Innovation policy developments in the Netherlands: From cluster policy to the adoption of the DIS Model

4th Regional Cluster Seminar

25 June 2003

Organised by JSSPRM, RIETI & NISTEP

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Overview

- Historical perspective
- Cluster policy roles
- Policy learning
- Cluster types
- Systemic imperfections
- Strategic framework & cluster policy process
- Leading Technological Institutions (GTIs or TTIs)
- Innovation performance & conditions in the Netherlands
- Dynamic Innovation System
- Concluding remarks

Historical perspective

- MoEA: Industry and sector based policies
- Cluster policy initiated by Michael Porter 1990
- Netherlands as early adapter from 1991
- Policy study 1993: ‘Competing with Knowledge’
- Policy study 1995: ‘Knowledge in Action’
- 1995: R&D subsidies: From industry to cluster based
- 1997 Cluster policy roles defined: Framework policy, Organising stakeholders, Innovative Procurement
- 1998 LTIs - Leading Technological Institutes
- 2000 Strategic Framework
- 2001 DIS - Dynamic Innovation System

Cluster policy roles

- Framework policy
  - Competition policy & deregulation
  - General technology policy
  - Macro economic policy
  - Solid and reliable infrastructure
- Organising stakeholders
  - Strategic information
  - Organisational capacity
  - Subsidies
- Innovative Procurement Policy

Policy leaning

- Leaning by doing i.s.o. benchmarking, mutual learking
- Clustering should be a market-induced process
- Each clusters is unique
- Role government *possible,* but *not* always required
- Develop various policy roles depending on cluster type
- Options for government roles in clusters: Chairman, Catalyst/Initiator, Process manager, Brokers, Connecting Networks, Finance

Critical learning points

- Generate shared vision
- Follow up is shared responsibility
- Cooperate with champions
- Clusters too broadly defined
- Core players and periphery
- Focus on high-tech prevails
- Pay attention to non-technical innovations
- Emerging vs mature clusters
- Limited role of the regions in the Netherlands
- Tendency to a sectoral bias

Different roles per cluster

- Demand: homogenious-differentiated & advanced-standard
- Type of knowledge: tacit-codified & embodied-disembodied
- Generating v. absorbing knowledge
- Concentrated v. dispersed

Systemic imperfections (1/2)

- Limited interaction between firms in cluster
  - Lack of cohesiveness → e.g. brokerage
  - High cognitive distance → e.g. joint research programme
- Informational imperfections
  - Lack of insight in technology or business trends

  → e.g. foresight studies or roadmaps

Systemic imperfections (2/2)

- Mismatch knowledge infra – business needs
  - Developed knowledge to far from business needs → e.g. joint research programme
- - Knowledge not commercially promising
  - Institutional set-up knowledge infrastructure → TTIs
- Lack of demanding customers
  - Innovative customers demand innovative inputs – e.g. Japanese car industry

Strategic framework

- From experimentation and variety to structure and integration
- Purpose: support tool policy makers
- Goals:
  1. Managerial – allocate recourses
  2. Support tool – adjust policies to cluster
  3. Provide transparency – public accountability
- Process: Guiding model with three phases
  1. Information
  2. Initiation
  3. Implementation

Strategic framework - Process

1. Information phase:

Purpose : Which cluster proposals are relevant for NL economy?

- Collect strategic information and cross-validate
- Bias toward new technologies & market trends
- Involvement by government or industry
- Bottom-up or top-down

Gate 1: Towards the initiation phase

- Cluster assessment – Potential Y/N
- Assessment government role – Systemic imperfections Y/N?

Only if Gate 1 criteria are cumulatively positive it will enter the initiation phase, otherwise no added value government role

Strategic framework - Process

2. Initiation phase:

Purpose : How do stakeholders tackle systemic imperfections?

- Knowledge & technology instruments
- Business tools
- Cluster monitor
- Bottom-up or top-down

Gate 2: Towards the implementation phase

- Level of urgency
- Associated Risks
- Required input
- Sufficient return on public investment
- Professional approach

Strategic framework - Process

3. Implementation phase:

Purpose : How to remove systemic imperfections?

