities is less than in period 2, as already many attendees have already become members previously.

Community Building Events for Collaboration

The community building events for collaboration were aimed at stimulating the writing of papers by members of different communities and presentation of papers from one community to another community. In total, 123 papers and 5 journal papers have been developed by persons from different communities (mostly non-partners). Apart from the collaboration, these events also resulted directly in attracting 36 new community members, mainly in the field of policy research, for the LinkedIn group. Indirectly there might be more members, but we are not able to trace this. Table 4 gives an overview.

Table 3 Community building events organised in period 3 and assigned to targeted communities

Event	Impact	E-government	Information systems	Complex systems	Public administration & policy research	Social simulation	Total number of participations	Participants added to The community (direct)
Panel at ICEGOV	LinkedIn members, minutes	X			X		100	15
Plenary discussion at ICEGOV	LinkedIn members, minutes	X			X		183 (5 panellists)	Unknown
tGov workshop presentation	LinkedIn members, minutes	X	X	X	X		51	3
Curriculum development policy informatics	curriculum	X	X	X	X	X	32	3
Samos summit for policy-making	presentation	X		X	X		22	(All were members)
ECIS panel—information systems in the public sector	LinkedIn members, minutes	X				X	12 (5 panellists)	3
panel at Dg.o—understanding and improving the uptake and utilization of open data	LinkedIn members, Collaboration	X			X		16 (2 organisers)	2

SKIN workshop—joining complexity science and social simulation for policy (SKIN 3)	LinkedIn members, Collaboration						44	1
NASPAA panel—#OpenData #BigData: data, big and small, in the public affairs curriculum	LinkedIn members, Collaboration				X		35 (4 panellists)	2
Total		7	2	3	7	2	485	29

Table 4 Types of community building activities, number of collaborative engagements of community members along targeted communities and impact achieved

Event	Types of community building activity	E-government	Information systems	Complex systems	Public administration & policy research	Social simulation	Total number of participations	Participants added to the community (direct)
Track at ICEGOV	Collaboration, papers, abstract to portal	X			X		6 papers 14 authors	2
Track at dg.o	Paper, proceedings	X	X				10 papers 30 authors	None[a]
SKIN workshop—joining complexity science and social simulation for policy (SKIN 3)	Papers proceedings	X		X			16 Papers 5 posters 23 authors	17
Track at the 17th international conference "Internet and modern society" and its part "e-Governance in Information society"	Collaboration, new LinkedIn, abstract to portal		X			X	54 papers 63 authors	9

Papers at IFIP EGOV/ePart conference	Papers proceedings	X		X		X	7 papers 22 authors	None[a]
t-gov workshop—Co-Creating Public Services of the Future:	EU project meetings	X	X	X		X	12 papers 31 authors	1
Total		5	3	3		4	113 papers 175 authors 5 posters	29

[a]Those engaged were already members

Community Building Events by Having Special Issues of Journals

The previous activities showed that there are many conference publications. In the short life time of this project, we managed to have two special issues with 9 peer-reviewed publications, as listed in Table 5.

Policy Informatics Curriculum

As this new field and knowledge base are being created and shaped, the need for an academic curriculum has arisen. There are no standard curricula and developing a curriculum demands input from various disciplines. A workshop was held to explore integration of data-intensive analytical skills in public affairs education. This workshop should provide the basis for the uptake of new developments in existing programmes.

The workshop "Policy Informatics in the PA Curriculum: A workshop to explore integration of data-intensive analytical skills in public affairs education" was held on 09 May 2014 at the Center for Technology in Government (CTG), State University of New York (SUNY), University at Albany. The event was supported by a grant to CTG from the National Science Foundation (NSF) and by the eGovPoliNet Consortium. The workshop had the following goals:

1. To understand the analytical needs of policy makers and program managers.
2. To share approaches to educating public administration and policy analysis students in the types, uses, and limitations of policy informatics.
3. To explore new methods for policy informatics education.
4. To consider curriculum recommendations for public affairs schools.

