



**INNOFORCE**  
EFI Project Centre

# The Role of the Institutional Level: Three Functions of Innovation Systems

IP INNO-FOREST 2006, Zvolen  
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# Innovation

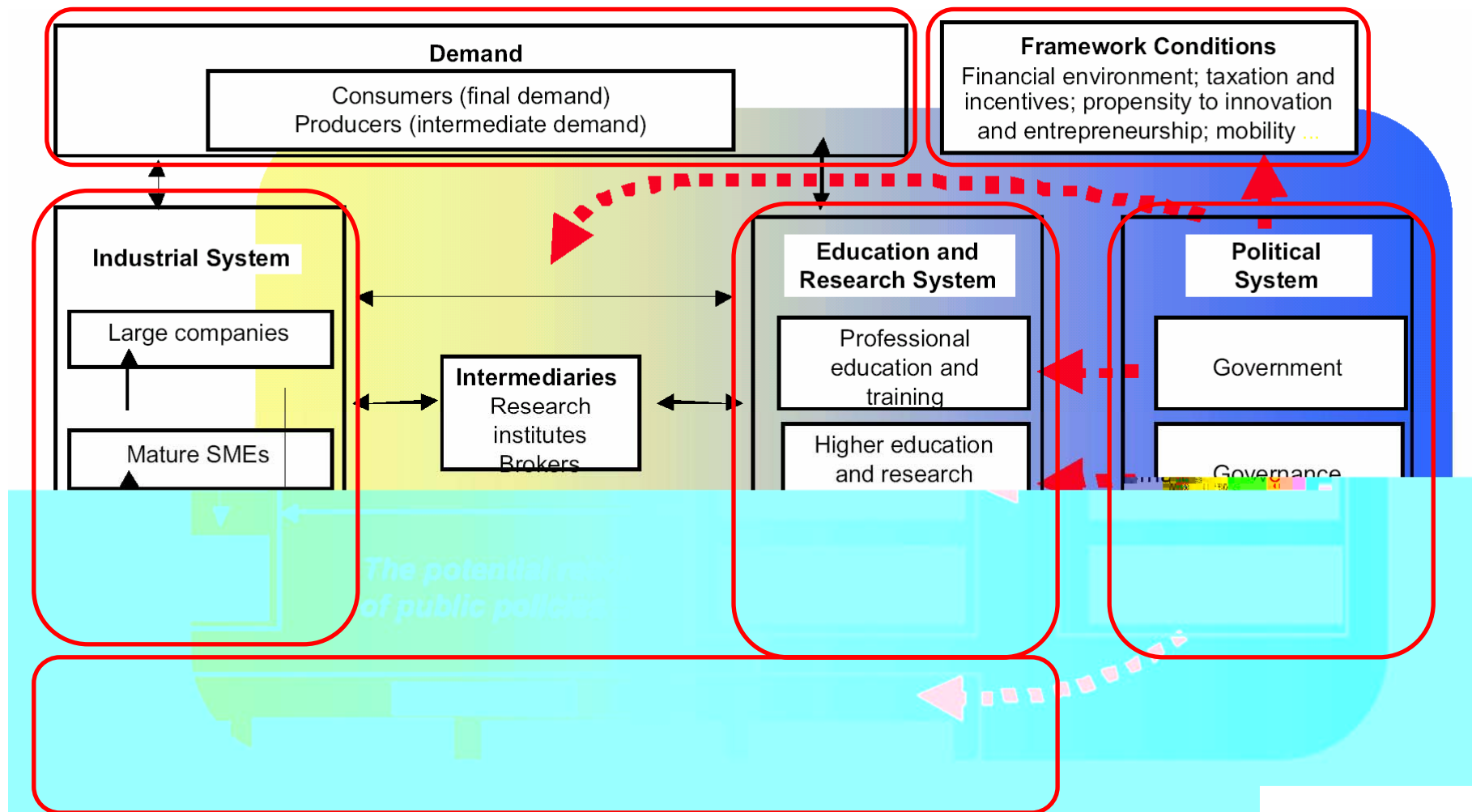
= successful introduction of novelties

# Innovation System

*“Set of institutions which jointly and individually contributes to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process”*

(Metcalfe 1995)