- Brokerages
- Establishing platform organisations
- Providing strategic information
- Removal of constraining regulatory conditions

Future cluster policy upgrading could involve:

- Non-technical innovations
- National versus International
- Inter-ministerial relationships
- The learning policy maker

Leading Technological Institutions

- Knowledge now overrides geography in the Netherlands
- Real & virtual institutes initiated by MoEA in 1997
- 4 LTIs: WCFS, DPI, NIMR, Telematics Institute
- Basic research with long term focus only
- 50% industry and knowledge institutes, 50% MoEA
- Open to foreign companies, R&D in NL
- MoEA financing limited to two times the lowest
- Increasing participation of companies
- External foreign auditing
- No MoEA influence on investment decisions

Example: Dutch Polymer Institute

- Multidisciplinary, ‘chain-of-knowledge’ approach
- Main polymer producing and processing industries: AKZO Nobel, Basell, Dow Chemical, DSM, General Electric Plastics, Océ, Philips, Shell, Teijin
- Universities of Amsterdam, Delft, Eindhoven, Groningen, Nijmegen, Twente, Utrecht and Wageningen and TNO. Universities of Hamburg, Naples and Stellenbosch
- Initially 4 years, after international evaluation + 6 years.
- Annual budget € 11 million, JPY 1,5 billion
- 25% industry, 25% knowledge infrastructure, 50% MoEA
- All members joint owner of research results
- Further info at www.polymers.nl

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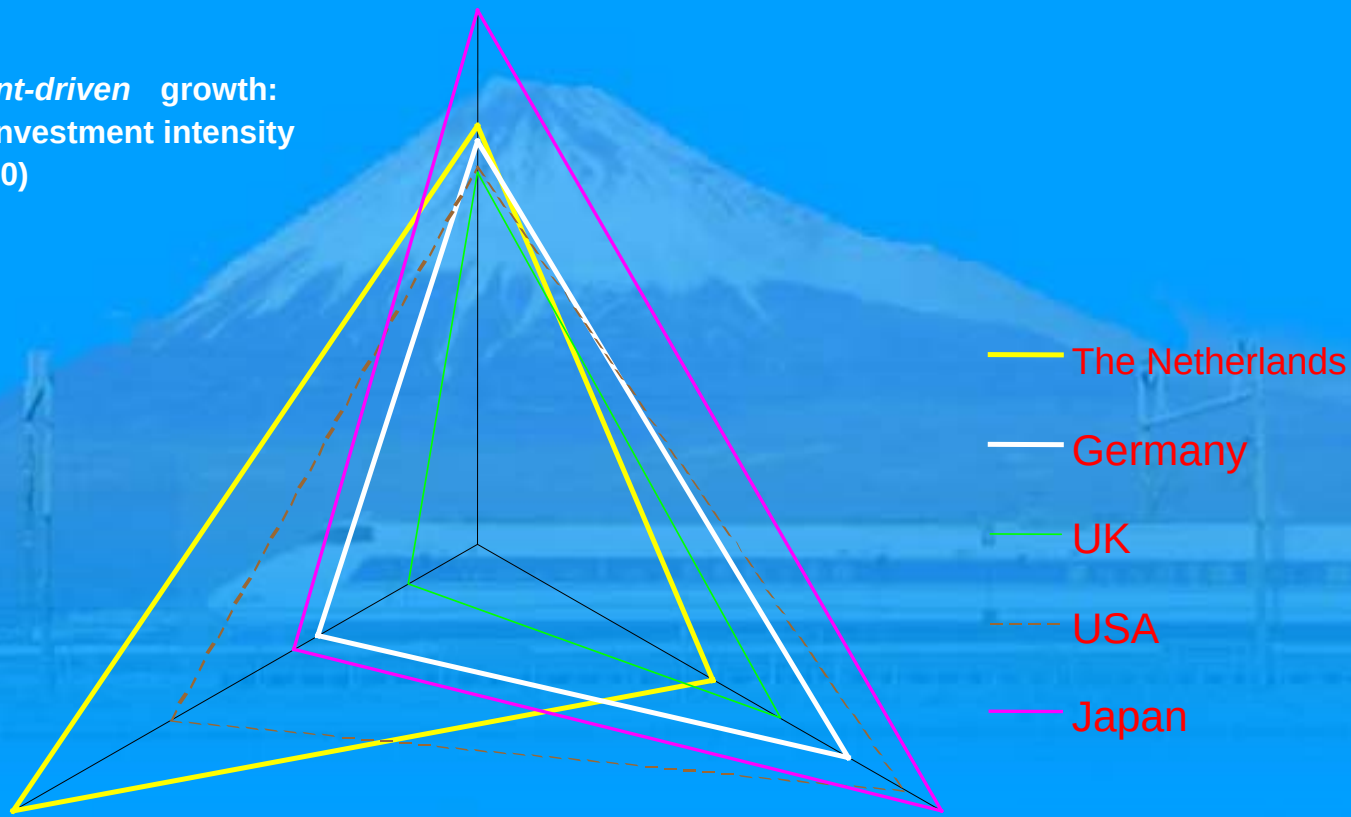
Challenge: Innovation driven growth!

