Project no. 266959

Project acronym: PICK-ME

**Project title:** Policy Incentives for the Creation of Knowledge: Methods and Evidence

Dissemination level: Public

Thematic Priority: Cooperation-SSH

Funding scheme: Collaborative project

**Deliverable N° 2.2**

**Workshop Summary**

Due date of deliverable: Month 18

Actual submission date: 18/07/2012

Version number: 01

Start date of project: 01/01/2012

Duration: 42 months

Name of Coordinator: Cristiano Antonelli

Name of lead partner for this deliverable: Samuel Neuman Institute
Introduction

A PICK-ME Progress Meeting was held at Collegio Carlo Alberto on June 20th-21st 2012. Attending were delegates and participants from all the PICK-ME countries: Spain, UK, Italy, France, Poland, Israel, Germany.

At this meeting, which took the form of a workshop, the S. Neaman Institute team led by Profs. Amnon Frenkel, Shlomo Maital and Dr. Daphne Getz presented three sets of results. These results were distributed in the form of working papers, as follows:

   This working paper summarizes the results of an innovative methodology developed by the SNI team, to visually map the national innovation ecosystem of a country. Five such maps were constructed, with the help of participating scholars: for France, Germany, Poland, Spain and Israel. The integrative paper compares and contrasts the five systems, with special emphasis placed on a) demand-side policies, and b) the role of public policy in general, especially the public-private mix.

   This working paper comprises a comprehensive review of the research literature on innovation. It is organized around the ‘generic’ innovation ecosystem map developed in the paper noted above [1], and distinguishes between demand-side and supply-side innovation. Some 238 research papers and books are described, summarized and integrated.

3. Market-Based Demand-Driven Innovation: Key Principles & Illustrative Case Studies “Six Principles In Search of Practitioners”.
   This working paper provides a set of six key principles that appear to drive demand-side innovation, together with case studies illustrating each principle.
All three of these working papers were distributed in advance. At the workshop, there was a lively discussion, both formal and informal. Some comments were also received by email, prior to the workshop itself.

The Powerpoint presentations used to present these working papers are part of this report. (see attachments).

Here are some of the relevant discussions, comments and suggestions received at the Turin Workshop.


   There was discussion regarding the technical methodology, in which the interactions between ‘anchors’ and ‘processes’ (essentially, stocks and flows) are analyzed, using factor analysis, in order to simplify the key essential processes and to simplify the visual ecosystem map. Some of the participants from each of the participating countries commented on possible lacunae in the ecosystem maps for their countries; the authors responded that the goal of the methodology is, as Einstein once noted, to “simplify as much as possible...but not more so”, and raised the issue of what “more so” implies, in this context. The Spanish participants described their interesting use of the methodology, to examine the private-public debate in Spain, and presented an interesting paper summarizing sociological content analysis of an Experts’ Workshop of the kind used to build the national innovation ecosystems. The rudimentary nature of Poland’s innovation ecosystem was noted, as a nation in early stages of transition. A key finding was the fact that there are major differences between countries in innovation ecosystems, and also, the ‘culture’ dimension, or anchor, plays a key role in virtually all the innovation ecosystems. There was discussion about the difficulty of distinguishing between whether some policies are truly demand-side, supply-side or both.

Our review of the massive innovation literature was a major challenge. The goal was to summarize a large literature, as an aid to PICK-ME scholars, in a manner that provided some sort of structure to a rather scattered set of research papers, and that also helped understand the key differences between demand-driven and supply-side innovation policies. Our paper covers some 238 books and articles. We received very useful suggestions about research papers that we did not include, that participants felt are significant and chose to include several. We particularly noted the relative paucity of research on demand-driven innovation.

3. Market-Based Demand-Driven Innovation: Key Principles & Illustrative Case Studies “Six Principles In Search of Practitioners”.

