Strengthening Self-Renewal Capacity in the InnoSteel Platform in Hämeenlinna, Finland

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1. INTRODUCTION

The rise of the knowledge-based economy has increased the role of innovation and exchange of ideas as sources of competitiveness and has in that way also affected policymaking. Technological developments, globalization and political processes of increasing global competition and network-based co-operation are leading to acceleration of technical and economic change. There is no sign of the dissolution of national borders that is so often mentioned in globalization discourse; in controlling globalization, the role of the public sector has become more prominent. Essential knowledge is often exchanged and created in a variety of co-operative spaces formed by a variety of both national and regional actors. National or regional politics can have an effect on attractiveness even when it is not rooted in national or regional characteristics per se, but in high-quality professional opportunities and innovation environments. By enhancing the attractiveness of innovation environments through regional and national policy incentives, it is possible to support the creation and development of high-quality organizations that attract also knowledgeable people from beyond regional, and even national, borders. Therefore, unlocking the capabilities to create, combine, adapt and attract are crucial elements for the success of the local innovation system (See the LIS research reports\(^1\), Lester and Sotarauta 2007, Srinivas, Kosonen, Viljamaa and Nummi, forthcoming).

Learning new skills and capabilities as well as improving the old ones have become a critical factor for successful innovation networks as old experiences do not necessarily apply in the new learning economy. New technologies overcome many place-specific restrictions related to distance

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1 The Local Innovation Systems Project (LIS, 2002–2006) investigated cases of actual and attempted industrial transformation and the role of universities in that transformation in about 23 locales in the United States, Finland, Japan, the United Kingdom, and Norway. The LIS Project aimed at developing new insights into how regional capabilities can spur innovation and economic growth and how new models of innovation-led industrial development can be developed. The research partners in the project consisted of the following research groups and institutions: MIT Industrial Performance Center, (USA); Sente, Research Unit for Urban and Regional Development Studies, University of Tampere, (Finland); Helsinki University of Technology, (Finland); Center for Business Research, University of Cambridge, (UK); and Rogaland Research Institute, (Norway).
and accessibility as well as local absorptive capacity, human capital aspects and cultural views. Similarly, to overcome the localization restrictions, public knowledge-oriented organizations tend to form co-operation spaces, forums and arenas to link national and regional administration, R&D organizations and business life together. Universities, for example, whose very existence as institutions of learning and knowledge creation is important in this complex interplay of different types of transactions and interaction, now find themselves on the front lines of a larger struggle to square the circle, as economic activity becomes both increasingly globalized and increasingly knowledge-based. Therefore, an important indirect role for universities is to serve as a public space for ongoing local but globally linked conversations about the future direction of technologies, markets and new services. Building globally attractive innovation environments requires policies focusing on the “human aspect” of the innovation environment (Gertler and Wolfe 2004).

Recent tendencies towards geographical, technological and intellectual agglomerations often occur in larger metropolitan areas that are facilitated by developed knowledge infrastructure, a wide variety of industries, technologies, clusters as well as regional entrepreneurship. In a region with a thin institutional and technological background, certain clusters tend to develop in a more isolated direction and are therefore sensitive to global market changes and to the movements of international capital flows. These types of regions can be called less-favoured regions, as is the case in the Hämeenlinna region (Finland). The study focuses on the basic premise that the gap between the promotion of innovativeness and the often poor implementation of various policies and managerial intentions cannot be removed simply by creating better-planned strategies, tools or institutions, particularly in the less-favoured regions.

The aim of this study is to analyse how innovation-oriented policy platforms take shape as spaces for a self-renewal capacity and how a specific platform enhances the continuous renewal of innovativeness and entrepreneurship of the partners involved. The general idea of the study is to develop a framework for self-renewal capacity in a traditional but rapidly diversifying and evolving technology-based manufacturing cluster, which enhances its knowledge environment through creating local knowledge space, public–private R&D institutions and consortiums and, moreover, local and national partnerships within global knowledge networks. Therefore, its special interests lie in finding out what the main processes of self-renewal are in such a region and in a certain traditional industrial sector, how those processes are linked to each other and what kind of platform of intention and emergence they form. Consequently the study is searching answers to the following question:

- Is it possible to develop regional and/or local development policies that foster innovativeness and regional partnership for traditional industry agglomerations in the form of a development platform with multiple actors and institutions?
- Furthermore, how can these policies ensure that regional actors have tools and possibilities to renew their own policies?

The study tracks the public–private partnership processes in which traditional industries reformulate their own technological and territorial position through commonly perceived and interpreted local innovation platforms. The study also tracks the various partnership processes in which traditional industry with company sizes ranging from small engineering offices to a European giant reformulates its own technological and territorial position through commonly perceived and interpreted regional innovation platform (policy platform) in its search of enhanced international competitiveness. The study is based on written material collected from national, regional, local and EU sources as well as from 22 thematic interviews carried out in the spring 2007 in the Hämeenlinna town
region (NUTS 4). The study is linked to the Research Unit for Urban and Regional Development Studies SENTe project «Self-Renewal Capacity of Clusters: A Three-level Analysis of Resilience and Innovation Policy (SERE)" and its sub-project "Creative Spaces as Stimuli for Self-renewal in Helsinki, Hämeenlinna and Oulu [2006–2008]".

2. **THE HäMEENLINNA REGION AND THE METAL CONSTRUCTION INDUSTRY**

The regional context of the study is the Hämeenlinna region, although both industrial development platforms serve the development needs of the other two Häme regions, Forssa and Riihimäki. In this study, the town region is defined generally as a *less-favoured region*, as the region is, by definition, trying to compensate for the economical and institutional differences and disparities that Finnish regions so often face in strengthening their innovativeness and competitiveness in business and industries operating mainly on global markets. Commonly this type of region is a non-university town region and the knowledge infrastructure industrially based or institutionally thin (see Kosonen 2006, 2007 and forthcoming, also Harmaakorpi 2004, Harmaakorpi and Melkas 2005, Hassink 2005, Landabaso et al. 1999, Morgan 1997, Virkkala 2003.).