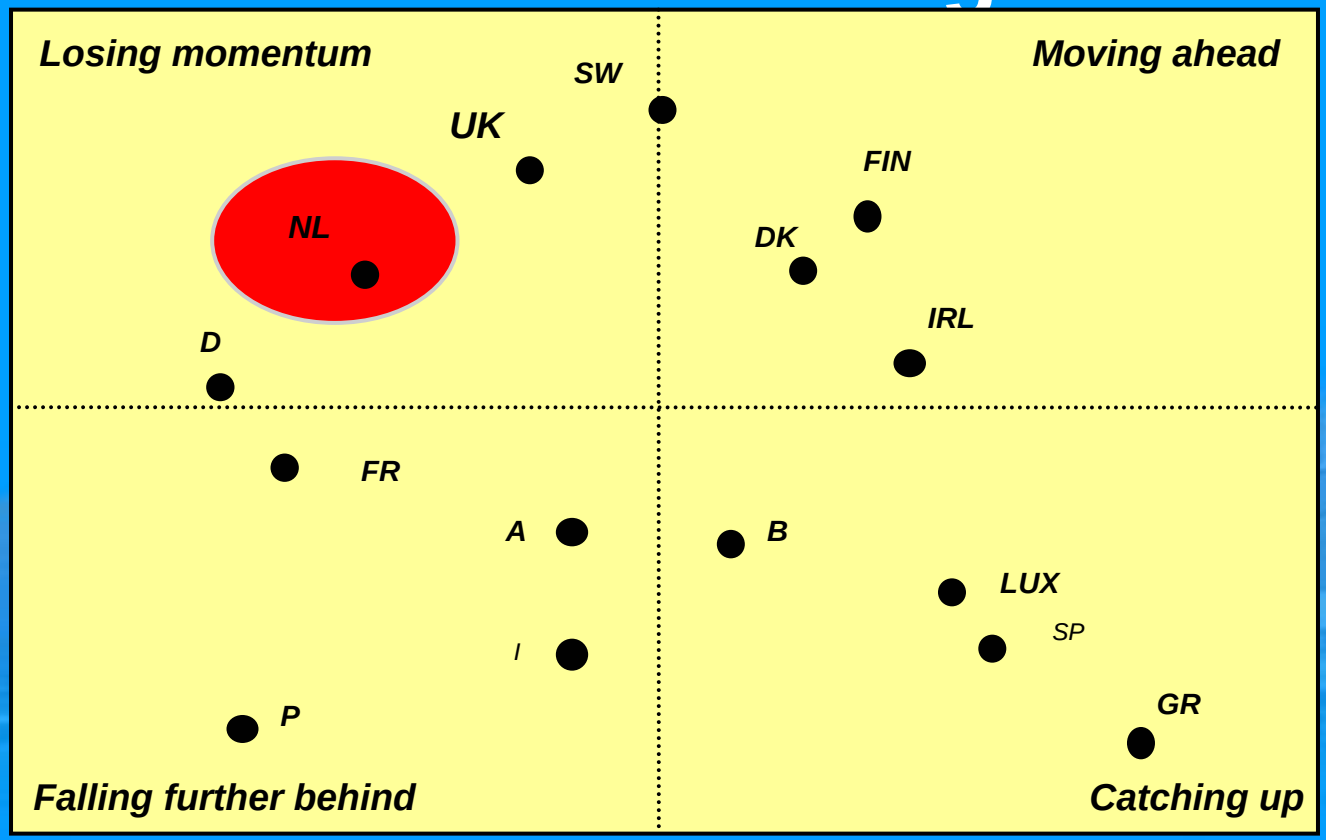
Investment-driven **growth:**
average investment intensity
(1990-2000)



Factor-driven **growth:**
growth rates of labour supply
(1990-2000)

Innovation-driven **growth:**
private R&D expenditures
% of GDP (1990-1999)

