



Fostering Regional  
Innovation and Development  
through Anchors and Networks

**PROJECT FINAL REPORT**

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# Final publishable summary report

## *Executive summary*

After studying regional development models in Europe for over two years, the team of FRIDA researchers concluded that anchor firms and the networks they create constitute 'key drivers' of the European Union's 2020 growth strategy. This micro-level approach, drawing on the behaviour of individual firms and the network approach drawing on network characteristics were used to address the issues of regional development, competitiveness and network influence at different levels of aggregation (regional, industrial, national, supranational) and to derive general conclusions, relevant for the European economy as a whole and for policy-making. The project produced evidence indicating that anchor firms have the capacity to upgrade local economies and thereby contribute to a more dynamic economy in Europe overall. Looking at companies representing three industrial sectors (biotech, nanoelectronics and aerospace) in seven European regions, FRIDA confirmed that anchors can emerge in virtually any industrial setting, including those that may be considered mature or 'un-innovative'. Whether high-tech or low-tech, anchor firms have several distinguishing features that set them apart from a typical company. These features reflect the numerous ways that anchors shape new and existing organisations. According to FRIDA findings, anchor firms affect not only the creation of new organisations but also the transformation of existing ones.

FRIDA highlights the anchor's role as visionary orchestrator, triggering entrepreneurship and operating in local, national and global networks. The networking component is critical to regional development as it carries the potential for sharing knowledge and other resources among various actors on different planes. It makes sense, then, for policy makers to nurture these exchange platforms and actively encourage local companies to participate in building them.

As the researchers observe: "Simply focusing on generating more local firms is likely to generate more marginal firms. The key policy agenda is to generate high impact firms, where impact is seen at the network level, and not only at the level of the individual firm." At the same time, because innovative initiatives tend to move globally in search of knowledge, resources and opportunities, looking only at the restricted boundaries of the local cluster is reductive and likely to be ineffective as a guide to policy.

Thinking local and global at the same time is an imperative for both anchor firms and for policy makers. The importance of local interaction versus distant one becomes especially crucial over time for the cluster survival. At different stages in the local evolution the role of anchors is to keep a pipeline open to tap external opportunities and knowledge. In sum it is very important to be cognizant of the change in leadership needed across the life cycle, as the impact of the original anchor is likely to decline over time. Firms that contribute significantly to regional development in one period of time can lock it into a low performance trajectory during another. This suggests that policy should focus on increasing competition among anchors rather than selecting single anchors as regional "champions". Rather than picking winners, policy should focus on creating the conditions for winners to emerge. The early detection and support of anchor players is especially crucial. New anchors become important in declining domain for generating variety and new product/market diversification. However, detecting and supporting anchors can be difficult for policy makers.

Anchors are important as triggering actors in emerging industrial and service settings. However, anchors are also found in sectors that may seem mature and un-innovative. Very substantial differences in levels of performance are found within all sectors, and it is misleading to think that only high-tech sectors are innovative, or that all firms in high tech sectors perform well, while firms in low tech sectors perform poorly. Innovation is not just about technology, it's about coupling technology and markets, and that coupling, both inside firms, and between firms is where anchors excel. A focus on R&D, or emerging high tech sectors, is likely to overlook the huge potential of the 97% of the European economy that is not high tech manufacturing. Finally, anchors operate in different ways depending on how close the anchor and its local region are to the technological frontier. When anchor firms are working at the cutting edge of technology

they tend to undertake research intensive innovation and work as anchors by linking local networks to global knowledge networks.

The sophistication of modern economic life means that cutting edge knowledge is highly specialized and is unlikely to be fully found in local universities. Anchor firms search globally for that knowledge and not just in universities. On the other hand, anchor firms operating in marginal local economies that are a long way from the technological frontier, are likely to focus their innovative activities much more on the diffusion of well established technology, and more process based upgrading of production (for example, from undertaking outsourced production for global firms that provide engineering support). This may involve starting from low tech beginnings and is unlikely to be research intensive. However, as skills and capabilities upgrade, the process of innovation within the network is likely to change and become more research intensive. Policy to support anchors should therefore be sensitive to these differences.

## ***A summary description of project context and objectives***

The project “Fostering Regional Innovation and Development through Anchors and Networks” FRIDA aims to improve regional policy making within the EU, by advancing state of the art understanding of the importance of anchor firms to regional development and cohesion. Anchor firms are known to be increasingly important to regional development as highly entrepreneurial, multi-national firms restructure and relocate in response to the pressures of globalisation. However, there is currently a substantial gap in our understanding of the reasons for their qualitatively different impacts on different regions, how and why they assist the development of networks and capabilities in regions, and what local policies make particular regions attractive, and influence anchor firms to contribute towards more cohesion and even development. By addressing these questions, the FRIDA project aims to both improve understanding and contribute towards the effectiveness of policy making. The outputs of the project are designed to directly help regional policy-making to better anticipate and respond to economic restructuring by helping create regional governance systems that ensure less developed regions level-up to the most developed regions, rather than more developed regions levelling-down in response to the increasing freedom of movement of capital, production and knowledge. In doing so, the project aims to directly address the main points in the call and improve development throughout Europe in a way that is more sustainable, even and socially cohesive.

FRIDA develops concepts and tools for improving our understanding of the interplay of firms, networks and institutions in shaping the development of regional economies and fostering their competitive growth in global markets. The focus of the research is on anchor organizations (henceforth anchors) that are organizations that can act as drivers for the competitive vibrancy of local economies through their ability to orchestrate interorganizational networks and promote innovation across boundaries. The application domain under consideration span three locally concentrated industries distributed across 7 regions and involved in the production of novel products and processes that add value to the economy. The intention is to provide a model of development that does not simply rely on trying to replicate wholesale the conditions of existing clusters, but instead focuses on cluster formation as a process lead by entrepreneurially oriented actors that foster business development as they build their organizations and create resources and community. The history of each region, including the early conditions and individuals involved, may be unique, but there are policy prescriptions that can be discerned from examining commonalities in the path of development of successful regions.

