

**Bruno Tellia, University of Udine**  
**Workshop Hyderabad dec 9-10, 2005**

# **ICT for EU - India**

## **Cross Cultural Dissemination**



**WG5 Innovation dissemination from academia to business (A2B)**

## **The Project**



# General description

Aim of the project was to establish relationships between partners and relevant subjects in India, Italy and Spain, in order to:

- exchange information
- build up a network among universities, research centers, training centers, scientific parks, entrepreneurial associations
- promote cooperation and offer opportunities to SMEs

This activity is intended for helping the innovation dissemination processes in the interested areas.



# General description

- Innovation dissemination process from academia to business (A2B) has been identified through the involved subjects (research centers, universities, training centers, scientific parks, entrepreneurial associations) in Italy (Friuli-Venezia Giulia) and India (Andhra Pradesh).
- These subjects have been interviewed to gather data on (1) effective situation of networking and dissemination system; (2) needs (3) problems in promoting a networking and disseminating perspective, (4) best practices, information and services available



# Specific objectives

1. Develop methodologies for promoting transfer of innovations from academia to enterprises.
2. Promote relationships and exchanges among SMEs, researchers and administrators for developing integration between academia and business, through a) direct contacts, b) A2B portal and other internet facilities, c) dissemination activities.
3. Create a data base of best practices, informations, services for those SMEs willing to introduce new technologies.



# Activities

- **Identification and qualification of the main relevant subjects in Friuli-Venezia Giulia and Andhra Pradesh**
- **Draft of questionnaires**
- **Interviewes with research centers, universities, scientific parks and enterprises**
- **Processing of data**
- **Definition of a plan of following cooperation**
- **Discussion of data, perspectives and possible actions**
- **Realization of an "A2B portal"**

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# **India and Italy in comparison**



# Defining innovation 1

According to Joseph Schumpeter (1883-1950), the theoretician of innovation:

- the concept “innovation” encompasses many dimensions: new products, new production processes, new markets, new raw materials, new technologies and new forms of organization;
- all these dimensions involve “carrying out new combinations”, which are qualitatively important and introduced by dynamic business leaders or “entrepreneurs”.



# Defining innovation 2

Today, it is necessary to take into account that:

- innovation process is risky
- innovation is costly
- only big firms can afford a R&D department
- most SMEs must turn to the market for innovation

Therefore, innovation management must be the core of any industrial policy in order to:

- support research
- make the results available to the productive system (with special attention for SMEs) at affordable costs
- assist firms along the introduction of new technologies



# Defining innovation 3

- Through the diffusion process, innovations contribute to economic development of a country and to companies growth
- To evaluate this process, two features are crucial:
  - space (quantity)
  - time (speed)
- Given a specific unit of analysis (company or country) we can state that the socio-economic development of this unit is a function of the speed at which innovations reach a critical mass.
- The general assumption underlying this statement is that the present (turbulent) environment requires that every entity operating in it show a high degree of innovativeness to become competitive and to survive.



# Innovation Dissemination in Italy (and Friuli)

In Italy (and in Friuli) innovation dissemination takes place in a peculiar productive context, which is structured in Industrial Clusters.

An *industrial cluster (or district)* is a productive system of SMEs specialized in the same productive cycle and integrated at local level. The common territorial-social-cultural background that characterizes a cluster produces what Marshall defined "industrial atmosphere". It constitutes a competitive advantage respect to other systems of production. In fact:

- The cost of relation among the interacting subjects are reduced
- The information costs are reduced
- Connections with scientific and technological world are easier
- Professional training supports the productive system
- The division of labour happens in a territory (the production cycle is shared from different enterprises)



# Innovation Dissemination in Italy (and Friuli) 1

- The new international division of labour (in some countries the labour cost is much lower)
  - the new ICTs (they make possible connections between subjects in any part of the world)
  - the development of transporting
  - The growth of borderless economy
- break the barrier of distance and make regional economies more linked and have led to bypass territorial boundaries



## Innovation Dissemination in Italy (and Friuli) 2

Thus the definition of cluster goes beyond strict territorial boundaries to include relations among subjects with no territorial contiguity but belonging to the same production chain.

industrial clusters become more and more *virtual*.