In the recent European Urban Audit Report called *The State of European Cities Report* (2007), the European regions and their main cities were classified into three major groups: a) regional poles, b) specialized poles, and c) international hubs. The town of Hämeenlinna was not amongst the studied poles; however, it may be noted that the classification of *regional market centres* is well appropriated in this matter (x-xi, 77–80). These regional poles have the following main characteristics: a) they are small or medium-sized cities with a centuries-old history, b) they have a diversified economy, and c) they tend to have large manufacturing sectors in traditional areas. Therefore, they tend to have less clear power sectors functioning as driving forces for *economic transformation and change* and causing a below-average GDP per capita and resulting in a below or average share of highly qualified workers and higher education services. Regional poles are important to their regions as centres, although they used to have, and still have, extensive hinterlands. Their economic (and cultural) importance, however, tends to be thin in the national or European context (ibid. 77–78).

The same applies in the case of the Hämeenlinna region. There was a visible demand situation for the technology park operator and overall investments for innovation environment for various industries in the Hämeenlinna region at the end of the 1990s. In addition, the policymakers realized that the status of the town region in the national context was weak. An example of this is the position of the region in the matrix of the Finnish cities and towns – Hämeenlinna had not reached the growth and competitiveness level of the main growth cities in Finland.

The Hämeenlinna town is a regional pole for the Häme region, an administrative nexus of the Southern Finland district (NUTS2 region) and headquarters for some administrative and legislative operations in southern Finland. At the same time, the Häme region is the main region for the metal manufacturing and traditional manufacturing sectors in Finland together with the capital region (NUTS3 regions). In 2006, the Hämeenlinna region (eight municipalities, the town of Hämeenlinna being one of these) had a total of around 90,500 inhabitants, 35,500 jobs and around

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2 The statistics presented in this chapter are gathered from the following sources: 1) « Häme puntari service » by the Helsinki University of Technology, Lahti unit; 2) Statistics Finland, ToimialaOnline; 3) The Häme Regional Council, reports and web-services; and 4) TETRA – preliminary liquidation proceeding report for TEKES technology programmes’ proceedings in the area of industrial steel construction, Publications of the Häme Regional Council V:85, 2006.
5,300 plants, offices and places for businesses. From the total number of inhabitants in the town region, the majority (53%) live in the town of Hämeenlinna (established in 1639). The population growth in the town region has been rather steady for 10–15 years; the population growth has been about 3.3% between the years 2000 and 2006. The equity ratio of workplaces is at a good level, but the unemployment rate has stayed at a relatively high level (approx. 10% in 2005 and 2006).

Recently the higher education and research system in the Hämeenlinna region is described as being thin and fragmented (Hämeenlinnan korkeakouluohjelma… 2002). The argument is based on the fact that the region does not have an independent university, the existing university filials are small and unrelated by both focus and location. However, the region has a strong local polytechnic, the University of Applied Sciences (HAMK). Furthermore, the region is lagging behind other regional poles and NUTS 3 regions in the volumes of R&D investments. Investments made in the higher education and research sector in the Hämé regions cover only 1.5% of the national investments in the same sector (around EUR 82 million in 2006). The private sector investments correspond to only 1.1% share of the R&D investments in the private sector nationally. The share of total R&D investments made in Finland for the regions was therefore around 1.4% in 2006 (Figure 1). (The Finnish Funding Agency for Technology and Innovation; Tekes R&D funding statistics 2006 and 2007, [updated 1–2/2008], Statistics Finland 2007, StatFin databases 2007, The Federation of Finnish Technology Industries, 2007 and 2008).

Despite the low level of R&D investments made in the region, the general economic growth has been more visible in recent 4–5 years after a slight drop back during the years 2001 and 2002. The recent growth can be seen in the number of new enterprises (from 115 new firms in 2002 to 281 new firms
in 2006) and the development of the turnover figures of the industries and businesses (Figure 2). Especially the fields of thin layer production and metal structures manufacturing have grown regionally\(^3\). These fields follow the global trends which challenge the traditional production in similar ways all over the world. Most of the production is export-intensive, either in the form of partial delivery and subcontracting or as the whole system provided applications (Ministry of Trade and Industry, 2005, Federation of Finnish Technology Industries 2007, Regional Council of Häme/TETRA 2006).

![Turnover / staff, all industries](image)

**FIGURE 2.** Productivity growth in all industry sectors in the Häme region. (Source: Hämeputuri and the Helsinki University of Technology – Lahti Unit.)

Of the total employment in industries, the metal manufacturing sector covers around 5,000 jobs of the total of 7,100 jobs in 2005, and around EUR 1,300 million of the total turnover of over EUR 2,000 million of the whole industrial sector (e.g. construction, food industries, machinery and vehicles, metal manufacturing). Furthermore, the strong level of exports and rapid change in marketing, ownerships and other forms of internationalization, producing, networking (forming alliances) and an increased need for highly skilled professionals from all over the world have changed both the macro and micro environment of the local industries within an exceptionally short period of time. The share of SMEs is notable, of the total number of around 1,400 companies (or divisions), 85% are SMEs. This is perhaps the main reason why the R&D investments in the sector cover on average only 1% of the turnover (Ministry of Trade and Industry, 2005).

