

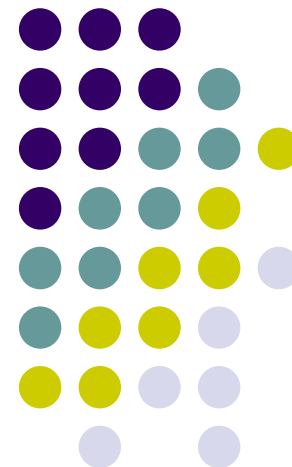


Specialist demand evaluation methodology and pilot survey in high technology field

SPECIALIST DEMAND PROGNOSIS IN LITHUANIA: New possibilities

SKILLS AND LABOUR MARKET EVALUATION:
Biotechnology, Mechatronics, Laser and IT across the OECD

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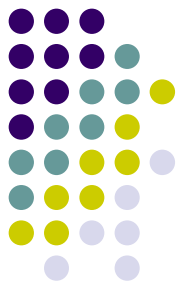




Structure of the study

- *Section 1:* Understanding industrial boundaries: defining the HT4
- *Section 2:* A note on method: the problem of cross-country indicator comparability
- *Section 3:* Analytical parameters of the HT4 in OECD member countries
- *Section 4:* Correlations of the parameters to employment generation in the HT4
- *Section 5:* Employment structures of the HT4 in OECD member countries
- *Section 6:* Implications for educational and training approaches in the HT4
- *Section 7:* Overview of forecasting specialist skills forecasting methodologies





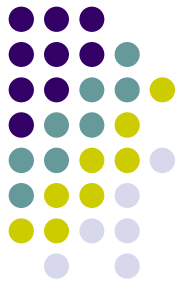
1. Understanding industrial boundaries: defining the HT4

- All the HT4 lack clearly defined boundaries that can be easily and precisely identified and surveyed
- The functional and operational boundaries of the HT4 are increasingly ‘liquid’...
- HT4 constitute interdisciplinary fields of study and practice across several domains of business applications...
- Significant cross-over movements across the HT4...



2. A note on method: the problem of cross-country indicator comparability

- Challenges of cross-country comparability due to methodological factors, such as differences in the definitions of the HT4 and the firms that structure them
- OECD member countries use different definitions of characteristics of interest, such as firm size categories or the application field
- Many indicators are often missing for specific countries because they are not included in national reports, even though the necessary data to construct the indicator have been collected





3. Analytical parameters of the HT4 in OECD member countries

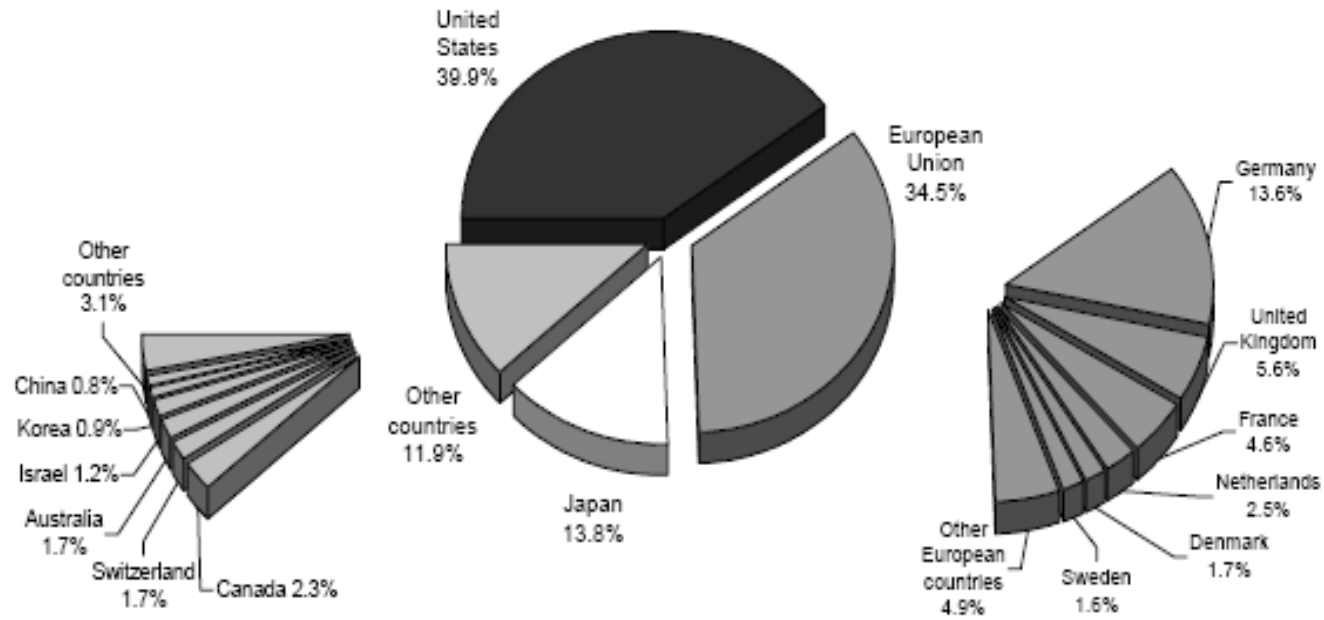
1. Relative proportional representation of the HT4 in GDP formation
 2. Relative industrial turnover
 3. Relative proportion of HT4 in total national export volumes
 4. Current and forecasted growth rates of the HT4
- No clear boundaries of representation of each of the HT4 in GDP formation...
 - No one-to-one relationships but rather ecosystemic ‘cluster’ interdependencies and synergies underpin performance...