For example: The *Chair cluster* of Friuli includes firms and plants in Romania, Bosnia, Bulgaria (raw material, first working, component parts), in Milan (design)



# Innovation Dissemination in Italy (and Friuli)

Industrial cluster has been the model of Italy's economic and social development. The Italian SME system has become a kind of production organization alternative to the managerial large-scale one.

Some data:

- Italy is the third-fourth productive force in Europe, nevertheless among the first hundred European companies only 4 are Italian
- 70% of total occupation in the manufacturing sectors is employed in SMEs, against one quarter in the rest of EU
- Half the industrial enterprises has less than 20 workers
- In Friuli there is 1 entrepreneur every 10 inhabitants
- In Italy there are 200 industrial clusters (4 in Friuli)



# Innovation Transfer through Clusters

The EU itself has taken a “cluster approach”.

EU's regional policy aims to minimise regional disparity and to promote economic and social cohesion, developing industrial clusters and stimulating innovation.

Regional Innovation Strategies (RIS), originally formulated in 1994 and launched in the late 1990s, combine regional vocational training, industrial and enterprise policies at individual local level.

In addition, in the 2000s more attention was given to build a new knowledge-based economy. Therefore, innovative activities, technology transfer, inter-firm cooperation and cooperation with higher education institutions and research centres are strongly encouraged, and inter-firm 'cluster' development becomes a keyword.