# Innovation System Model



Source: Arnold / Kuhlman 2001

# Innovation System

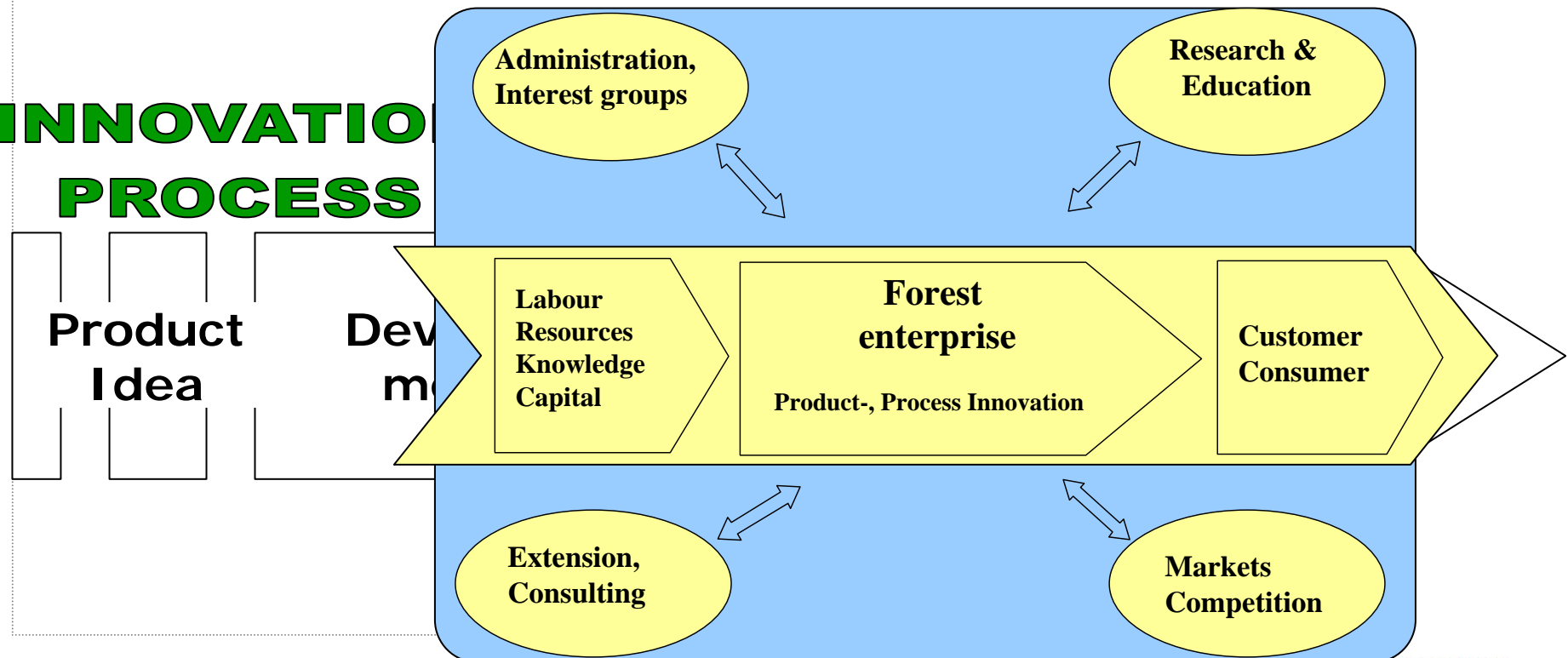
## ▶ Common characteristics of IS approaches

- Innovations, learning and institutions at centre
- Holistic and interdisciplinary
- A historic perspective is natural
- Differences between systems and non-optimality
- Emphasis on interdependence and non-linearity
- Product technologies & organisational innovations
- Conceptual framework rather than formal theories

# Innovation Systems (IS)

Look at innovation processes not as linear but complex processes ...