The Netherlands is losing momentum



Innovation index

Average Change in Trend Indicators in Percentages 1995 - 2000

Source: EU, Innovation Scoreboard 2001

Innovation Strengths and weaknesses in the Netherlands

- Public R&D-expenditure
- ICT-climate
- Public acceptance new technologies

- Co-operation with universities / research institutes
- New technology based firms and fast growing enterprises
- Patent position
- Share innovative products
- Costs of patents
- Availability seed capital

- Private R&D expenditure
- Availability R&D personnel
- Financing system universities
- Use of patents for science

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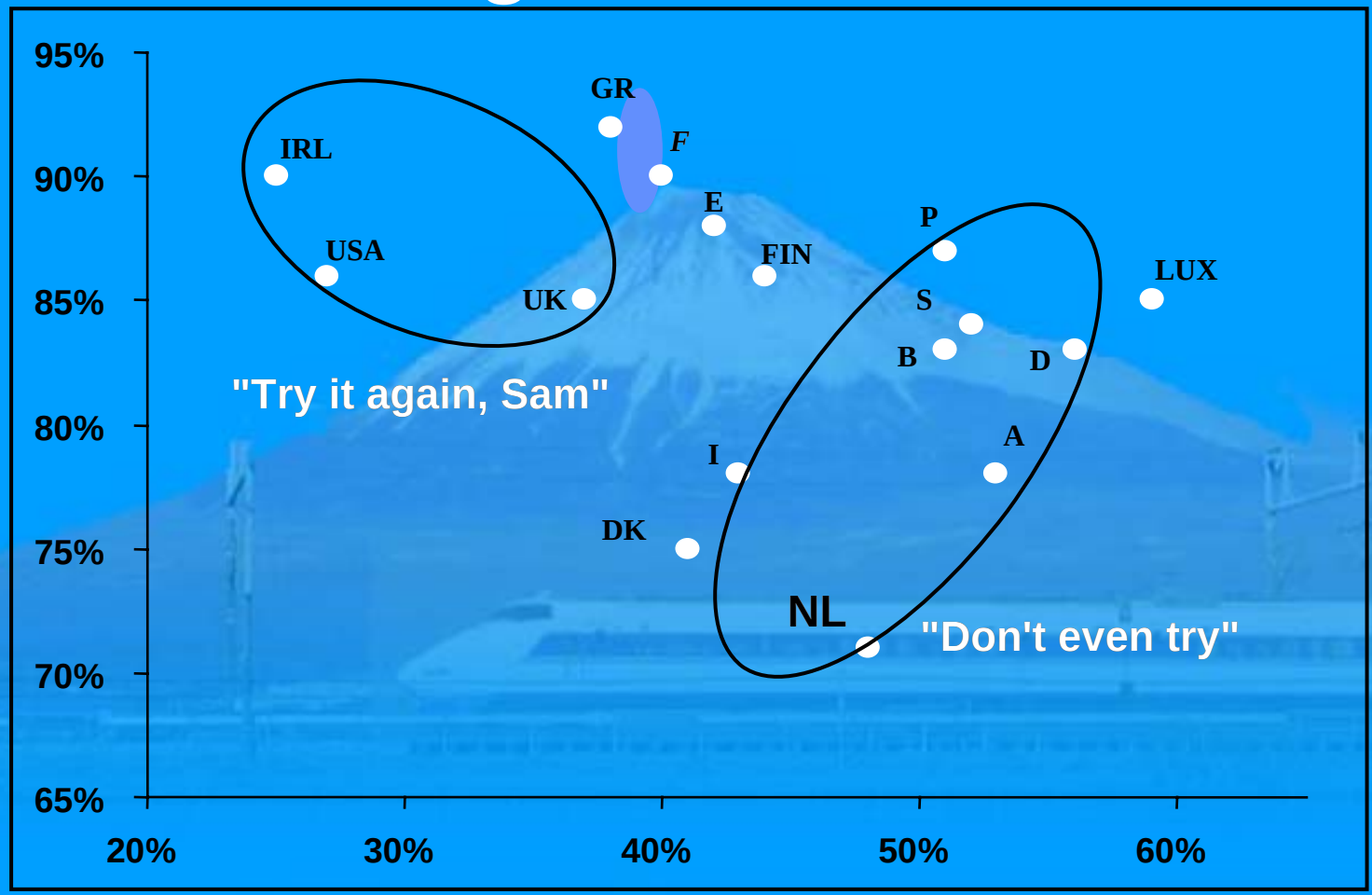
Stigma on failure