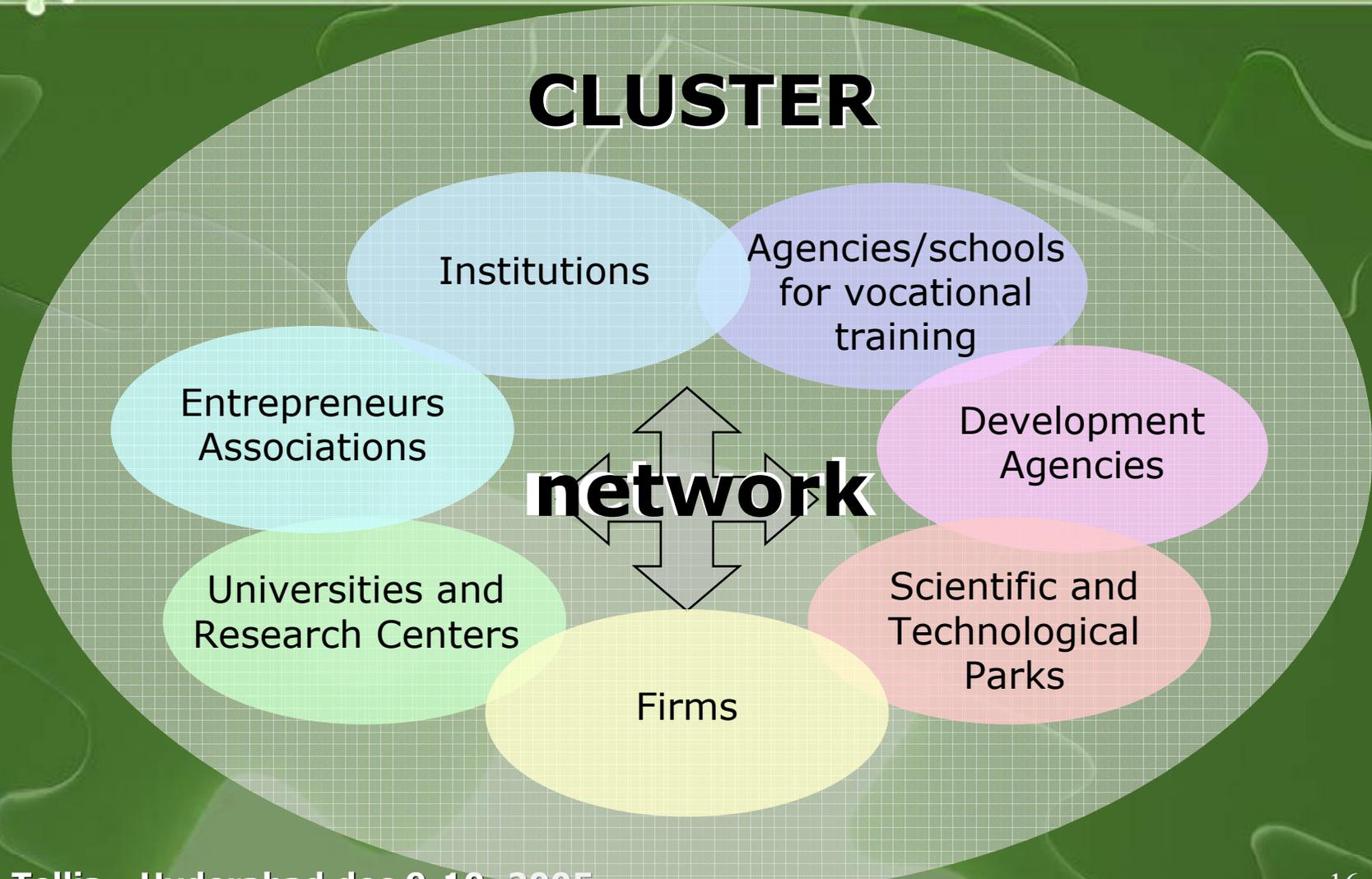


# Innovation Transfer in a Cluster

Porter defines 'cluster' as "geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region." Its characteristic is that of keeping or strengthening high productivity, innovation and new business creation accompanied with spill over effects.

Becattini defines an industrial cluster as "a socio-territorial entity which is characterized by the active presence of both a community of people and a population of firms in one naturally and historically bounded area." This definition suggests an analysis of 'cluster model' based on two key-terms: 'population of firms' and 'community of people'.