## INNOVATION PROCESS

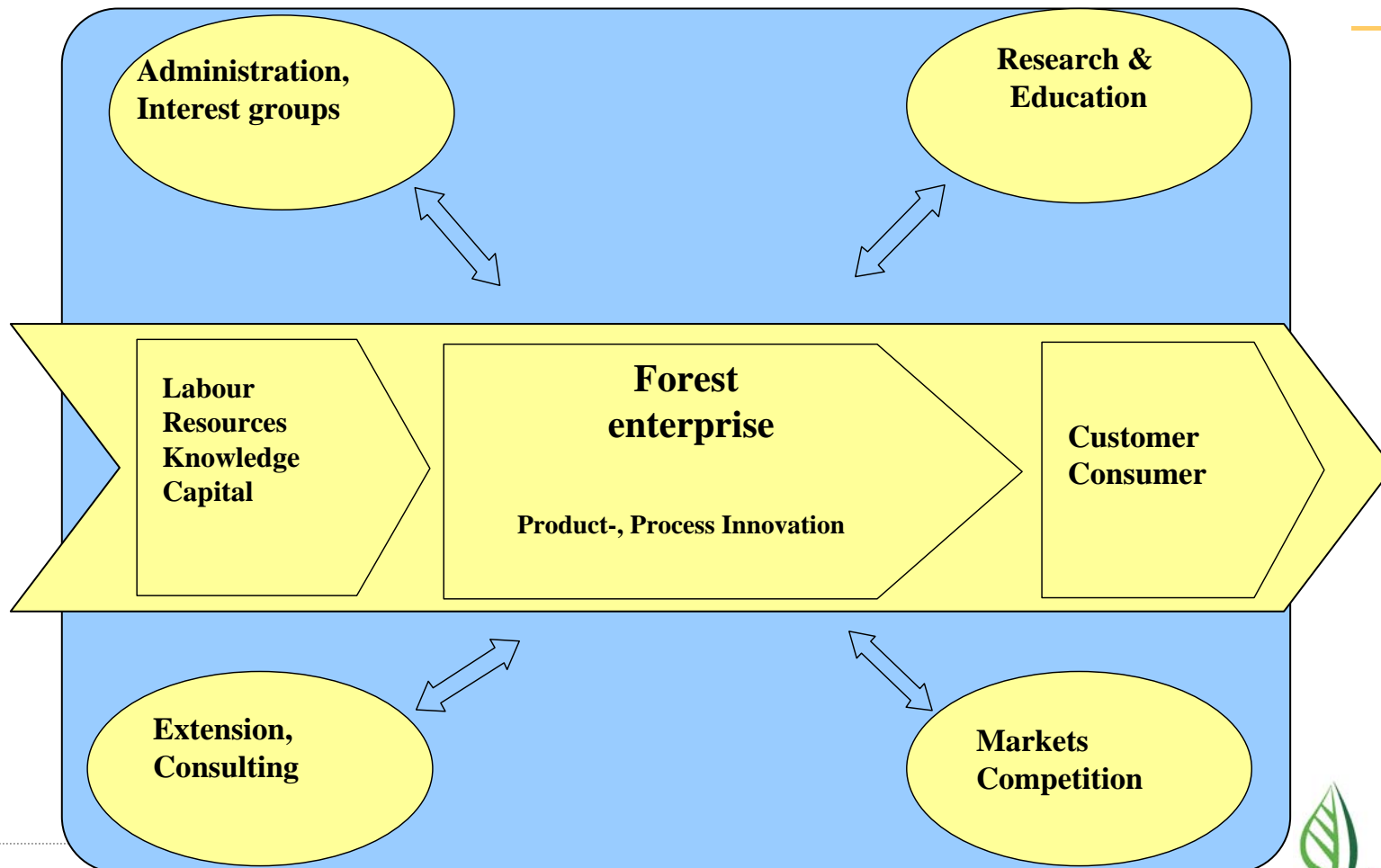


# Innovation Systems (IS)

... are comprised of

- ▶ actors
- ▶ institutional background
- ▶ and their interaction;

