

# Evaluating Industrial Benefits from RTOs

Study performed 2007 by Swedish Research Institutes

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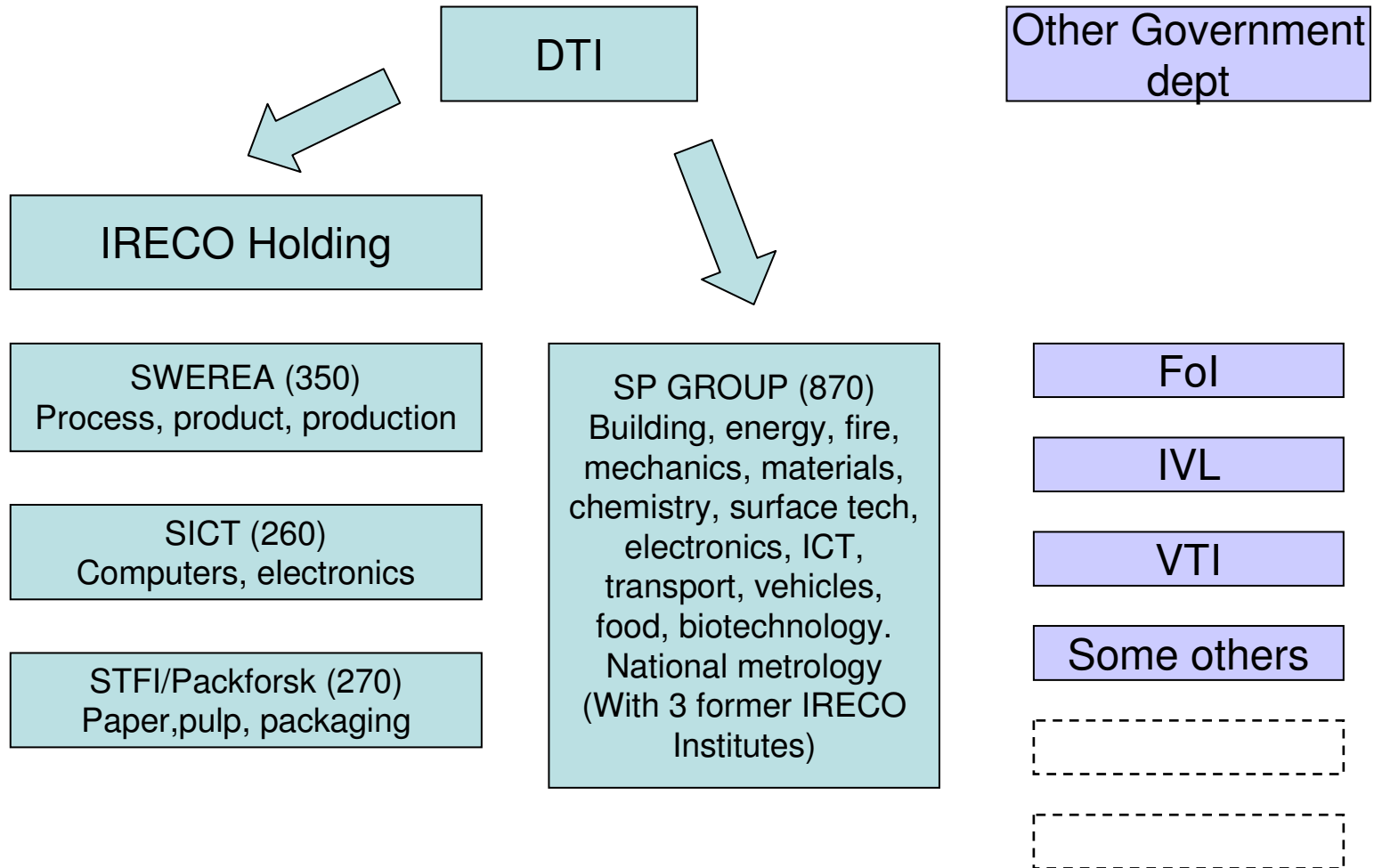
SP Technical Research Institute of Sweden