Public administration and public policy curricula need to confront these trends and develop ways to train professional analysts and managers to understand and address them. This workshop showed the needs and opportunities in the emerging data-intensive science and decision-making environment and explored ways to integrate them into public affairs education.[2]

Springer Book "Policy-Practice and Digital Science"

To take advantage of these developments in the digital world, approaches are changing and new methods are needed, which are able to deal with societal and computational complexity. This requires the use of knowledge originating from various disciplines including public administration, policy analyses, information systems, complex systems and computer science. All these knowledge areas are needed for policy-making in the digital age and were integrated in the book 'Policy-Practice

[2] Further information about the workshop can be found at http://www.ctg.albany.edu/news/events?eventID=72 (last access: 11/05/2016).

Table 5 Number of peer-reviewed publications in two special issues

Event	E-government	Information systems	Complex systems	Public administration & policy research	Social simulation	Total number of participations	Participants added to the community (direct)
International Journal of E-Government Research (IJEGR), Special Issue on Policy-making: a next challenge in e-government research	X	X	X	X	X	5 papers 21 authors	None
Journal of Policy Analysis and Management (PAM) Special Issue on policy informatics			X	X		4 papers 18 authors	7
Total		2	3	2	1	9 papers 39 authors	7

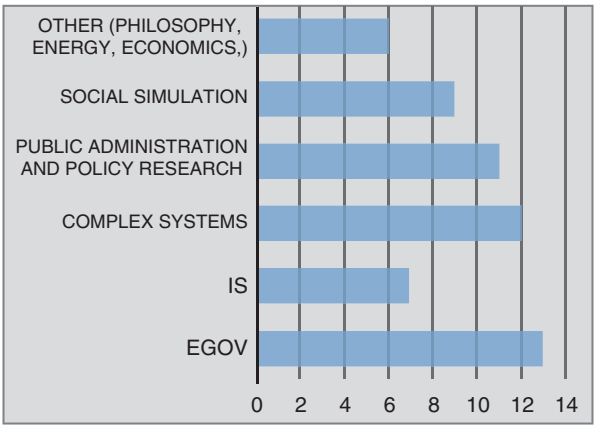

Fig. 6 Overview of the disciplinary background of the chapter authors

and Digital Science" by Janssen et al. (2015). The aim of this book was to provide a foundation for this new interdisciplinary field, in which various traditional disciplines are blended together with the curriculum development. The book provides a foundation for this growing field.

In total 54 different authors were involved in the creation of this book. Some chapters have a single author, but most of the chapters have multiple authors. The authors represent a wide range of disciplines as shown in Fig. 6. The focus has been on targeting five communities that provide the core field for ICT-enabled governance and policy making. A sixth category was added for authors not belonging to any of these communities, such as philosophy, and economics. Figure 6 shows that the contribution of authors are evenly distributed among the communities. A large part of the authors can be classified as belonging to the e-government/e-participation community, which is by nature interdisciplinary.

PhD Colloquia

As in period 2, the PhD colloquia were organised at conferences in the e-government community. These types of conferences are interdisciplinary by nature and the organisers were open for interdisciplinary research. Furthermore, these conferences attract persons coming from various communities, and are of interest for persons from various communities.

The Role of LinkedIn and the Portal in the Community

Community building was supported by a LinkedIn group and by developing a portal. Figure 7 presents an overview of the discussions started and commented on in the LinkedIn community, starting from November 2011. A steady initiation of