However, this cannot be explained by the absence of research partners, as all the Finnish universities of technology (Helsinki, Tampere and Lappeenranta), and most of the polytechnics, especially in Hämeenlinna, Turku and Seinäjoki (called the universities of applied sciences in Finland) and VTT Technical Research Centre of Finland are involved in research projects with industry. Also the major funding institutes like TEKES have launched programmes or tools for the sector. There is

\(^3\) From the national level point of view, the whole industrial metal construction sector reaches a gross value of about EUR 1,500 million, of which exports cover around 20%. The biggest customers and end-users are machinery, process, electronics and marine industries, including ship building industry, etc., and the construction sector as the biggest single sector (e.g. the metal constructed warehouses from aluminium or steel reaches the level of 60–80% of all stock houses). The share of gross value for the construction sector is around 1/3. Company classifications vary from engineering and architect offices to construction companies and component providers to metal manufacturing. In total, the industrial metal and steel construction sector employs over 11,000 people, mostly in the regions of Uusimaa (the capital city of Helsinki) and Häme (the cities of Hämeenlinna and Lahti).
also a set of collaborative development and training centres or testing laboratories, etc., established in locations with strong company or division locations and polytechnics. These are, for example, InnoSteel Factory Oy (in Hämeenlinna), JaloteräsStudio, Steelpolis, Elme Studio, and Koneteknologiatekkeskus Turku Oy. In this study, the focus lies on the InnoSteel Development Centre.

As the sector is seen to be important not only regarding regional and national competitiveness, but also at the European level, for example, the European Commission has launched (2004) a specific platform incentive (ESTEP) for the steel sector. Basically, constructing with steel and other metals is the most common in Germany (in Europe), also in the UK, Spain and Italy, and the idea of using steel as a construction material is rapidly growing internationally. The country that has been developing the steel construction sector the most to increase the share of R&D, efficiency, the sustainability (environment aspects), usability and overall competitiveness of the sector, is the UK with its specific programmes and action plans launched in the 2000s.

3. **The conceptual background of the study**

In the contemporary knowledge-based economy with a constant and even urgent need to renew itself, the actors involved in strengthening local innovation environments are supposed to renew the local set of capacities as well. Knowledge-based and increasingly open economies with multilevel networks, organizations, the fusion of technologies, business operations and R&D alliances are highly complex and evolving but require talented workforce and high-quality production (Scott 2006, Asheim and Coenen 2005, Asheim/EC 2006, Cooke 2004, Cooke and Schwartz 2007). This fusion increasingly includes knowledge from various technology and competence bases, knowledge sources, various institutional settings, organizations and industries in a very intertwined way, which has recently been referred to as a search for related variety (Asheim and Coenen 2005, Asheim/EC 2006). Lambooy and Boschma (2001) proposed that a ‘regional history’ determines to a large extent the available options and probable outcomes of local policy making while building up local innovation environment. According to Lambooy and Boschma (also Asheim/EC 2006), the previous and current institutional base in a region is important in broadening the region’s knowledge base by attempting to stimulate new fields of application, new clusters and new industries. Therefore, a regional policy also evolves and, at its best, renews itself by capitalizing on region-specific assets and resources added with access to global knowledge pools. (Asheim and Coenen 2005, Asheim/EC 2006, Lambooy and Boschma 2001).

The framework of the ‘self-renewal capacity’ of platforms takes the institutional evolvement and renewal to a further stage. At the end of the 1990s, Ståhle studied the self-renewal capacity of single organizations, and by doing so, underlined in 1998 how "the self-renewal capacity refers to overall capacity of a (single) organisation to master changes in its strategies, operations and knowledge." A capacity refers to a maximum performance within an accessible set of resources, connections, individuals and cultural aspects that a system can construct and perform (ability), as well as the power (capability) of receiving and holding ideas, information and knowledge. Hence, if capacity refers to an ability to construct, perform, produce and connect factors that are essential to regional innovation platforms, the self-renewal capacity in an innovation platform may be defined as a set of capabilities targeted at renewing elements and actors in the platform in the form of a continuous and emergent process. When having to face future crises, those with a wider capacity of the self-renewal may recover from the crisis better (Saarivirta 2007). Sotarauta (2005, also Saarivirta 2007) has specified that the five functions of the self-renewal capacity are based on:

- Exploitation
- Exploration
In this study, self-renewal capacity represents a set of platform specific processes of exploration, exploitation (sometimes referred to as problem-solving, see Lester and Sotarauta 2007), absorption and integration together with strategic approaches and specific development leadership and power that can be intentionally designed and constructed but that are open for emergent ideas and linkages to global knowledge networks. (Sotarauta 2005, Sotarauta & Srinivas 2006). Of these, exploration is a (research) journey to a dimension where one could find something radically new or the journey may not turn out to be the most successful one. Exploration is seen as searching for new hunting grounds, questioning the unquestioned themes, expanding and searching for unseen possibilities, resources, competence and partnerships. After exploration, new ideas, knowledge, for example, will be exploited. Normally, exploitation means using existing information, knowledge, processes, products, etc. (See e.g. Holmqvist 2004, Sotarauta 2005, Sotarauta & Srinivas 2006).

Absorption, by definition, means the ability to recognize the value of new, external information, to assimilate it and to apply it to commercial ends (Cohen & Levinthal, 1990). According to Saarivirta (2007), successful firms know how to absorb the essential from their environment. In the contemporary knowledge economy, this inevitably means also the capability to recognize changes in the global markets and knowledge networks. Integration is seen as formulating shared interpretations and fostering open discussion in the shared arenas, forums, programmes, advisory boards, etc., and in other public spaces. Strategy and leadership come into the same picture by formulating an applicable and shared strategy and by updating processes of the strategy and vision. The elements of the self-renewal capacity can be viewed in Figure 3.