The SNI team was assigned the task of preparing case studies illustrating demand-driven market-based innovation. Several of these case studies are based on Israeli startup firms. After collecting and analyzing the cases, the SNI team identified six key principles that appear to drive demand-side innovation. It was noted, in the discussion, that when many entrepreneurs are asked what help they seek from government, they tend to answer, none – or, ‘leave us alone’, or ‘eliminate bureaucratic red tape’. This raised the issue of whether an important public policy might be no policy, or less policy. The case of Italy was raised, in light of the difficulty in doing business in Italy, as shown in the World Bank “ease of doing business’ annual report. Several of the cases show how individual entrepreneurs have created successful businesses, based on their own intuitive identification of an unmet need (often, their own personal need), and without substantial outside funding. This entrepreneurial energy appears to be a key driver of demand-driven innovation.
ANNEX

Workshop Presentations
Work Package 2 – Review and taxonomy of supply-side and demand-side innovation policies

Amnon Frenkel & Shlomo Maital
With Eran Lack and Emil Israel
and the assistance of the German, France, Spanish and Polish Pick-Me teams
**WP2 – Partners**

**Israel** – SNI - Samuel Neaman Institute

**Germany** – UHOU - Universitaet Hohenheim

**Spain** – CSIC – Agencia Estatal Consejo Superior De Investigaciones Cientificas

**Poland** – Centrum Analiz Spoleczno- Ekonomicznych-Fundacja-Naukowa

**France** – Universite De Nice - Sophia Antipolis
WP2 – Objectives

• Build a consensual visual map of a nation’s dynamic innovation ecosystem

• Capturing the crucial elements of the system, as the basis for building effective pro-innovation policies, with emphasis on demand-side aspects.

• Produce a comprehensive annotated bibliography of the scholarly literature on demand-side and supply-side innovation

• Compile several case studies of demand-driven innovation
## WP2 – Final Time-Table

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Year 1</th>
<th>Year 2</th>
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<tbody>
<tr>
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<td><strong>Work-package’s Task</strong></td>
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<tr>
<td><strong>Task 2.1</strong> - Preparation of methodology for mapping the national innovation ecosystem</td>
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<td><strong>Task 2.2</strong> - Construction of a prototype procedure</td>
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<td><strong>Task 2.3</strong> – Collection and integration of individual country innovation information about innovation ecosystem policies</td>
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<td><strong>Task 2.4</strong> – Preparation of a comprehensive review of innovation ecosystem policies</td>
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<td><strong>Task 2.5</strong> – Preparing a critical integrative review of the literature on demand-side and supply-side innovation</td>
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<tr>
<td><strong>Task 2.6</strong> – Compile several case studies of demand-driven innovation</td>
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<tr>
<td><strong>Presenting the final results in a workshop</strong></td>
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</tbody>
</table>

- Distribution to partners
- Roundtable Discussions
- Delivery to SNI
- Receiving feedback
- Presenting the final results in a workshop
**WP2 – Deliverables**

**D2.1 - Mapping the Nations’ Innovation Ecosystems:**
Provide detailed report on each country’s innovation ecosystems and a comparative analysis report [month 12]

**D2.2 - Detailed Taxonomy of Innovation Policies:**
Detailed taxonomy of innovation policies, organized around the innovation ecosystem dimensions [month 18]

**D2.3 - Workshop Summary:**
Volume presenting the results of the workshop at which participants provide input and feedback on the bibliography, literature review, taxonomy, and policy survey [month 18]
WP2 – Review and taxonomy of supply-side and demand-side innovation policies

Literature Review
Literature Review - Methodology

• The literature review based on survey of 235 articles, books and research reports on innovation policies

• It covers examples from various countries, particularly from Europe but also from the U.S. and Israel

• It is organize in the context of a systems approach to innovation

Effective innovation policy must begin with a big-picture systemic visualization of national innovation systems, that captures the key stocks and flows of the innovation process as well as the essential feedback mechanisms that link them.
Four key dimensions of innovation are the pillars of the generic overview of national innovation ecosystems:

• **Culture**
• **Market**
• **Context (including infrastructure)**
• **Institutions (including regulations)**

Surrounding these dimensions are a dozen key processes indicate demand based and supply side of innovation processes.
CULTURE DIMENSION

- Covers aspects of innovation that relate to how supply and demand interact in the marketplace, including the forces of competition
- Culture is strongly linked with entrepreneurship
- Guiso et al. (2006) define culture as “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation.”