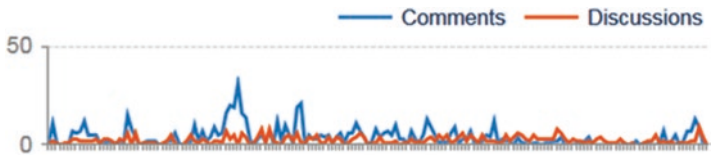

Fig. 7 Overview of discussions and comments in the LinkedIn community over time

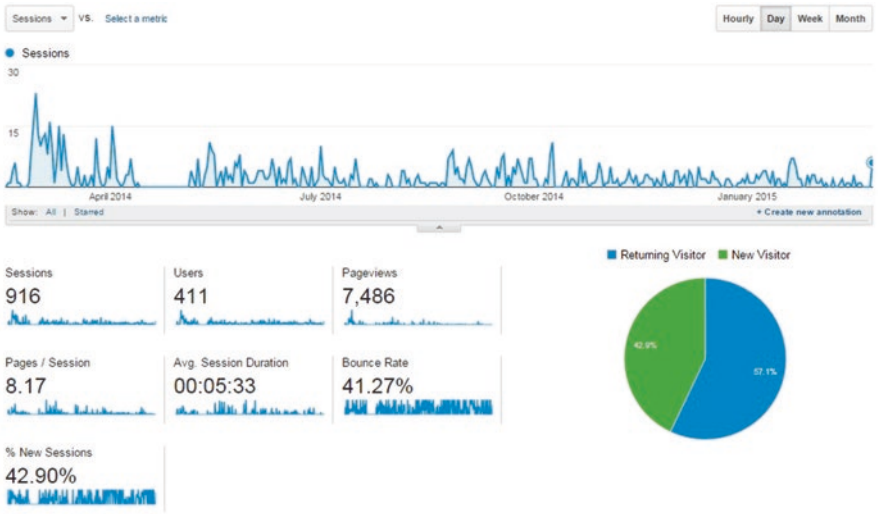

Fig. 8 Overview of the traffic of the portal

discussions is shown, whereas the responses (comments) to the initiated discussions vary a lot. Partly this can be attributed to the topic, as a discussion can include the announcement of an event, the sharing of new work, etc. The sharing of ideas and discussion about ideas is posted less frequently. This also shows that a large number of members are 'listeners', they follow the discussions but do not actively contribute.

In the LinkedIn community a 'network effect' or 'network externality' seems to have occurred. Network effects or *network externalities* refer to the dependence of the value of a good or service on the number of other people who use it (Katz and Shapiro 1985). A positive network externality happens as being part of a community becomes more valuable as more users joined the eGovPoliNet community. The network effect can explain the ongoing growth of the LinkedIn community, although our efforts were not focused on letting it grow anymore in the final period. The large number of members will ensure that there is a sufficient number of participants to maintain interactions and participation.

The google analytics for the project portal for 29 May 2014 to 25 September 2014 are shown in Fig. 8. It shows the activities and the users. The analytics in the figure at the top shows the new persons entering the community. At the beginning there is a large influx which slows, and then the events resulted in a more steady

Table 6 Overview of the LinkedIn and Portal communities

	Initiating (end of period 1)	Expanding (end of period 2)	Sustaining (end of period 3)
LinkedIn: number of members	267	1290	2740
Portal: number of members	0	53	163
Portal: number of unique visitors	0	219	612

Table 7 Collaboration at the end of period 3

	After period 1	After period 2	After period 3
Number of joint papers	6	28	141
Number of workshops and panels	8 (2 panels)	12 (4 panels)	15 (4 panels)
Collaboration leading to a paper	4	28	59
Number of PhD colloquia organised	0	4	3
Number of PhD proposals at colloquia	0	33	13

inflow of new members. Table 6, below, shows an overview of the incredible growth of the community in terms of LinkedIn members and portal members and visitors. This tables shows that the community has considerably developed over time.

Analysing the Community at the End of Period 3

The collaboration is analysed based on the metrics determined in period 1. The number of joint papers is calculated by counting the 113 conference papers, 9 journal papers, and 19 book chapters which resulted in 141 joint papers. The previous tables show that 15 events were organised from which 4 are panels. Some events took place at the same outlet (for example there were 2 panels and a track at ICEGOV). The observed collaborations resulting in a paper were estimated at 59. As there are 141 joint papers the actual collaboration should be higher (Table 7).

Based on the events and collaborations a social network analysis (SNA) was conducted. As with the figures for period 1 (Fig. 4) and period 2 (Fig. 5) the red nodes are the information systems community. Fig. 9 shows the community at the end of period 3 and although not represented directly on the figure, it also reflects that more and more members from this community are connected to other communities. Indeed there might be even more connections which were not administrated and fall outside our scope of analysis (e.g. events organised by others, events in which attendee lists were not completed and conference/journal papers not indexed).