3.1. Analytical parameters of the HT4 in OECD member countries

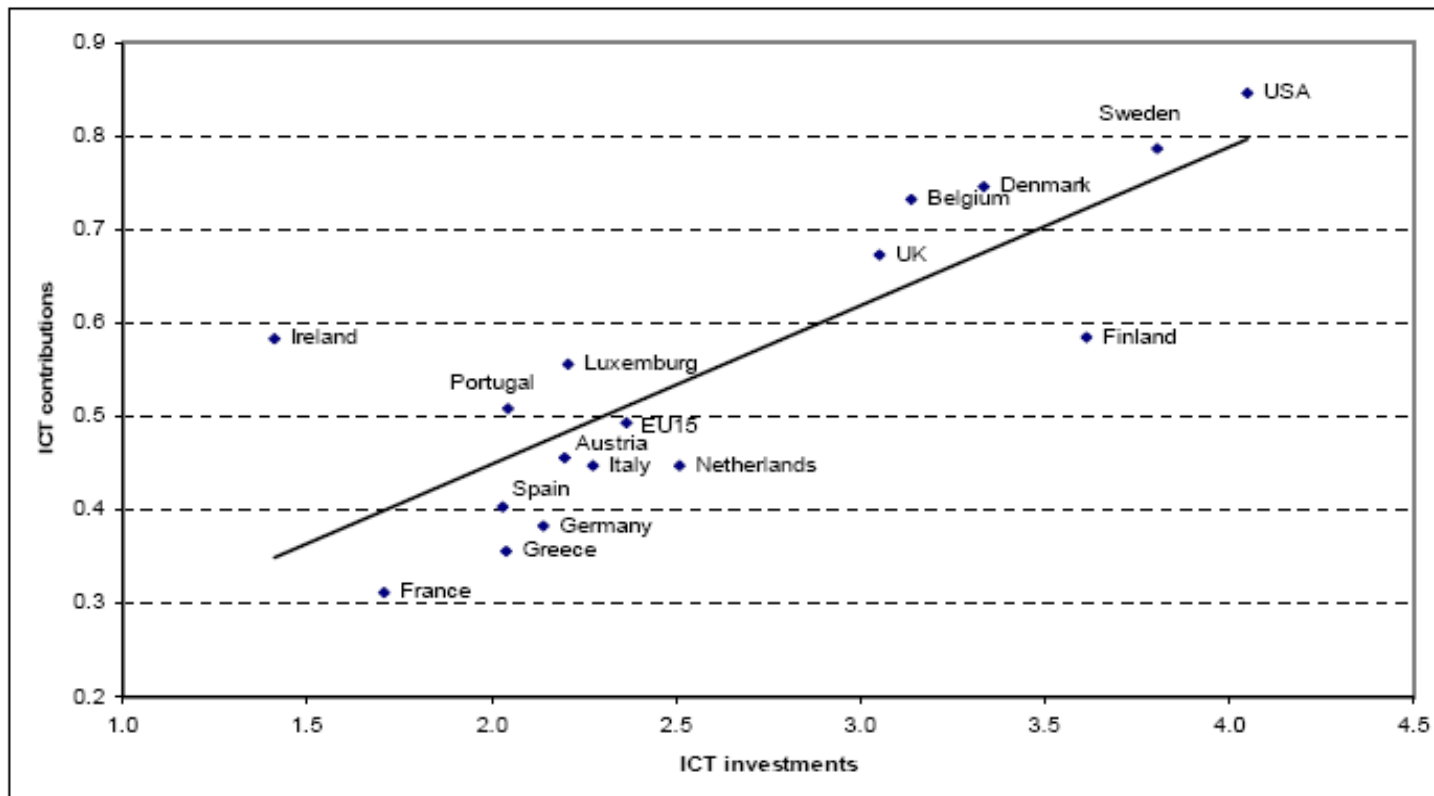
Share of countries in biotechnology patterns filed at the EPO, 2002