- This definition reinforces the transmission of entrepreneurship across generations

In our generic innovation ecosystem map is interrelated with seven key processes; three of them presented supply side of innovation, three demand driven innovation and one indicate both.
Four key dimensions of innovation are the pillars of the generic overview of national innovation ecosystems:

- **Culture**
- **Market**
- **Institutions (including regulations)**
- **Context (including infrastructure)**

Surrounding these dimensions are a dozen key processes indicate demand based and supply side of innovation processes.
MARKET DIMENSION

• Market dimension covers aspects of innovation that relate to how supply and demand interact in the marketplace, including the forces of competition.

• Afuah (2000), underscores the importance of using the network as the lens when exploring the impact of a technological change on firm competitive advantage.

The Market Dimension in the generic innovation ecosystem map is interrelated to three key processes.
Four key dimensions of innovation are the pillars of the generic overview of national innovation ecosystems:

- **Culture**
- **Market**
- **Institutions (including regulations)**
- **Context (including infrastructure)**

Surrounding these dimensions are a dozen key processes indicate demand based and supply side of innovation processes.
INSTITUTION DIMENSION

• Institutions are defined as durable systems of established and embedded social rules and conventions that structure social interactions.

• Institutions are the ‘rules of the game’ that define the context in which innovation occurs.

• Institutions play a key role in the initiation and evolution of innovation.

Two key processes are interrelated to this Institution Dimension. These two key processes are also interrelated to the Culture and Context Dimensions.
Four key dimensions of innovation are the pillars of the generic overview of national innovation ecosystems:

• Culture
• Market
• Institutions (including regulations)
• Context (including infrastructure)

Surrounding these dimensions are a dozen key processes indicate demand based and supply side of innovation processes
CONTEXT DIMENSION

• Refers to the scientific, technological and physical infrastructure in which innovation thrives, with ‘infrastructure’ broadly interpreted to mean any framework that relates to innovative activity.

• The Context is a major dimension in our generic innovation ecosystem map that interrelated with eight key processes.
### Innovation – “breaking the rules to create value in novel ways”

<table>
<thead>
<tr>
<th>Key Processes Side Dimension</th>
<th>Supply Side</th>
<th>Demand Driven</th>
<th>Both demand &amp; supply</th>
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<tbody>
<tr>
<td><strong>CULTURE</strong></td>
<td>Gov. inv. In HC and HC Development</td>
<td>Market Driven Forces</td>
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<td>Public funding of private entities</td>
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<td>Standardization</td>
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## Demand-driven components igniting innovation processes

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Market-Driven Forces

- Market driven forces tend to enhance the emergence of new markets, technologies and innovation processes.

- Sometimes characterized by a kind of chaotic and unorganized management process.

- Firms are required to kill their mainstream business in order to realize a new technology’s full potential.

- The capitalist system underpins demand-driven forces, but classical competition alone would not sustain the creation of new technologies or innovation paths.

Diagram:

- National Policy
- Strict regulation
- Governmental procurement
Lead Market

• Lead markets are crucial apparatuses in generating exports and enhancing economic growth

• The literature review indicate that It is not clear which are the key factors that determine whether a country will be a leading market or a lagging market (Beise, 2004)

• Global firms are major players in benefiting from leading markets

• Leading markets act as beacons that illuminate the set of product characteristics that are most likely to succeed, thus reducing the risk of failure in new product launches.

Demand Attractiveness in the Private Sector

• Demand attractiveness concentrating on the firm's knowledge stock, mainly its R&D activity

• The relationship between R&D stock and productivity is mostly positive

  ➢ the larger is the proportion of R&D activity the larger will be the impact on business intensity

• It is a key factor in the development of a variety of activities in the market
Cluster Strategies

• Spatial location is well documented in the literature as agglomeration clusters that act as a source of regional development contributing to the general welfare.

• Related variety strengthens regional economic growth through ‘spillover effects’ between products and industries, as one firm builds innovation on the activities of another (Boschma and Iammarino 2009)

• Proximity enhances connectivity among agents which are working within related industries, capturing 'spillovers' in their innovative activities

• Factors involving the variety of knowledge, its geographical source and the nature and evolution of clusters are crucial in understanding regional systems as part of a general ecosystem of innovation.
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</table>
Labeling and Awareness

• Labeling and Awareness explores measures for educating and protecting consumers, without hampering the introduction of innovative products.