# Innovation Transfer in a Cluster





# Innovation Transfer in a Cluster

## POPULATION OF FIRMS

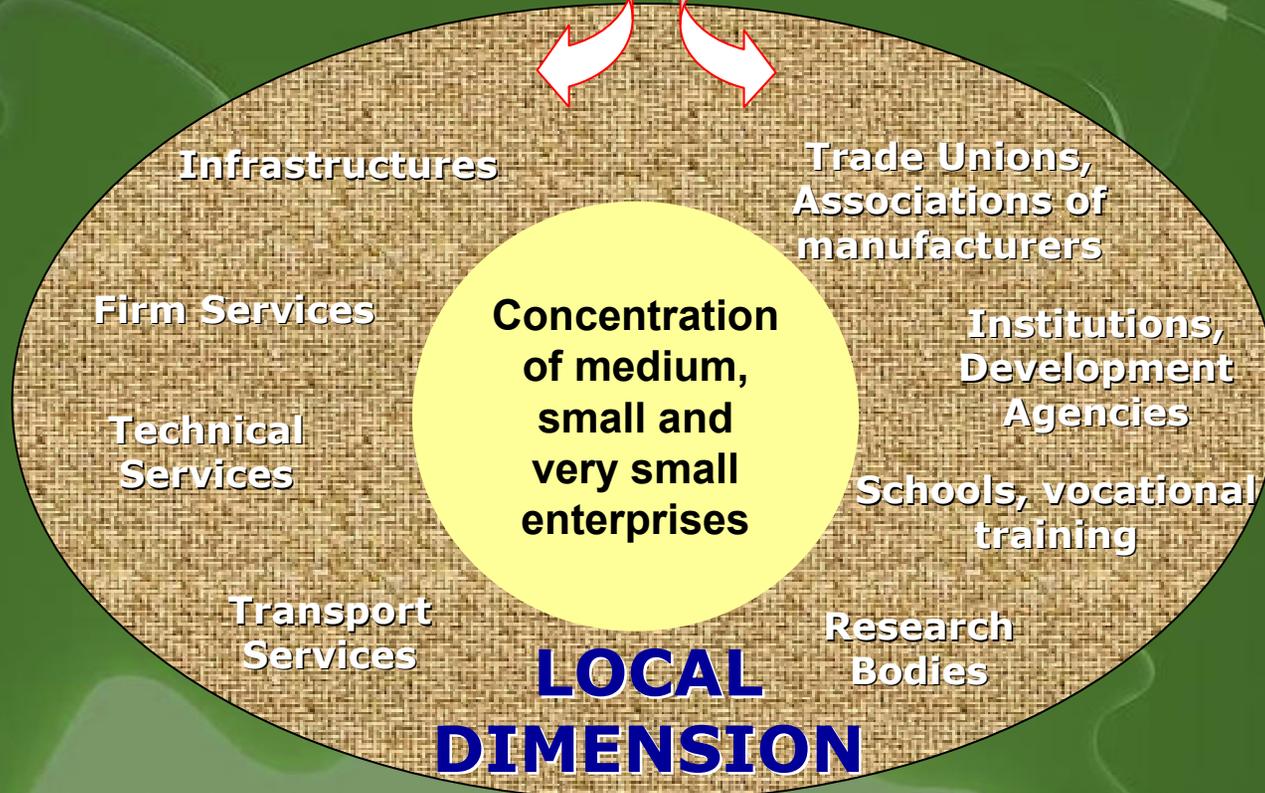
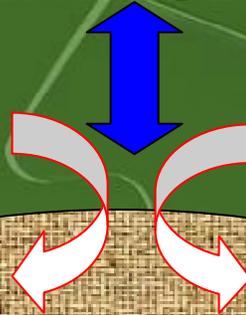
- ◆ high density of firms localized in a defined area
- ◆ presence, inside this concentration of firms, of medium, small and very small enterprises
- ◆ division of work
- ◆ high specialization
- ◆ adaptability and flexibility
- ◆ high mobility from subordinate work to self-employment work
- ◆ high work flexibility inside the firm
- ◆ labour market segmentation
- ◆ high firm birth-death rate
- ◆ high activity rate
- ◆ low unemployment rate
- ◆ an articulate system of material and immaterial infrastructures.