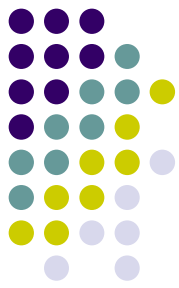
Specialisation index of biotechnology patents¹ filed at the EPO,² 1996-2002

3.2. Analytical parameters of the HT4 in OECD member countries

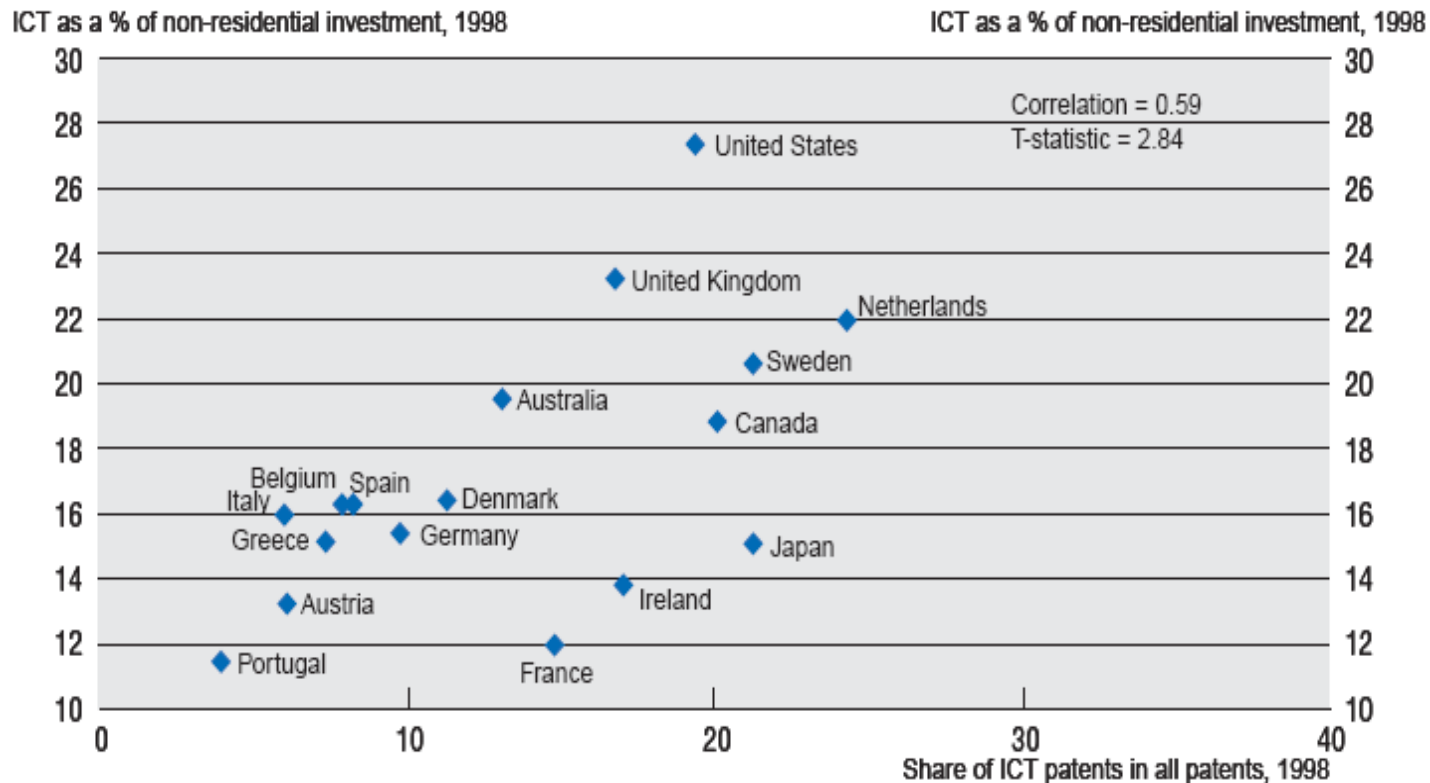
ICT capital investments and ICT capital contributions to GDP growth 1995-2004