The identification of the project objectives were driven by three general and independent research domains, which involve the interplay of anchors, networks and regions:

1. The majority of the economic discourse attempts to replicate the characteristics associated with a fully functional regional system, including such attributes as a local research university that is pro - technology transfer, an active venture capital industry, active social networks and adequate support services but historical evidence suggests these factors often lag, rather than lead, cluster formation. The scholars and the institutions envisioned the role of anchors performed by large corporations or by some local subsidiaries or labs of large firms. Industrial policy followed consistently.

Our research show two important results:

- a) The anchor role can be played by small firms or by large organizations.
- b) The longitudinal analysis shows that the anchor role is temporary and therefore at the local system level new actors are involved to take the lead overtime.

A sustainable local system, whatever is the triggering actor, needs a variety of capabilities and knowledge that only different organizations can provide. Beyond the anchor action, large organizations potentially deliver a huge amount of knowledge and capabilities arising from previous cumulated experiences and relationships. The boundaries span of their activities and the autonomy are regulated ultimately by the corporations and by corporate portfolio activities. They are locally rooted but they can leave, easily. small organizations at low in resources and capabilities but quick to act and react, and are more rooted into the territory. Only betting on one actor typology overlooks the contributions and the policy intervention of the others. A sustainable local system requires a "collective capability" that is the sum of different actions

provided by several organizations, with winners and losers and with extensive initiatives renewal. The most recent literature on regional economics confirms the trajectories emerging from our field analysis. Models of regional economic development have poorly attended the role of Anchors in the development of regional economies, and have rarely considered how Anchors actively interact with and shape their local environment. Hence key questions:

- What is the role of anchors in shaping the development of local networks and influencing regional development?
  - What kind of resources and capabilities do Anchors mobilize in order to enable local development?
2. Inter-organizational networks are widely recognized as crucial constituents for the development and growth of regions, because they help them enhance productivity, improve innovation capability, facilitate the commercialization of innovation and generate high employment. Although inter-organizational networks have been consistently acknowledged as drivers of regional success and cluster growth, virtually no studies have endeavoured to untangle such processes within a framework of formal network analytic measurement and operationalization. Bringing quantitative tools to unveil the relational underpinning of regions is a critical requirement to advance our understanding of how locally embedded organizations leverage dispersed knowledge. This would allow us to properly address three related questions:
- What network configurations underlie the functioning of successful regions?
  - Are there network structures that are more conducive to regional development?
  - What position do anchors occupy within these structures?
3. The questions above point at micro (actors) and meso (cluster networks) level drivers of regional development respectively. Yet it is unclear whether and to what extent these processes are spatially and geographically bounded. Indeed, while some recent evidence suggests the openness of the cluster is of particular importance (especially when the market for innovation is global), most research on locally concentrated industries obscures important relationship with organizations located elsewhere. In effect, in order to get a fuller picture of a firm's networks of relationships it is necessary to look at the firm's connections beyond any specific region. Therefore we ask:
- Does it matter whether linkages are with organizations within the local cluster or do firms do better by reaching out beyond their neighbourhood?
  - Do firms, if any, that bridge across local clusters perform better than locally embedded ones?
4. These changes present new opportunities for developing regional policy that can encourage regional development based on anchor firms. However, formulating such policy will require a validated understanding of the causes of the qualitative differences in the behaviour of anchor firms and their contribution towards regional capability building. Therefore we ask:
- How anchors are attracted to particular regions and how they contribute to different types of regional capability building?
  - How are these behaviours influenced by policy?
  - How can policy be better designed to encourage more equitable and sustainable regional development?

In sum, by addressing points 1 to 4, we gain deeper insights into the mechanisms pushing regions to superior performance. This implies focusing on what we regard as the crucial pillars of these mechanisms:

- Anchors and networks as well as their interaction.

We see four crucial contributions from this project:

- 1) From a theoretical perspective FRIDA adds to organizational and sociological accounts of the factors conducive to regional advantages;
- 2) From a spatial standpoint it illuminates the extra-regional processes shaping the pattern of regional development. So far enriching the conventional literature on industrial districts that limits the focus on localized agglomerations as sufficient conditions to account for regional development;
- 3) From a methodological standpoint it introduces novel approaches to the analysis of the relational underpinning of regions;
- 4) From policy making perspective it allows more informed and target efforts towards efficient resource allocation and networking initiatives.

Finally FRIDA fosters and promotes cross-national collaboration among international researchers and public bodies, as well as dissemination of practices across the 7 regions that constitute the object of this investigation.

Here below we identify and discuss four main interlinked project objectives that guide FRIDA's endeavour to provide solutions to the challenges examined in the previous sections:

- 1) Uncovering the key distinctive traits of anchors and probing the nature of the exchanges between the anchors and the other firms/organizations locally based.
- 2) Mapping the relational structure of regional clusters and distilling key network indices to capture and compare relational features across regions.
- 3) Running statistical models to estimate the effect of network properties on regional performance
- 4) Analyzing cross-regional patterns of access and interaction.

## ***A description of the main S&T results/foregrounds***

### **Review of literature and elaboration of conceptual model**

The literature review carried out by the 7 European Institutions participating to the FRIDA collaborative project provides a state of the art on the three pillars of the project:

- Anchors and regional development;
- Networks and regional development and
- the interplay between networks and anchors.