The urban and regional labour market tends to be flexible, fluid, competitive but often insecure with their many elements of temporality, circulation, part-time or freelance forms of work. Inter-organizational tasks are organized and co-ordinated in temporary collaborative work groups, as project-oriented teams (Grabher 2001, 2002 and 2004, Glückler 2007) or temporary clusters (Maskell and Kebir 2005, Maskell and Malmberg 2007). The idea of interactive, collaborative and often informal spaces, or perhaps the ‘cafeteria effects’, basically lies on the simple notion that a certain milieu or agglomeration
with closely working actors and individuals can be vibrant and culturally lively with social contacts and interaction in the sense that there are a lot of useful, informal and unplanned contacts going on simultaneously and continuously, which makes it easier to share information, interpretations, inspiration and motivation among the networks of communication (e.g. knowledge networks) and information linkages internal and external to that milieu (Cooke 1998 and 2004, Morgan 1997, Bathelt 2005, Bathelt et al., 2004, Maskell and Kebir 2005, Maskell and Malmberg 2007, Lambooy 2004).

The production aspect, as Scott highlighted in his work in 2006, refers here to work typically occurring in extended networks and arenas (public spaces) of firms and other productive organizations, often dominated by large corporate entities but also influenced and incorporated by small, flexible and adaptive organizations fast in their transformation, imitation and learning. At its best, by attracting various organizations, skilled professionals and R&D collaboration from other industrial sectors, technology areas and R&D institutions from other regions, the innovation network is able to perform so that new innovations and productions modes emerge. Therefore, we may expect innovation platforms to enhance continuous renewal and innovativeness by diversifying and thereby evolving medium-tech industrial clusters or traditional sectors, if they are connected to the far more advanced sectors, branches and industries in the regional economy. The existence or creation of “public spaces as shared arenas” are the crucial element of the economic development of sort of disadvantaged regions or regions without clear growth aspects (see Healey et al., 1999, Bathelt 2005, Bathelt et al., 2004, Scott 2006, Amin and Thrift 1995).

Platform building

The focus of the study is on the InnoSteel Platform as a space for knowledge sharing in the form of open arena for the members of local metal construction (innovation) network. The idea in the InnoSteel network is to collaborate and enhance the elements of the local innovation environment and thus to increase the level of (industrial) innovation services and internationalization of the cluster. The intertwining collaboration with various types of competencies, institutions, technologies and industries and other businesses is recently defined as a (policy) platform development.

In the regional context, a policy platform is seen to be an intertwined complex of various actors and organizations, also municipalities or regional agencies, which takes into account the local (economic) development aspects and constructs the local innovation environment, not only some technology sectors. The foundation of a platform policy represents a strategy based on the shared and complementary knowledge pools and sources of competence (Asheim/EC 2006). Furthermore, the platform approach focuses on how knowledge is distributed and accessed across various sectors, disciplines and groups of actors in distributed knowledge networks. Generally there are several types of interpretations of the platform formation and the aim of the platforms:

- **Political platforms**, literally taken policy platforms represent this interpretation. According to this view, a platform stands for a declaration of principles and policies adopted by a political group or a candidate. This type of declaration is usually presented in the form of a written intention or programme which is subject to change in the course of political discussions (Merriam-Webster OnLine Dictionary, 2008).
- **Discursive platforms**, types of discussion forums. In the case of constructing innovation environments, these platforms are formulated and interpreted as forums for pre-clustering collaboration or a place or an opportunity for public discussion about a common, innovation and knowledge-related theme. More specifically these tend to be spaces for industry and/or technology and/or knowledge specific buzz (Harmaakorpi 2004, Harmaakorpi & Melkas 2005; Calia et al. 2007, Maskell and Kebir 2005).

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• **Technological platforms**, for combining and accumulating separate technologies to the same development base. These types of platforms are known in the media sector as production platforms. These are often targeted for developing a generic technology for several technology areas and industries, for example in embedded computing systems for mobile phones, traffic systems and vehicles and electronics. Common to European Union technology policy (Asheim/EC 2006, Gilsing & Nooteboom 2006).

• **Combined knowledge platforms**, innovation-oriented competence pools – arenas for accumulating a variety of ideas, people, resources, knowledge and competence. The very principles for collaboration are openness, varied linkages, the accumulation of knowledge and skills. (Woolthuis et al. 2005, Grabher and Ibert 2006).

Interpretations about the platform formation may be divided into two groups by their policy or technology development intentions and aims. The first two sets of interpretations highlight the platforms as spaces for discussion and exchanging ideas. In addition, these two categories suggest further actions based on changing opinions and ideas within political or theme-based frames. However, such interpretations do not imply the various qualifications, expertise, competence bases or individual backgrounds of the participants. In these two types of discussion spaces the participant may represent the same professional or enthusiastic background or thematic group. An example of this may be political groups or internet gamers in their virtual meeting spaces.

The latter two groups of interpretations represent a more targeted view towards innovation and technology development. However, between these two groups, the technological platforms rather represent action-based views or narrow technology-oriented views, while the new technology is the outcome of combining the existing technologies in new ways or creating and developing the applications based on the generic technology development amongst many companies, industries and disciplines. Meanwhile the combined competence pool represents free knowledge exchange in the form of an ‘open innovation’ theme. In the context of building up a local innovation environment, the innovation policy platforms are being built up in a more policy-oriented way than the traditional types of technology platforms like European Technology Platforms⁵, where the main issue is to gather together universities and industries from similar research areas and technologies. Also, in some European Technology Platforms⁶ the basic idea is to keep institutional affluences from intermediaries as low as possible, even in many studies their role is proved to be important (Howells 2006).

The latter interpretations highlight differences in participants’ competence areas and backgrounds by combining the differences to new knowledge. In other words, new knowledge is created through interaction and learning by different participants. Furthermore, in some examples this may mean the alliance of companies with separate core competencies and main markets but with the same development needs and intentions. In the innovation platform perspective, developing the self-renewal capacity is a sum of different actions to be taken simultaneously by various actors, sometimes rivals, at other times co-operators, but still together. Recently in Finland, a significant part of publicly supported R&D is therefore carried out in different collaborative R&D projects, mainly between firms and research organizations, increasingly focusing on business-ecology-related solutions, technical applications and testing (Nieminen 2005, Boschma and Sotarauta 2007).

