

# How Fundamental Science Contributes to the Vision of Digital Ecosystems

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## Abstract

Fundamental science contributes to the vision of Digital Ecosystems by asking fundamental questions, no matter how difficult they might be. Following the design and development of a Digital Business Ecosystem reference implementation and the engagement of regional actors who confirmed the interest and the need for an evolutionary collaborative space that could facilitate the formation of business partnerships and the dynamic composition and execution of complex service chains, the Digital Ecosystems initiative must now ask itself the next set of questions: is it generating value? What kind of value? How? These questions take stock of the fact that a significant amount of value is already being generated by means and methods that do not rely on the Digital Ecosystems approach. None-the-less, If we look at the structure of the economic landscape we notice two problems that the Digital Ecosystems initiative is ideally placed to resolve, one rooted in computer science and the other in social science: (1) the most abstract and sophisticated aspect of the digital technology underpinning e-Business interactions, the “nervous system” of the digital marketplace, is in the hands of a few providers in the form of centralised business process transaction managers, which limit the ability of small firms to form new partnerships autonomously and privately and therefore put a cap on market growth and dynamism; (2) the area of greatest economic growth potential, the Knowledge Economy, is hampered by defensive and outdated IPR norms and by a poor understanding of the role of social interactions as an amplifier of the construction and distribution of knowledge capital. In Digital Ecosystems research social science, computer science, and natural science work together to understand these phenomena; the dynamic, distributed and evolutionary architecture of Digital Ecosystems; and the collaborative, regulatory and governance practices of distributed socio-technical systems that can realise these new forms of economic production in the Knowledge Society.