## Background

- The Swedish institute sector is somewhat fragmented
- Government and industry are considering strengthening the institutes financially, to gain international competitiveness.
- This process is on-going, and an increased base funding by the DTI is foreseen



# The Swedish Institutes

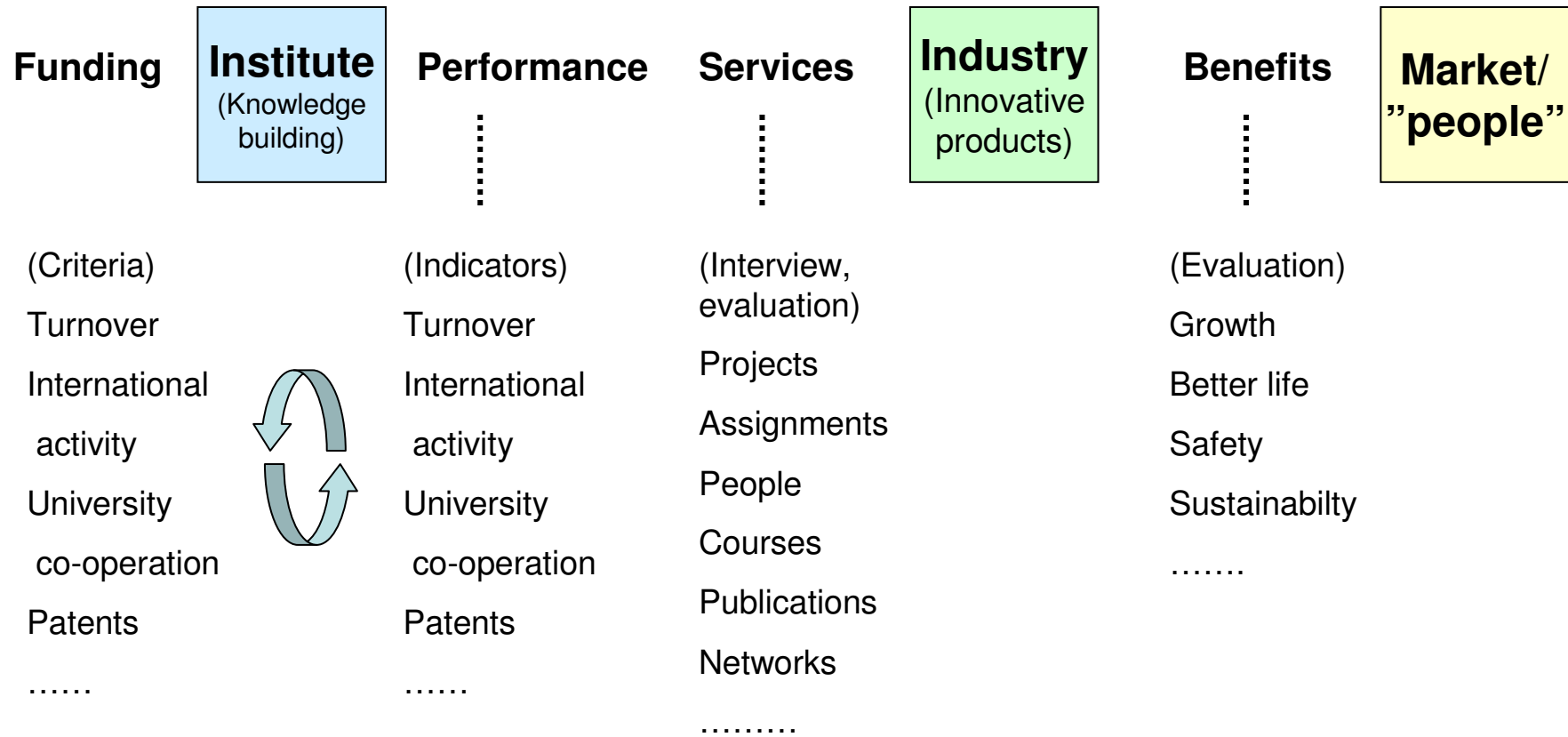


## Background (cont)

- Then there is a need, and considerable interest, in establishing measures of industrial benefits from using institutes, and their capabilities built through the base funding
- Hence, IRECO gave the task, and allocated some of the base funding, to SWEREA, SICT, STFI/Packforsk and the SP group to:  
**”Find and validate a model for how customer benefits emerges from co-operation with research institutes, and how this benefit can be coupled to the base funding of the institutes”**
- It is unusual that such a study is performed from the ”inside”, by the institutes themselves. Considerable work has been, and is, performed by financing bodies and consultants



# From funding to benefits - Innovation



## Plan and organisation of study

Project was run by one management representative from each of STFI, SICT, SP, and SWEREA (CEO, CTO or COO), aided by experts from their respective institute

Project plan (2007):

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Management	■	■	■	■	■	■	■	■	■	■	■	■
State of art study	■	■										
Analysis, modelling	■	■	■	■	■							
Verification		■	■	■	■	■	■	■	■			
Reporting									■	■	■	■



# Institutes have many functions which produce customer benefits

## Activities (from government study)

- Applied research
- **Development**
- **Design**
- Education
- Testing and evaluation
- Advice, expert services
- **Prototypes**
- Demonstration, pilot studies
- Certification

## Benefits (useful services)

- **Direct projects to develop products/processes**
- Indirekt contributions
  - Courses, seminars
  - Reports, handbooks
  - Stakeholder networks
  - Mobility (Ph D:s etc)
  - Knowledge transfer (universities, international)