## COMMUNITY OF PEOPLE

- ◆ relationships network among different economic, socio-cultural, political and institutional actors.
- ◆ common political subculture
- ◆ industrial atmosphere
- ◆ trust and cooperation



## EXTERNAL DIMENSION



## LOCAL DIMENSION



# **Innovation Transfer in Italy (and Friuli): the Framework**



# Innovation transfer - Friuli 1

## *Universities*

- direct services to enterprises and public bodies
- stages within firms
- continuing training to professionals
- project management



# Innovation transfer – Friuli 2

## *Research centers*

- laboratorial analisys/tests
- direct services to enterprises and entrepreneurial associations
- “standards” information (especially for export)
- assistance in new products development



# Innovation transfer - Friuli 3

## *Development agencies*

- project management
- transnational connectivity
- intermediation between public and private

## *Labour agencies*

- recruitment services (knowledge workers)
- training



# Innovation transfer - Friuli 4

## *Scientific and Technological Parks*

- direct connection between academia/research and enterprises
- direct services provision to enterprises/public bodies
- project management
- dissemination activities
- formation



# Innovation Transfer: the STPs

In Italy there are 34 Scientific and Technological Parks and several hundred Industrial Parks.

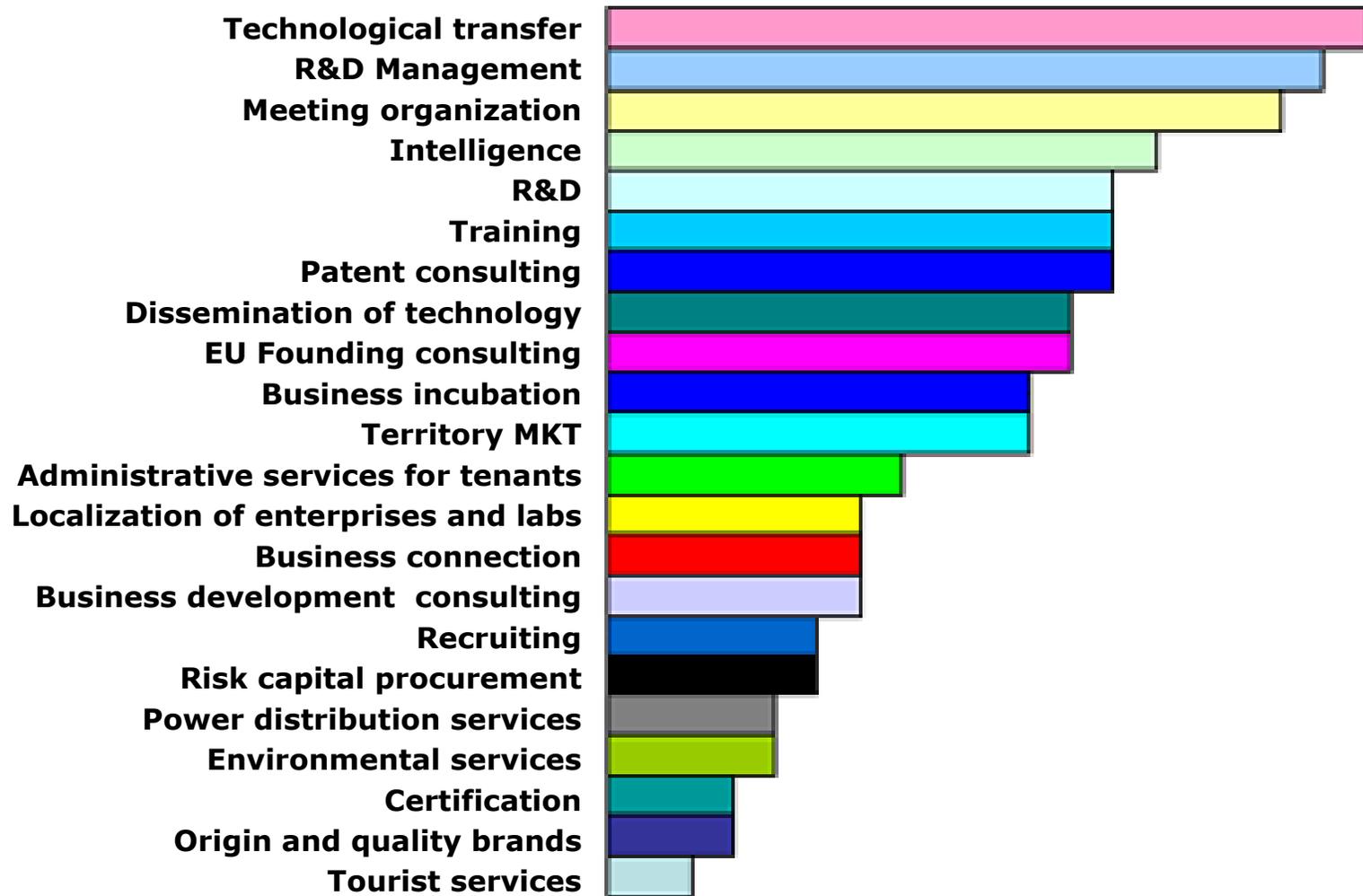
In Friuli-Venezia Giulia there are 2 STPs and 12 Industrial Parks.

Industrial Parks are infrastructured areas for firms settlement. They do not play any active role in innovation transfer; even if proximity of firms is itself a way to disseminate innovation.

A short presentation of Italian STPs will follow.