Figure 10 shows the social network and the members of the eGovPoliNet community. It shows that the network has considerably expanded beyond the original eGovPoliNet members which are depicted using the red colour, whereas the

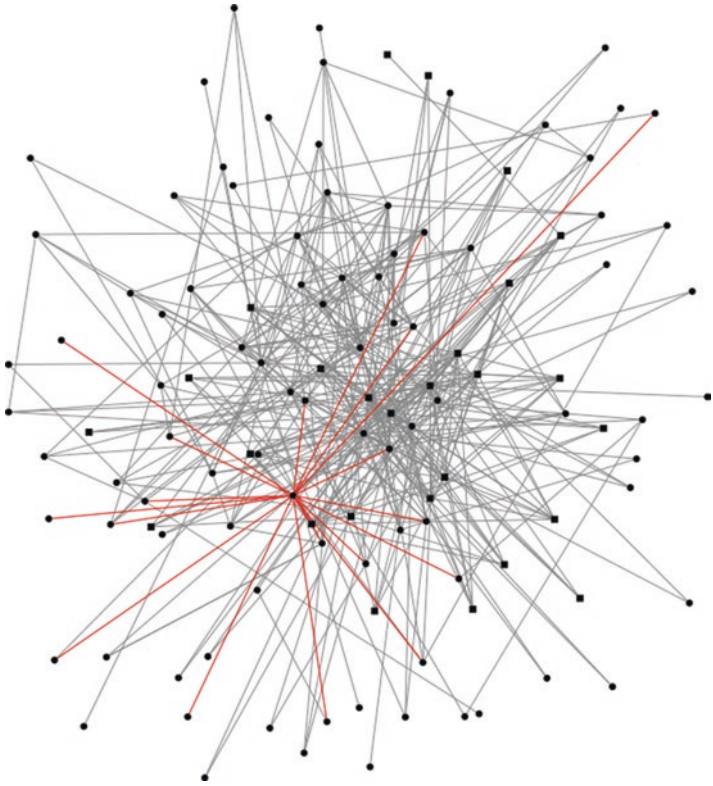

Fig. 9 Social network analysis of the eGovPoliNet members after period 3

information systems persons are blue. The circle on the outside shows the persons who are 'listeners', who do not actively engage in content-generation, but consume the context and incidentally contribute to a discussion on LinkedIn. There are more persons who are only 'listeners' than visualised in this figure. We did not opt for including them and limited the analysis to 477 persons from which 385 persons can be classified as active.

There are various other *limitations* in the SNA analysis. First, we did not include the visitors to the portal. Second, sometimes persons cannot easily be allocated to a certain community. Some persons fit within two or even more communities which makes it difficult to determine how communities are collected. Third, collaboration can involve papers having multiple authors. Only key authors might be open and collaborate with other members, whereas some authors might only provide their expertise. Nevertheless all authors are included in the analyses. Finally, we had two events in period 3 in which the attendees list were not collected and we had to guess the number of attendees.

Table 8 shows the development of the community. The *network size* is calculated by counting the number of different persons who attended the events over the years.

