

**Third International Seville Conference on
Future-Oriented Technology Analysis (FTA):
*Impacts and implications for policy and decision-making***

16th- 17th October 2008

[Deep drill as toolkit for Decision makers]

[Domolki, Kosa, Komlodi, Krauth, Ratai]

[HUNGARIAN National Council for
Communications and Information Technology]



FTA
Future oriented
Technology
Analysis



ICT prospective forecasting project in Hungary

— Overview

- The project
 - aim and sponsor of the project, the project itself
- Observations found
 - on demand side, on supply side, on crosscutting issues
- Methodologies for
 - deep drills, visions, scenario building, panorama of news
- Dissemination
 - for decision makers, for community of professionals, through website www.nhit-it3.hu, in a printed book in 2009

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—The Project

- Aim of the project is technology based forecasting of next decade in field of ICT
- Sponsor of the project is Hungarian National Council of Communications and Information Technologies
It is an official body to advice the Government in this field
- There are five participants of the project: it is an interdisciplinary team with information experts, engineer-economist, lawyer of informatics and also master of liberal arts
- We have about ten co-authors of some special deep drills

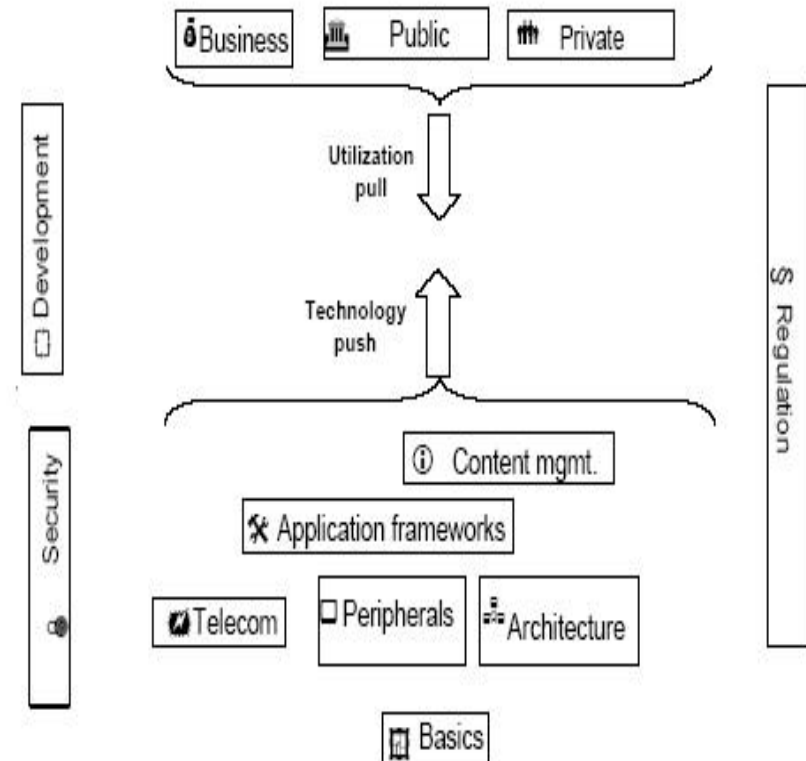
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Overview of ICT fields in 12 key areas

- Business usage
- Governmental usage
- Private usage

- Technology Basics
- Telecommunications
- Peripherals
- System design
- Application frameworks
- Content management

- Regulation,
- Security
- Development



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— Observations on demand side and crosscutting issues

Business : Electronic- and paper based information will be replaced by computer based ones, using B2B services.

Vision: “Information-related working methods in enterprises”

Public services: Business community needs rely on real time services from the government side.

Vision: “Electronic government” (under preparation)

Private sphere: Society will be reorganised along new type of networks, having ICT support. The whole consuming structure may be changed, due to working, buying, learning at home.

Vision: “Intelligent home”

Development and maintenance role of services in all activities is increasing.

Security all aspects effecting the trust in ICT systems: reliability, protection of data, preserving personality rights

Regulation the society intend to regulate with different tools the situations of asymmetric information and market power

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— Observations & Deep drills on technology supply

Basic studies are scientific disciplines serving as foundation to information and communication technologies, such as material sciences (micro)electronics (quantum)physics biology (mathematical) computing science.

4 Deep Drills: Unlimited bandwidth and computing power”; Biology and informatics; Nanoelectronics; Plastronics.

Communication shows the next step is to make seamless connection among different business players and customer

4 Deep Drills: The future of the Internet; New generation networks (NGN); IP based television (IPTV); Radiofrequency identification (RFID).

Peripherals devices realize the connection between IT systems and the outside world including the communication between computers and human beings and also when computers directly communicate with outside ambient.

6 Deep Drills: The Multitude of end-user equipments; Flexible human-computer connections; Personal identification techniques; ICT implants; Sensor systems; Embedded systems.

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— Observations & Deep drills on technology supply (continued).

System design deals with organizational questions of all kinds of systems, made out of different kinds of components starting from processors going to the networks.