# Innovation Systems (IS)





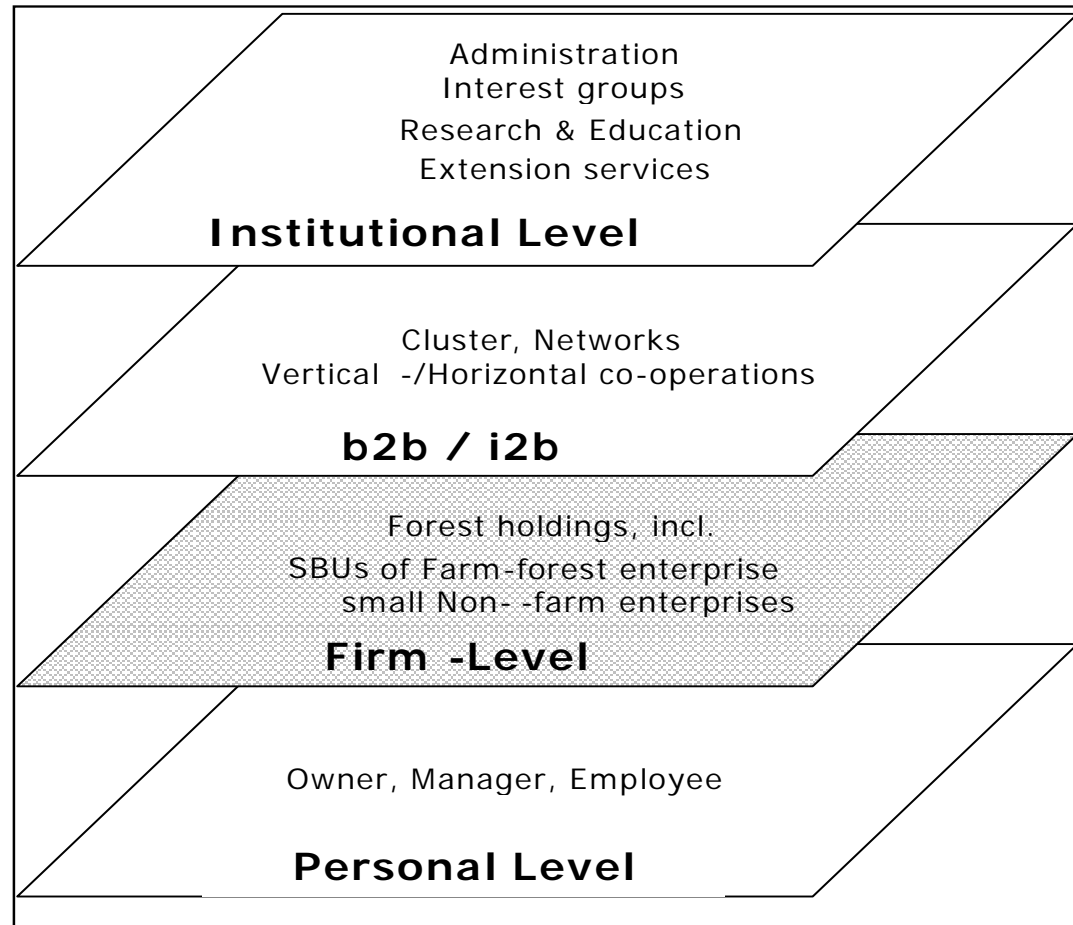


# Innovation Systems (IS)

... comprise private and public actors

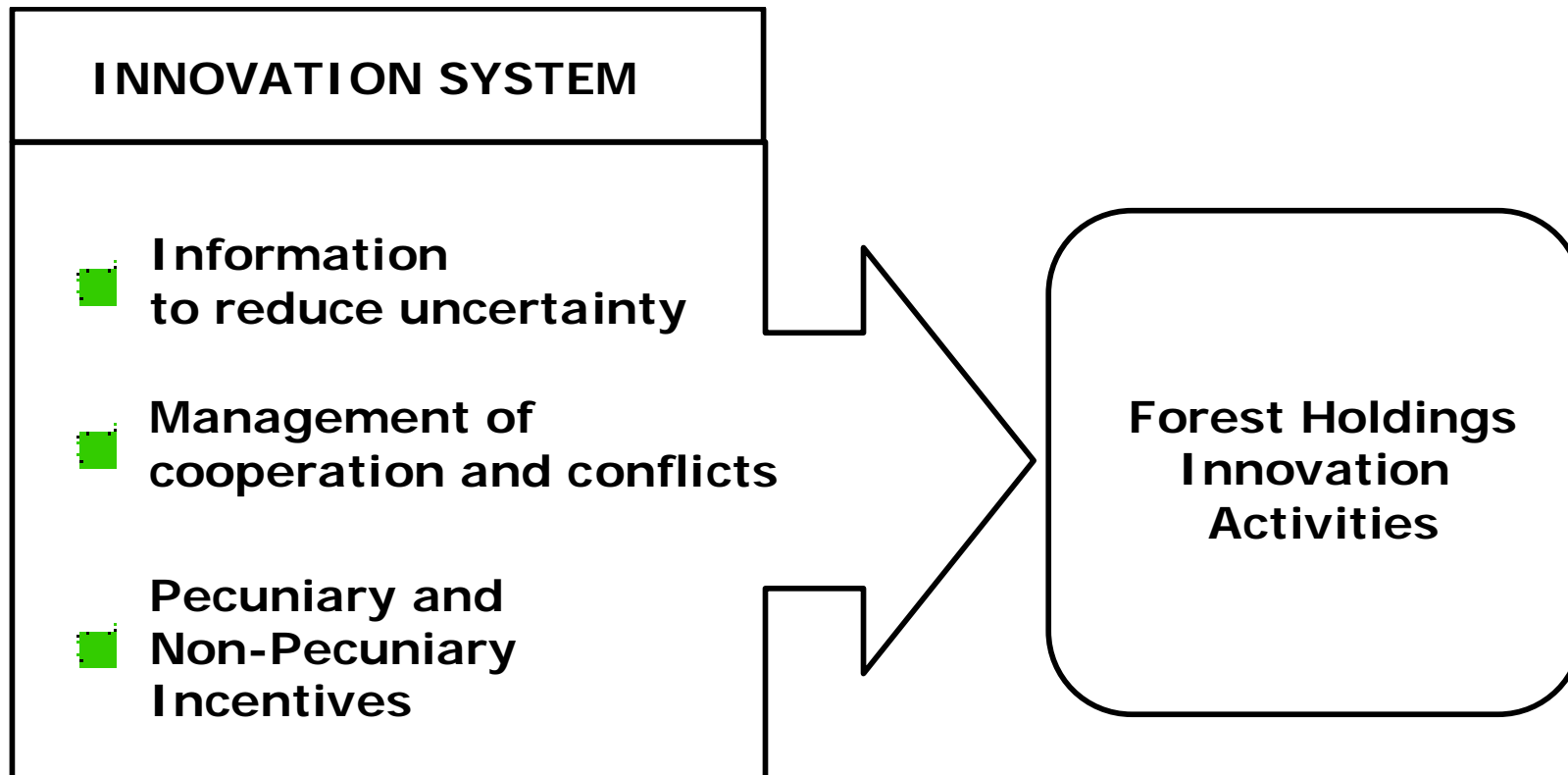
... and on different levels:

# Innovation Systems (IS)





# Functions of IS



# Information Function

- ▶ **Information flows:**
  - ▶ **Sources of ideas**
    - from which actors?
    - through which channels?
  - ▶ **Sources of know-how**
    - technical know-how
    - business know-how
    - organisational know-how
    - financing know-how

# Coordination Function (1)

- ▶ **1. Business cooperation:**
  - ▶ **Horizontal cooperation**
    - small or large forest holdings
    - for marketing/production/etc.
  - ▶ **Vertical cooperation**
    - along the wood-chain
    - along other production chains!

## Coordination Function (2)

- ▶ **2. Coordination of actors:**
  - ▶ **Coordination of public and private actors and conflict resolution**
    - **What is the quality of the contact?**
    - **Who initiated the contact?**
    - **Who helped in conflict resolution?**

# Incentive Function

- ▶ Pecuniary and non-pecuniary incentives
- ▶ Financial flows:
  - ▶ Sources of financing
    - internal:
      - own
      - business cooperation
    - external:
      - private financial market (bank loan...)
      - public funds
  - ▶ Role of public funds?



# National Innovation System

*„...the elements and relationships which interact in the production, diffusion and use of new, and economically useful knowledge (...) and are either located within or routed inside the borders of a nation state“ (Lundvall 1992)*

## ► Elements:

- Institutional structure
- Incentive system
- Capabilities and creativity of economic actors
- Cultural characteristics of a nation

# Regional Innovation System

*„geographical distinctive, interlinked [institutions and] organizations supporting innovation and those conducting it, mainly firms“ (Cooke et al. 1996)*

- ▶ **Spatial and social proximity are important conditions for the realisation of innovation**
- ▶ **Facilitate exchange of knowledge, create learning processes**

# Sectoral Innovation System

*„System of firms active in developing and making a sector's products and in generating and utilizing a sector's technologies" (Breschi and Malerba 1997)*

- ▶ Particular combinations of opportunity and appropriability conditions
- ▶ Particular degrees of cumulativeness of technological knowledge
- ▶ Common knowledge base