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⁵ **The European Steel Technology Platform (ESTEP)** is supposed to bring together the whole European steel industry, research centres, universities, the European Commission and Member States, as well as the other European institutions and especially in this industry, trade unions because of their strong political influence. ESTEP was launched in 2004. It represents the whole major European steel industry, including ArcelorMittal, Celsa, Corus, Outokumpu, Riva, ThyssenKrupp, voestalpine AG, and the case company in this study, Rautaruukki Corporation.

⁶ One of the first EU Technology Platforms established in 2004 is the **ArtEmis** technology platform for embedded (computing) systems and intelligence. The main players in the platform are major European companies, related universities and research labs and some 14 European Member States. The company group includes ABB, AirBus, Philips, Nokia, Thales, Daimler Chrysler, and ST Microelectronics, for example.
In this study and concept, individuals in collaboration (single actors as parts of networks and coalitions) are at the core of actions. Binding the idea of the self-renewal capacity to the innovation environment discussion, we may highlight the importance of localized technological knowledge and collective experimentation and learning performance, as we may expect that, in building the self-renewal capacity, implementation occurs through individual learning processes. To enhance the local innovation and economic transformation processes, national and local development actors need legitimacy (Aldrich 1999). Moving beyond a biological metaphor for regional evolution, there is a notion that new organizations and populations need to establish legitimacy and build collective mechanisms to collaborate and compete.

4. BUILDING UP A COLLABORATIVE PLATFORM FOR THE LOCAL METAL CONSTRUCTION CLUSTER

In the Häme region the starting point of platform formation was the local awareness of the scarce resource base of individual actors. Simultaneously actors recognized the opened and widened opportunities to collaborate with the industries. The aspects which were mainly behind the shared view, or interpretation, of the need for enhanced development actions and new partnerships in the metal manufacturing sector are as follows:

- The significance of the metal industry in the Häme region was a top priority amongst regional industries,
- R&D investments in the metal industry and manufacturing were very low in the region, and the capabilities of local firms of using new technologies were not strong enough to be competitive at the global level,
- SMEs were in short of adaptability and resource base: physical (funding, premises, etc.), human (skilled professional workers, research etc) and relational (connectivity),
- SMEs were short of capabilities to utilize the opportunities for globalization. They were also unprepared for the challenges posed by fast developing economies to traditional industries and European-based construction clusters,
- Networking between supplier chains and matrixes was not open and innovative enough in business operations; the capability of firms and their networks forming new services and customized solutions based on new business concepts was weaker than those of many of their global rivals,
- Regional and local innovation environment actors were incapable to support new models in knowledge creation, production and distribution. They were unaware of the framework requirements on new philosophy in product and process development, e.g. the philosophy of open innovations, open networks and ‘distributed’ knowledge flowing rapidly over sectoral and cultural barriers.

From the industry-specific point of view, there was specifically one set of aspects that led the members of the local development network – development officers, entrepreneurs, local polytechnic representatives and policymakers (in brief, development leaders) – to think over the possibility of creating a specific collaborative system, an organizational mode and a community for strengthening the flexibility, adaptability and absorptive capacity of the metal industry in the region. Certainly the existence of one of the biggest Finnish metal production corporations (Rautaruukki) and one of its main divisions in the town together with strong and proactive polytechnic expedited the action taken in the town region. All parties were more interested in collaborating and forming cross-border type alliances than earlier. The following citation from the interviews sheds light on the discussions flowing in the discussion forums and at workplaces at that time:

"Searching for new ideas, that just should be an active way of doing things. We cannot lie still here, we have to be active and development-oriented. One way to get it actually going is to try if the company cases (in development) would work. Through these we can learn new things and experiment on our ideas. By listening to the messages of

Source: SeRe Hämeenlinna interviews (5 + 17), the Regional Council of Häme, V: 85/2006.
the company needs we are able to find out what we should do. Also, we should seek more and more opportunities
to participate in wider (national networks and programmes, for example, Tekes technology programmes to get new
points of view to things.” (InnoSteel-actor, developer)

The end of the decade witnessed an energetic period with a great number of accounts, reports, plans,
programmes, project incentives towards constructing a well-equipped innovation environment for
the major industries and business sectors (retail, transportation, construction, energy production,
food industry, tourism, etc.). In the period 1998–1999, several overlapping processes were going on
to strengthen the institutional set-up in regional development. The regional development strategy,
local vision and soft culture (way of doing things) changed towards a collaborative, cluster-oriented
and experimental trajectory. The importance of forming a collaborative space with a new possibility
of face-to-face contacts was underlined, as is pronounced in the following citation:

"In Finland, the importance of daily face-to-face contacts is visible so that the difference between a hundred kilo-
metres from the capital region to Hämeenlinna and one hundred meters from the other building to another, doesn't
really matter if there are no ‘coffee-table’ contacts. If these contacts are non-existing, then they are, and then there
has to be a different way of organizing the collaboration.” (InnoSteel actor, company representative)

The active partners were mainly the City of Hämeenlinna, the polytechnic and other colleges, and
local industries and their representatives (HAMK 2000, Teknologiakeskus Innopark 2005). The re-
gional council also contributed to the development, although its role was more that of a ‘supporter’
than that of an initiator or mobilizer, according to the SeRe interviews carried out in the Hämeen-
linna region in 2006. The local network of metal manufacturing actors includes representatives or
leaders from some 400 plants or enterprises, knowledge institutions, research units, development
agencies and funding organizations as well as local and regional policymakers.9

Before the platform was constructed and organized, there were three simultaneous phenomena
that guided the key actors seeking shared partnerships enhancing the innovativeness of traditional
industrial sectors in the region. In 2004 the main vision for the platform was formulated and
expressed in three goals: a) to become a leader in Finland in product development and testing, b) to
become a leader in training of metal constructions at an international level, and c) to develop pro-
fessional competence and product development in sheet metal products and steel construction.