• This ethical aspect of market development and innovation processes is becoming more and more significant:
  ➢ Since youngsters are evolving to be the focus of consumerism, and
  ➢ in cultural trends, the demand side underpins modern and highly innovative economies.

• Education is a major aspect - it seems that treading the fine line between critical consumerism and further consumption should be a goal of consumer education.
Public-Private Cooperation

• Public-Private Cooperation concentrates on technology transfer from the public sector to the private one

• Universities that represent publicly funded institutions are evolving to play a major role in the research of innovation

• The enormous innovative potential of universities has turned them to a main research theme, directed toward shaping more effective tools for public-private cooperation

• It is obvious that universities and private firms both expect to reach a positive relationship, in order to enjoy reciprocal 'spillovers'.
Public-Private Cooperation

• However, this growing cooperation between private sector firms and public universities raises several issues that pose serious challenges regarding to:

  ➢ Intellectual property

  ➢ The leakage of scientific knowledge and the sensitive topic of rewards,

  ➢ Royalties

  ➢ Institutional loyalty of many scientists involved

• University technology transfer policies can be a decisive factor in guaranteeing successful technology transfer.
Standards and Standardization

• Innovation, whether its origin is in Academe or elsewhere, must follow a standardization process in order to converge into a well-defined technology

• Standards are a source of information that helps many enterprises in their innovation activities

  ➢ It helps them to build focus, cohesion and critical mass in the formative stages of a market

• Standards and Standardization codifies and diffuses state of the art technology and best practice

• Standards and Standardization acting as an essential part of the microeconomic infrastructure that enables innovation on the one hand and reduces undesirable outcomes on the other.
Summary

• As wide diversities exist in national innovation systems, then we should also find equally wide diversity in the battery of innovation policies that nations adopt.

• We should regard the literature as a wide variety of ‘social experiments’ that need to be carefully evaluated as far as possible under controlled circumstances.

• Key paradox in innovation policy:
  - Demand-driven innovation policies permit maximum flexibility and resilience of market forces and remove bureaucratic regulations and red tape as far as possible, however,
  - Supply-side innovation policies are the opposite and feature direct and indirect interventions by government agencies.
Summary

• The art of optimizing supply-side and demand-side innovation policy is best practiced:

  ➢ First, by building a true visual picture of a nation’s innovation ecosystem – complex enough to capture all the key aspects of innovation, yet simple enough to be comprehensible,

  ➢ Second, by benchmarking other nations, to adapt innovative innovation policies that have proven benefits, while studying the relevant research

Each nation must adapt its arsenal of innovation policies to its own culture and history, learning from other nations and pioneering with its own experiments, building on what is known and at times, even, experimenting with what is not known
“Like Some, Like All, Like None: A Comparison of Five National Innovation Ecosystems, With Emphasis on Markets & Demand”

Amnon Frenkel*, Shlomo Maital* & Eran Leck*

* The Samuel Neaman Institute for National Policy Research

“Re-imagining Europe: Demand-Driven Innovation & Economic Policy” Turin, Italy, June 21-22/2012

The research leading to these results has received funding from the European Union Seventh Framework ProgrammeFP7/2007-2013 under grant agreement n° SSH-CT-2010-266959
PICK-ME - Policy Incentives for the Creation of Knowledge: Methods & Evidence
Introduction

National innovation ecosystems are defined as:

“.. the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies.” (Freeman, 1987).

Research objective:

To build a consensual visual map of a nation’s dynamic innovation ecosystem, and to capturing the crucial elements of the system, as the basis for building effective pro-innovation policies, with emphasis on demand-side aspects.
Towards Innovation Ecosystem Theory

An innovation ecosystem similarly reflects the relationships among: firms, government bodies, universities, researchers, consumers, owners of capital and workers.

