



## "Innovation Hot Spots": Clusters of Business and Spatial Development

By Ioannis Katsikis, Doctoral Candidate

Fast-growing, geographically and industrially clustered firms are becoming an increasingly important factor for innovation and urban or regional development. Coined by researchers R. Poudier and C. St. John (1996) of the Clemson University, USA, the notion of Innovation Hot Spots is today frequently employed by policy makers, regional and local authorities searching to promote growth and development in a region, as well as by business leaders searching to identify attractive locations for their businesses. An innovation hot spot:

- o Concentrates competence and innovation capability in a specific product or service business;
- o Consists of a cluster of firms in complementary industries serving that product or service business;
- o Maintains high competition between an important number of firms within each of the complementary industries;
- o Presents a high rate of new venture creation (start ups and spin-offs);
- o Presents favourable dynamics of co-evolution, or, more simply speaking, integrated development and reciprocal support between firms, industries, institutions, universities, public policies and political initiatives;
- o Provides an environment with superior quality of life attracting and maintaining highly qualified workforce in the region.

As a result of the above conditions, innovation hot spots enjoy rapid growth, leading to job creation, knowledge development and, in the best cases, sustainable urban expansion.

Some well-known innovation hot spots today are Silicon Valley with Information Technology and Information Systems, the Dublin region in Ireland for electronic components and business services, the Milan region in Italy with industrial design, the Geneva - Zurich axis in Switzerland for Biotechnology, the Amsterdam region in Holland with cut flowers, the Linköping region in Sweden with aviation industry, and the Basque region in Spain with automotive components. New innovation hot spots also emerge rapidly in India, China and Russia, and some of the most attractive in IT- and Telecom-related products and services already exist in Taiwan, Singapore and South Korea.

First and foremost, the focus on hot spots of clustered firms and organizations provides a new and more dynamic perspective on business growth compared to the traditional focus on branches or sectors. Further, in terms of innovation systems (c.f., e.g., Carlsson et al., 2002; Chung, 2002; Mualert & Seika, 2003; Porter & Stern, 2001) the innovation hot spot is situated in the intersection between national, regional and industrial innovation systems. Hence, it can combine the best of:

- o National support for basic research and venture funding,
- o Regional development incentives, transport and communication infrastructure, access to qualified workforce and access to a local market,
- o Privately funded and driven R&D within established industry structures.

In view of the socio-economic importance of innovation hot spots, it is in the interest of countries, and regions in particular, to promote the development of such clusters of dynamically evolving businesses and institutions. The European Trend Chart on Innovation reflects this concern. The objective of this initiative is to identify the European Union's most innovative firms, sectors and regions in order to better understand how favourable conditions for innovation hot spots can be developed.

### The Athens-Attica Region in Greece - An IT Innovation Hot Spot

The most recent European Trend Chart Reports (2004, 2005 and 2006) present Greece among the top innovation leaders in the computer services sector in Europe. Computer services enjoy a high knowledge creation and knowledge diffusion intensity, meaning that the hot spots exploiting such services position high on an innovation intensity scale (ETCR 2004), something that provide additional benefits to the regions hosting such industries. More specifically, the leading position of Greece in the computer related service activities is translated through the country's lead, compared to the other EU countries, in:

- o Number of SMEs cooperating within the sector,
- o Innovation expenditures,
- o Share of firms that receive public innovation support,
- o Gross investment in machinery and equipment,
- o R&D expenditures, and
- o Growth rate of employment.

The IT sector in the Attica region, which includes the greater Athens area and represents about 4 million people, concentrates competence and innovation capability in products and services, creating new business opportunities and contributing significantly to employment growth. As emphasized in the Federation of Hellenic Information Technology and Telecommunication Enterprises reports, growth has been boosted by the Information Society Program and the Olympic Games, in which the contribution of technology was of great importance (SEFE, 2004). The IT and Telecom sectors are expected to keep up their high growth momentum with IT services being the sub segment with the biggest growth.

Consulting, implementation, operations and support services are all likely to enjoy similar growth since they are complementary industries forming the Attica IT innovation hot spot. This gearing-up of a wide range of players in the ICT cluster is a key characteristic of sustainable growth. ICT expenditure in Greece now stands at more than 5% of GDP. As a growing industry, it attracts more and more qualified human capital. It is estimated that over 100,000 people are already employed in more than the 400 ICT firms in the region.

Moreover, the Attica region presents a favourable macroeconomic environment characterized by high rates of development, increase of consumption and investments. In parallel, the necessity for modernization of Greek firms leads them to privilege investments in new technologies. European Union's Grants, through the 3rd Community Support Framework (2000-2006) and the Information Society Program in particular, result in the dissemination of the "Information Society" concept in Greece - in public administration, firms and in the population itself.

### Maintaining the Dynamics in the Hot Spot

Research conducted within the InnKnow Center is preoccupied with analyzing and proposing frameworks for maintaining the dynamics in innovation hot spots. There is a significant risk of rise-and-fall patterns occurring for innovation hot spots, leading to former hot spots transforming into "blind spots", and core competencies developed turning into core rigidities and cultural lock-in (Poudier & St. John, 1996; Leonard-Barton, 1992; Christensen, 1997). When this happens, firms fail to renew their resource base, strategies and structures, leading to a failure to adapt to environmental changes.

Several academics and practitioners (e.g., Nelson, 1995; Edquist et al., 1998; Woolthuis et al., 2005) argue that declining hot spots might be revived by local economic development policies designed to stimulate R&D including:

- o Training of the local labour force,
- o Business support services to guide reorientation and restructuring efforts,
- o Public sponsorship to encourage joint ventures and alliances,
- o Effective management of the local infrastructure,
- o Development of science parks.

Nevertheless, institutional support interventions may turn into artificial breathing, which only prolongs the pain of an uncompetitive business infrastructure. As highlighted by many researchers (e.g., Scott, 1992; Poudier and John, 1996; Carlsson and Jacobsson, 1997) collective efforts by policy makers and communities to guide hot spot behaviour may finally lead to isolation of the hot spot from real competitive forces and to encourage sameness among hot spot competitors. In order to remedy this risk, important factors for sustaining an innovation hot spot include:

- o The development of entrepreneurial spirit within all spatial dimensions, i.e., firms, organizations, industries, regions and countries.
- o The integration of local knowledge and local resources in the innovation processes.
- o The co-evolution of innovation dynamics between firms, industries, institutions, universities, public policies and political initiatives.
- o The ability of firms to switch partners and reduce dependence on certain dominant organizations (not only at the country level but also in the global market).
- o The capability to respond to market trends and consumers needs.
- o The development of capabilities (not only technical but also organizational) lying outside the existing structure of firms' skills.

### The Future of IT Hot Spot in the Region of Attica

After the Athens 2004 Olympic Games, the IT sector has succeeded in keeping up its growth momentum. It has increased its contribution to employment through more job creation and through the geographical expansion and formation of cross industry and international partnerships.

The major field for development remains the software industry. The most important markets for future development still include the public sector, manufacturing, banking services, food and beverages, pharmaceuticals, health and insurance services. Major products with remaining high growth potential include ERP and web applications, data bases and CRM, internet and security applications.

Finally, the major opportunity for future development can be the enlargement of the European Union, where Greece enjoys a strategic positioning as a trampoline for Balkan business expansion and the dissemination of IT in sectors of the economy where the need for developing technology is large, such as in agriculture and tourism.

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