3.3. Analytical parameters of the HT4 in OECD member countries



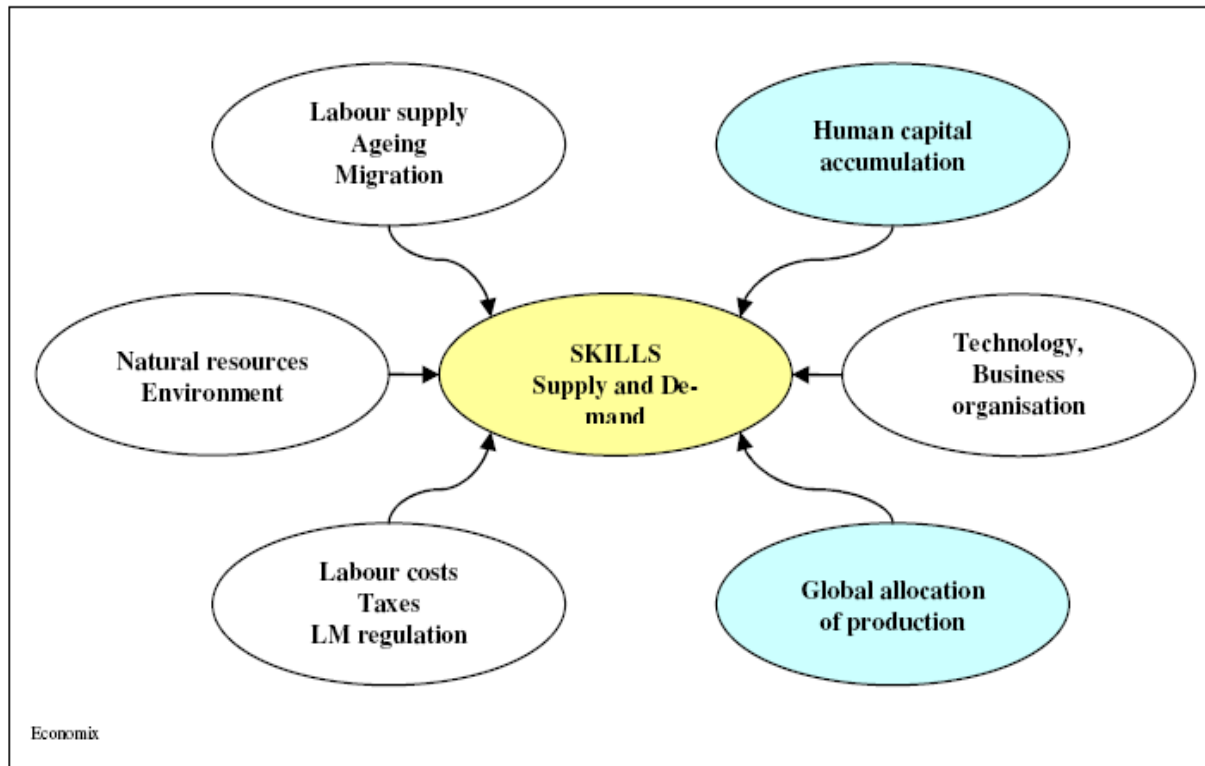
ICT investment is accompanied by rapid innovation in ICT