  - High risk projects
  - Impacting society (health, environment, safety)



## Literature survey

- Many studies and suggestions about "hard" indicators of performance (publications, patents, courses etc)
- Technopolis study tries to link performance indicators with industrial goals (cf Figure) in terms of financial, research, social and human indicators (150 indicators from 23 institutes!)
- Few results involving "soft" indicators (use of project results, impact on products, improved environment etc)
- Measurement of development of Intellectual Capital as proof of function and usefulness is suggested by some authors
- Effect logics are developed which define aims and find ways for evaluation in the short, medium and long perspective



## Conclusions from literature survey

- There are many indicators for performance of institutes, so many that they tend to cause too much work without adding value
- It takes a long time from financing to possible evaluation of impact in industry (and society)
- There are few objective connections, but many indicative ones, between performance of institutes and effects in industry
- It is important to consider the individuality of their own institutes when defining indicators. They have strategies of their own depending on their markets and stakeholders.



## A case of learning

For the allocation of base funding to the IRECO institutes 2008 a complicated set of essentially "hard" criteria was suggested

Following some discussion with the institute directors, arguing the turnover as an essential and relevant criterion, this set of criteria for applications were decided by IRECO

- continued increase in co-operation between institutes
- international activity
- knowledge transfer to SME:s
- contribution to growth
- commercialisation
- co-operation with universities

After ambitious application writing, and hearings before a panel of experts, which cost considerable effort, the result was a funding (from a fixed total amount) which was very close to proportionality to turnover