# Sectoral Innovation Systems

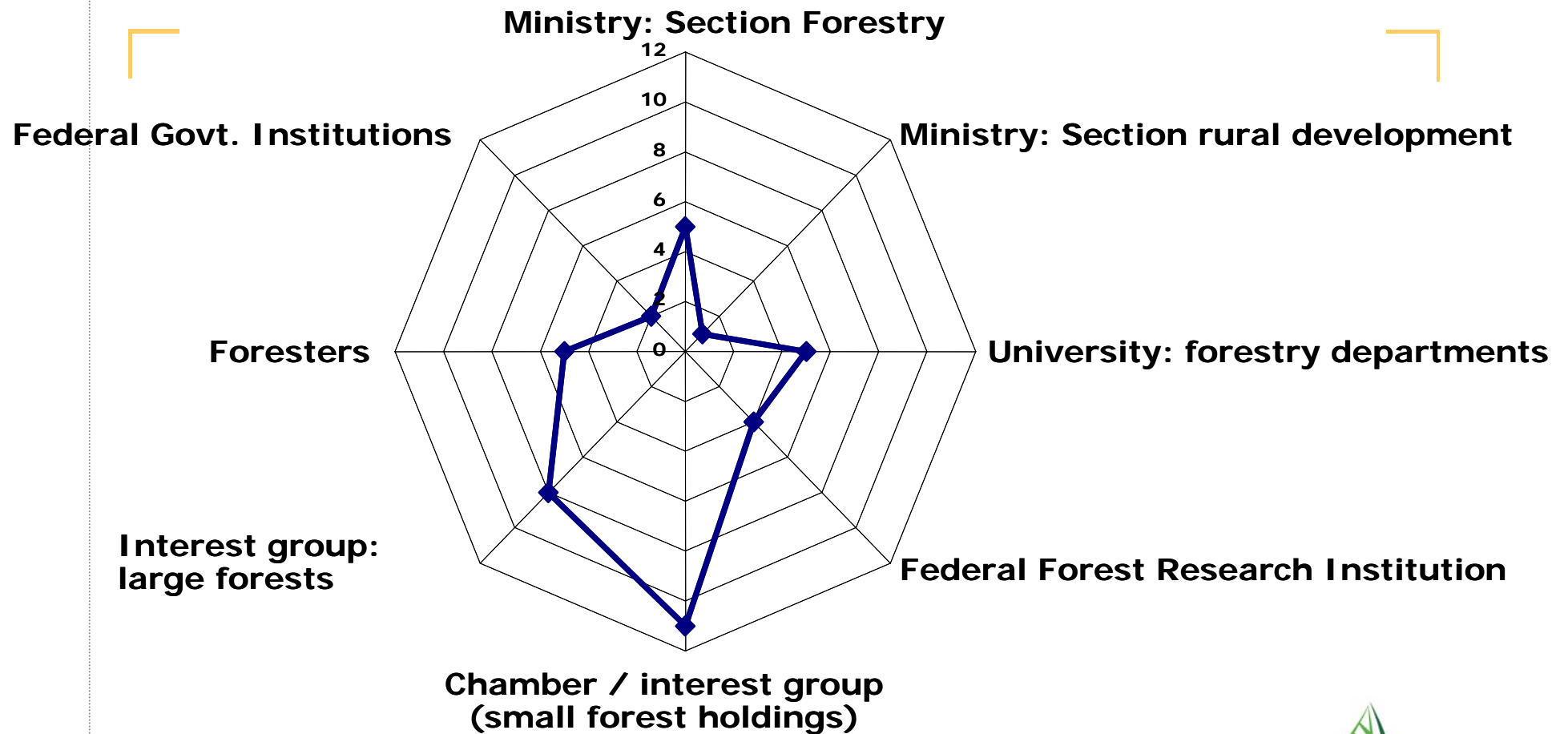
- ▶ **SIS comprise of actors of one specific sector and the majority of functions are fulfilled by these actors.**
- ▶ **SIS in traditional, mature sectors support more process than product innovations and are strongly oriented at traditional business areas.**