The results are clearly reported in deliverables D2.1 and D2.2, in particular, the FRIDA consortium performed three levels of analysis of the existing literature and aims at:

- identifying the main results of economic and managerial contributions regarding the role of anchor firms in the innovation dynamics and structuring the networks in a local area;
- identifying the main methodologies performed to link anchor firms and networks on the one hand and regional performances on the other hand;
- identifying the role of public policies (policy to foster innovation, competition policies, policies to enhance clusters and cooperation, policies to stimulate the creation of start-ups, and so forth) regarding anchor firms.

The reviews compare and categorize peer-reviewed articles and book chapters. To locate studies for potential inclusion they were generally built on the electronic resources of Jstor, Ebsco, ANCP, ProQuest Digital Dissertation, PsycInfo, PsychArticles, ABI/Inform, Business Source Complete; furthermore the reviews used the search engine of the academic web crawler Google Scholar to look for related articles. They also used the web-engine Isi Web of Knowledge, which offers a specific tool of citation mapping. Thanks to this web-application for every single work considered, they tracked its cited and citing references through two generations: this allowed identifying other relevant contributions. The selected articles came from several important academic journals, such as Administrative Science Quarterly, Organization Science, Academy of Management Journal, Academy of Management Review, Strategic Management Journal, Journal of Management, Journal of Management Reviews, European Management Review, Industrial and Corporate Change, American Sociological Review, Managerial and Decision Economics, Cluster Networks and Innovation, Research Policy, Regional Studies, Economic Geography, International Journal of Technoentrepreneurship.

The contributions were selected to be included in the database by defining five main criteria of relevance:

- 1) theoretical contributions and reviews analyzing anchors, networks and performance;
- 2) quantitative studies investigating the relationships between anchors and any of the network variables and performance outcomes;
- 3) quantitative studies examining the drivers and mechanisms of dynamic evolution of anchors and networks;
- 4) quantitative studies examining the effects of any of the moderating variables relevant to our analysis;
- 5) studies exploring the genesis of anchors and the evolution of clusters networks both at the individual, firm and network level.

The deliverable is structured as follows.

In the first section it provides the main traits of the literature on anchors and regional development.

In the second section it offers a critical review of the literature on geographical clusters, networks and performance. In the third section a review on the interplay between anchors and network is presented. In the annexes section the consortium reported the single reviews performed by the research units.

### **Data collection protocol and database query**

The FRIDA data collection protocol defines the content and rules relating to the collection of data to assess network dynamics in the industries under investigation. The specific details of the procedure to follow aim to produce an outcome from each partner of the project that is comparable with the other outcomes, even if there are some specific differences related to the different industries under investigation (i.e. nanotech, biotech, aircraft). More specifically, FRIDA social networks data consist in anchor relations that will be measured by checking a set of actors that are present in the specific regional area under scrutiny. Thus, the goal of the Data Collection Protocol is to identify and collect the data available through existing databases and other secondary sources and to define a common data collection protocol to be used during the fieldwork. In order to understand the role of anchors and networks in regional development, FRIDA partners will observe three specific industry contexts in seven different regions. For each of these settings the first step of work package 2 is the identification of reliable data sources and key actors. As regards secondary data, various databases relevant to each specific setting will be used. As regards primary sources, interviews will be conducted with the actors involved in the process (i.e., the entrepreneurs and managers of the institutions involved in the anchor networks and the other relevant stakeholders located in the geographic areas) by means of a questionnaire jointly defined by the seven partners.

FRIDA analysis suggest some of the anchors we will be looking at including GSK, Pfizer and Astra Zeneca when researching regional development in biotech in the UK regions, STMicroelectronics in Catania and Grenoble, members of the SAME forum in Sophia Antipolis; aerospace firms that are members of the Aviation Valley Association in Katowice ; 4 firms that account for the 75% of the turnover of the Biomedical Valley in Emilia-Romagna and the 10 members of the “Aviation of Ukraine” industrial club.

In order to ensure that the field data collected from interviews and surveys are comparable and consistent across settings, FRIDA uses shared data collection protocol. A data collection protocol is commonly defined as a predefined procedural method in the design and implementation of experiments. In natural sciences, it is widely used to generate standards that create a crucial knowledge base for successful replication of results by others in the field. A common semi-structured research protocol is therefore used to allow the output of the individual case studies to be contrasted. This will allow the causal factors identified in the literature review to be evaluated, providing consistent inputs to WP 5 and 6. In this perspective the FRIDA data collection protocol is aimed at:

1. Establishing a common field-data collection procedure;
2. Establishing the common themes to be addressed by the questionnaires:
  - a) Qualitative questions;
  - b) Quantitative questions;
3. Establishing the performance indicators to be collected through the questionnaires;
4. Establishing the sociometric questions to be asked in order to uncover the relational structure of each industry-region;
5. Establishing data collection requirements specific to each partner.

### **Case studies analysis**

#### ***The role of Anchor Organizations and Trajectories***

Compare to existing literature, in FRIDA project highlights the role of different types of organisations (firms, large public research center, etc.) as Anchors. They are concentrating research and economic activities

around them: supporting spinoffs creation, generating spillovers, orchestrating networks, attracting outside talents, attracting investments, etc.

### ***From knowledge based to actor based economy***

Anchor organization is a crucial agent of integration between scientific knowledge and economy. Because it bridges different actors, it fosters integration of knowledge and transformation from generic technologies to specific applications. In addition, anchor is an orchestrator for new ventures (talents, markets, etc.). The anchor organization is a nexus of actors to coordinate. It gives sense to the cluster activity, allowing identification from the outside, and it is also an engine of local development (agency, orchestration and close interrelationship with public authorities). The anchor organization is a bridge from local to global, that's the reason why it may be important for anchors to be multinational, multi-located.