6 Deep Drills: IT utility services; Privacy enhancing technologies (PET), Service-oriented application development (SOA); Agent-based technologies, Long range data archiving, Security-conscious development and operation

Application frameworks enabling technologies, used in the development of certain classes of application programs.

5 Deep Drills: Semantic technologies; Text analysis; Business intelligence; Autonomous mobile robots; Location determination technologies

Content management procedures for creating, developing, classifying, searching and storing information in different information technology applications.

6 Deep Drills: The Web 2.0 phenomenon; Collective content production; P2P solutions and the content industry; Virtual reality and virtual worlds; Online multiplayer games; Intellectual public goods (“Open source”)

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— Observations: High level vision

The **high level vision** about the Hungarian information society of the next decade comes from summarizing the results of the “drill down” analysis papers.

I. Practically unlimited **performance** parameters

II. Total **connectivity**

III. Processing and communication capabilities of “**ambient**” objects

IV. Increasing **intelligence of systems**

V. **Service** orientation on all levels

VI. **Collaboration** between users

VII. Importance of all aspects of **Trust** and **Security**

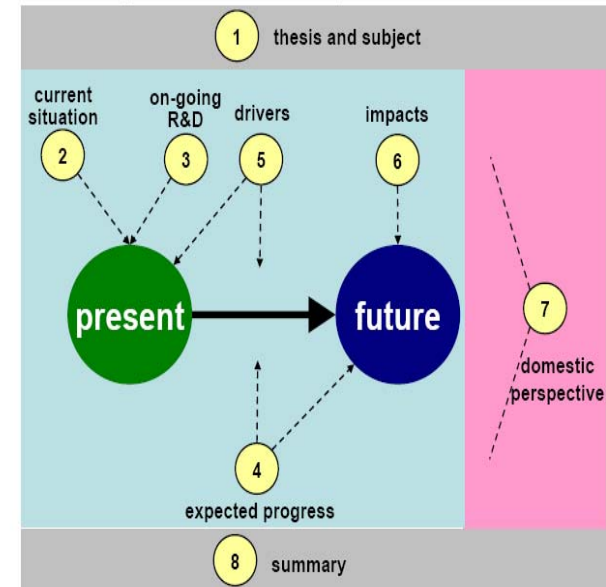
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Methodology: Common template for Deep Drills

First sentence is the thesis (the message)

1. chapter: The scope of the Drill
2. chapter: The present situation
- 3 chapter: Ongoing research projects
4. chapter: Expected future
5. chapter: Drivers
6. chapter: Impacts
7. chapter: Domestic situation
8. chapter: Summary

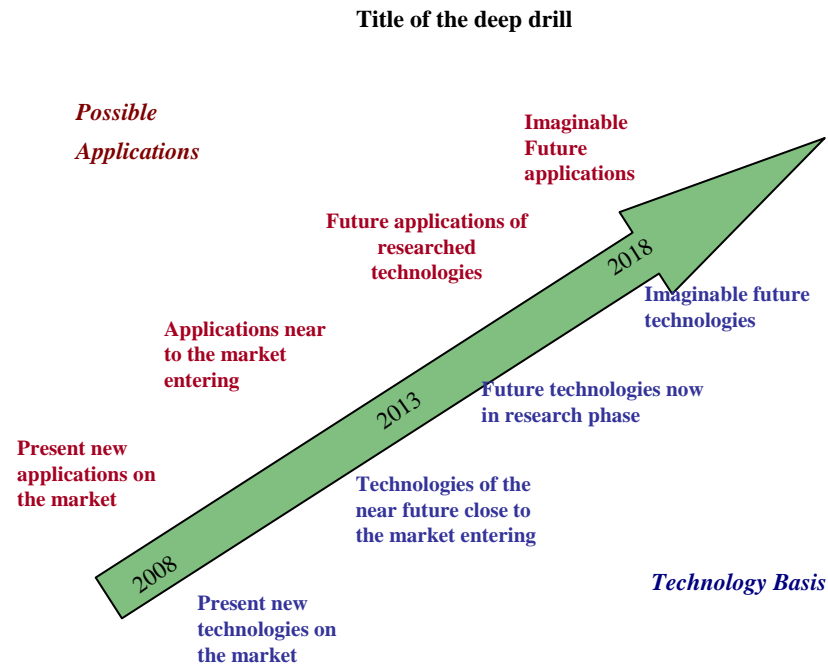
Chapters of „deep drill” studies



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— Methodology: try to use common visualisation

- Each deep drill has this kind of figure about the expected technology basis and the applications
- the mainstream of the potential technology supply is forecasted



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Methodology: Vision is based on a deep driver analysis

- **Political drivers**
- **Economic drivers**
- **Social drivers**
- **Technological drivers**

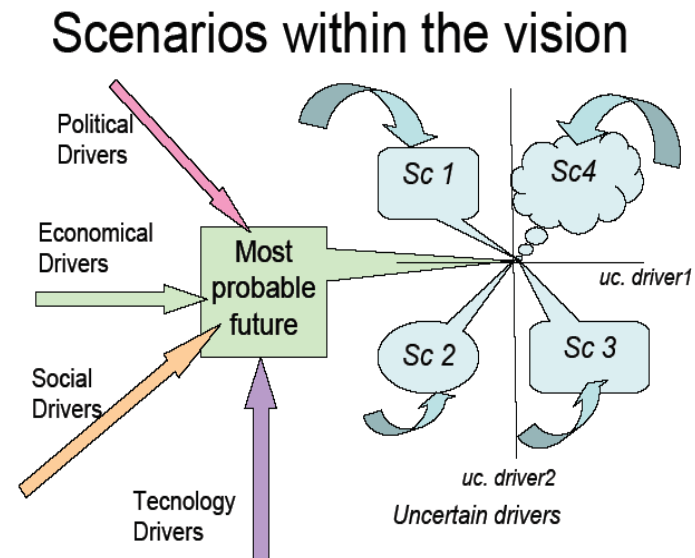
*Example from
the Vision
“Information-
related
working
methods in
enterprises”*

Political	Economical
<ol style="list-style-type: none">1. Level of EU integration2. SMB-friendly legal environment3. Support for R & D4. Integration of EU public administration5. Efficient public services6. Value of public information7. Infrastructure of education8. Openness of education system	<ol style="list-style-type: none">1. IT investment2. Utilisation of EU resources3. Value of intellectual assets4. Changing enterprise organisation5. Maturity of service sector6. Extent of outsourcing7. Directions in labour market8. Entrepreneurship
Social	Technological
<ol style="list-style-type: none">1. Knowledge of advanced technologies2. Aging society3. Role and impact of the IT generation4. Mobility in work5. Safety of life and property6. Environmental challenges7. Adult training and education8. Multi-cultural society	<ol style="list-style-type: none">1. Reliability and security2. Flexible IT architecture3. Integration solutions and web 2.04. Knowledge magement systems5. Business intelligence6. Intelligent wearable appliances7. Common intellectual assets8. Bandwidth9. Virtual presence10. Ambient intelligence11. Sensor systems12. Document management and archiving systems13. Digital maps14. Mobile internet15. Semantic systems

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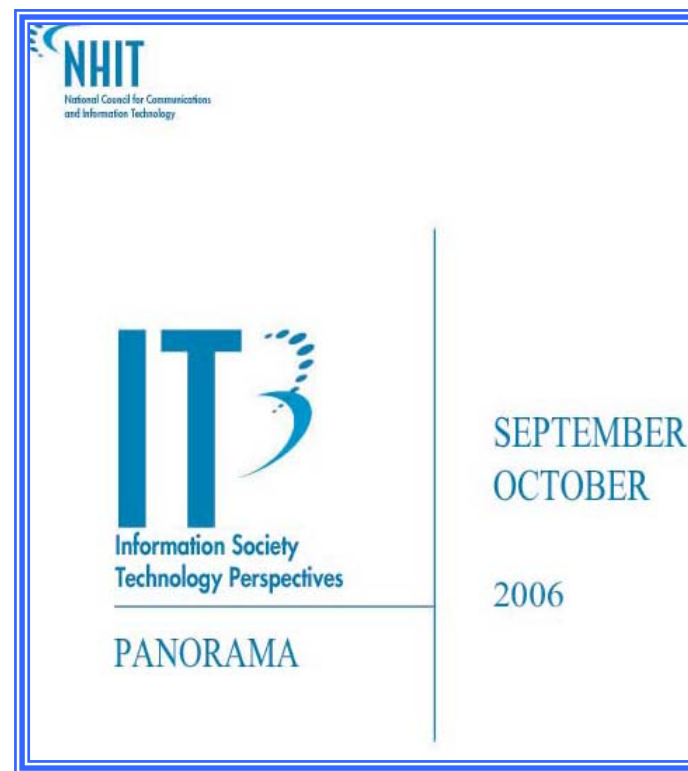
Methodology: Evaluation of the drivers and the scenarios

- Drivers must influence strongly the visioned usage area, but may be predictables or unpredictable
- Main vision is the most probable part of the vision based on drivers with clear future trends
- Scenarios are variations based on nonpredictable (uncertain) drivers
- These uncertain drivers can also be social or economic drivers, or related with the usage of the technology supply



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- Methodology: feedback to the reality by news
 - Bimonthly panorama of technology news items
 - The short news are collected, selected, commented by us.
 - why is it important, where can the reader learn more about it



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— Dissemination of results, and outlook

- There is a list of decision makers, about 100-150 people, who receives the results via paper-based sending
- Our results are available through our interactive website www.nhit-it3.hu, which has some parts in English too
- There is also a community of professionals, about 30-40 people, so called the „society of IT3 friends”. They use materials for higher education
- Most of the results will be published in a paperbased book early 2009
- We are asked to transfer the methodology to the newly established Hungarian Mobile Multimedia Platform forming Strategic Research Agenda
- International linkages with Institute for the Future, California and *we intend to build up link to IPTS, Joint Research Centre, EU*

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— Thank you for your attention