An innovation ecosystem generates increased innovative output in two ways:

• Through an increase in the quantity of inputs (capital and labor) in the system, and

• Through an improvement in the efficiency with which existing inputs are used to generate innovation.
An initial first step toward focused effective pro-innovation policies is to model each nation’s innovation ecosystem, to fully understand its components and their interaction.

The theory of demand-driven innovation raise the dilemma in the context of pro-innovation policy: where a key issue is:

*How can basic research driven by the curiosity of individual researchers be leveraged to build innovations that meet real human needs and wants (demand-side innovation), without restricting it so much that the energy driving such research (curiosity, freedom, initiative) is diminished or destroyed?*
‘Valley of death’ (termed by Jackson, NSF)

‘Valley of death’—the gap between basic research funded largely by government and commercial development funded by industry.

- Type I errors - technologies that should develop - instead unjustly ‘die’, owing to lack of funds, and

- Type II errors - technologies that should rightly ‘die’ - in fact are heavily funded.

Success in navigating through the Valley of Death relates to how supply-side and demand-side innovation are integrated.
Methodology – Stage A

A. Experts Workshop to list key a) “anchors” and b) processes”
   “Quality anchors”: strengths, or core competencies, of the nation, on which innovation can be built
   “Innovation Processes”: generate innovation or overcome innovation weakness”

B. Cross Impact Analysis

C. Factor analysis reduces and simplifies.

D. ‘Visual map’ is constructed based on the preceding analysis.
# Stage A: List of Anchor and Processes

## List of Anchors

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<tr>
<th>No.</th>
<th>Anchor</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Holistic “systems” view of the private sector</td>
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<tr>
<td>2</td>
<td>Culture that fosters constant innovation, specifically, transforming basic scientific research into innovative products and services.</td>
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<tr>
<td>3</td>
<td>Belief in the ability to invade successfully new markets.</td>
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<tr>
<td>6</td>
<td>Business-centered entrepreneurship</td>
<td></td>
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<tr>
<td>7</td>
<td>Existence of high-level research universities</td>
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<tr>
<td>13</td>
<td>Infrastructure supporting ideas</td>
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<tr>
<td>17</td>
<td>Threatening external environment, causing a sense of uncertainty</td>
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<tr>
<td>18</td>
<td>Low power-distance (“sergeant is willing to contradict the general”)</td>
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<tr>
<td>19</td>
<td>Frameworks that encourage social networking (e.g., IDF)</td>
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<td>20</td>
<td>Willingness to solve problems independently</td>
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<td>21</td>
<td>ICT capability</td>
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<tr>
<td>22</td>
<td>Creativity, knowledge and capability in business development</td>
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<tr>
<td>23</td>
<td>Ability to create strong interpersonal relationships, feeling of “family”</td>
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<tr>
<td>24</td>
<td>Constructive competition</td>
<td></td>
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<tr>
<td>25</td>
<td>Education creating global perspective</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>National admiration of technology-intensive entrepreneurship that creates wealth</td>
<td></td>
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</tbody>
</table>

## List of Processes

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<tr>
<th>No.</th>
<th>Process</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Private sector entrepreneurship support innovation</td>
<td>Supporting innovation and growth of innovative businesses.</td>
</tr>
<tr>
<td>2</td>
<td>Constant government investment in basic research</td>
<td>Increasing investment in basic research, fostering innovation.</td>
</tr>
<tr>
<td>3</td>
<td>Private initiative programs for supporting innovation</td>
<td>Encouraging innovation and entrepreneurship.</td>
</tr>
<tr>
<td>7</td>
<td>Encouragement of university-industry collaboration</td>
<td>Building partnerships between academia and industry.</td>
</tr>
<tr>
<td>8</td>
<td>Govt. support of applied research in universities</td>
<td>Providing incentives for applied research.</td>
</tr>
<tr>
<td>9</td>
<td>Education to foster entrepreneurship</td>
<td>Supporting education initiatives that promote entrepreneurship.</td>
</tr>
<tr>
<td>10</td>
<td>Govt. tax incentives for innovation</td>
<td>Providing financial incentives for innovation.</td>
</tr>
<tr>
<td>11</td>
<td>Office of Chief Scientist forums for fostering R&amp;D coordination</td>
<td>Creating platforms for R&amp;D collaboration.</td>
</tr>
<tr>
<td>12</td>
<td>Reduction of industrial concentration (monopoly power)</td>
<td>Addressing industrial concentration.</td>
</tr>
<tr>
<td>13</td>
<td>Interdisciplinary programs in universities</td>
<td>Supporting interdisciplinary research.</td>
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<tr>
<td>14</td>
<td>Government programs for strengthening scientific and technological education</td>
<td>Promoting scientific research and innovation.</td>
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<td>15</td>
<td>Increase in private sector capital</td>
<td>Enhancing private sector investment.</td>
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<td>16</td>
<td>Curiosity, to interdisciplinary, systems thinking</td>
<td>Encouraging interdisciplinary thinking.</td>
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Methodology – Stage B