### ***Connecting Anchor Organizations and Networks***

Anchor organizations are the engine of the development of emerging industries and services (Cf. Nanotech, Biotech, etc.). They play a role to launch new technologies, new applications due to their large knowledge and technological base for early detection and support.

### ***Regional development and clusters***

WP4 emphasises the interplay between clusters and networks. Within clusters, organisations are competing to orchestrate actors within clusters. Competition for orchestration is a condition for sustainability of the cluster avoiding lock in on specific trajectories, preparing the next stage of development. In that sense, anchors are second order policy instrument (fostering integration of technologies, attracting talents and investors, providing early markets for start-ups). But they have to be challenged. As soon as the boundaries of the cluster appear clearly around the anchor, they have to be reopened to allow different bridges to the global environment.

### **Exploratory network mapping and network analysis**

The analysis has revealed anchors role in leveraging local and global assets at the same time. Looking only at the restricted boundaries of the local cluster is therefore reductive and likely to be ineffective as a guide to policy. Thinking local and global at the same time is an imperative for both anchor firms and for policy makers. The original academic work on local economies focused on sectors and time periods with limited divisions of labour. As a result, the knowledge of technology and markets needed to succeed was likely to be found locally. Today this is not the case. Our research has highlighted the global nature of anchor firms activities, and the way in which they operate in markets and source technologies internationally, but bring and diffuse those benefits locally, through local interactions and local skill upgrading.

### **Statistical models of performance**

Overall, the examination of the four different empirical settings investigated shows that the patterns of development and growth of clusters are unique and different according to the specific research setting. The development and growth of a cluster is highly contingent on national systems of innovation and, thus, policy makers must design specific policies for each location and industry setting. For example, the diversity of a cluster in the German biotech setting has a positive effect on the innovation speed while the Grenoble team found that organizational diversity fosters scientific variety in particular during the emergence phase, however, when the field reaches a certain level of maturity, organizational fragmentation may slow growth down. Nevertheless there are some common results. With regard to the importance of relationships, the team of Mannheim and the team of Grenoble found that the tightness of relationships between local actors is important for the development of a cluster. Similarly, the team of Bologna found that joint action has a positive influence on rent generation ability. This confirms the importance of action oriented problem solving within industrial districts and clusters. Finally, the team of Mannheim as well as the team of Bologna found that having a central position in the network is beneficial. In particular the Bologna team found that firms having central positions in the network use the variety or redundancy of ties basically for two reasons: (1) to gain access to a richness of information, which fostering radical innovation and technological rents,

and (2) to achieve additional bargaining power in comparison with their partners. The Ukraine team has a very unique research setting. The team highlights the creation of the cluster by government was artificial. The team further states that the main player have a relatively good profitability, good brands, international experience, a history of strong international contacts and have a big quantity of planes in use.

### **Policy recommendations and dissemination**

#### ***Policy Implications***

Anchors are important as triggering actors in emerging industrial and service settings. However, anchors are also found in sectors that may seem mature and un-innovative. Very substantial differences in levels of performance are found within all sectors, and it is misleading to think that only high-tech sectors are innovative, or that all firms in high tech sectors perform well, while firms in low tech sectors perform poorly. Innovation is not just about technology, it's about coupling technology and markets, and that coupling, both inside firms, and between firms is where anchors excel. A focus on R&D, or emerging high tech sectors, is likely to overlook the huge potential of the 97% of the European economy that is not high tech manufacturing.

Be aware of the change in leadership needed across the life cycle, the impact of the original anchor is likely to decline over time. Firms that contribute significantly to regional development in one period of time can lock it into a low performance trajectory during another. This suggests that policy should focus on increasing competition among anchors rather than selecting single anchors as regional "champions". Rather than picking winners, policy should focus on creating the conditions for winners to emerge.

The early detection and support of anchor players is crucial: new anchors become important in declining domain for generating variety and new product/market diversification. However, detecting and supporting anchors can be difficult for policy makers.

When anchor firms are working at the cutting edge of technology they tend to undertake research intensive innovation and work as anchors by linking local networks to global knowledge networks. The sophistication of modern economic life means that cutting edge knowledge is highly specialized and is unlikely to be found only in local universities. Anchor firms search globally for that knowledge and not just in universities. On the other hand, anchor firms operating in marginal local economies that are a long way from the technological frontier, are likely to focus their innovative activities much more on the diffusion of well established technology, and more process based upgrading of production (for example, from undertaking outsourced production for global firms that provide engineering support). This may involve starting from low tech beginnings and is unlikely to be research intensive. However, as skills and capabilities upgrade, the process of innovation within the network is likely to change and become more research intensive. Policy to support anchors should therefore be sensitive to these differences.

#### **Recommendations for policy makers**

Messages for European policy-makers:

- Anchor level:
  - support for highly skilled and networked serial entrepreneurs, and teams of serial entrepreneurs;
  - sustain and support spin-off companies that emerge from established firms, rather than low capability firm founders or university spin-offs with limited managerial skills and links to global markets;
  - monitor knowledge niches and star scientists;
  - exploit the skills of private investors to seed with small (selected) investments and follow on closely;
  - map "underground" less visible initiatives;
  - recognize that undifferentiated support for entrepreneurship is likely to be ineffective at generating anchors. Policy needs to be highly focused. Shift away from encouraging undifferentiated market

entry, towards supporting the small number of firms with the potential to both grow and strengthen their local environments.