(OECD indicators)

Source: Gallup Euro-barometer 2000

Theoretic framework of innovation (1)

Innovation: from linear to cyclical

Linear innovation model:

- from basic research through different phases to innovation in the market

Cyclical innovation model:

- Innovation is influenced by developments in technology, science, society and market
- Innovations on interfaces of different disciplines

Innovation policy at a glance

To improve the functioning of Innovation System through an appropriate mix of:

Generic policies

No choice for specific technologies or clusters

Specific policies

Aimed at specific technologies or clusters with high potential revenues for the Dutch economy

New challenges for Dutch innovation policy

Growing significance of innovation

- to realise long term economic growth while facing an economic downturn

Inter-ministerial policy review (IBO)

- increase effectiveness of instruments
- less instruments
- more co-ordination between ministries

Decreasing budgets

International developments

- EU Lisbon / Barcelona strategy 3% GDP for R&D
- NL 2%, Private R&D investments low

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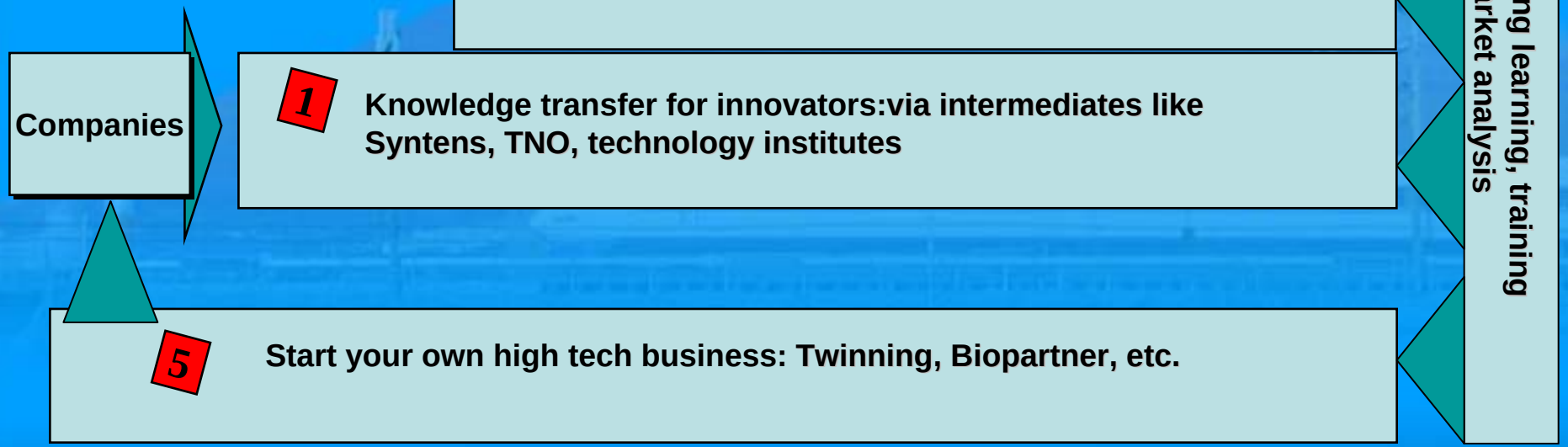
Innovation policy instruments from the perspective of an innovating company



Dynamic Innovation System:

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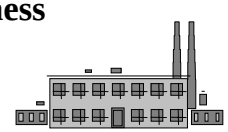
Demand

Consumer and intermediate


Business



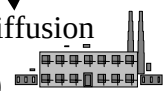


Knowledge creation

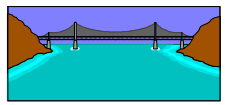
(big companies & new technology based companies)

Knowledge diffusion

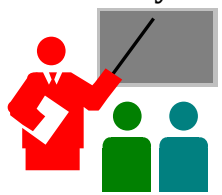
(SMEs)

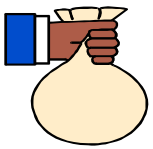



Interaction

Education and research system






Infrastructure

Capital, IPR, information systems, standards


Framework conditions: financial, environmental, taxation, incentives, innovation willingness, entrepreneurial spirit and mobility

Dynamic Innovation System:

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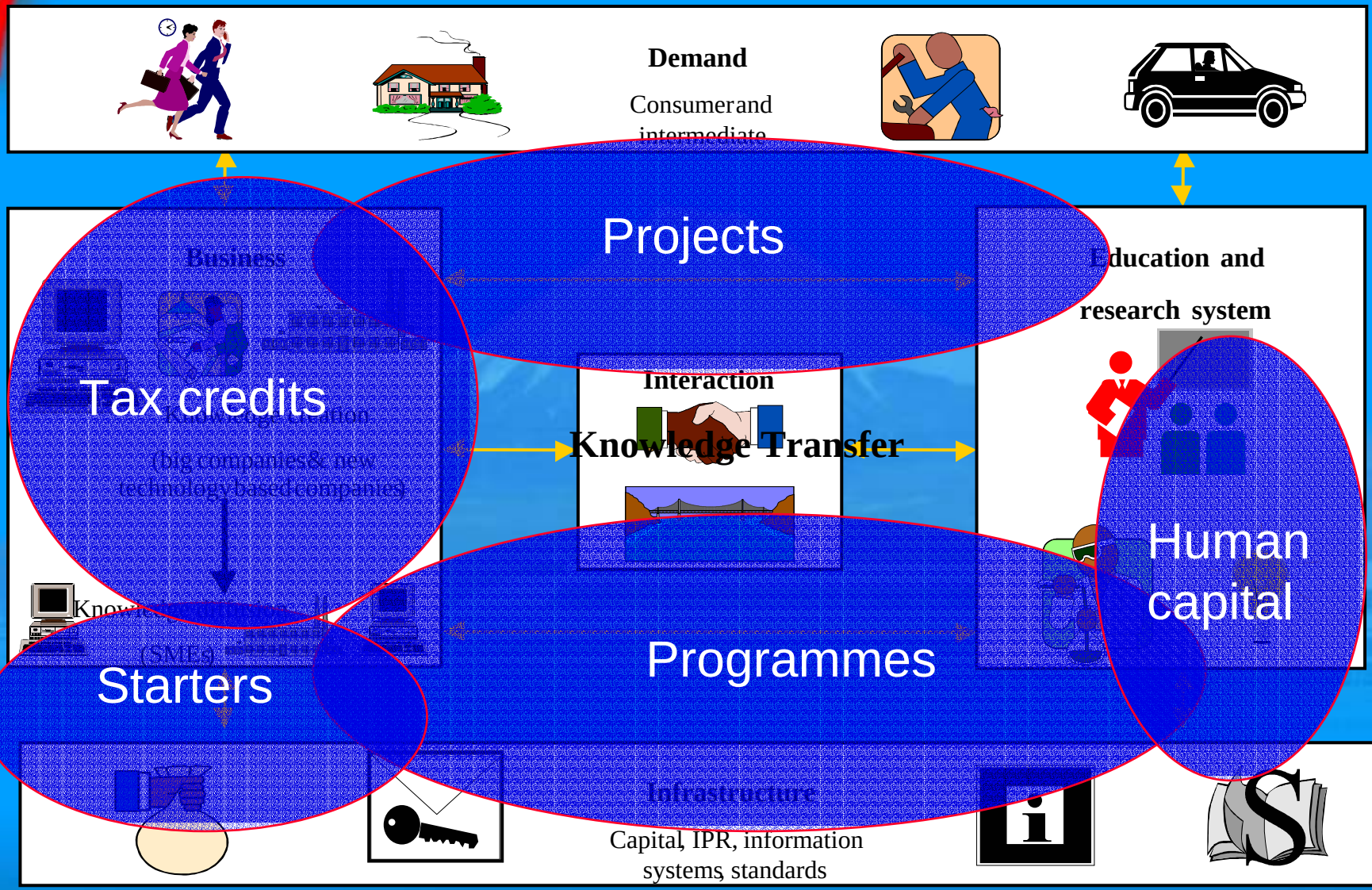

Framework conditions: financial, environmental, taxation, incentives, innovation willingness, entrepreneurial spirit and mobility

Concluding remarks

- From experimenting with clusters to a strategic framework guiding cluster policy
- LTIs as a successful derivative of cluster policy
- Reduced performance of the Netherlands in innovation indicators
- The policies based on the Dynamic Innovation System replacing cluster policy as the main framework for innovation policy in the Netherlands