A. Experts Workshop to list key a) “anchors” and b) “processes”

B. Cross Impact Analysis
   Research team evaluate causal links (+, -) between the anchors and processes

C. Factor analysis reduces and simplifies.

D. ‘Visual map’ is constructed based on the preceding analysis.
## Stage C: Classification of processes and anchors into groups

<table>
<thead>
<tr>
<th>Factors</th>
<th>Local and Regional Incentives Supporting Innovation</th>
<th>Targeted Public Programs</th>
<th>Joint Public-Private Initiatives for Supporting Innovation</th>
<th>Public Funding of Private Entities and Programs</th>
<th>Development of Human Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchors/Processes</td>
<td>Regional strategy plan</td>
<td>Employment of third parties of innovation &amp; infrastructure</td>
<td>Multilevel innovation programs</td>
<td>Science policy supporting actions</td>
<td>AVANZA plan (TICS)</td>
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<tr>
<td>Clusters</td>
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<td>4 4 5</td>
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<tr>
<td></td>
<td>Valorization of intangible assets</td>
<td>4 4 3</td>
<td>2 4 4</td>
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<td></td>
<td>Wide range of improvement in the innovation system</td>
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<td>Strong presence of SMEs stimulate entrepreneurship attitude among young generations</td>
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<td>4 3 3</td>
<td>4 5 4 5</td>
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<td>Quality of innovation (ratio Science/resources)</td>
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<td>Leading positions of technological sectors</td>
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<td></td>
<td>Creativity (Mediterranean special features)</td>
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<td></td>
<td>Positive political attitude towards innovation</td>
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### Stage C: Classification of processes and anchors into groups

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<td>Enhancement of third mission of universities &amp; related infrastructure</td>
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<td>Multilevel innovation programs</td>
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<td>Public procurement supporting AVANZA plan (TICS)</td>
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<td>IDEAS program</td>
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<td>Technological infrastructure support program</td>
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<td>PROFI program</td>
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<td>Support policies for non technological innovations</td>
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<td>Support to social innovation</td>
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<td>Enhancement of few oriented technological centres</td>
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<td>Open software support policy</td>
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<td>Quality improvement of human capital</td>
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| Human resources competences (public & private sector) | |
| Development potential of Spanish Innovation System | |
| Quality of innovation (ratio Science/recourses) | |
| Leading positions of technological sectors | |

| Creativity (Mediterranean special features) | |
| Entrepreneurship attitude | |
| Positive political attitude towards innovation | |

A mathematical procedure for determining and weighting the direction and strength of link between the factors (group of processes) and clusters (group of anchors).

Strong positive link: ++

Weak positive link: +
Methodology – Stage D

A. Experts Workshop to list key a) “anchors” and b) “processes”
B. Cross Impact Analysis
C. Classification of processes and anchors into groups
D. ‘Visual map’ is constructed based on the preceding analysis
Stage D: 'Visual Map' of the Nations' Innovation Ecosystem

Legend

Group of processes (factor analysis) factor analysis

Supply side

Demand Driven

Cluster of Anchors
Israel’s Innovation Ecosystem

Private & Public Sector Activities

‘Out of the box’ thinking

Entrepreneurship Cluster

Culture of Empowerment

Competitive structure

Cultural Diversity

Scientific and Educational Infrastructure

Demand in the Private Sector

Public-Private Cooperation

Government Programs

Govt. Invest. in Human capital

National Research Funds

Legend

Group of processes (factor analysis)