- Network level:
  - support the local initiatives of firm-led network in network creation;
  - facilitate entry of, and links to international companies fostering network creation, skill upgrading and cluster empowerment;
  - select the engines to create the snow ball effect;
  - encourage competition and resist policies that reinforce existing low performance networks;
  - recognize that it may be very difficult to either identify anchors or find effective ways of supporting anchors that have been identified. Policy should focus on creating the conditions where success can emerge rather than on picking winners.
- Cluster level (and beyond):
  - be aware of a change of leadership moving from the network to the cluster level;
  - cluster leadership can be shared among different actors and surrounded of ambiguity;
  - the dynamic local anchors often become gazelles and move internationally. Moving internationally may enrich the local cluster as well.

Local anchors can play an important gate-keeping role bridging different geographical as well as knowledge domains:

- encouraging collaboration outside individual clusters becomes a priority;
- managing the local and global is an act of ambidexterity.
- Further scientific evidence is needed on the following:
  - listing weak signals;
  - how to make weak signals visible in advance;
  - the microfoundations of knowledge detection and replication.

Suggestions for local decisions makers:

- General
  - Recognize and lubricate the “triad effect” but avoid over engineering;
  - Draw policy attention to local communities to enhance awareness of the anchor effect;
  - Adapt policies to meet specific needs of differing sectors and regions.
- Public institutions
  - Make local agency aware of the anchor and its role for the network and the community;
  - Push and influence local based initiatives supporting anchoring.
- Industrial units and local universities
  - Sensing and scouting for academic entrepreneurs through:
    - Patents
    - Scientific publications
    - International projects
    - Award recognition

- Scientific achievement
- Facilitate access to knowledge resources and stimulate interfaces with the market.

## ***The potential impact (including the socio-economic impact and the wider societal implications of the project so far) and the main dissemination activities and exploitation of results***

Anchor organizations have some very distinctive features that make them unlike the typical firm. In particular, they have a profound impact beyond their individual outcomes because they shape the creation of new organizations and the transformation of existing organizations in multiple ways:

- spawning new firms (spinoffs);
- generating knowledge spillovers;
- serving as role models for other players;
- building and coordinating interorganizational networks;
- attracting outside “talent”;
- providing financing and markets;
- diffusing global technological and market knowledge from their global to local networks;
- training and upgrading new generations of entrepreneurial managers.

These features are not necessarily deliberate but more frequently the underlying result of anchors’ day-to-day activities. Anchor firms may act to enhance and upgrade their local economic environments, but rarely do so for unselfish reasons. An important policy imperative is to work with, rather than against, the economic incentives anchor firms face.

To achieve the goal of economic competitiveness in Europe focusing on knowledge assets is not enough. We often take for granted that a great amount of knowledge exists but two main constraints reduce its exploitation. First, fragmentation. Second, lack of precise mechanisms for detecting and selecting key players responsible for influencing the transfer, exploitation and commercialization of knowledge.

Our research suggests that a pure focus on knowledge generation or knowledge commercialization is unlikely to be a successful basis for policy, particularly if it is focused on universities and university spin outs. Innovation is not just research, but the integration of a technological capability with a market demand. Universities, and most small scale entrepreneurs have limited market understanding, limited manufacturing capability and limited skills in the technical areas demanded by sophisticated customers. This puts them at a significant disadvantage compared to established firms. Anchor firms, particularly when they spin out new ventures, are often establishing much larger, more professional, better financed firms, with established managerial and technical skills and links into international markets. As such they perform much better than the typical entrepreneurial start ups often supported by traditional policies.

Anchors are crucial agents of cohesion and transformation. Their local and global network connections mean that unlike the single firm focus of ‘gazelles’ they help upgrade local economies. Unlike the exclusively local focus of links in the ‘clusters’ literature, anchors exploit a variety of networks at different spatial scales. Thus, they may operate on the global scale to source the world’s best technology, and sell to the world’s most demanding markets, but operate in very local labour markets. Thus when managers and staff leave to enter other firms, they transfer across spatial levels.

As well as this ‘passive’ upgrading, anchor firms can actively work to upgrade their local environment. Anchor firms with complex supply chains and highly networked connections to customers may strategically work to upgrade their environment. Firms in marginal areas, with seemingly limited capabilities, can incrementally, over long periods of time generate very significant improvements in their environment with important regional development implications.

The anchor effect works to a significant degree through the spawning of new companies or its functioning as a role model for other companies directly or indirectly linked to the anchor via network ties. Anchor firms reconfigure industrial networks directly and indirectly. While they may link to global markets, and develop new products and services to address those markets, other firms in the local economy can copy what they are doing, and succeed as a consequence, without having to know the reasons why they succeed.

While policy makers are often concerned with attracting large companies locally, our evidence suggests that the attractiveness of the local area to large external R&D facilities is not enough and needs to be coupled with home-grown companies and a recognition that innovation, and economic development occur and can be driven by firms across the entire economy and not just firms in high tech sectors.

Our research also suggests that large international R&D intensive firms differ substantially in their contribution to local development. Some firms may act as anchor firms and help upgrade their local environment, while other firms may operate in isolation, while other firms may have a predatory and potentially negative influence on local firms. In our research on the UK bio-pharma industry we have found firms actively working to build the local biotech industry working alongside firms that 'cannibalize' and asset strip small firms that may have had high growth potential.

Moreover, in a global market place, the costs of attracting firms may lead to tax competition, and a 'race to the bottom' with under-developed regions competing against each other to subsidize the R&D activities of established and often well rewarded firms. When this does happen, a worrying selection effect can develop where firms are selected that are only concerned with reducing their tax take, with little attention to their contribution to the local economy. The key policy issue is not to attract large global firms, as such firms may not necessarily act as anchors and help develop the local economy. The key issue is to focus on supporting the entrepreneurial dynamic firms that help co-ordinate the various processes involved in local regional development. Attracting an R&D intensive global firm to a local region where patterns of innovation are not R&D based, may simply result in the global firm undertaking the low tech parts of its operations in that country. For example, computer production is a high tech sector, but someone, somewhere has to put computers in boxes. Tax incentives that attract high tech computer firms to undertake low tech 'box filling' are likely to be substantially less effective than policies to support the technical upgrading of other seemingly low tech sectors.

