Understanding the role of governance in the context of digital ecosystems

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Abstract

In this chapter, key characteristics of digital ecosystems are described and developed as ‘dimensions of governance’. Governance can have far-reaching and fundamental consequences with respect to the way relationships are constituted within a given social context. Understanding the role of governance in the context of digital ecosystems requires consideration of the social, regulatory and technological aspects of ecosystem-based technologies and social networks. It also involves understanding governance as a spectrum of working practices that include both formal and informal working arrangements. In this chapter, social science research contributions from the digital business ecosystem project are drawn upon to develop a preliminary framework for supporting discussion and further research around this topic.

Introduction

The policy vision for digital ecosystems is to use the latest developments in technology infrastructure design, to create a framework for innovation that will enable small and medium-sized enterprises (SMEs) to cross the digital divide, thus stimulating regional development. The innovation and diversity inherent in the business models and practices of SMEs has the potential to provide Europe with a groundswell of new products, ideas and services. However, for this source of innovation to be fully mobilised, the right regulatory, technological and social conditions need to be created. However, in seeking out the ‘right’ regulatory, technological and social conditions, a central paradox is opened up. Diversity is contextual in that environments that are themselves varied and distinct nurture it. In this respect, what constitutes ‘ideal conditions’ for growth in one environment may prove obstructive in another. Therefore, formulating a template for governance that puts in place the ‘right’ conditions for ecosystem-based innovation and which also supports the diversity inherent in the business practices of European SMEs constitutes a significant challenge.

In this paper, the role of governance is considered in the context of digital ecosystems and a preliminary framework for supporting discussion and further research around this topic is outlined. Social science research carried out as part of the Digital Business Ecosystems (DBE) project is drawn upon to elicit insights into regulatory, constitutional and technological aspects of digital ecosystems governance. From this, a number of different ‘dimensions’ are proposed according to which the topic of ecosystems governance can be understood. The significance of these dimensions can only be touched on here, but in developing them, a basis for thinking about and analysing issues of digital ecosystems governance is provided and can be further developed in future research.
1. Understanding the role of governance

Governance refers to the constitution of relationships between different social groups and the processes of decision-making through which rights and responsibilities are established and defined. Traditionally, the term ‘governance’ has been used to describe the relationship between a government and its people or alternatively, the relationship between a company and its shareholders - the latter known as ‘corporate governance’ (Coyle 2003; Benn and Durphy, 2006). Over time, the meaning of governance has been extended to include all aspects of civil society, not simply those pertaining to central government or large companies (Ostrom, 1983). More recently, as understanding has grown of the choices inherent in the design of new technologies, governance is also used to describe technology procurement and the way key technological relationships and dependencies are established between technological products and systems purchased by an organisation (Thomas and Ranganathan, 2005).

One of the analytical challenges of understanding the role of governance is that it is comprised of characteristics that are deeply context specific, yet it focuses attention on principles and dimensions that have a generic or universal quality, such as duties, rights and responsibilities. In addition, the spectrum of decision-making structures, events and routines to which it can refer are far-reaching; from formal voting mechanisms to informal consensus building, governance can be understood to be comprised of a range of different practices and ‘working rules’ (Mansell, 2006). Together these rules and practices constitute a basis for coordination and an associated culture of meetings and communication (Darking, 2006). At the formal end of the spectrum, legally constituted entities and relationships bind and characterise relationships. However, the significance of informal means of coordination should not be underestimated. Informal environments afford flexibility with reduced organisational overhead and less reliance on formal contracts. In a business context, this flexibility can allow smaller companies to respond to customer needs in an agile and timely way. It can also create conditions of trust that facilitate the transfer of knowledge between companies and co-workers (Gow, Elaluf-Calderwood and Tsatsou, 2005).

Another analytical challenge is that, from a governance perspective, regulatory, technological and organisational frameworks cannot be studied in isolation from one another. Each of these frameworks can alter the basis according to which interactions take place; therefore alterations to one can have consequences for each of the other. It is therefore necessary to consider regulatory, organisational and technological dimensions both respectively and relative to one another, when considering questions of governance.

2. The digital ecosystems context

There are several key characteristics that have an important bearing on the underlying logics that shape the governance and coordination requirements of digital ecosystems. The most significant characteristic is the policy vision and focus of digital ecosystems, which is firmly centred on SMEs and regional development (Nachira, 2002). This emphasis acts as an organising principle in all decision-making processes relating to the DBE infrastructure. Similarly, the distributed and open source philosophies that are characteristic of DBE technology design and infrastructure development also play a significant role in the ecosystem vision. A further constitutional aspect of the DBE is the membership and participation conditions applied to stakeholders, each of whom have clear yet diverse interests in ensuring the sustainability of the DBE. Guaranteeing a balance of interest amongst diverse stakeholders – especially where those stakeholders are of varying size (i.e. a small company and a large corporation) - is of critical importance if digital ecosystems are to
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maintain their orientation towards supporting SMEs. For stakeholders to understand themselves as having a voice within governance and decision-making processes, an open, inclusive and transparent culture of meetings and communication needs to be established. Internet technologies and open communication forums offer an important vehicle for achieving such transparency (WGIG, 2005).