**Example:**

**Forestry SIS in Austria**

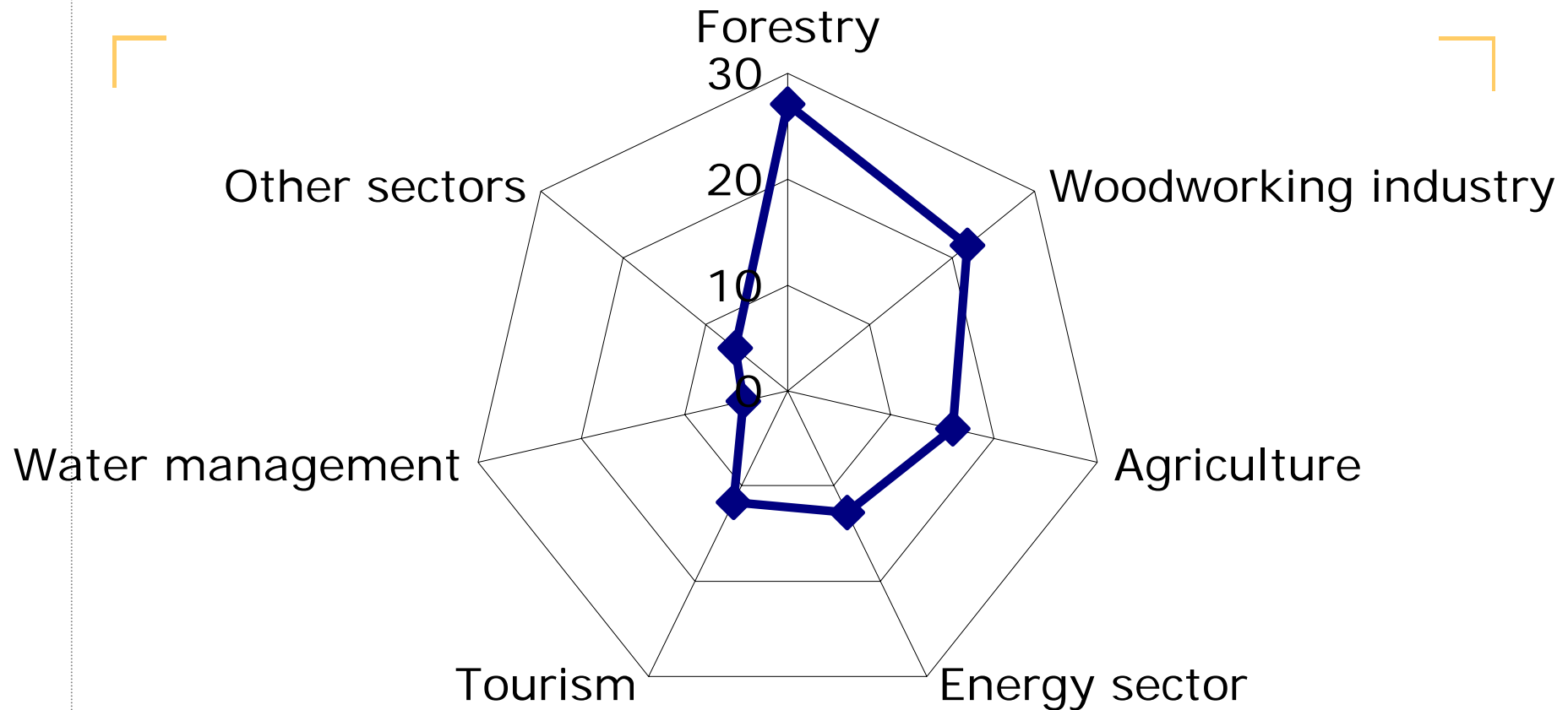
# Forestry SIS in Austria: Actor network on national level



## **Forestry SIS in Austria: Actor network on national level**

- ▶ **SIS consists of a „traditional coalition“.**
- ▶ **Is not in contact with NIS actors.**
- ▶ **Lacks of intersectoral relations.**

# Actor network on provincial and district levels







## **Actor network on provincial and district levels**

- ▶ **Cross-sectoral interaction happens ad-hoc on the ground ...**
- ▶ **without strategic planning on higher administrative levels.**