The main dissemination activities for the second period of the project were the following:

- The intermediate workshop hosted in Brussels, 11 November 2010 with the title "Science - Policy Dialogue Seminar". The workshop was organised in collaboration with DG RTD, Unit L.2 Socio-economic Sciences and Humanities and hosted by ENEA with the participation of several representatives of different EC Directorates.
- The final conference hosted in Brighton (UK) under the title: "FINAL CONFERENCE OF THE FRIDA PROJECT: final results and Policy Dialogue", 10-11 March 2011, Room 24/25 SPRU, The Freeman Centre University of Sussex Brighton East Sussex United Kingdom BN1 9QE. The aim of the conference was to disseminate the final results of the project FRIDA and to discuss them with a wider audience including policy makers, stakeholders, participants of the related research projects and the research community. It was organised in collaboration with the European Commission DG RTD with two main sessions:
  - 10th March (afternoon): presentation of project final results
  - 11th March (morning): analysis of interplay between different issues, policy implications and roundtable dialogue with stakeholders.

Below we provide a summary description of all the dissemination initiatives as well as publication outcomes that were generated by FRIDA. These include:

- scholarly workshops
- policy oriented events

- practitioners seminars
- scientific conferences

As well as a variety of publications including:

- International scientific journals' articles,
- Conference proceedings
- National scientific articles
- Management oriented articles

In the table below we have grouped all the dissemination events distinguishing them based on the national/international scale. Wherever possible we provided links to institutional web pages with further details on the event.

Unit	Local	International
UNIBO	<p>FRIDA Kick-off meeting</p> <p>FRIDA Steering Committee meeting</p> <p><i>Dall'università all'impresa: il ruolo trasversale delle nanotecnologie</i>, 15 novembre 2010, ore 10.30 Bologna, San Giovanni Battista dei Fiorentini <a href="http://www.bo.cnr.it/events/universita_impresa_15novembre.pdf">www.bo.cnr.it/events/universita_impresa_15novembre.pdf</a></p> <p><i>Brainstorming Lounge</i> - Alma, November 25, 2010 <a href="http://www.brainstorminglounge.com/raconto-del-primo-evento/">http://www.brainstorminglounge.com/raconto-del-primo-evento/</a></p>	<p><i>Moving Beyond Boundaries: Pursuing Performance through Inter-firm Networking</i> Bologna Workshop, 20 November, 2010 Alma Graduate School</p> <p>FRIDA international symposium entitled "The role of anchor firms and Networks in Mobilizing Knowledge for Developing Regions and Countries", Academy of Management Conference, Chicago, Aug. 6-12, 2010</p>
SPRU	<p>March 2010 = Executive Education for 180 biopharmaceutical professionals, Cass Business School.</p> <p>June 2010 = 4 weeks (1 day per week) of executive training for former R&amp;D staff at GSK CNS Laboratory to train staff how to move from large pharmaceutical firms and form their own viable biotechnology firms.</p>	<p>FRIDA final Conference March 10-11, 2011 – SPRU. <a href="http://www.fridaproject.eu/news_notizia.asp?id=29">http://www.fridaproject.eu/news_notizia.asp?id=29</a></p>
CCIG/GEM		<p>Winter School on Emerging Nanotechnologies Pinsot, 30 March 2011 <a href="http://www.nanodistrict.org/index.php/winter-nanoschool-on-emerging-nanotechnology">http://www.nanodistrict.org/index.php/winter-nanoschool-on-emerging-nanotechnology</a></p> <p>Workshop Minatech at the Crossroads "The diffusion of nanotech by STMicroelectronics: A comparison between Catania and Grenoble". Grenoble, 23-24 June 2010 <a href="http://www.minatec-crossroads.com/mti">http://www.minatec-crossroads.com/mti</a></p> <p>FRIDA International Symposium entitled "Trajectories of Technology Emergence: from convergent technologies to distributed legitimacy", organized by Vincent Mangematin of GEM with Michael Lounsbury of the University of Alberta,</p>
EUROPEAN COMMISSION		<p>FRIDA Dissemination seminar, Nov 12, 2010 <a href="http://www.fridaproject.eu/events_evento.asp?id=8">http://www.fridaproject.eu/events_evento.asp?id=8</a></p>
UNICATANIA	<ol style="list-style-type: none"> <li>1) Inaugural Local Dissemination Workshop of the FRIDA Project – Catania 17th June 2009</li> <li>2) Second Local Dissemination Workshop of the FRIDA Project – Catania March 4th 2010</li> <li>3) Final Local Dissemination Workshop of the FRIDA Project - INNOVATION AND DEVELOPMENT OF HIGH TECH ANCHOR FIRMS AND NETWORKS IN SICILY – Catania March 3rd 2011</li> </ol>	<p>Strategic Management Society FRIDA Workshop Rome, 12-15 September 2010</p> <p>The 22th Sinergie Annual Conference (University of Salerno: October 7-8, 2010), where G.M. D'Allura and V. Pisano presented the paper: "La localizzazione dei processi innovativi ad alto contenuto tecnologico: il ruolo delle imprese 'àncora' fra sistemi locali e network globali". The paper was awarded the Sinergie Best Conference Paper Prize.</p>
UMAN	<p><i>Local Roots - Global Link</i>, Local dissemination event (Wissenschaftliche Tagung an der Universität Mannheim), March 17 2010, Aula im Schloss der Universität <a href="http://al-laham.bwl.uni-mannheim.de/research/eu_project_frida/index.html">http://al-laham.bwl.uni-mannheim.de/research/eu_project_frida/index.html</a></p>	<p>The 30th Anniversary Strategic Management Society Annual International Conference (Rome 12-15 September 2010), where a panel on anchor firms entitled "A Strategic Perspective on Network Anchors" was featured by one of the members of the UNICATANIA working team; <a href="http://rome.strategicmanagement.net/tools/schedule/sessionDetails?id=199">http://rome.strategicmanagement.net/tools/schedule/sessionDetails?id=199</a></p>