Aligning interests around common goals and ensuring that infrastructure development remains attuned to the needs of SMEs and regional development will have a fundamental impact on the level of trust and credibility associated with digital ecosystems. Trust, credibility and attunement were identified as fundamental to the specific e-business practices involved in using the DBE and in the continuing engagement of SMEs (Darking & Whitley, 2005; Gow et al., 2005). These attributes are particularly relevant given that use of the DBE involves a high degree of knowledge sharing with respect to business models and in terms of engagement in open source development. In establishing credibility and ensuring that engagement strategies were attuned to the needs of regions and SMEs, results from DBE regional analysis highlighted the diversity that exists between regions. Identifying relevant sectors, communities and organisations with which to engage was a region-specific task from which individual strategies could be derived, but from which no single model for leadership could be defined (Passani, 2005).

In addition to the coordination of regional engagement, the developer community who are responsible for maintaining and developing the DBE code base also require a basic framework for carrying out their responsibilities. At present, the developers act as a distributed group working under the leadership of two individual ‘synchronisers’. This lightweight level of coordination and integration was designed in order to keep organisational overheads to a minimum, thus enabling the sustained, voluntary engagement of developers beyond the end of the project (Darking 2006). The code base also requires the protection offered by licensing, in this case, the General Public and Creative Commons licensing that currently dictates the use of DBE knowledge and code. As well as licensing arrangements relating specifically to the code base, the DBE project also developed a regulatory framework, which aimed to provide basic legal resources necessary to enable SMEs to carry out business via the DBE infrastructure and included an automated process for contract generation. The significance of this framework in acting as a resource to support SME e-business interactions was such that its coordination and design constituted an area of governance research in and of itself.

The de-centralised, distributed design philosophy that underlies the way in which the DBE infrastructure is maintained and developed constitutes another defining characteristic. This ‘meta’ approach to infrastructure development is designed to reduce lock-in and dependency, pushing choice and decision-making power away from the centre. The role of open source development methodologies and modes of organisation is a central requirement with respect to attaining this end. Finally, one of the most innovative characteristics of digital ecosystems is its use of biologically-inspired algorithms to support the distribution and composition of business services.

3. Dimensions of digital ecosystems governance

Drawing on the key characteristics of the digital ecosystems context outlined in the previous section and the observation that governance involves a spectrum of processes, rules and interactions made in the introductory section, six ‘dimensions of digital ecosystem governance’ are outlined. Integrating key findings from social science research carried out as part of the DBE project, the table below links characteristics of the digital ecosystem
context together with dimensions of governance. Cutting across organisational, regulatory and technological frameworks, these dimensions should be considered as inter-related and at times over-lapping concepts for organising further research and discussion on the topic of digital ecosystems governance.

<table>
<thead>
<tr>
<th>Characteristic of digital ecosystems</th>
<th>Dimension of digital ecosystem governance</th>
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<tr>
<td>Shared values, common vision, participation and membership - constitutional documents such as manifesto, bill of rights or code of practice</td>
<td>Constitution and balance of interests</td>
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<tr>
<td>Transparency, inclusion, due process, policy, procedure and accountability</td>
<td>Culture of communication</td>
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<tr>
<td>Alliance forming and regional coordination, allowing for diverse governance models and diverse membership</td>
<td>Credibility, attunement and trust</td>
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<td>Distributed template, lightweight organisation and synchronisation for aligning codebase infrastructure development; association and alliance forming</td>
<td>Organisation and synchronisation</td>
</tr>
<tr>
<td>Knowledge and technology licensing, regulatory framework for digital ecosystems e-business interactions and legal definitions relevant to DBE entity</td>
<td>Licensing and regulation</td>
</tr>
<tr>
<td>Choice of software development methodologies, technological directions and infrastructural standards; association and alliance forming</td>
<td>Technological dimension</td>
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In order to set in place the policy vision for digital ecosystem, the values and priorities encapsulated by that vision need to be embedded in constitutional documents such as a manifesto, bill of rights or other statement of common purpose. Defining the constituency to whom the bill or rights or common values apply is another important aspect of constitution building.

In terms of ensuring the operational viability of the infrastructure, there are a number of tangible areas toward which questions of governance can be applied. Questions surrounding the maintenance and development of the DBE code base constitutes one such area. Another tangible area is security; the extent to which identities can be trusted and data securely shared via the DBE infrastructure. Sharing business models is also a significant tangible area that requires constitutional support in the form of a code of practice for SMEs to ensure interests are protected. In addition to these operational questions, governance of the DBE regulatory framework is an extremely influential area of the ecosystems environment, which brings with it specific governance requirements. As a set of processes that involves consequences for the infrastructure as a whole, the evolutionary environment denotes another area that will require some form of governance or coordination.
4. Conclusion

The purpose of identifying the characteristics and dimensions above is to formulate the outline of a framework for considering issues associated with digital ecosystems governance. As more fully developed in deliverable D32.7, these characteristics and dimensions can be applied to tangible areas that arise as relevant to digital governance and coordination efforts. From a research perspective, this framework could act as a basis for formulating a taxonomical approach to exploring, setting the boundaries and assessing the relevance of issues associated with digital ecosystems governance.

The policy vision for digital ecosystems places specific demands on the creation of a template for governance. Creating organisational channels for participation and collaboration that allow SMEs to define a technological infrastructure and regulatory environment that serves their needs above all others is not straightforward. The diversity inherent in SME requirements and the regional variations as to what constitutes a credible framework for participation indicate that a distributed, de-centralised template would offer the highest degree of flexibility and attunement to local needs. Preserving the diversity of local needs and contexts has the potential to support and inspire innovation offering significant advantages to SMEs, regions and Europe as a whole.

5. References


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