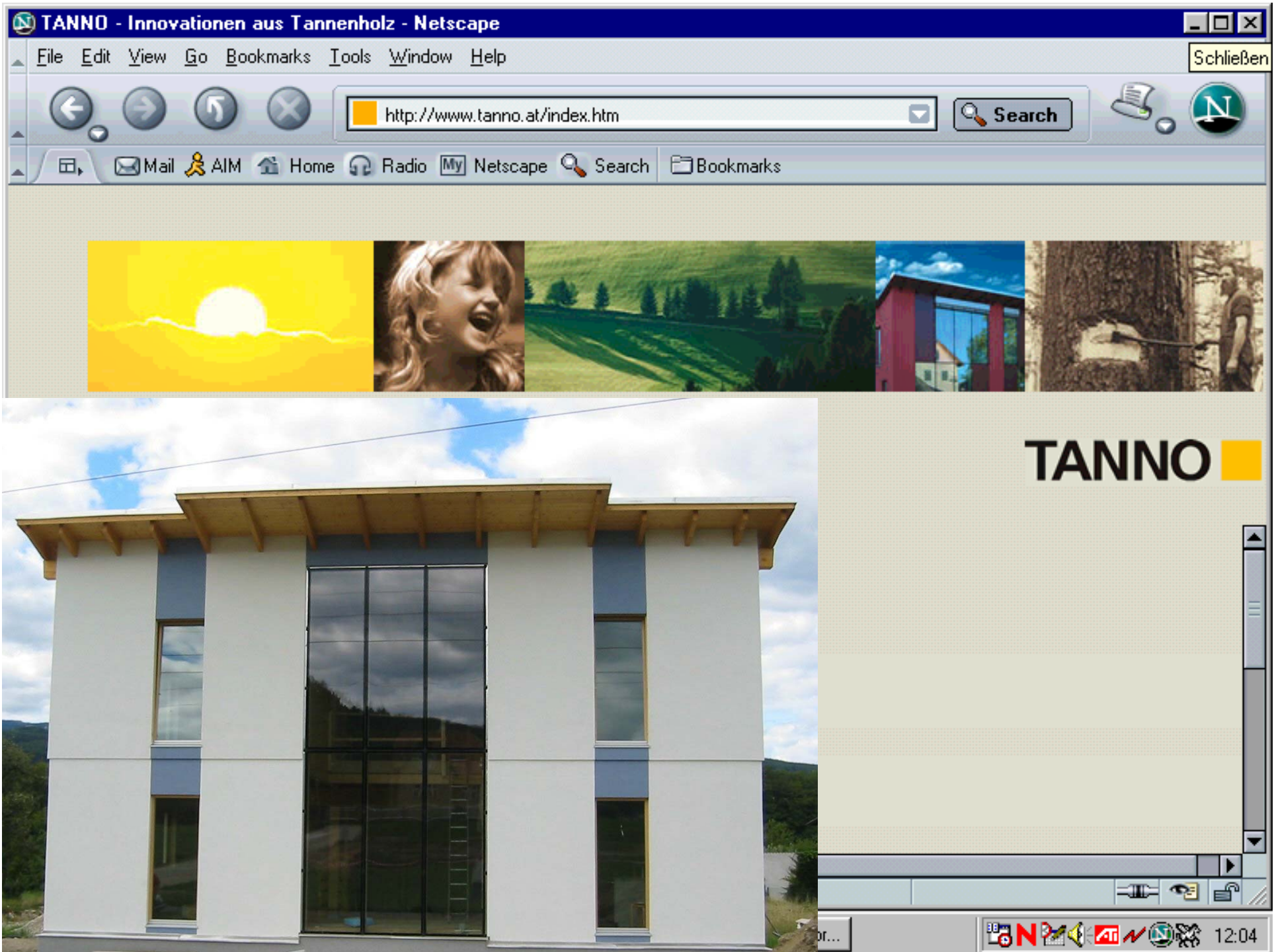
# Regional Innovation Systems

- ▶ RIS are mainly characterized by actors located in a specific region rather than by a specific sector.
  - ▶ *Cross-sectoral.*
- ▶ Majority of functions of the innovation system are fulfilled by regional actors.
  - ▶ *Suitable for „territorial“ services of forests.*



# A Case: The TANNO house





# A Case: The TANNO house



## ► Problem



# A Case: The TANNO house



- ▶ Problem
- ▶ Idea ..... 
- ▶ First financing attempt: Rural Development Funds
- ▶ Second financing attempt: Regional Development F. (Leader+ Region „Kraftspendedörfer Joglland“)

# A Case: The TANNO house

## ▶ Actors:



- ▶ ARGE Tanno: regional forest associations, saw-mill, furniture manufacturer, wellness facilities (sauna), pre-fab company, architect (Gemini).
- ▶ Chamber of agriculture (regional office).
- ▶ proHolz (timber marketing) – finding an architect
- ▶ Rural and regional development funds coordination offices (ILE; EU regional mngtmt)
- ▶ Designer (on contractual basis for furniture design)

# A Case: The TANNO house

## ▶ Results:



- ▶ A number of products (pre-fab, furniture, sauna)
- ▶ Modern design (house, furniture)
- ▶ Modern technology (*low energy* house)
- ▶ Sales have started
- ▶ Several awards
- ▶ Follow-up project: TANNO + Gemini technology (*plus energy* house)



# A Case: The TANNO house

## ▶ Conclusions:



- ▶ Considerable time investments are necessary and frustrations in the starting phase have to be calculated!
- ▶ **Cross-sectoral cooperation** takes a lot of time but pays the effort!
- ▶ Look out for „non-sectoral“ subsidies!

# Conclusions

- ▶ **Results from INNOFORCE studies prove the importance of institutional level interactions and public and private institutional actors:**  
**Even in the case of very **simple** innovations that are mainly developed by one single company there are already many actors to be considered (e.g. authorities), or business cooperations that are recommended!**  
**Even more important in **complex** cases!**

# Recommendations – Institutional Level

- ▶ **Develop a comprehensive innovation policy for the forestry sector**
- ▶ **Provide Information on New Markets and Improve Information Flows**
- ▶ **Facilitate Cross-sectoral Co-ordination**
- ▶ **Provide Incentives that Systematically Foster Innovation**



**Thank you**

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