4. Correlations of the parameters to employment generation



Determinants of skills supply and demand



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4.1. Correlations of the parameters to employment generation

The analytical correlations between growth rates in the HT4 and skills and labour demand and supply are intermediated by a multitude of forces and variables which greatly complicate the task of determining exact one-to-one correlations in the demand and supply of skills:

- Globalization
- Declining importance of national labour supply
- Increasing technological intensity of the production process
- Demography
- De-industrialization of the EU economies
- The cost of energy
- The re-emergence of regional economies and social and human capital

While there is general consensus on these variables the question is what might be *the correct weighting of these determinants*.



4.2. Correlations of the parameters to employment generation



What are the implications?

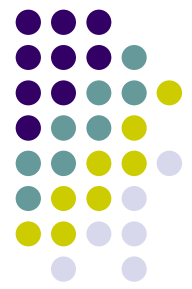
- The changing nature of occupations
- The weakening link between occupations and sectors
- The weakening link between supply and demand



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5. Employment structures of the HT4 in OECD member countries



European ICT skills framework - CEDEFOP

GAHFA Skill level L2, L3, L4, L5, L6	Career Space Skill level L5, L6	SFIA Skill level L1, L2, L3, L4 L5, L6, L7	ISCO-88 Skill level L2, L3, L4 L-
ICT marketing, consulting and sales	Cross sector	Sales and marketing	Sales and marketing managers (1233)
ICT business and project management		Management and administration	Computing services managers (1236)
ICT systems and application development	Software and services	Strategy and planning	Computing professionals (213) Computer systems designers, analysts and programmers (2131) Computing professionals not elsewhere classified (2139)
ICT integration and administration		Development and implementation	Computer associate professionals (312) Computer assistants (3121) Computer equipment operators (3122)
ICT infrastructure and installation	Products and systems		Electronics and telecommunications engineers (2144) Production and operations managers in ... communications (1226) Broadcasting and telecommunications equipment operators (3132)
ICT Support and Systems Service	Telecommunications	Service delivery	Telegraph and telephone installers and servicers (7244)



5.1. Employment structures of the HT4 in OECD member countries

Map of ICT job titles and qualifications at different levels within the ICT skills framework

ICT Business Area	Work Areas	Fields of Activity	Current ICT Job Titles / ICT Qualifications				
			L2	L3	L4	L5 / L5B	L6 / L5M
ICT Business Area Skills linked to ... <ul style="list-style-type: none"> Information Systems and Applications Communications Systems and Applications Sector-specific ICT Solutions Internet Applications E-business and E-commerce Data Management Networks Systems ICT Security Solutions Business Applications Industrial IT Systems Embedded Systems Multimedia Applications Consumer Electronics ICT Training Solutions All Sectors / SMLEs	ICT Marketing, Consulting and Sales	Market Analysis and - Benchmarks			e.g. ICT Sales Account Manager		
		Advertising and Consumer Promotion	e.g. ICT Business Assistant	e.g. Web Applications Consultant		e.g. Communications Marketing Manager	e.g. Product Manager
		Customer Consulting and Acquisition	Software Marketing Assistant	Marketing Technician	E-Commerce Consultant	Software Sales Manager	ICT Consultant
		Requirement, Product and Systems Analysis	/	ICT Sales Supporter	Product Manager Internet Services	Key Account Manager	Web Content Strategist
		Conception and Documentation of ICT Solutions	Assistant for Business Informatics (D)	Database Management - Micro Systems (P)	/	/	/
		Quotation Processing and Contracting	Intermediate BTEC Call Handling (UK)	IT System Support Specialist (D)	Business Manager in Business Informatics (D)	Informatics Management Engineer (P)	Informatics and Economics (NL)
		Project and Resource Planning			Middle Management Employee Administrator ICT (NL)		Information and Management (P)
		Selection and Purchasing	e.g. ICT Project Assistant	e.g. Office Manager	e.g. Line Manager	e.g. Team Manager	e.g. Department Manager
		Order Coordination and Project Support	Office Supporter	Website Coordinator	ICT Project Manager	Product Planner	Master Scheduler
		Project Monitoring and Quality Assurance	E-Commerce Production Assistant	Data Warehousing Consultant	ICT Content Manager	Knowledge Manager	Manager Business Development
Customer Support and Training	/	/	ICT Quality Manager	/	/		
Project Finalising and Billing	Commercial Assistant for Information Processing (D)	Information Technology Officer (D)	Business Manager in Data Processing and Organisation (D)	Directing IS Strategy (NVQ UK)	Business Information Technology (NL)		
		Managing IT for Teleworking (NVQ UK)	Managing IT Systems (NVQ UK)	Computer Science Economy (D)	Health Informatics (UK)		
		Project		IT in Business (UK)			