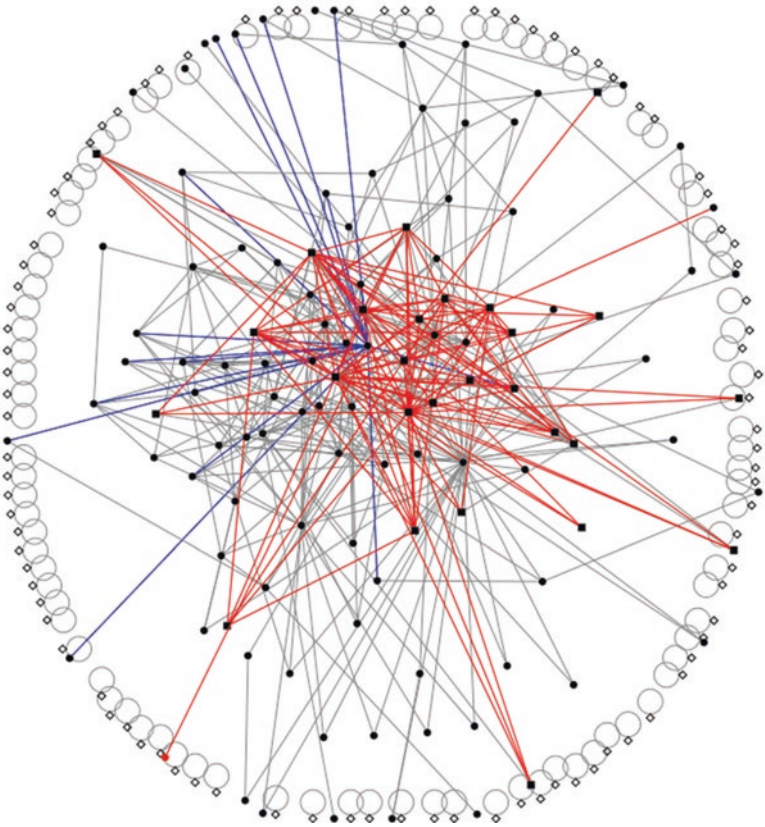

Fig. 10 Social network and the eGovPoliNet members after period 3

Table 8 Social network at the end of each period

	Start of the project	Initiating (end of period 1)	Expanding (end of period 2)	Sustaining (end of period 3)
Network size ('knowing');	0	160	485	513
Network size ('collaborating');	0	42	91	187
Network density;	0	0.019	0.021	0.024
Network closeness (average geographic distance);	0	2.94	3.06	2.93

The network size for knowing is 513 which is calculated by adding up 485 persons attending events and 28 person attending the PhD colloquia. Papers have 1 or more authors, whereas PhD proposals have only one author (PhD supervisors are not included in the network size).

The *network density* is the proportion of direct ties in a network relative to the total number of possible ties (Emirbayer and Goodwin (1994) cited in Zhang et al. 2011). Table 8 shows the changes in network density over the periods. The network grew in period 3, but at the same time there are many collaborations among members which resulted in a slight increase in the network density. In the LinkedIn community there are many members that do not participate actively and only listen. If the 'listeners' were left out this number would be much higher.

By collaborative ties between actors we mean things such as writing papers together, writing grant proposals together, collaborating in a project. Just knowing each other is enough for having ties, but not sufficient for collaborative ties. Whereas the *network closeness* is calculated by the distances between pairs of actors (Hanneman and Ridddle 2005). Table 8 shows that the network closeness has decreased, as the links between core members are closer, even for those who are new and entering the network.

Community Building Activities Post-eGovPoliNet

In the first period, a number of community building activities have taken place which were focussed on analysing and understanding the community. In the second period, the community building activities focussed on expanding the community. In the third period, the focus was on sustainability; this was done by ensuring that persons from outside the eGovPoliNet project were involved in the organisation of events. In period three, the focus was on continuing key events and enlarging the impact of these events. Several of the events organised have become 'accepted' by these conferences and considered as 'belonging' as part of these conferences. The conference organised provided invitation for running the track for another year without having to ask. This has resulted in a large number of events that are continued after the project ended.

Table 9 indicates the planned community events for collaboration. These are more than in period 2 to ensure that community members collaborate. Furthermore, the same outlets as in period 2 are targeted as this ensures a recurring presence. The idea is that people will get to know the events and will start considering this as a periodically occurring event. Apart from eGovPoliNet partners, other people will be involved in the organisation of these events to ensure sustainability after the project ends.

Although the number of events varies per community, this does not mean that the impact in any one community might be less. For example, the eGovernment Policy/Policy informatics minitrack at AMCIS might have a huge impact as AMCIS is visited by 700–1000 information systems experts.

Three PhD colloquia were organised by eGovPoliNet partners at primarily e-government type of conferences. Students could submit a PhD proposal to be presented at the colloquia and from these appropriate proposals were selected and accepted for presentation and discussion. The idea was to attract PhD students from all communities to those colloquia to ensure that PhD students from various disciplines meet each other in a multidisciplinary setting. Table 10 indicates the plans for future PhD colloquia.