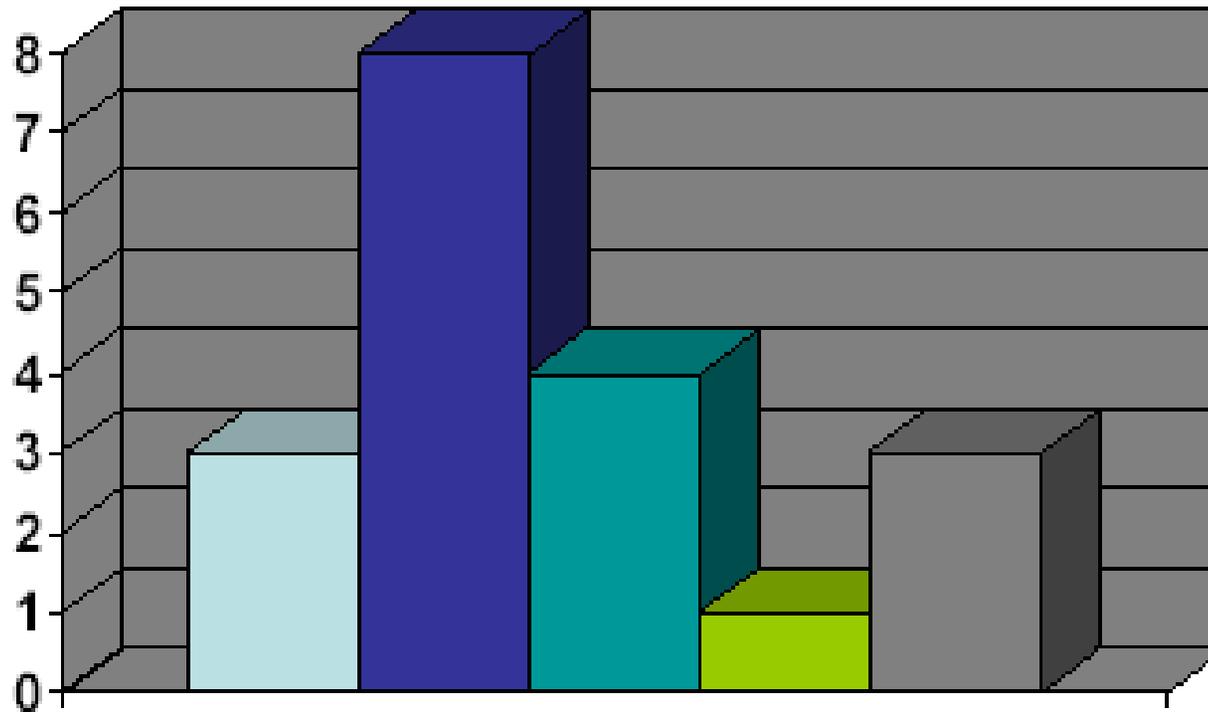


# Services offered by STPs





# Personnel of STPs

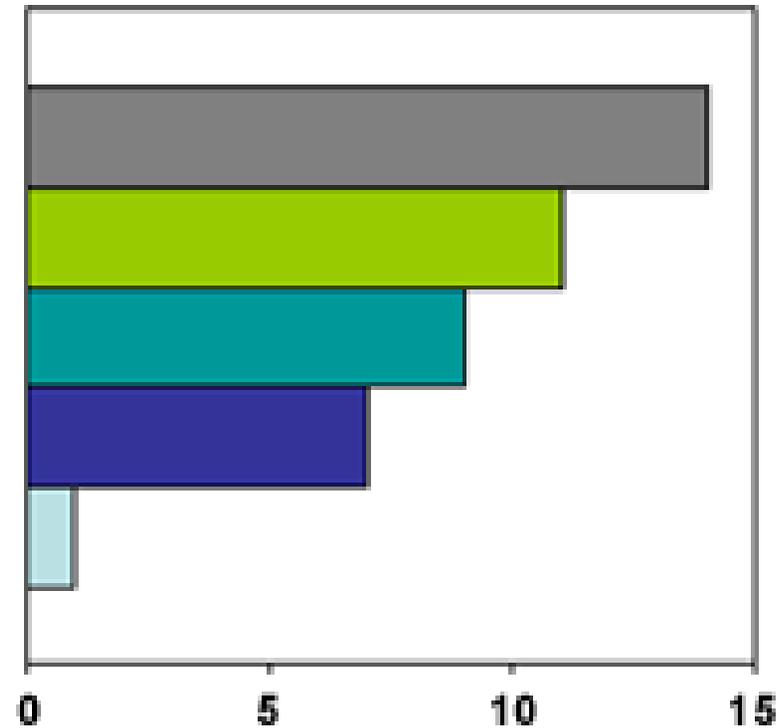


**<5** **5-12** **15-25** **40** **>100**



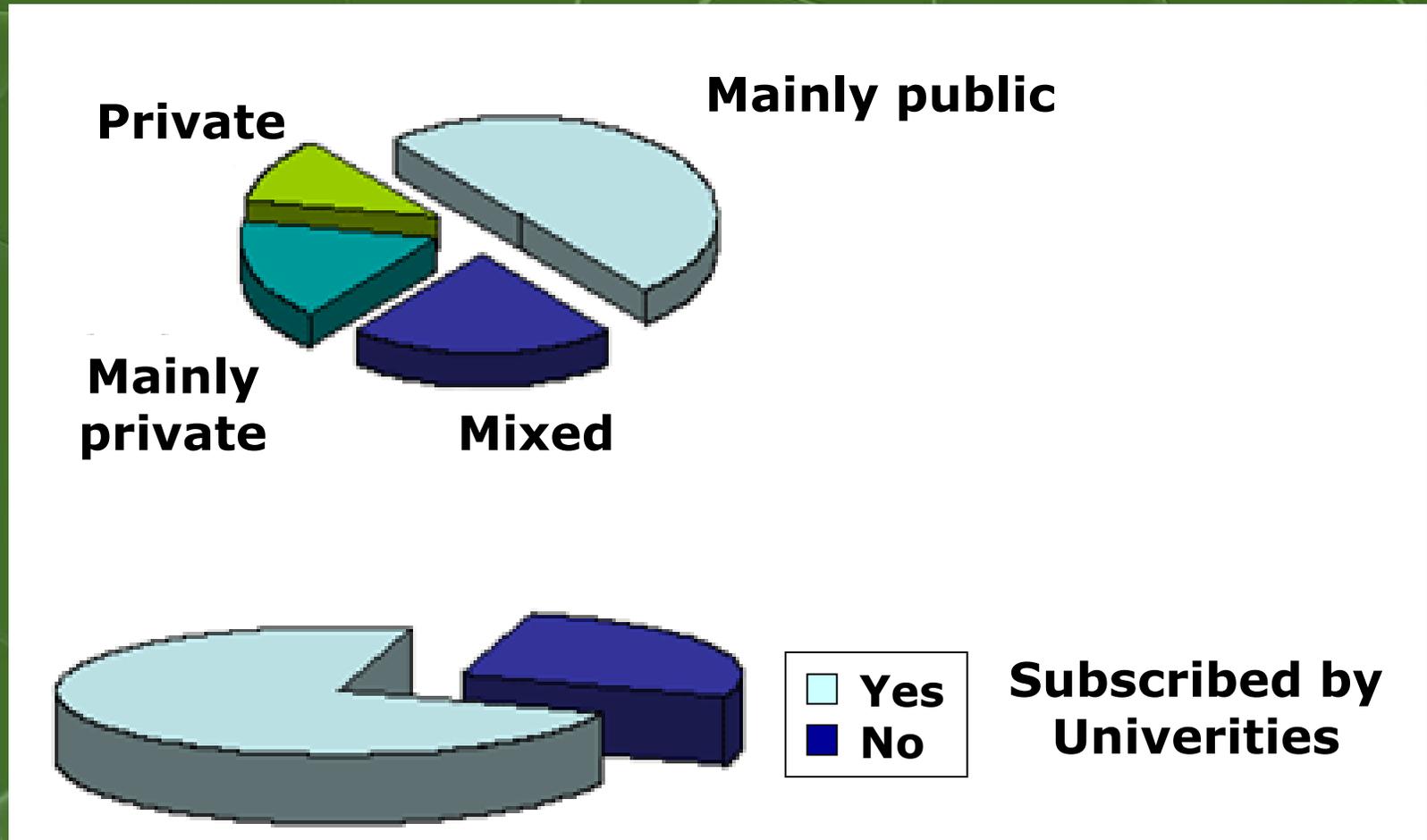
# Infrastructures of STPs

**Research labs**  
**Business incubator**  
**Laboratory areas**  
**Industrial areas**  
**Residential areas**





# Share capital of STPs





# Contacts – Andhra Pradesh

| <b>INTERVIEWED ORGANIZATION</b>   | <b>RELATED INFORMATION</b>   |
|---|--|
| - CDCC – Centre for Development of Advanced Computing                             | Scientific society of Ministry of Communications & Information Technology, Government of India |
| - L&T INFOCITY Limited - Joint Venture Company of L&T and APIIC                   | Technological Park   |
| - Indian Institute of Chemical Technology   | Council of Scientific and Industrial Research  |
| - Hyderabad Software Exporters Association  | Entrepreneurial association  |
| - Institute of Science and Technology - Jawaharlal Nehru Technological University | University level education an research   |
| - Satyam Computer Services Ltd.   | Computer Services  |
| - Innovation Communications Systems LTD.  | Software Development   |
| - Polaris Software Lab Limited  | Software engineering   |
| - Hyderabad Industries Limited  | Building Industry  |
| - Birla Scientific Center   | Foundation   |



# Interviewed subjects

## CDCC – Centre for Development of Advanced Computing

- A scientific society of Ministry of Communications & Information Technology, Government of India
  - R&D institution, engaged in research, design, development and deployment of cutting edge products and solutions in the area of IT and Electronics.
  - Spearheading of national initiatives in IT.
  - Supercomputers, multilingual products, cyber and network security, data management, and formation are core activities.
- 
- High level of dissemination
  - High contacts with political and administrative bodies
  - Possibility to enlarge “development agency” tasks



# Interviewed subjects

## L&T INFOCITY Limited (Technology Park)

Hyderabad Information Technology and Engineering Consultancy City (HITEC City): the largest (151 acres) Information Technology park in India, offers IT infrastructure under one roof to companies operating in the field of IT services, IT enabled services, Telecom, Engineering Consultancy and related domains.