5.2. Employment structures of the HT4 in OECD member countries

Map of European ICT skills profiles assigned to the ICT work areas within the framework



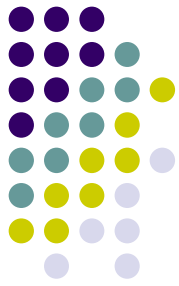
ICT Business Area	Work Areas	Fields of Activity	ICT Skills Profiles					
			L2	L3	L4	L5	L6	
3. ICT Business Area Skills linked to ... <ul style="list-style-type: none"> Information Systems and Applications Communications Systems and Applications Sector-specific ICT Solutions <ul style="list-style-type: none"> Automotive Industries Banking and Financial Services Graphic Arts and Media Internet Applications E-business and E-commerce Data Management Networks Systems ICT Security Solutions Business Applications Industrial IT Systems Embedded Systems Multimedia Applications Consumer Electronics ICT Training Solutions 	ICT Marketing, Consulting and Sales	Market Analysis and - Benchmarks						
		Advertising and Consumer Promotion						
		Customer Consulting and Acquisition			ICT Marketing	ICT Marketing Management (CS)	ICT Marketing Management (CS)	
		Requirement, Product and Systems Analysis	ICT Marketing, Consulting and Sales	ICT Marketing, Consulting and Sales	ICT Consulting	ICT Sales Management (CS)	ICT Sales Management (CS)	
		Conception and Documentation of ICT Solutions			ICT Sales	IT Business Consultancy (CS)	IT Business Consultancy (CS)	
		Quotation Processing and Contracting						
	ICT Business and Project Management	ICT Business and Project Management	Project and Resource Planning			ICT Business Management		
			Selection and Purchasing			ICT Project Management	ICT Project Management (CS)	ICT Project Management (CS)
			Order Coordination and Project Support	ICT Business and Project Management	ICT Business and Project Management	ICT Quality Management	ICT Management (CS)	ICT Management (CS)
			Project Monitoring and Quality Assurance			ICT Content and Knowledge Management	ICT Content and Knowledge Management	ICT Content and Knowledge Management
			Customer Support and Training			E Business Management	Automotive Knowledge Management (Auto)	Automotive Knowledge Management (Auto)
			Project Finalising and Billing			Automotive Knowledge Management (Auto)	Bank e-marketing / e-business management (Bank)	Automotive Knowledge Management (Auto)
All Sectors / SMLEs								
ICT Business Area	Work Areas	Fields of Activity	L2	L3	L4	L5	L6	