Table 9 Indication of planned community events to sustainably support collaboration of the Policy Community

Event	Expected impact	E-government (EGOV)	Information systems (IS)	Complex systems	Public administration & policy research	Social simulation
Track at ICEGOV	Collaboration, abstract to portal	X			X	
Track/ at Dg.o	Collaboration	X			X	
ESSA—social simulation	Collaboration			X		X
eGovernment Policy/Policy informatics minitrack at AMCIS	Collaboration	X	X		X	
Joining Complexity Science and Social Simulation for Policy (SKIN 3)	Papers in proceedings			X		X
Policy Modelling and Policy Informatics Track at IFIP EGOV/ePart	Papers in proceedings, Platform for networking	X		X	X	
tGov workshop	EU project meetings	X	X	X	X	X
Total		5	2	4	5	3

Table 10 Indication of planned PhD colloquia of the sustained Policy Community

Event	Expected impact	E-government (EGOV)	Information systems (IS)	Complex systems	Public administration & policy research	Social simulation
PhD colloquium ICEGOV	Collaboration, abstract to portal	X	X	X	X	X
PhD colloquium at dg.o	Collaboration, abstract to portal	X	X	X	X	X
PhD colloquium at IFIP EGOV/ePart	Collaboration, abstract to portal	X	X	X	X	X
Total		3	3	3	3	3

Conclusion

This chapter has detailed the creation and growth of an academic community, through the stages (phases) of the process of the lifecycle of the eGovPoliNet project and the development of a 'policy informatics' community. Creating the community was done in three phases: Initiating (period 1), Growing (period 2), and Sustaining (period 3). The experiences show that developing a community is time-intensive and could only be successful by organizing many online and physical activities. Key to the success is the organization of physical meetings in which people from different disciplines come together and ensuring sustainably by retaining key persons which function as linking pins between communities. Developing a community has to be done carefully, and in the multi-phase way, to initially attract people to join the community and then sufficient interaction/relationship development to enable people to stay. While this is tricky to measure, various metrics have been employed, including the social network analysis of the Policy Modelling 2.0 LinkedIn group; this shows that there is some development across existing communities. Creating communities is not easy, and in some there is much that pulls apart, as much as pushes together, but in this context, the eGovPoliNet can justifiably claim to have made a good start on the development of a Policy Informatics community, whether and how it survives, only time will tell.

Acknowledgments The eGovPoliNet Coordination Action (Grant Agreement N°288136) was co-funded by the European Commission, Information Society and Media Directorate General, under the Seventh Framework Programme (FP7), Cooperation Theme three, "Information and Communication Technologies". The authors wish to acknowledge the Commission for their support, the efforts of the partners and the contributions of all those involved in eGovPoliNet.

Appendix: Community Building Activities Template

Field	Details (Your Data Here!)
Description (to be filled in before the event)	
\Id	This is a unique identifier of the activity.
Title	
Topic	Description (Who, Why, What, When, Where, How)
Purpose	The purpose of the event related to the objective of eGovPoliNet community building. For example the purpose is 1) participation and/or 2) integrate the currently fragmented research by involving both policy-researchers as well as complex systems researchers)

(continued)

Field	Details (Your Data Here!)
Communities involved:	e.g. complex system researchers and policy-makers from government
Type	Knowing or collaboration (in time this should shift to the latter)
Location and date	What is the location and date (e.g. at IFIP EGOV Conference in Koblenz September 2013), including URL (if applicable)
Set-up event:	Draft agenda (related to the purpose to be achieved, including name of presenters, name of presentation and other detailed information)
Who	Who is the organiser who are the collaborators
Actual impact	
Communities involved:	e.g. complex system researchers and policy-makers from government, including list of names
Feedback:	e.g. minutes, who is going to collaborate with whom
Outcomes	Quantifiable outcomes related to KPI after the event took place (eg. Event resulted in XX linked in members, 2 case studies, …)
Dissemination (only if it was also a dissemination activity that goes beyond the persons mentioned before)	
Field	Details (YOUR DATA HERE!)
Short description of work performed	(1–2 lines. It should include some info such as number of copies produced, languages covered etc.)
Reason why the material was created (Objective)	(1–2 lines)
Relevant WP(s)	List here the specific WPs for which this material was produced. If the material was produced to disseminate the whole project's results you should write "PROJECT"
Partners that created the material	The partner (organisations' name) that created this material
Other partners involved	
Type of audience the material is designed for	Preferably a list of participants names, their function and affiliation
Number of audience reached	(see above) The total number distributed over groups like policy-makers, researchers, elected politicians, public managers etc.
What impact is to be reached according to the project objectives	
More info	
Attachment	Provide the material in electronic form to enable easy assimilation

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