The publications are grouped by FRIDA partner as follow:

## **UNIBO**

### International publications:

Lorenzoni, G. 2010. "Genesis of a research field: district, network, strategic network," *Journal of Management and Governance*, *Journal of Management and Governance*, vol. 14(3), pages 221-239

Lorenzoni, G., Russo, D. and Ferriani, S. (2010) "Unfolding Local Knowledge and Field Emergence: The Rise of Bologna Nanotech", currently under review.

### National publications:

Lorenzoni, G. (2010) *Le microfondazioni nell'analisi dei distretti industriali*, in C. Boari (2010), *Dinamiche evolutive nei cluster geografici d'impresa*, Bologna: Il Mulino

Ferriani, S. F. Fonti, R. Corrado "Legami sociali, rapporti economici e legami procurati da terzi: Uno studio sulle determinanti dell'embeddedness nei cluster geografici". In C. Boari (a cura di) *Dinamiche Evolutive nei Cluster Geografici di Imprese*. Bologna: Il Mulino. Pp. 229-268.

### Working Papers

Ferriani, S., Filippelli, M. and Lorenzoni, G. (2011) "The Anchoring Effect: A Genealogical Perspective", Working Paper of the Management Department, University of Bologna

Lorenzoni, G. and Baglieri, D (2011) *Closing the Distance Between Academia and Market: Experimentation and User Entrepreneurial Process*, Working Paper.

## **SPRU**

Nightingale P. (2009) 'Organising for Innovation' Trends in Biotech, with Will West (CEO CellCentric).

Nightingale P. (2009) 'From Funding Gaps to Thin Markets' NESTA-BVCA with multiple co-authors, NESTA London.

Nightingale P. (forthcoming) 'Innovation', and 'Management of Technology' Palgrave Dictionary of Strategic Management, ed. D. Teece.

Rafols, I., Porter, A.L. and Leydesdorff, L. (under 2nd review after minor revisions) *Overlay Maps of Science: Their Potential Usage in Science Policy and Research Management*. *Journal of the American Society for Information Science and Technology*.

Hopkins M. M. and P, Nightingale and C Baden Fuller (2011) 'Servant Firms in the Biopharmaceutical Industry', for submission to *Research Policy*.

## **KATOWICE**

### International publications:

1. W. Czakon, P. Klimas (2011) 'Anchoring and the Orchestration Process: the Case of Aviation Valley', in *Fundamentals of Management in Modern Small and Medium-Sized Enterprises*, S. Lachiewicz, A. Zakrzewska-Bielawska (ed.), Technical University of Lodz Press, Lodz.

### National publications

W. Czakon (2010), *Hipoteza bliskości*, *Przegląd Organizacji* nr 9, str. 16 – 21.

W. Czakon (2010), *Model biznesu operatora a orkiestracja sieci*, [w] *Modele, metody i narzędzia zarządzania organizacjami*, J. Pyka (red.), Towarzystwo Naukowe Organizacji i Kierownictwa, Katowice, s. 23 – 30.

W. Czakon (2010), *Hipoteza kotwiczenia firm*, [w] „*Zarządzanie i Informatyka – dylematy i kierunki rozwoju*”, 4 Forum Naukowe UE Katowice, UE Katowice, s. 13 – 26.

W. Czakon, P. Jędrzyk (2010), Sieci oraz firmy kotwice – ich znaczenie w gospodarce opartej na wiedzy, [w] „Zarządzanie i Informatyka – dylematy i kierunki rozwoju”, 4 Forum Naukowe UE Katowice, UE Katowice, s. 109 – 124.

## **UMAN**

### International publications:

Who makes you central? Analyzing the influence of international alliance experience on network centrality of start-up firms. Forthcoming in: Management International Review (MIR) 2010 (mit T. Amburgey).

Who is my partner and how do we dance? Innovation speed and the spectrum of collaboration in U.S. Biotech. Forthcoming in: British Journal of Management, 2010 (mit T. Amburgey und C. Baden-Fuller).

Dating before marriage: Analyzing the influence of pre-acquisition and target familiarity on acquisition success in the “M&A as R&D” type of acquisition. Forthcoming in: Scandinavian Journal of Management, 2010 (mit T. Amburgey und L. Schweizer).

Al-Laham, A. (2010) Who makes you central? Analyzing the influence of international alliance experience on network centrality of start-up firms. Forthcoming in: Management International Review (MIR) 2010.

### Working Papers:

Local cluster or global network effects? Analyzing innovation drivers in biotech. Paper presented at the 35th EIBA Annual Conference, Valencia 2009.

## **UKRAINE**

### International publications:

The organizations interaction within networks [Текст]: звіт про НДР (проміжний) / НТУУ «КПІ»; кер. Гавриш О.А.; вик.: Солнцев С.О., Бакалінський О.В. [та ін.].-К., 2009.- 40 с.

The transformation of Ukrainian aircraft building through the improvement of business network cooperation [Текст]: звіт про НДР (проміжний) / НТУУ «КПІ»; кер. Гавриш О.А.; вик.: Солнцев С.О., Бакалінський О.В. [та ін.].-К., 2010.- 73 с.