"These are not any life-time workplaces and people are aware of that. They are more like ‘fertile soil’ for them, during
these functions and projects the InnoSteel developers learn more and are able to raise their own skills level at the
same time as their knowledge accumulates their understanding of the whole process. Therefore this embraces the
tradition of journeymen; there are professionals coming from higher educational units and other agencies, raising
their knowledge level as ‘journeymen’ and then being recruited to firms and other agencies through the company
cases.” (InnoSteel actor, developer)

The first phenomenon is that the regional policymakers begin the processes of establishing a technol-
ogy park, a development agency and a regional node for the Center of Expertise Programme
(national). Before the process had reached full swing, the alliance of municipalities in the region es-
stablished a joint venture for the industry and trade promoters in the year 2000, later named the Häme
Development Centre Ltd (Kehittämiskeskus Oy Häme in Finnish). Although annual or bi-annual
evaluation measures are taken together with the involved municipalities, regional economic devel-

dopment has since its establishment been directed mainly through the company and its personnel.

8 NOTE: In these citations, I have used only two categories to distinguish the interviewees, those of developers and
company representatives. The developer group therefore includes representatives from the local polytechnic, actors
‘inside’ the InnoSteel network and representatives from local development or technology agencies. This is due to
the fact that the population of interviews is rather small and the location (Hämeenlinna) even smaller, and there is
a risk of identification through the citations.

9 The sector is an important sector from the point of view of employment particularly in the Uusimaa (capital region)
and Häme regions.
The director of the development agency was chosen from outside the region, and the same applied in the recruiting process for the technology centre\textsuperscript{10} venture two years later.

"The metal sector is important in this region. This was the starting point. And very typical of these local firms is that they are very small and their R&D inputs are similarly very small from the point of view of both time-consumption and money. These entrepreneurs are able to create a lot of new ideas and have very often even established companies based on (product) innovations, but in their every-day business they tend to have very little time to create new innovations or renew the functions of the company. Luckily we are able to help them by relatively small inputs and help them to create something much bigger through this set of multi-actoral collaboration when they participate in InnoSteel activities." (InnoSteel actor, developer)

Secondly, a local institution of higher education, the Häme Polytechnic\textsuperscript{11}, also contemplated the opportunity to establish a higher-education- and development-based-technology centre or a technology park in close connection with it. The polytechnic’s intention was to co-locate this kind of centre on the same campus. As it represents the only independent institution of higher education in the entire region, the polytechnic wanted to fulfil its role also as an institute for applied research from the industry’s point of view. The Häme Polytechnic was seeking to strengthen its focus and role within regional knowledge infrastructure. Therefore, it was opening up new partnerships and collaboration modes with such private partners as industries and such public ones as municipalities and local public agencies. In addition, the institution was seeking various sets of external funding sources to add to its own funding, and therefore shared the risks of establishing new functions.

"It is for example in Teke’s interests to build up collaborative projects in which firms, universities and polytechnics participate. There have been some projects locally, where the polytechnic has collaborated together with universities located elsewhere, and Teke has funded the activities. Later on the polytechnic has organized direct educational projects targeted to firms and their personnel. So we may say that the polytechnic is utilizing the collaborative R&D projects as a sort of product development projects in which the institution is able to test ideas for educational products it is going to perform with firms later on." (InnoSteel actor, developer)

The third simultaneous process was the change of orientation towards new businesses and internationalization of the biggest industry in the town region. Certainly the existence of one of the biggest Finnish metal production corporations (Rautaruukki\textsuperscript{12}) and one of its main divisions in the town together with a proactive polytechnic expedited the action taken in the town region. At the end of the 1990s, the company faced fierce competition from rapidly growing economies such as Russia, China, Far East area, South Africa, the former socialist countries in Europe, etc. In addition, in 2003, the corporation recruited a new CEO and established a brand new company strategy. In the new strategy, the goal was to transform the business from basic metal manufacturing and constructing into customized solutions and whole system applications. With this new strategy (see Figure 4), the representatives of local plants and divisions were in a position in which they were expected to act as change agents and connectors to R&D institutions.

\textsuperscript{10} The Technology Centre started as a project at the end of the year 2001 first under the name of “Hämeenlinnan seudun teknologiakeskus Oy”, later Technology Centre Innopark Ltd.

\textsuperscript{11} Recently named the Häme University of Applied Science in English.

\textsuperscript{12} Rautaruukki Oyj, Ruukki Corporation was established in 1960 as a state-owned metal manufacturing company. The state’s ownership of the company has decreased; the company is now quoted in the OXM Nordic Exchange (in Helsinki). Its biggest owners are foreign (36.6% of the shares) and the Finnish State (39.7% of the shares) (Situation on 31 January 2008). Currently it operates in 24 countries and its turnover is around EUR 3.9 billion (in 2007). Its R&D investments amounted to EUR 28 million in 2007. The total employment figure is over 14,600 employees, out of whom about 8,000 work in Finland. The company operates in 30 locations in Finland. Of the turnover gained in 2007, about 82% came from the core market area, Finland (31%); from the other Nordic countries (30%); and from the transition countries in the EU, Russia and Ukraine together (21). Other European countries covered 15% and other countries 3% (source: http://www.ruukki.com/www/corporate.nsf/).
The Hämeenlinna plant was not threatened by a direct closedown but by major reorganization measures instead. The plant was searching for both local and interregional partners to work with the product development and ‘testing’ new ideas. The changed situation and orientation in the corporation was seen as a new opportunity for regional actors such as Häme Development Center Ltd and the Häme Polytechnic. They all together with other regional agencies and authorities saw it as an opportunity to collaborate together and to create new resource pools and testing labs to strengthen and accumulate the skills available in the region. As the plans went further, the alliance managed to attract also other companies to join the platform. The importance of local partners in the sector is pronounced in the following citation:

"Overall the development orientation in this sector (construction) underlines the necessity of embeddedness modes. Also, technical knowledge is difficult to achieve without it being distributed to many locations. There were some ideas to centralize the development processes in the same location or even in the same country. Then it would be simple and easy to lead the development processes, but then we would not be in touch with our customers’ needs and our sensibility to market changes anymore. In that case, we would need totally different mechanisms to collect the development ideas, then. These are more or less local issues in the construction business which should be solved locally." (InnoSteel actor, company representative)

The InnoSteel metal construction product development and training centre

The InnoSteel metal construction centre is a development platform and a closely interconnected development network based on providing collaborative space for product development, research and training for enterprises and other actors working in metal construction and steel sheet production. The basic idea is to bring together actors to develop, test and train new products, or processes in metal construction. In 2004 the main vision of the centre was formulated and expressed as the following goals: a) to become a leader in Finland in product development and testing; b) to become a leader in the training of metal constructions at an international level; and c) to develop professional competence and product development in sheet metal products and steel construction. To attain the leading position, the centre’s main modes of activities are searching, identifying, applying and establishing new models in production development, testing and distribution. The main organizations involved are InnoSteel Factory Oy, InnoPark Ltd testing space for prototypes (‘protopaja’), HAMK University of Applied Sciences, and Rautaruukki Corporation R&D Center in Hämeenlinna (Figure 5).
The most visible and practical near-to-customer services are provided through the InnoSteel Factory Oy operations. The main actors behind the InnoSteel idea were more or less the same key actors from the industry, the polytechnic and the regional development agency who were behind the Sheet Metal Development Centre approximately ten years earlier. The Sheet Metal Development Centre was a joint venture of public kind of the Rautaruukki Corporation and the polytechnic, located in an industrial area somewhat outside the city centre.

“The Sheet Metal Development Centre was established in the form of a project. First we had a place, then a set of development projects and then people. And I see that the InnoSteel and especially the InnoSteel Factory Oy is going through the same process and having the same challenges in the long turn as the Sheet Metal Development Centre. I also believe that, when public funding is about to decrease or end, the InnoSteel Factory will able to continue with the critical mass and knowledge of substance that it will have achieved by then.” (InnoSteel actor, company representative)

The InnoSteel Factory Oy (ISF) is a joint venture with six different voting partners in both public and private ownership. The InnoSteel Factory Oy organizes contract training with local educational institutions to introduce to the students the factory facilities with modern machinery and equipment. In addition, the ISF provides services to metal manufacturing firms directly. Local metal-manufacturing SMEs are represented at the factory directly with their company shares and voting rights. The ISF’s three main modes of operation are: a) development projects of various kinds: it organizes and co-ordinates metal manufacturing, constructing, engineering, simulation, etc., development projects; b) training: it arranges customized training courses and programmes for metal industry workers, degree and extension students and, in the future, also for professional teachers; and c) prototype manufacturing: it organizes prototype manufacturing and simulation testing through its contract-based service. These three different task sets are also highlighted in looking for what type of services the ISF provides directly to the firms:

“There are also many services for firms that they can offer in here. There are, for example, prototype and testing services for small series and single components. Also, if a firm is at a stage of technological leap, it is offered some training and testing time with special equipments and machines (that it does not have itself) as well as other types of development projects with new technologies and individual educational projects.” (InnoSteel actor, developer)

The platform also involves a great number of other partners such as the Häme Development Center Ltd, other educational units, metal and steel construction companies, The Häme Center of Expertise, related R&D units and institutions, universities, etc., in the region and beyond. The facilitator of the premises for the InnoSteel Development Center as its physical environment is the Technol-
ogy Centre Innopark Ltd, which offers all services required by companies in its local network. The InnoSteel facility and private industrial plants were its first manufacturing facilities in 2005. Later on, the Technology Centre Innopark Ltd also invests in small industry premises and office buildings in that area.

5. **Discussion: Orientation to self-renewal capacity in the InnoSteel Development Platform**

The focus of the study has been on the InnoSteel development network as an innovation development platform. Further the focus has been on the development efforts to enhance innovation processes and increase the level of (industrial) innovation services and internationalization of the steel construction cluster located in the region. Conceptually the study has been searching the answer to how the set of the platform-specific processes of exploration, exploitation (problem-solving), absorption and integration together with strategic approaches and specific development leadership and development power has been intertwined in the real action of the steel construction platform in one Finnish less-favoured region, Hämeenlinna. The preliminary findings from SeRe study in Hämeenlinna suggest the following relationships between the elements and processes.

Looking at the processes and aspects of self-renewal capacity, most of the aspects are in fact included in the InnoSteel Platform. There is a hint of exploration through international networking and the collaboration with the Finnish science universities located elsewhere. These linkages are realized both through polytechnic institutions (mainly the Sheet Metal Development Centre) and Rautaruukki R&D operations. Rautaruukki as such is involved in several large research and development projects nationally and across the EU. The most visible and practical customer-oriented services are provided through the InnoSteel Factory operations. The manufacturing SMEs of the region are represented directly in the InnoSteel Factory and in its Board of Directors. The manufacturing firms also established in summer 2007 a new industrial association as a networking tool for firms. Models, concepts and formulation of brand new solutions and testing in the form of ‘socio-technological experimenting’ are the main functions of the InnoSteel platform, whether originally intended or not.