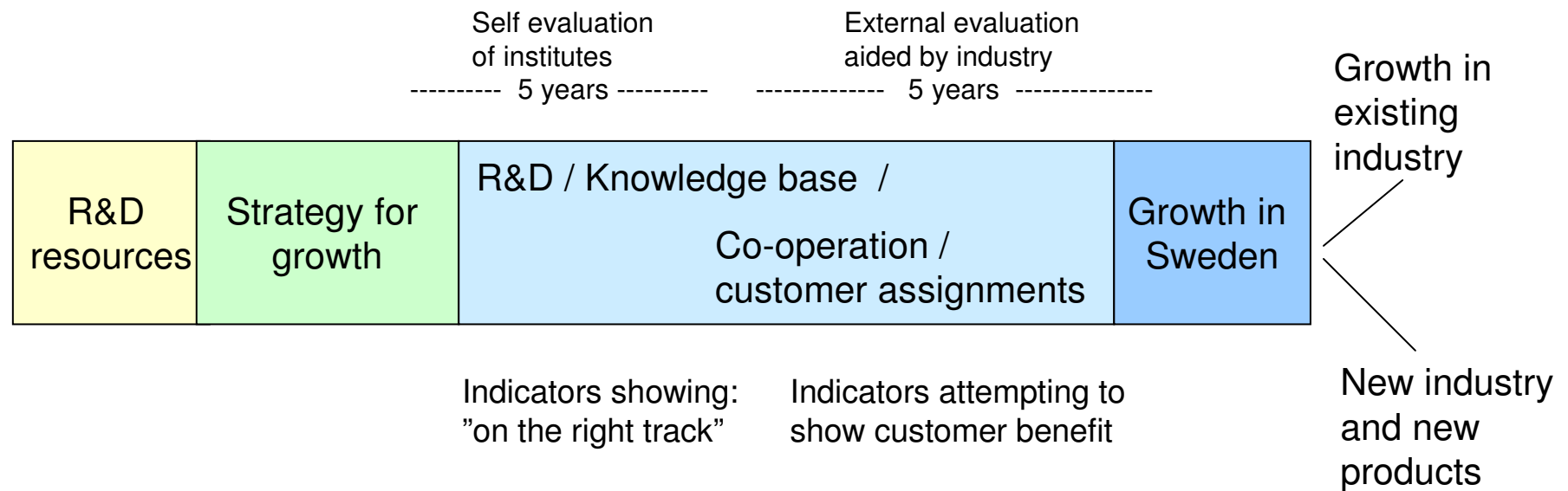


## Analysis and model

- The institutes have industrial stake holders, and build strategies for their market. This has to be considered in the base funding.
- The institutes have systems and indicators for measuring performance annually, and they assess customer benefit in the direct relationship with customers.
- The time between financing competence building and effects in terms of benefits from new products, growth etc is long, often in the order of ten years.
- Other studies, effect logics, are similar to the thoughts presented in the model. I.e they set up strategies with goals, which can be checked on different levels and time scales



# Model for measuring customer benefit of institute R&D



# Features

## Main messages

- It takes a long time from ordering a research task to final customer benefit (industry/society) →
- The order has to consider the strategies and individuality of the institute →
- The institute itself defines aims and a plan for follow-up of performance, and makes annual self-evaluation →
- External evaluations of customer benefits are made in a longer perspective →

## Plan of action

- Make long term orders of research (min 3 years) and describe aims distinctly but without too much detail
- Let the institute produce plans, and indicators and follow-up procedure
- Let the institute report, and be responsible for, the annual follow-up
- Make external evaluations of the fulfilment of the order on a three to five year basis



# Verification

## **Eight case studies from all four institute groups give**

- Long relationships with institute are beneficial.
- Time from start of projects to visible growth and market is typically 10 years.
- Competence of institute is built under long time and used in many ways.
- Combination of several knowledge areas necessary to solve problem.
- Large projects give many results, as products/patents, testbeds, researchers in industry, environmental impact.
- Relation between direct economic gain in industry and project cost + estimated cost for knowledge base is 10 – 100 (Conservative estimate)



## Verification (cont)

### Interviews with industrialists yield

- Time to benefit after project 1-3 years, and longer times for general build up of competence (see graph)
- The proposed model is relevant
- The strategies of the institute should consider industrial priorities (and be supported by base funding)
- An important function of base funding is to enable high risk applied research in institutes
- Not control/indicators, but orders related to goals
- Main usefulness is related to continuous improvements, and long range relationships, rather than singular break-through's
- "Without ... lasting relationship.....that we should have been as successful..."



# Verification (cont)

From  
YKI member days  
(~ 100 customers)

Time from end of project to tangible result