Supply side

Demand Driven

Cluster of Anchors

Positive Link +
Negative Link -
Mixed Link +/-
Israel’s Innovation Ecosystem

Private & Public Sector Activities

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Public-Private Cooperation

Legend

Group of processes (factor analysis) factor analysis

Supply side

Demand Driven

Cluster of Anchors

Positive Link + Negative Link - Mixed Link +/-
National Innovation Ecosystems

The analysis enables us to:

• Show visually and clearly the key elements of demand-side innovation drivers

• To indicate how these demand-side aspects of innovation interact with supply-side elements

• Focus on identifying ‘gaps’ -- crucial market needs that have not been fully met, such that innovative technologies can be leveraged to match supply with demand and create business opportunities.

• Identify supply-driven processes reflecting innovation driven by supply (incentives, funding, etc.), through which resources are directed toward specific markets and products, “pushed” by supply factors rather than “pulled” by demand factors.
Stage D: ‘Visual Map’ of the Nations’ Innovation Ecosystem

Legend

- **Group of processes (factor analysis)**
- **Supply side**
- **Demand Driven**
- **Cluster of Anchors**

**Israel**

- P1. Private & Public Sector Activities
  - A1. Out of the box thinking
  - A2. Entrepreneurship Cluster
  - A3. Culture of Empowerment
  - A4. Scientific & Educational Infrastructure
  - A5. Competitive structure
  - A6. Cultural Diversity
  - A7. Economic Institutions
- P2. Demand in the Private Sector
- P3. Public-Private Cooperation
- P4. National Research Funds
- P5. Govt. Invest in Human capital
- P6. Govt. Programs

**Germany**

- P1. Market-Driven Forces
- P2. Cluster Strategies
- P3. Standardization
- A1. Technology Capabilities
- A2. Availability of Human capital
- A3. Pro-innovation Culture
- A4. Market Structure
- A5. Govern. & Tech. infras.
- A6. External Effect

**Spain**

- P1. Local and Regional Incentives
- P2. Joint Public-Private Initiatives
- P3. Targeted Public Programs
- A1. Technological & Entrepreneurial Infrastructure
- A2. Human capital and Leadership
- A3. Pro-innovation Culture and attitude
- P4. Development of Human Capital

**France**

- P1. Standards & Regulations
- P2. Public Procurement
- A1. Public Policy Intervention & Regulation
- A2. Corporate Policy
- A3. Education, Mobilization
- A4. Demand Side Policies
- P3. Lead Markets & Consumer policies
- P4. Labeling & Awareness raising

**Poland**

- P1. Increased awareness of innovation
- P2. Gov. encourage innovation implement
- A1. Entrepreneurship
- A2. Human capital structure
- A3. Financial and regional systems
- A4. Culture of innovation
- A5. Economic institutions
- P3. Government programs
- P4. Encourage technological independence

- **Legend**
  - **Group of processes (factor analysis)**
  - **Supply side**
  - **Demand Driven**
  - **Cluster of Anchors**
A Comparison of Five National Innovation Ecosystems

The first layer refers to the list of **key anchors** identified in each of the participant countries based on four key innovation dimensions:

- Culture (shared values)
- Context (scientific and technological infrastructure, structure of the economy)
- Markets (demand, preferences)
- Institutions (system of laws & regulations, written & unwritten ‘rules of the game’)

## Comparison of Innovation “Anchors”: Israel, Germany, France, Spain and Poland

<table>
<thead>
<tr>
<th>Key Innovation Dimensions</th>
<th>Israel</th>
<th>Germany</th>
<th>France</th>
<th>Spain</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A6. External Effects</td>
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<td></td>
<td>A5. Economic Institutions</td>
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<td>A5. Economic Institutions</td>
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</tbody>
</table>

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A. “Like All...”
## A. “Like All....”