5.3. Tracking employment structures and emerging patterns

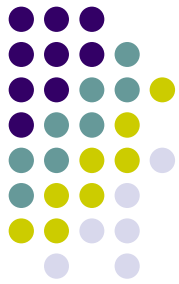
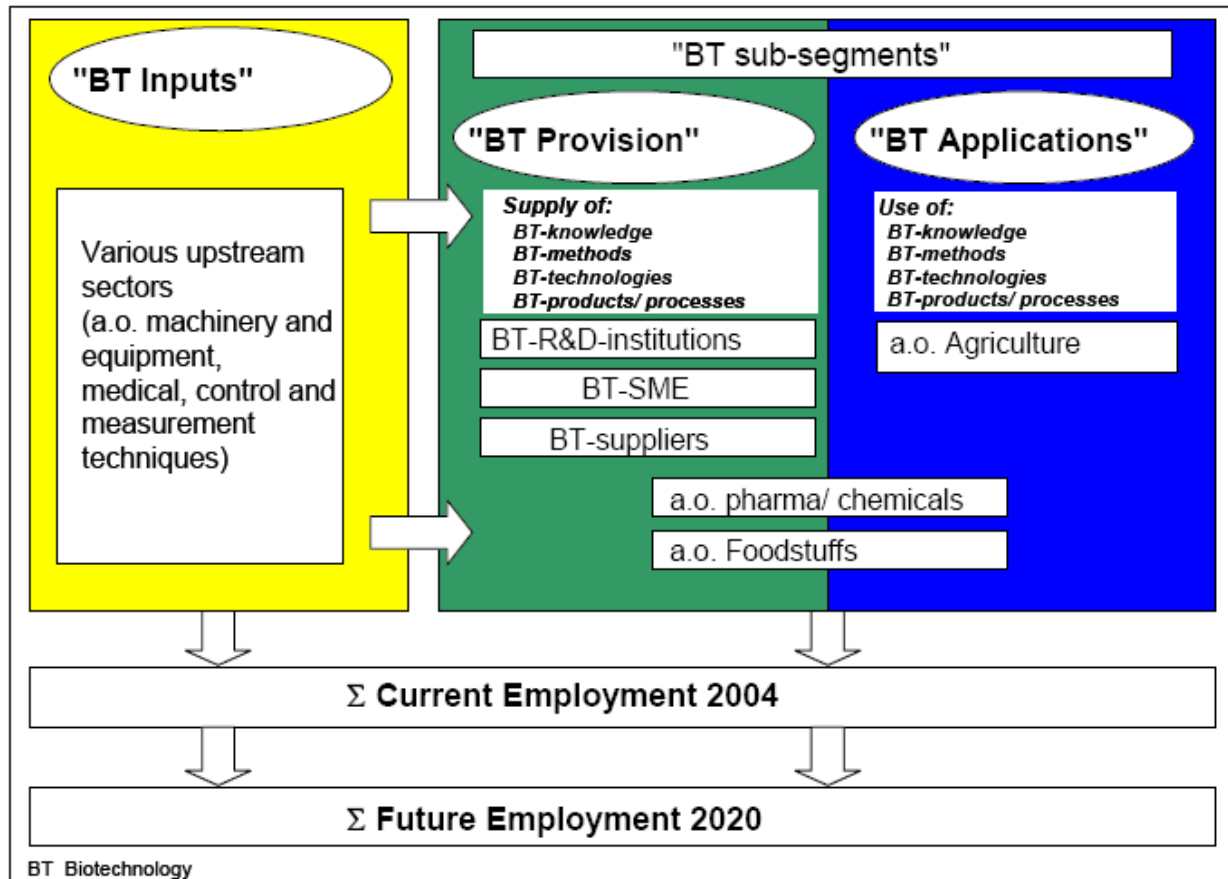
Diagrammatic representations of ‘direct’ employment relations between demand and supply of skills in the HT4-specific companies and/or to their suppliers remain partial

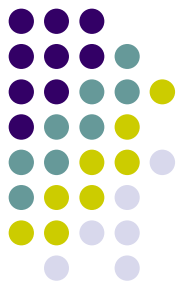
It is important to take into account the ‘indirect employment impacts’ generated by ‘environmental’ interdependencies and dynamics across the HT4 and the effects of public R&D related demand.