### INFRASTRUCTURE

Power - quality uninterrupted power, 24 hour maintenance services

Communications - seamless connectivity

Entire HITEC City networked through optic fibre backbone

VSNL communication center providing satellite connectivity, dedicated OFC leased lines up to VSNL Mumbai and further links to international destinations via sub-marine optical fiber links.

STPI ,Hyderabad provides high speed data communication links to USA,Europe and Asia.

It provides free internet services through the international gateway (IBS

CIVIC INFRASTRUCTURE/AMBIENCE/AMENITIES

- **No direct dissemination, only services to specific organization**
- **"Perfect position" to deal with innovation dissemination**



# Interviewed subjects

## Indian Institute of Chemical Technology

- Council of Scientific and Industrial Research
  - It is an autonomous Registered Body since 1942
  - Major contribution on Agrochemicals, Pharmaceuticals, Edible Oil Technology-area.
  - Chemical innovation, high level of direct contact and direct services to enterprises, also international (mainly UK and USA)
- 
- Innovation/research implementation
  - Innovation dissemination directly to business
  - High level of international/national network



# Interviewed subjects

## Hyderabad Software Exporters Association

- The HYSEA is a body representing the software industry in Andhra Pradesh under the Andhra Pradesh Public Societies Registration Act.
  - HYSEA promotes co-operation and good business practices among the members by representing and resolving issues and problems affecting the business interests of the member companies, by nurturing entrepreneurship, research and innovation, to achieve global excellence in IT products and services.
  - Membership of the Association is 210.
  - HYSEA's since 1991 has expanded to playing a role in helping the government formulate appropriate policies and extending help in the creation of simpler and more effective procedures needed
- 
- Clustering/associational role
  - High possibility of new functions (ex. joint research activities, joint innovation dissemination)



# Interviewed subjects

## Institute of Science and Technology Jawaharlal Nehru Technological University

- Research and education in the fields of Engineering, Technology and Applied Sciences of interdisciplinary and multi-disciplinary character.
  - Centers for Environment, Water Resources, Remote Sensing, Bio-Technology, Management Studies, Computer Science, Energy and Transportation Engineering. They offer Post-Graduate and Research programmes leading to M.Tech., MBA., M.Sc.,(EST), M.Phil., MS and Ph.D., degrees in the latest technological thrust areas.
  - They work also on refresher courses, training programmes and consultancy services.
  - Supported by budgetary allocations from university funds and sponsored research programmes.
- 
- They promote field-oriented research activities in collaboration with industrial units
  - Active dissemination, with specific targets
  - Possibility to enlarge projectual/dissemination activity



# Innovation transfer Andhra Pradesh<sup>1</sup>

## *Universities*

- specific organization (specialized in one sector)
- project activity together with public bodies and enterprises on focused and specific subjects

“umbrella” organizations that merge different universities in order to strengthen and tighten their “offer” on the market of projects and direct research



# Innovation transfer

## Andhra Pradesh 2

### *Technological Parks*

- providing advanced services structures
- placing at enterprises' disposal wide spaces, controlled, already or to be built, completely cabled and full of services, in which highly specialized workers are easily found, with costs (at the moment) highly competitive
- disseminating innovation in an informal way (direct contacts, proximity, same working places)



# Innovation transfer Andhra Pradesh 3

## *Research centers*

- Governmental or private
- Dissemination only within the organization, or referred to specific clients

Dissemination activities could improve if:

- Network strategy
- Participated management



# Innovation transfer Andhra Pradesh 4

## *"Development agencies"*

- They are very different from the development agencies in Italy, as for example the CDCC – Centre for Development of Advanced Computing (a scientific society of Ministry of Communications & Information Technology, Government of India) or the Indian Institute of Chemical Technology (Council of Scientific and Industrial Research)
- They are more “governmental”, and the general political and administrative frame is different
- In future, they can foster the role of project management and open to private participation



# Some remarks

In order to work in direction of an “organized” dissemination, it is important in our opinion to focus the following points:

- creation of an intermediary level of “disseminators” (entrepreneurial associations, development agencies, STPs)
- importance of shared policies
- importance of mixed (public/private) initiatives
- cluster strategy as “network strategy”



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