### Comparison of Innovation “Processes”: Israel, Germany, France, Spain and Poland

<table>
<thead>
<tr>
<th>Supply/Demand side of Innovation</th>
<th>Israel</th>
<th>Germany</th>
<th>France</th>
<th>Spain</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P2. Cluster Strategies</td>
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<td></td>
<td>P3. Public-Private Cooperation</td>
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</tbody>
</table>
A. “Like All....”

lessons:

• It is the individual energy of entrepreneurs and innovators that drives the innovative ecosystem, which in turn flows from the culture and history of their nation.

• The ‘valley of death’, where basic research crosses the ‘desert’ of resource scarcity toward commercial exploitation, exists in all five countries under study.

• It is market forces that ‘pull’ innovative ideas through this barren territory toward full implementation and global scale-up.

• The five innovation ecosystems indicate that this ‘demand pull’ force can fruitfully be strengthened in each of the five nations under study, in particular in Spain but also in France.
B. “Like Some....”

There are aspects of the innovation ecosystems that exist in some, though not all, of the five countries.

- All five systems are complex, though the French, Polish and Spanish ecosystems appear rather simpler than those of Israel and Germany.
- Poland’s ecosystem is simple because it is in its early stages.
- France is simple, perhaps because it is dominated by the role of the public sector.
- Spain features ‘local and regional initiatives’.
- Israel’s culture of “empowerment” and “out-of-the-box” thinking is vital.
- Germany features “cluster strategies”.
B. “Like Some....” The third layer

- We identify and isolate the most important linkages for each of the five countries.

- For each of the four key dimensions, we listed the main processes that were most strongly linked to anchors comprising the four dimensions.

- In this manner, it can be seen:
  - Which dimensions of the innovation ecosystems contribute most to fostering innovation-supporting processes
  - Which processes are ‘innovation accelerators’, and
  - What are the major differences across countries.
### A. “Like Some….”

Comparison of Key Innovation Dimensions that strongly encourage factor processes: Israel, Germany, France, Spain and Poland

<table>
<thead>
<tr>
<th>Key Innovation Dimensions</th>
<th>Israel</th>
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<th>Spain</th>
<th>Poland</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>P5. Government Investments in Human Capital</td>
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<td>P6. Government programs for supporting innovation</td>
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<td>P4. Key Skills Development</td>
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<td>P.4 Labeling &amp; awareness raising industries</td>
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<tr>
<td>Institutions (System of laws &amp; regulation)</td>
<td></td>
<td>P4. Key Skills Development</td>
<td></td>
<td></td>
<td>P5. Private Sector Attractiveness</td>
</tr>
</tbody>
</table>
• There is a strong contribution by the culture dimension to innovation processes, in particular in Spain and in Israel;

• Culture seems to be less important in France and in Germany;

• Poland in particular appears to need to create and strengthen an innovation culture, as it is a transition economy;

• In all five countries the infrastructure dimension supports processes that contribute to innovation driven by the public sector and the private sector alike. This is true in particular of Israel, Germany and Poland;

• France and Spain notably appear to lack processes driven by this dimension.
There is great untapped potential here, for best-practice benchmarking – a process in which countries adapt and import ideas that have been successful in other countries in strengthening innovation.
Summary

• A country requires strategic direction and vision, that provide a clear answer to the questions:
  
  o What does our country do better than other countries, in which products and industries?

  o Can we excel, so that we can produce and export, in order to generate jobs, income, wealth, exports and dynamic sustained growth, even in the face of weak global markets?

• Such strategic planning is normally regarded as “top down”, driven by the country’s political and business leadership.
Our analysis of national innovation ecosystems has revealed the crucial importance of combining ‘top down’ strategic innovation policies with ‘bottom up’ policies driven by the infrastructure of existing capabilities.

These capabilities find expression in the innovation ‘anchors’, in our analysis, which differ widely across countries in their impact on the evolution of innovation ecosystems and their ability to implement national strategic goals.

These anchors, and the dimensions to which they belong, comprise the foundation on which nations can build their strategic innovation policies.
Conclusions

• Each nation, therefore, must design its own unique, specific national innovation policy, according to the strengths and weaknesses identified in its innovation ecosystem.

• And at the same time, through the process of best-practice benchmarking, it is useful for nations to explore these special innovation drivers, and to find ways to adapt them to their own innovation systems.