5.7. Tracking employment structures and emerging patterns

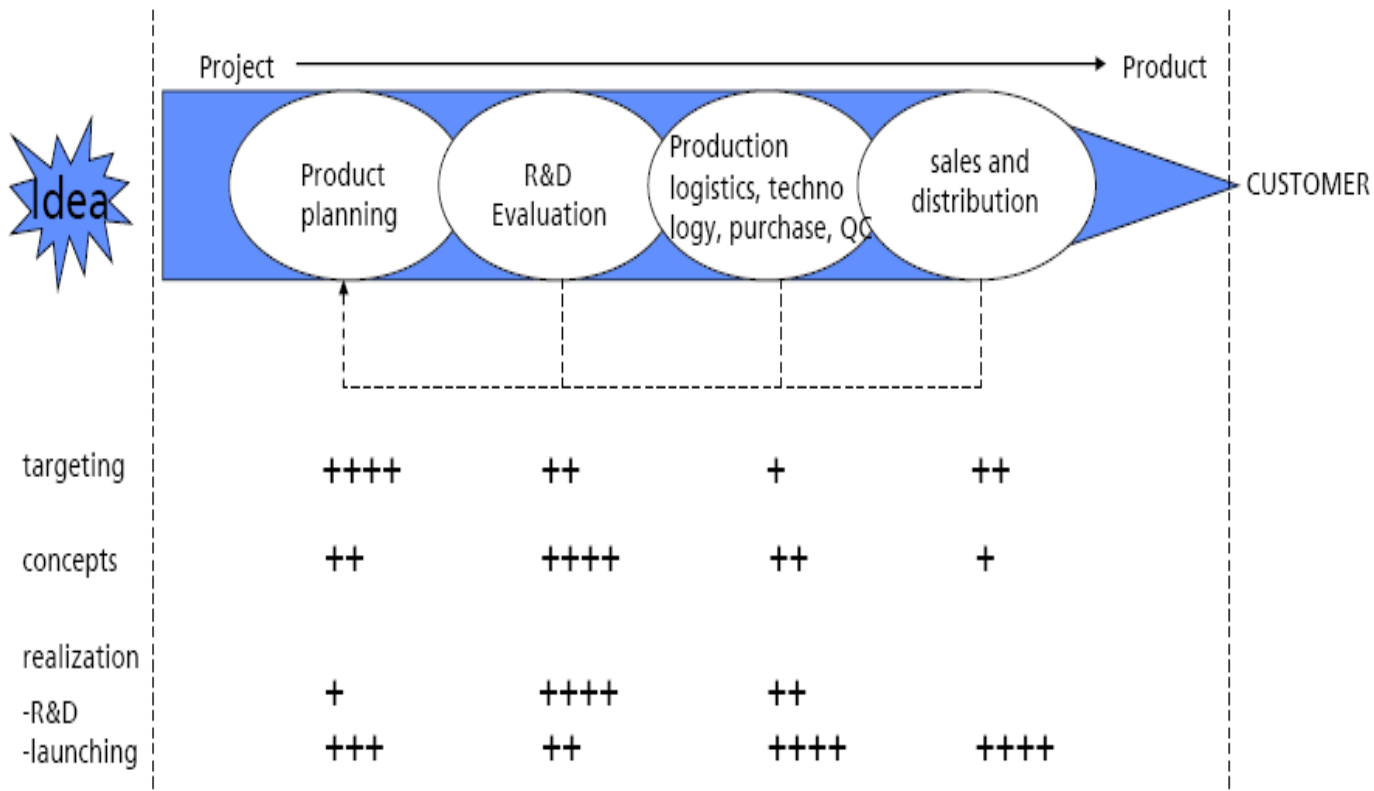
“Three Pillar Concept” for the Analysis of the Employment Effects of New Technologies, Applied to Biotechnology





6. Implications for educational and training approaches in the HT4

A management concept for the interdisciplinary realization of innovative projects





6. Overview of forecasting specialist skills forecasting methodologies

Recent analysis and evaluation of existing practice of specialist skills forecasting has resulted in two major conclusions:

- Forecasting is inconsistent, meaning readers and reviewers need to be proficient in econometric modeling and research design if they are to fully assess the value and or the flaws within the conclusions drawn by the authors
- Forecasting is very much source, location, and time specific. Consequently, it is not clear if the models will perform as well in other forecasting horizons. This suggests that there is no single forecasting model that can accurately forecast labour market needs in all situations. Ultimately, it appears that some forecasting models have the ability to estimate labour needs in very specific circumstances

Vocational training is highly specialized, which makes it vulnerable in the context of the changes associated with globalization, technological change etc. This is the reason why *several OECD public authorities are very cautious with publishing occupational forecasts and have switched to forecasting activities* (e.g. office work, fabrication, supervising etc.).





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THANK YOU

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