However, the platform also faces some challenges posed by fragmentation and exclusion of key actor groups from strategic discussions, which can lead to a contradiction of diversified interests. Therefore, one may find that the integration attribute is missing or at least problematic in the current phase of the platform. The importance of a well-succeeding integration process and interpersonal relations in the InnoSteel platform is constantly highlighted in the interviews. This addresses the need for policies focusing on the “human aspect” and encouragement for “open innovation” in an innovation environment. The following list sums up the preliminary thoughts and findings arisen in the empirical part of the study:

- *Exploration* as searching for new hunting grounds, expanding and searching for unseen possibilities, resources, competence and partnerships,

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13 Technology Centre Innopark Ltd is a member of the Finnish Science Park Association (TEKEL) and the International Association of Science Parks (IASP). The Centre also hosts a regional node of the Finnish Centers of Expertise Network. The key function of Innopark is to provide premises and related service packages for industries and single firms at different stages of the business cycle, to serve as a business incubator, and to manage and implement various EU-funded projects that promote business life in the Hämeenlinna region.

14 InnoSteel Factory Oy is a joint venture also with six different voting partners in both public and private ownership.
• **Experimentation** as searching for frontier and mixed applications, solutions, technologies, knowledge and modes of work,

• **Exploitation and problem-solving** as combining the results of the experimentation and searching with existing knowledge and testing,

• **Entrenchment** as providing the accumulated (related) and applicable knowledge through embedding new knowledge to existing knowledge, conventions and collaboration modes. The process includes the modes of institutionalization and socialization but in a spirit of renewal and in an attempt to avoid lock-ins,

• **Integration** as formulating shared interpretations and fostering open discussion in shared arenas, forums, programmes, advisory boards, etc., and in other public spaces,

• **Strategy and leadership** as the formulation of applicable and shared strategy, the updating processes of strategies and visions, visible leadership needed.

In addition, the platform includes a lot of experimental and emerging opportunities which spring up when the involved actors get results and more experience from the partnerships. Similarly, in the InnoSteel platform, the company representatives tend to look for trusted alliances instead of keeping the R&D in-house or performing direct research contracting with public knowledge institutions or private R&D labs. Aldrich noted in 1999 that new organizations and populations need to establish legitimacy and build collective mechanisms and spaces to collaborate and compete. These spaces may flourish in the forms of platforms. Therefore, an important indirect role for policy platforms is to serve as a **public space** or an **interpretative space** for ongoing local, but globally linked conversations about the future direction of technologies, markets and new services.

"In the development projects, people’s individual ways to collaborate matter the most, they formulate how willing or possible the other actors see participating in the projects. In that way how attractive the projects are and how well they work are based on the relationships between the participants. These are really the main issues. But in developing the whole InnoSteel the structural issues are in the determining position.” *(InnoSteel actor, company representative)*

The findings of a forthcoming study (Srinivas, Kosonen, Viljamaa and Nummi, forthcoming) carried out on publicly funded technical projects and technology programmes in Finland suggest that the industrial participants were seeking short time-span and exploitative benefits as was expected. In addition, they very actively looked for **exploratory, difficult-to-describe new knowledge and deeply committed coalitions and research alliances within long-time spans**. In a thin knowledge environment, such as less-favoured Finnish regions, the collaborative learning and co-development process of exploration gets a form of **experimentation**, as a resource base for ‘freely associated search’ (as Holmqvist suggested in 2004) is too thin to be fully engaged in. According to interviews, one possible way to proceed from those types of knowledge circumstances is to expand the search horizon to include global knowledge networks and the constant challenging of the local actors towards experimentation and to apply suitable global examples to the local innovation environment:

"This is basically a constant search, looking for new ideas and applications from everywhere. And while looking, at the same time we are thinking about our company cases (projects) and trying to find out matching cases to solve their problems. As all the cases are applied, so we constantly think about what we learned from the previous cases, how we could utilize them further and what we could try to do differently. And then we reflect all these findings and compare them with the new applications we find and see. Therefore, I would say that our main way of renewing ourselves is to work in these projects and see what comes out from them, as they are, in principle, searching for new ways of doing things anyhow.” *(InnoSteel actor, developer)*
6. CONCLUDING REMARKS

The focus of the study has been on processes aimed at building up (constructing) innovation development platforms. The study tracked the regional partnership processes affecting the innovativeness of traditional industry in the search for enhanced international competitiveness and self-renewal capacity. In their development work including a great deal of temporality and fixed-term functions, a local innovation environment needs processes that embed created, reorganized, infused and accumulated knowledge. The key processes from empirical findings – exploration, exploitation, integration, leadership and strategy – in collaborative and interpretative spaces are relevant to the development of regional clusters. However, the early findings in Hämeenlinna strongly suggest that a process that we may define as *entrenchment* (embedding processes) and *experimentation* are relevant elements as well, at least in the less-favoured regions, due to possible shortages of related variety and thin knowledge bases in those regions. Figure 6 sums up the preliminary thoughts and findings arisen from the empirical part of the study:

![Diagram of processes](image)

**FIGURE 6.** The set of the processes of the self-renewal capacity in the InnoSteel metal construction platform

Generally constructing an innovation environment in less-favoured (Finnish regions) as a process calls for new organizational modes, new technology and innovation culture as well as real access to new technology and knowledge. In this case, the possible shortages of related variety and thin knowledge bases forced firms to seek new knowledge pools and to create new strategic alliances. The empirical findings of the InnoSteel study underline the notion that, to create local knowledge spaces and systems in a thin knowledge environment, the firms need a) *applicable national instruments* (competitive funding, legislation, educational opportunities, etc), b) *regional or local incentives and activeness*, and c) *dense global interaction*, all within the locally embedded existence of active and skilled actors as well as the advanced development culture and mobilization, often described as openness for new ideas and knowledge. Otherwise local actors may be incapable of abandoning the past ways of constructing a local innovation environment and positioning themselves to the new hunting grounds in their search of future trends, new ideas, new concepts, new questions – and new links to global innovation networks and hubs.
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