### Conference proceedings:

Солнцев С.О., Бакалінський О.В. Міжнародний проект FRIDA: заохочення регіональних інновацій та розвитку через базові організації і мережі. // Тези доповідей VIII міжнародної науково-практичної конференції «Маркетинг та логістика в системі менеджменту». – Львів: Видавництво Львівської політехніки, 2010. – 469-470.

## **UNICATANIA**

### International publications:

Baglieri, D., Cinici M.C., and Mangematin V. (2011). Rejuvenating Nanotech Clusters with Sleeping Anchors: Pre-adaptation and Lifecycle. Working Paper GEM. Presented at the Winter School on Emerging Nanotechnologies, Grenoble Ecole de Management, Pinsot March 28-April 1. Under second review for Technovation.

Baglieri, D., Dagnino, G.B., Faraci, R., Galvagno, M., and Garraffo, F. (2010). Dropping the Anchor in Regional Innovation and Development: A Bibliometric Analysis, Conceptual Extension and Research Agenda. Under Review.

### National publications:

Dagnino, G.B., D’Allura, G., Faraci, R. and Pisano, V. (2011). La localizzazione dei processi innovativi ad alto contenuto tecnologico: il ruolo delle imprese “àncora” fra sistemi locali e network globali. (The Localization of High-Tech Innovative Processes: The Role of the Anchor Firm between Local Systems and Global Networks), Sinergie. N.84.

### Working papers:

Baglieri, D. and Dagnino, G.B. (2010). Knowledge Dynamics in Biotech and Nanotech Clusters: Who Plays the Anchor Role?. Presented at the Symposium "The Role of Anchor Firms and Networks in Mobilizing Knowledge for Developing Regions and Countries" (Co-sponsored by BPS, OMT and TIM Divisions) 70th Academy of Management Meeting. Montreal, Canada: August 6-10.

Cinici, M.C., Dagnino, G.B., and Faraci, R. (2011). The Anchor Firms as a Strategic Orchestrator: Evidence from the Nanotech Clusters of Catania and Grenoble. Accepted for presentation at 31st Strategic Management Society Conference. Miami, FL: November: 6-9. Presented at the Winter School on Emerging Nanotechnologies, Grenoble Ecole de Management, Pinsot March 28-April 1 and in a research seminar at Cass School of Business, London and at 30th Strategic Management Society Conference Competitive Strategy Interest Group Paper Development Workshop. Rome, Italy: September 12-15, 2010.

D'Allura, G., Galvagno M., and Mocciaro Li Destri, A. (2010). Main Trends in the Study of Regional Innovation Systems: An Author Co-citation Analysis. FRIDA Working Paper, University of Catania. Presented at the 70th Academy of Management Meeting. Montreal, Canada: August 6-10; and at the Academy of International Business UK-Ireland Chapter Conference - Dublin, April 2010.

### Practitioners' oriented publications:

Dagnino, G.B. (2011). Dalla crescita al declino, 4 fasi per raccontare la Stmicroelectronics di Catania. Milano Finanza/MFSicilia, June 11.

Dagnino, G.B., and Faraci R. (2011). Innovazione, ecco l'ancora di salvezza per lo sviluppo del Mezzogiorno. Milano Finanza/MFSicilia, March 5.

Dagnino, G.B. (2010). Progetto FRIDA: innovazione e sviluppo tecnologico nel catanese.

StrumentiRes, Vol.2, n.3 April (web site: <http://www.strumentires.com>).

### **CCIG/GEM**

#### International publications:

Mangematin, V.; K. Errabi and C. Gauthier. Forthcoming. Large players in the nanogame: Dedicated nanotech subsidiaries or distributed nanotech capabilities?. Journal of Technology Transfer.

Sabatier, V; Mangematin, V.;Rousselle T.. Apr 2010. From Recipe to Dinner: Business Model Portfolio in the European Biopharmaceutical Industry. Long Range Planning forthcoming: 431-447.

Sabatier, V.; Mangematin, V.; Rousselle, T.. Mar 2010. Orchestrating networks in the biopharmaceutical industry: small hub firms can do it. Production Planning & Control 21/2.

#### National publications:

Blanco S., Mangematin V., Fujimoto Y.. Oct 2010. Entre devise olympique et marketing de l'innovation. In Créativité et Innovation dans les loisirs sportifs de nature. Edited by J. Corneloup et P. Mao. Mercues: Editions du Fournel, 251. ISBN:978-2-36142-018-5.

Mangematin, V.. Feb 2009. La confiance. In Les concepts en sciences infirmières. Edited by Monique Formarier et Ljiljana Jovic. Lyon: ARSI: Editions Mallet Conseil, 115-118. ISBN:11.

Philippe Larédo, Carole Rieu, Lionel Villard, A. Delemarle, B. Kahane, C. Genet et Vincent Mangematin. Jan 2009. Emergence des nanotechnologies : Vers un nouveau « modèle industriel » ? . In L'internationalisation des systèmes de recherche en action. Les cas français et Suisse. Edited by Ph. Laredo, J.-Ph. Leresche et K. Weber. Geneve: Presses polytechniques et universitaires romanes. ISBN:978-2-88079-818-0.

### Working papers:

Baglieri, D.; Mangematin, V., What Drives "Knowledge in the Air" in Technology Clusters? Diversity, Openness, and Anchor Firms' Competitive Orientation.

Mangematin, V., Delemarle A., The Role of Regional Institutional Entrepreneurs During the Emergence of Clusters in Nanotechnologies.

Mangematin, V. & Rieu, C. (2010). The Determinants of Science-Based Cluster Growth: The Case of Nanotechnology. RMT Working paper series.

## ***Project public website and relevant contact details***

The address of the FRIDA public website:

- <http://www.fridaproject.eu/>

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Project logo:

