Mind the gap

Linking (telco) forecasting to innovation management

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How to improve forecasting?

1. Better and more methods, data, tools, experts, etc.

2. Combining different methods

3. Better linkage to decisionmaking:
   - context
   - uncertainty in telco-industry

Contents

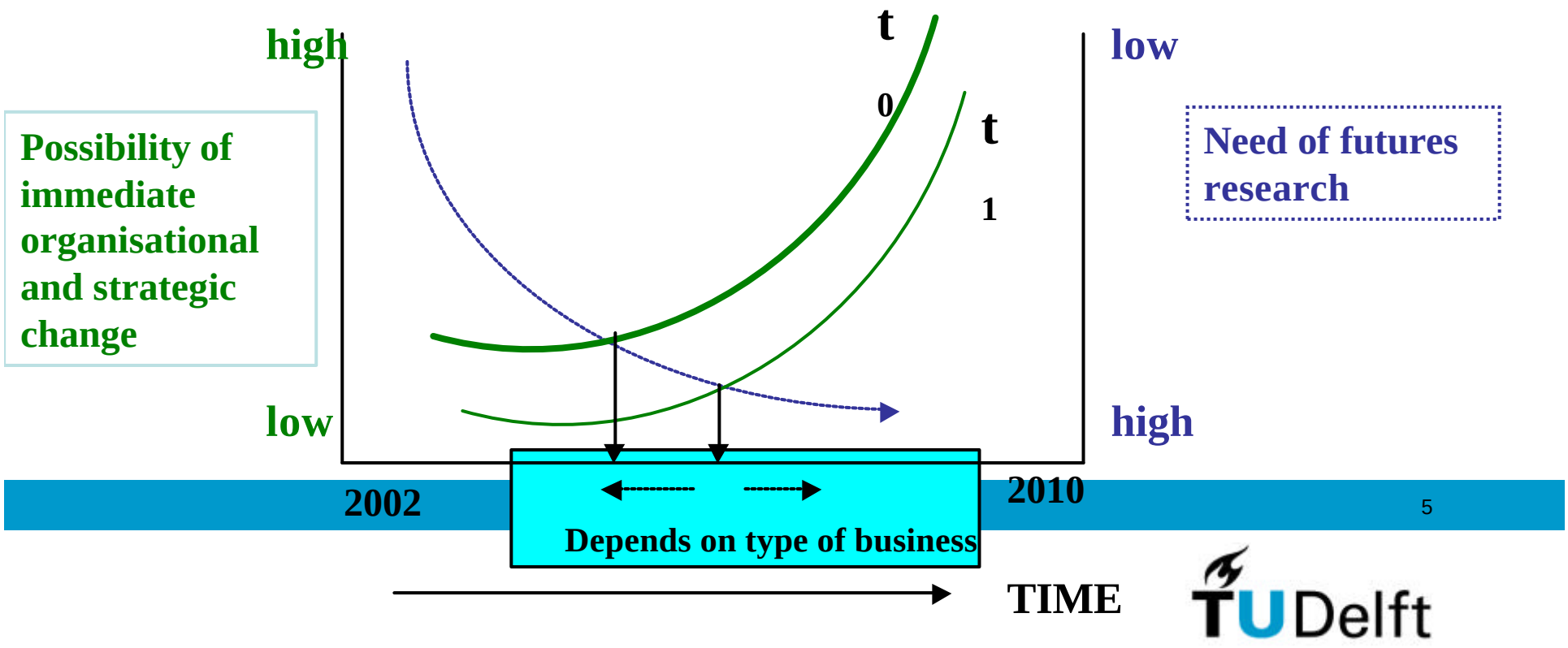
- 1. Forecasting & futures research
- 2. Telecom and the future
- 3. Managing innovation
- 4. Linking innovation & forecasting
  - *Case: Lucio*
- 5. Concluding remarks

1. Paradox of the future

"The more turbulent and dynamic our timeframe, the more need there is to know the future, but the more difficult it is to know the future"

1. Why look into the future?

Relation between need of looking into the future and the (im-) possibility of immediate organisational and strategic change



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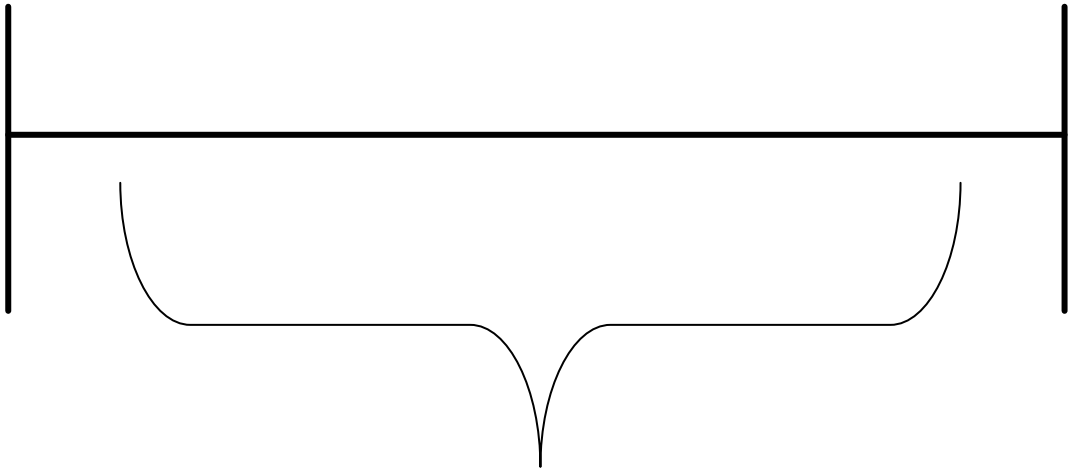
1. The playing field of futures research

The future is completely *knowable*: history = future: no need for futures research



The future is completely *unknowable*: history ≠ future: futures research has no use and is not needed

Playing field of futures research

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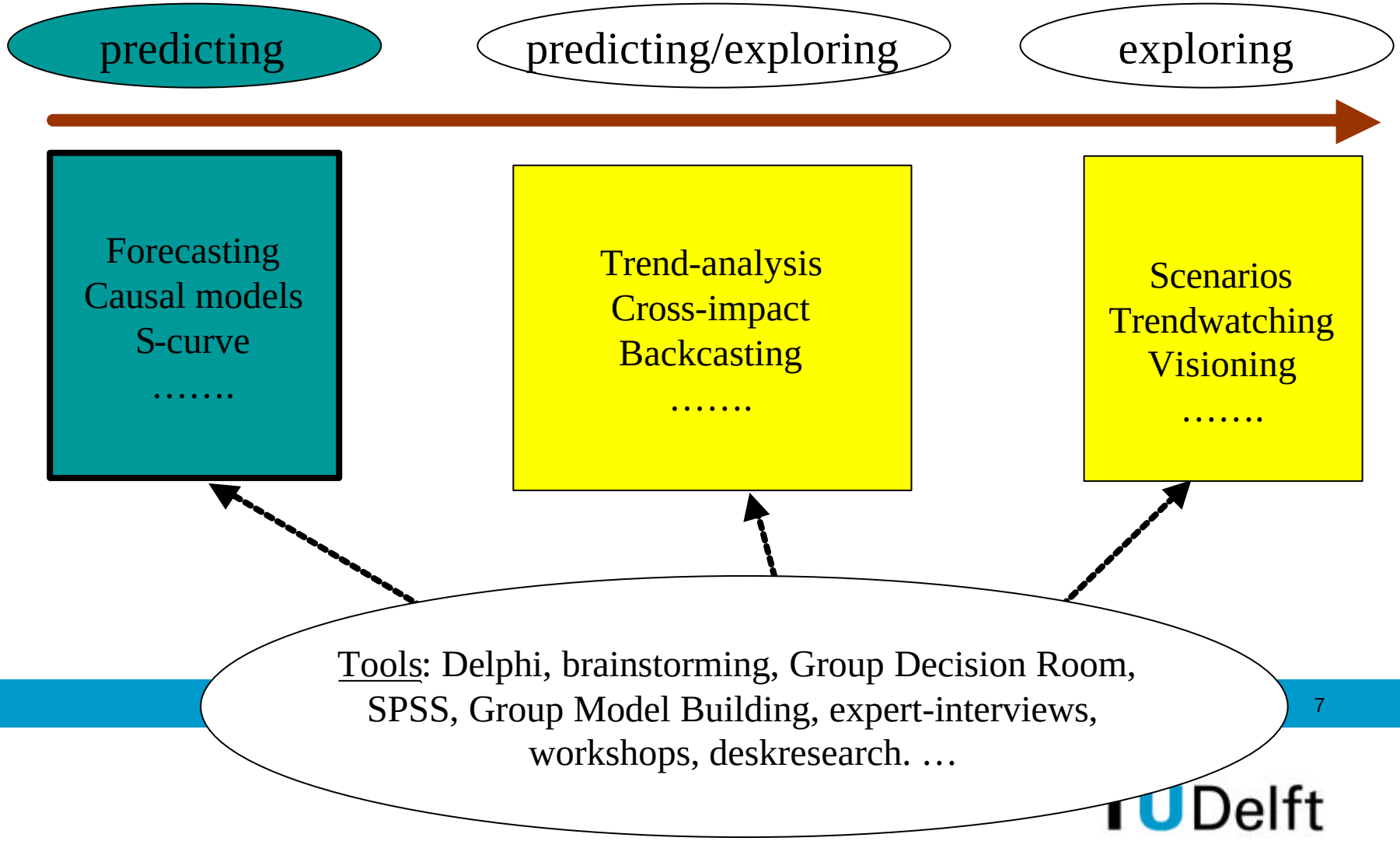
1. Forecasting as part of futures research



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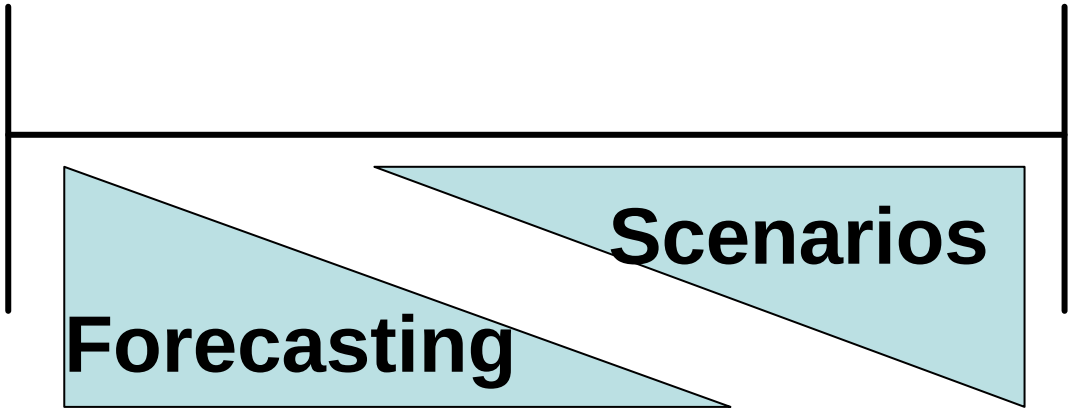
1. Forecasting & scenarios

The future can be known

history ≈ future: the future can be predicted



The future is very difficult to know

history ≠ future: the future can only be explored

Playing field of futures research

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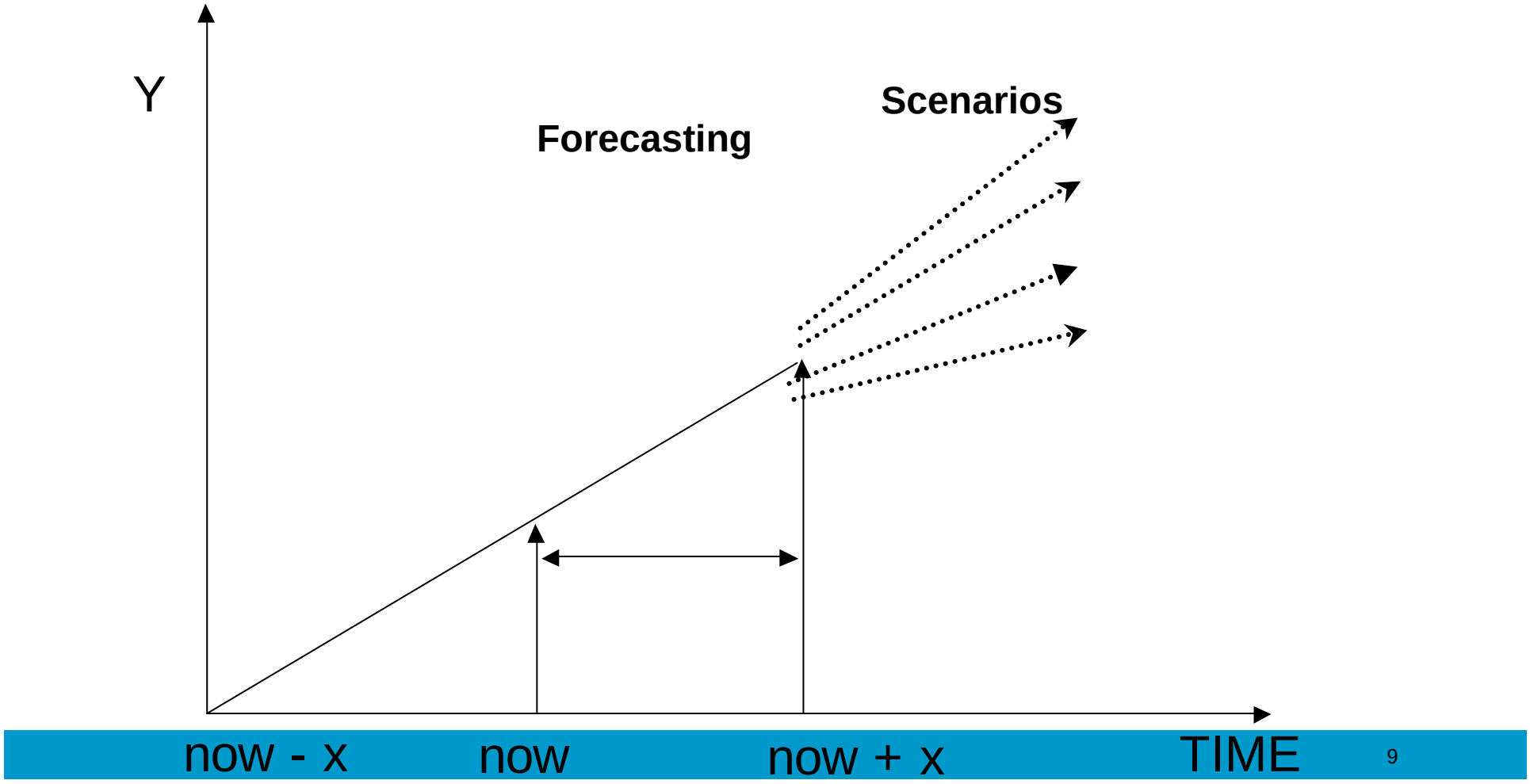
1. Scenarios and forecasting



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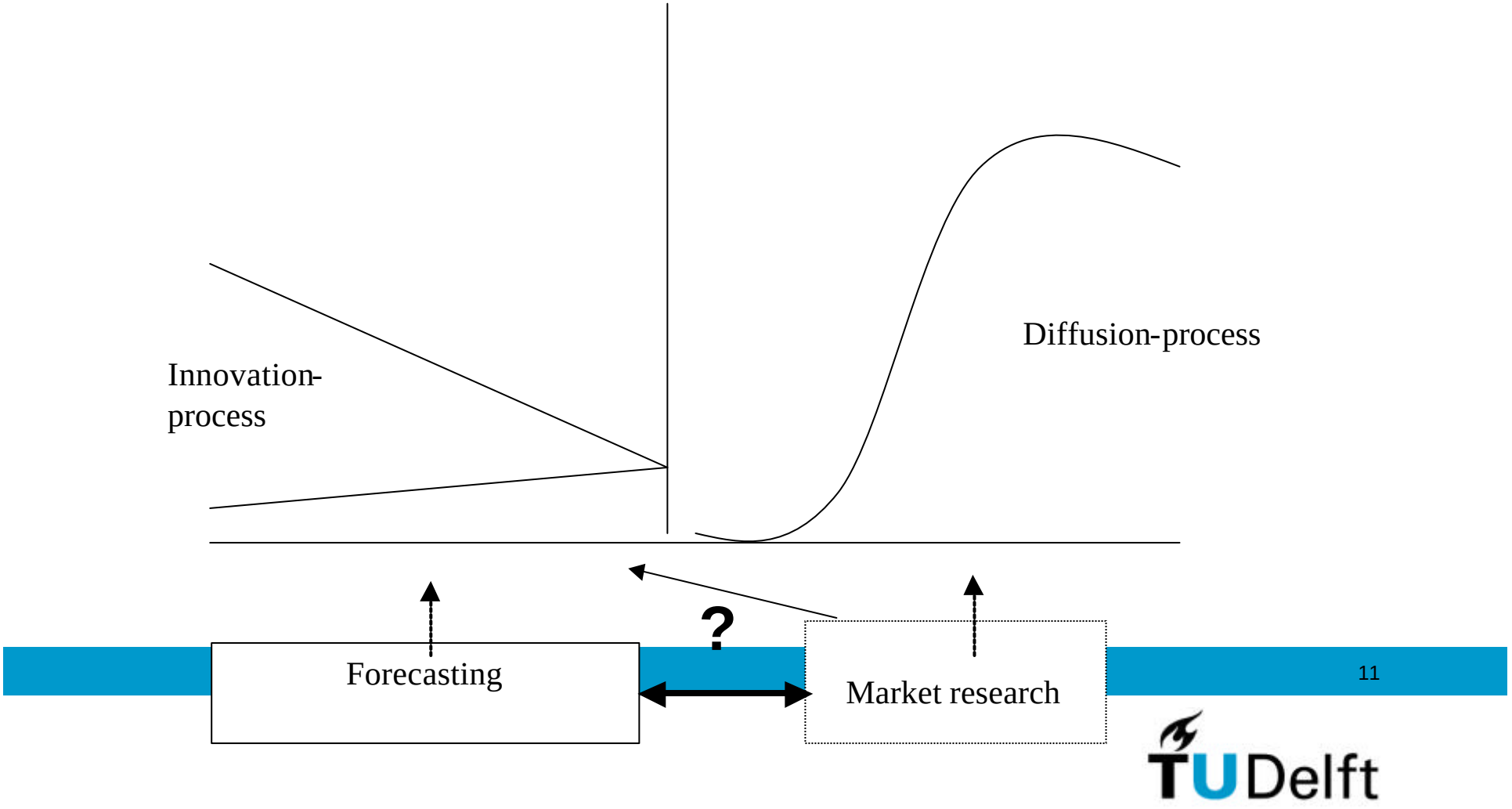
1. Problems with forecasting

Clusters of factors:	Factor and author:
Too much emphasis on technology push:	**Fascination with the exotic: a bias toward the optimistic and a disregard for reality (Schnaars, 1989);** **Price-performance failures: many technologies deliver lesser benefits at greater costs than anticipated (idem);** **Too much influence of peope who have a financial stake in a new technology (Brody, 1991).**
Influence of contemporary thinking or interests:	**Enmeshed in the Zeitgeist: too much focused on one technology and its presumed benefits (Schnaars, 1989);** **Ultimate uses unforeseen: rarely do forecasters anticipate applications fully (idem)** **Market researchers who survey the wrong people, i.e. companies who produce a new technology (Brody, 1991).** **Expectations may be biased by the broader cultural concerns of the time (Geels & Smit, 2000).**
Neglect of change:	**'Assumption drag': using 'old' assumptions in predictive models (Ascher, 1978).** **Ultimate uses unforeseen: rarely do forecasters anticipate applications fully (Schnaars, 1989).** **Sudden new trajectories in technological developments may trigger shifts in future images (Geels & Smit, 2000);** **Forecasts about new technology are often positioned as replacing old technology (idem);** **The neglect of of the generation of new activities by assuming that the pool of existing activities (idem).**
Neglect of social change:	**Shifting social trends: changing demographic trends and social values are not well considered (Schnaars, 1989);** **Too many stress on 'functional thinking' and neglecting the 'fun' of doing things, such as shopping (Geels & Smit, 2000);** **Viewing the societal embedding of new technologies as unproblematic (idem);** **New technology promise high societal gains but prove later to be unrealistic (idem).**

1. Forecasting & market research



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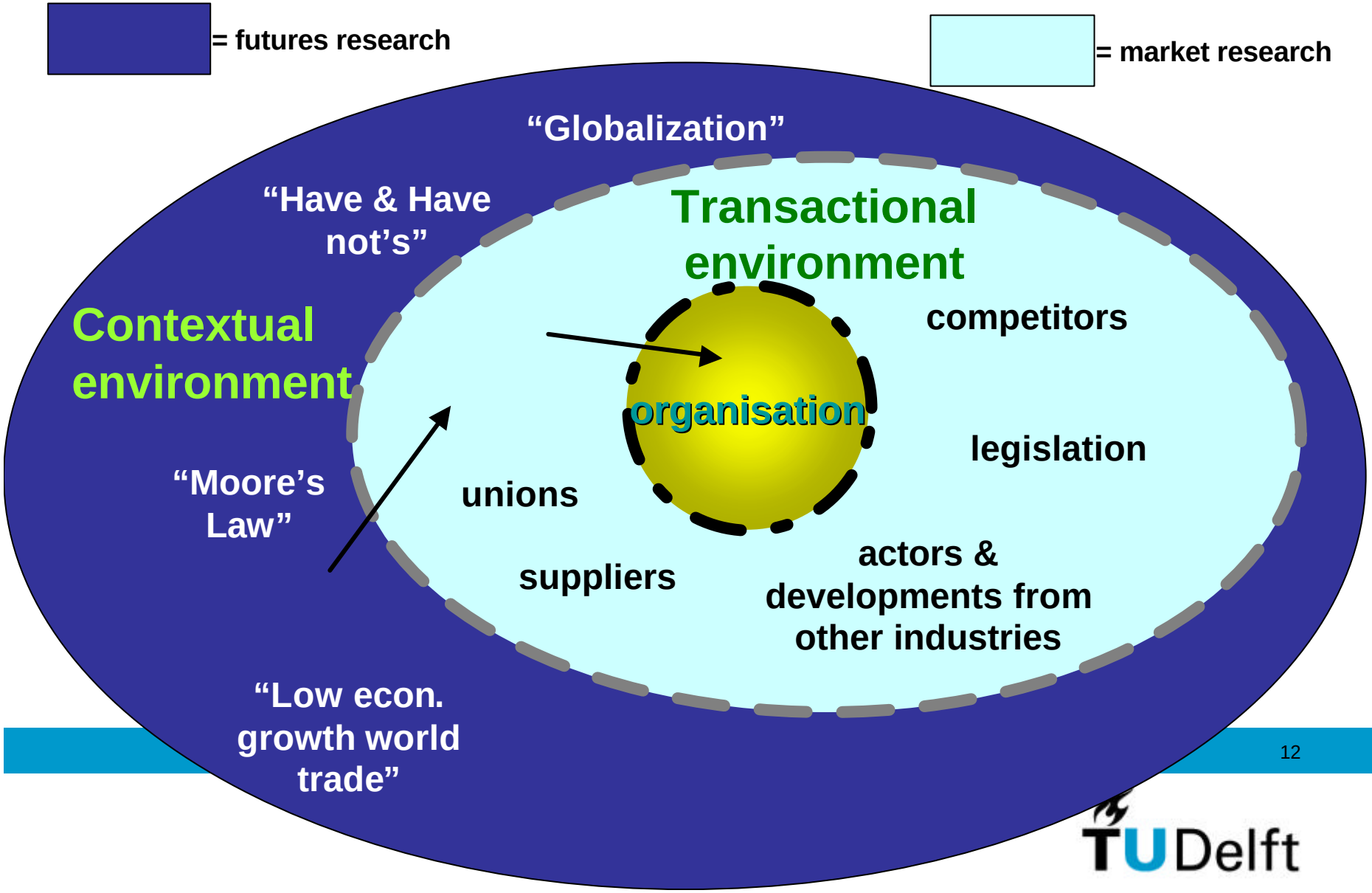
1. Futures research & market research



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1. From process-experts to content-experts: a continuum

Process-expert

Forecaster

Content-expert

Innovator

Process-experts: ??

Competences:

- knowledge of methods and their application
- process and facilitating capabilities
- organizational distance

Content-experts: Naisbitt, Toffler, Negroponte, etc.

Competences:

- knowledge and access to much data/information
- communication skills
- high status (sometimes even capable of realizing self-fulfilling prophecies)

2. Gartner's hype cycle

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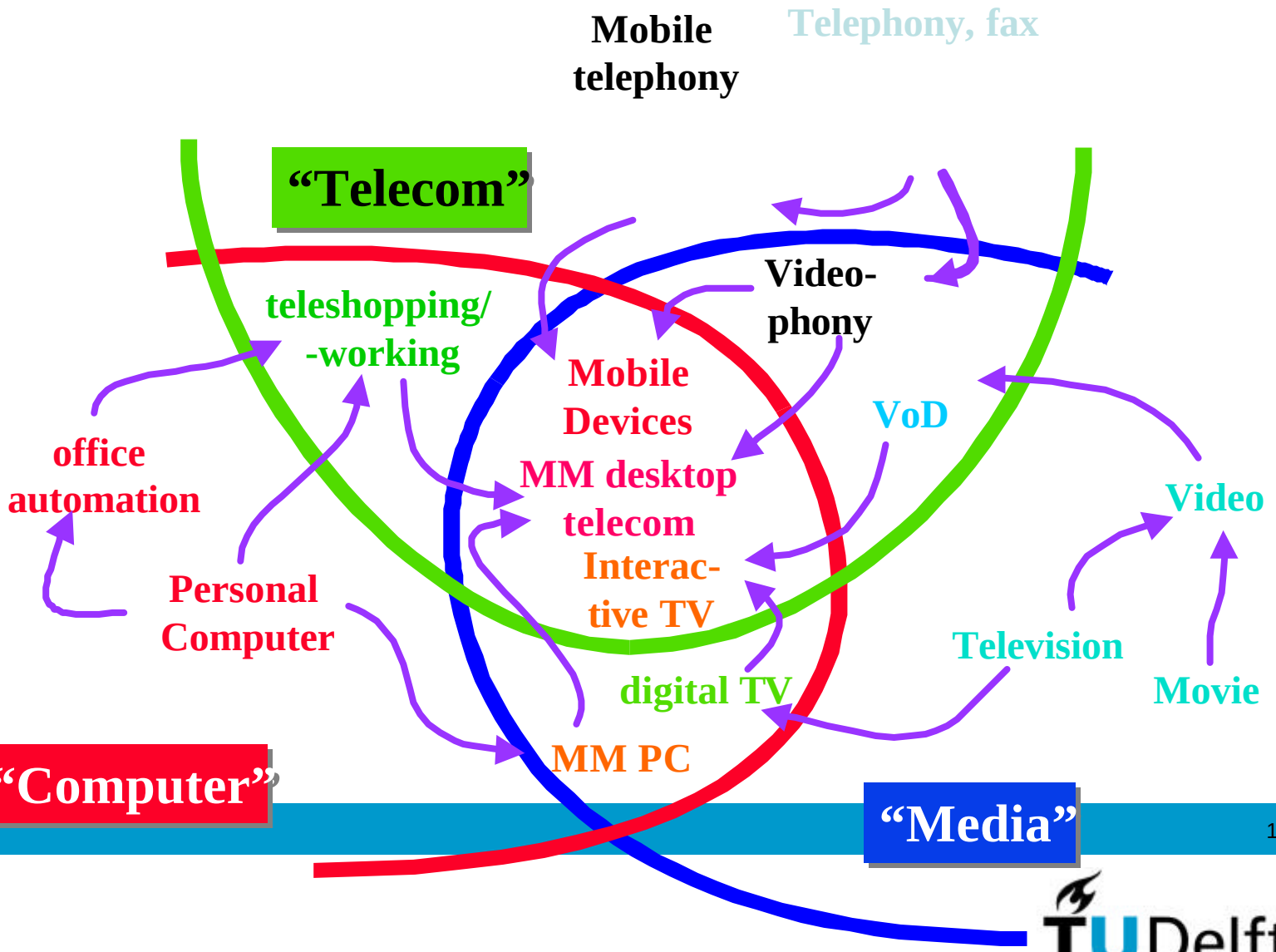
2. Divergence and/or convergence



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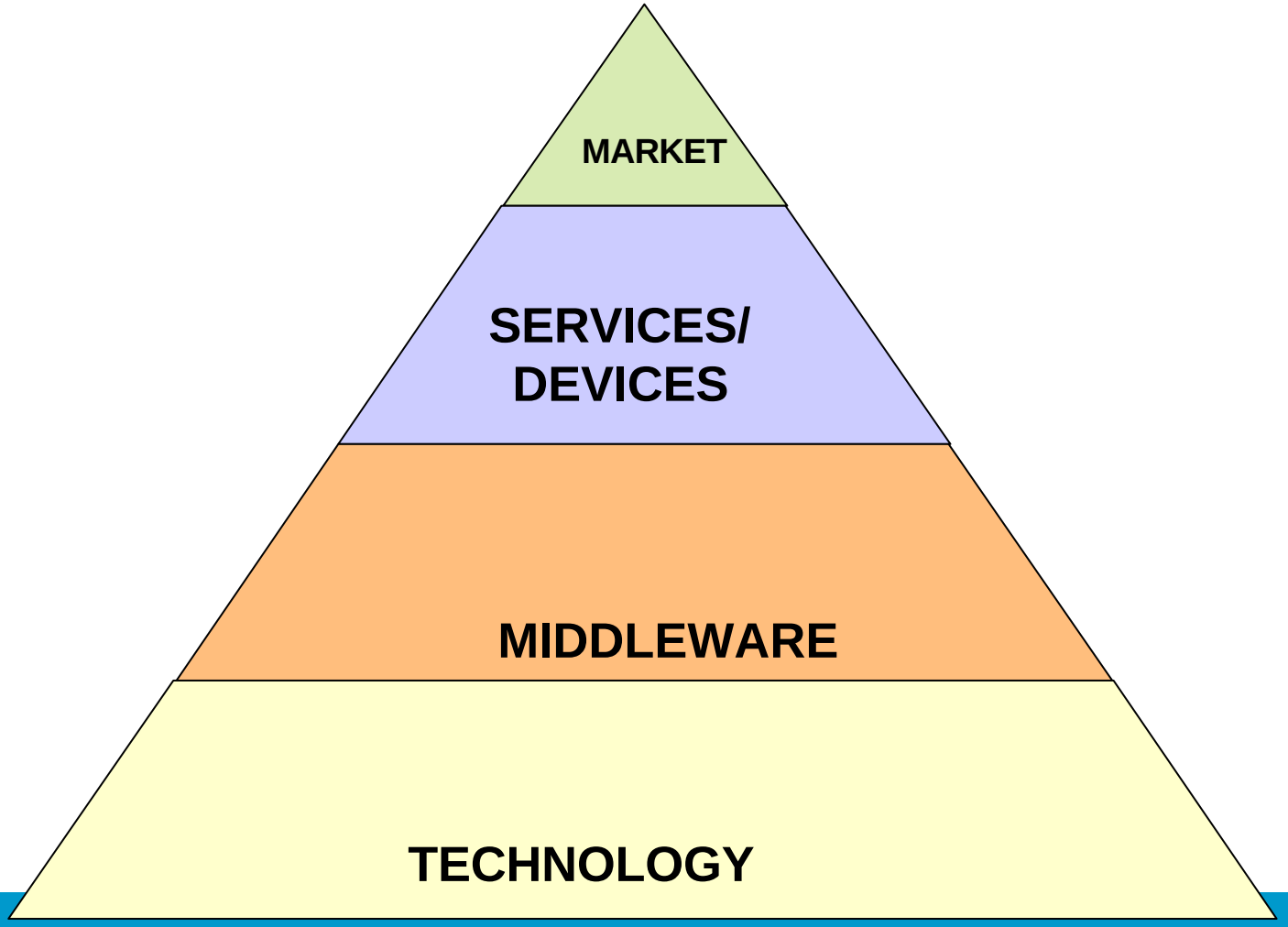
2. Telecom layers



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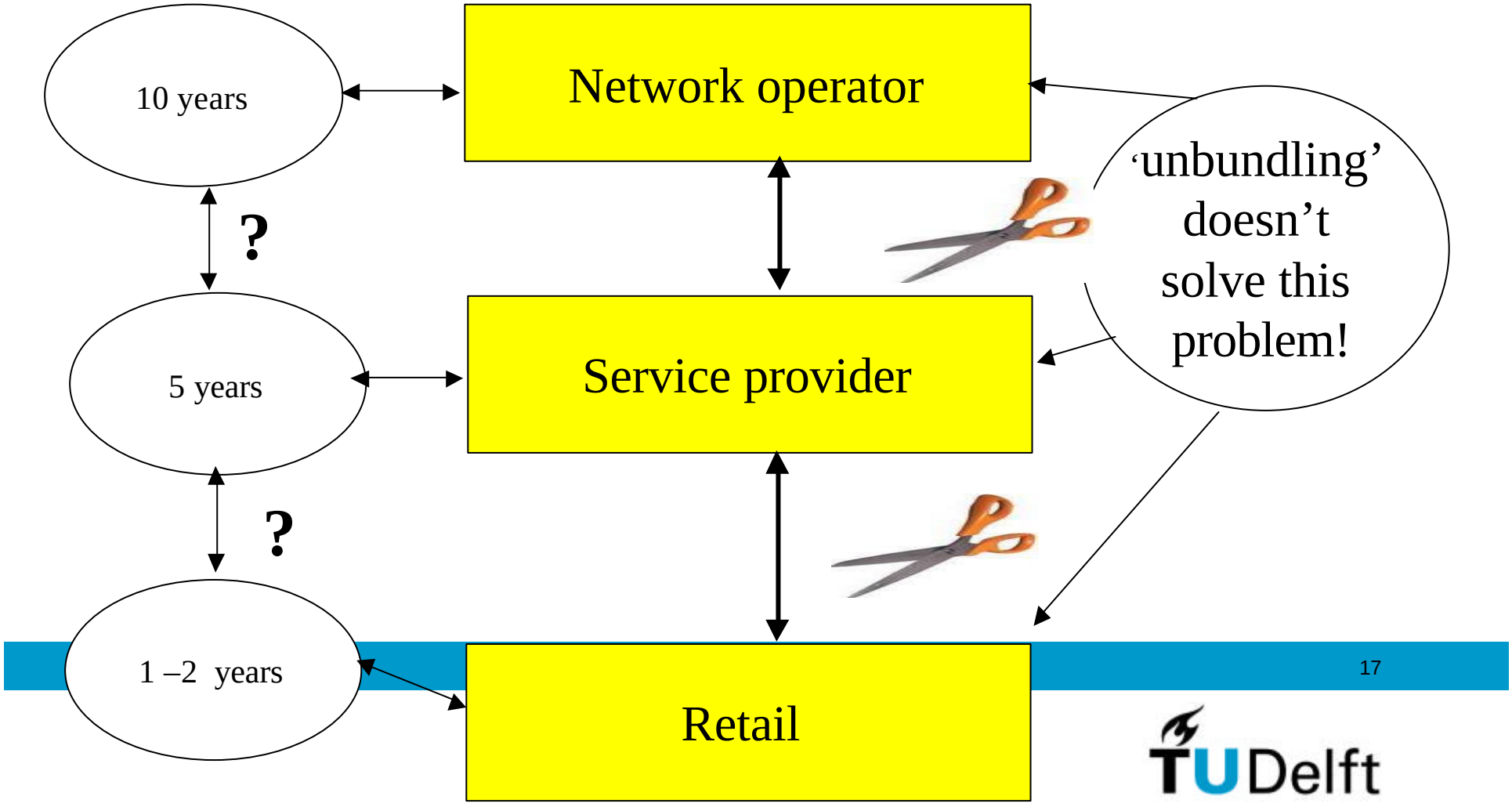
2. Different time horizons telco-industry/company



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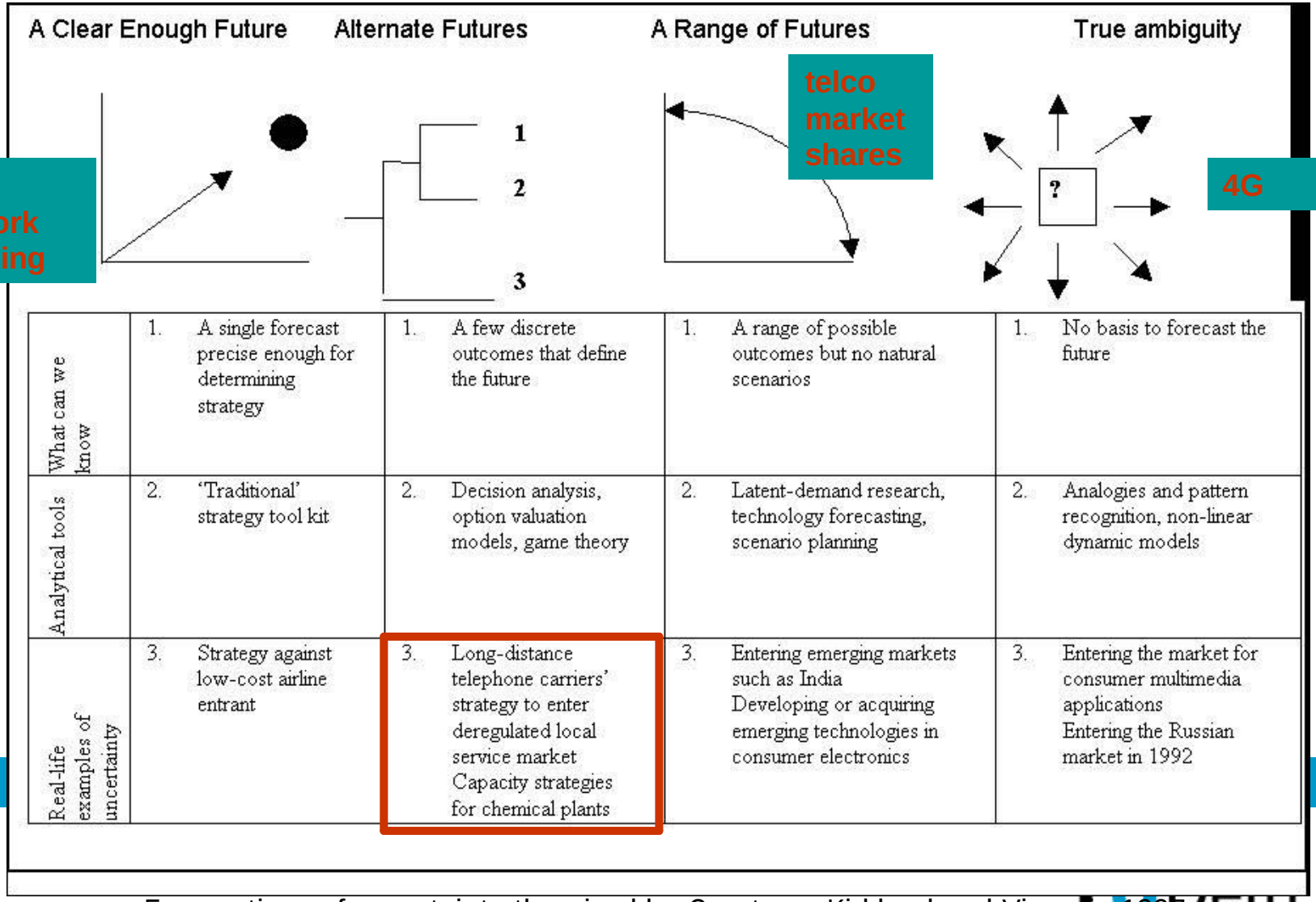
2. Different uncertainties

'Old' network planning

telco market shares

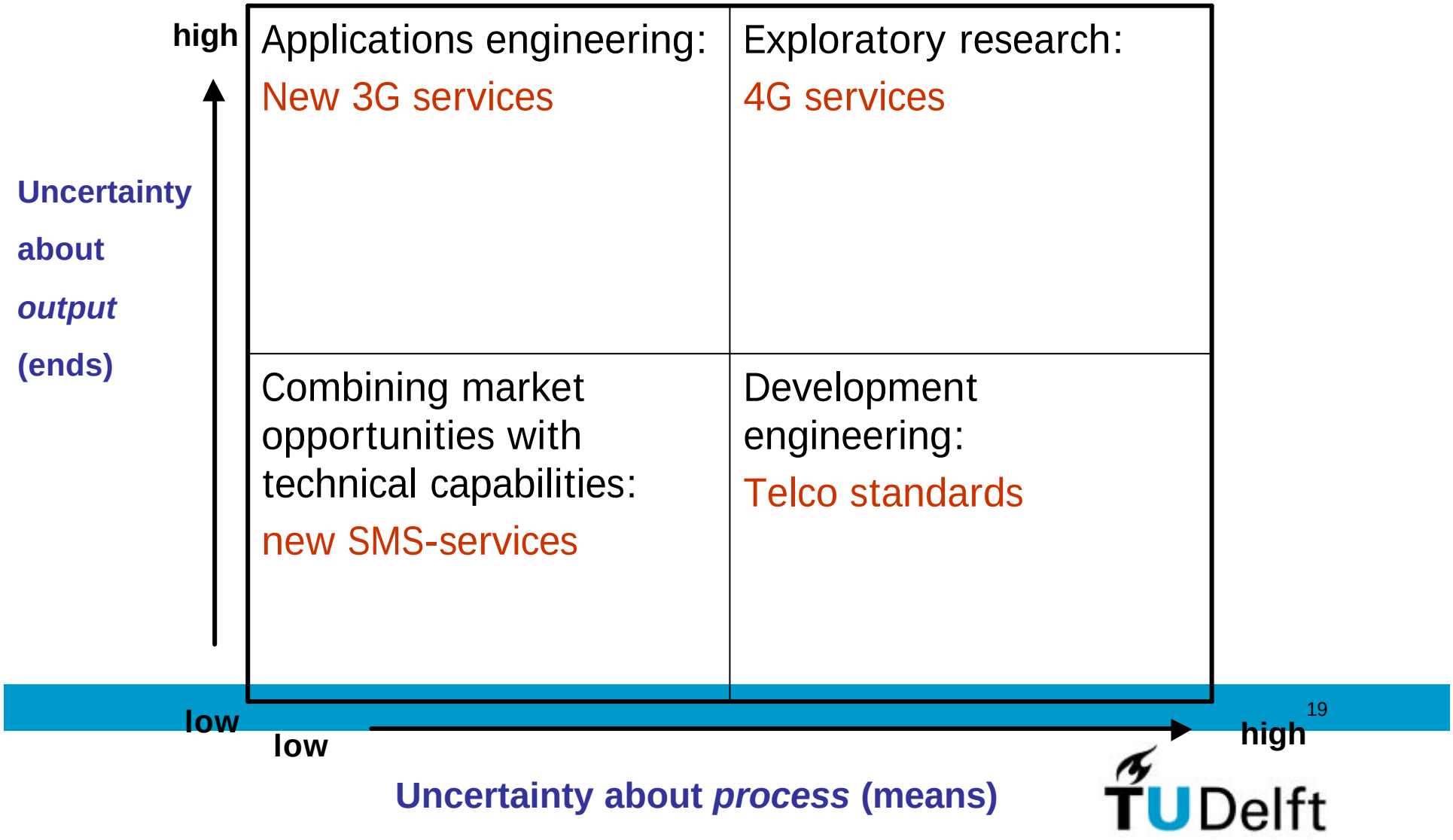
4G



	A Clear Enough Future	Alternate Futures	A Range of Futures	True ambiguity
What can we know	1. A single forecast precise enough for determining strategy	1. A few discrete outcomes that define the future	1. A range of possible outcomes but no natural scenarios	1. No basis to forecast the future
Analytical tools	2. 'Traditional' strategy tool kit	2. Decision analysis, option valuation models, game theory	2. Latent-demand research, technology forecasting, scenario planning	2. Analogies and pattern recognition, non-linear dynamic models
Real-life examples of uncertainty	3. Strategy against low-cost airline entrant	3. Long-distance telephone carriers' strategy to enter deregulated local service market Capacity strategies for chemical plants	3. Entering emerging markets such as India Developing or acquiring emerging technologies in consumer electronics	3. Entering the market for consumer multimedia applications Entering the Russian market in 1992

Four notions of uncertainty theorized by Courtney, Kirkland and Viguerie 1997

2. Pearson's uncertainty map



2. Forecasts and their consequences

Consequences: *Type of trend:*	*Uncertain consequence:*	*Certain consequence:*
Uncertain trend:	‘unbundling’	‘telco network crash’
Certain trend:	‘millenium-problem’	‘lower investments in telco networks’

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2. Forecasting & decisionmaking

Quality of forecast / Usage of forecast	Correct forecast	Incorrect forecast
Forecast is used for decision	Correct decision	Wrong! *Type II error*
Forecast is not used for decision	Wrong! *Type I error*	Correct decision

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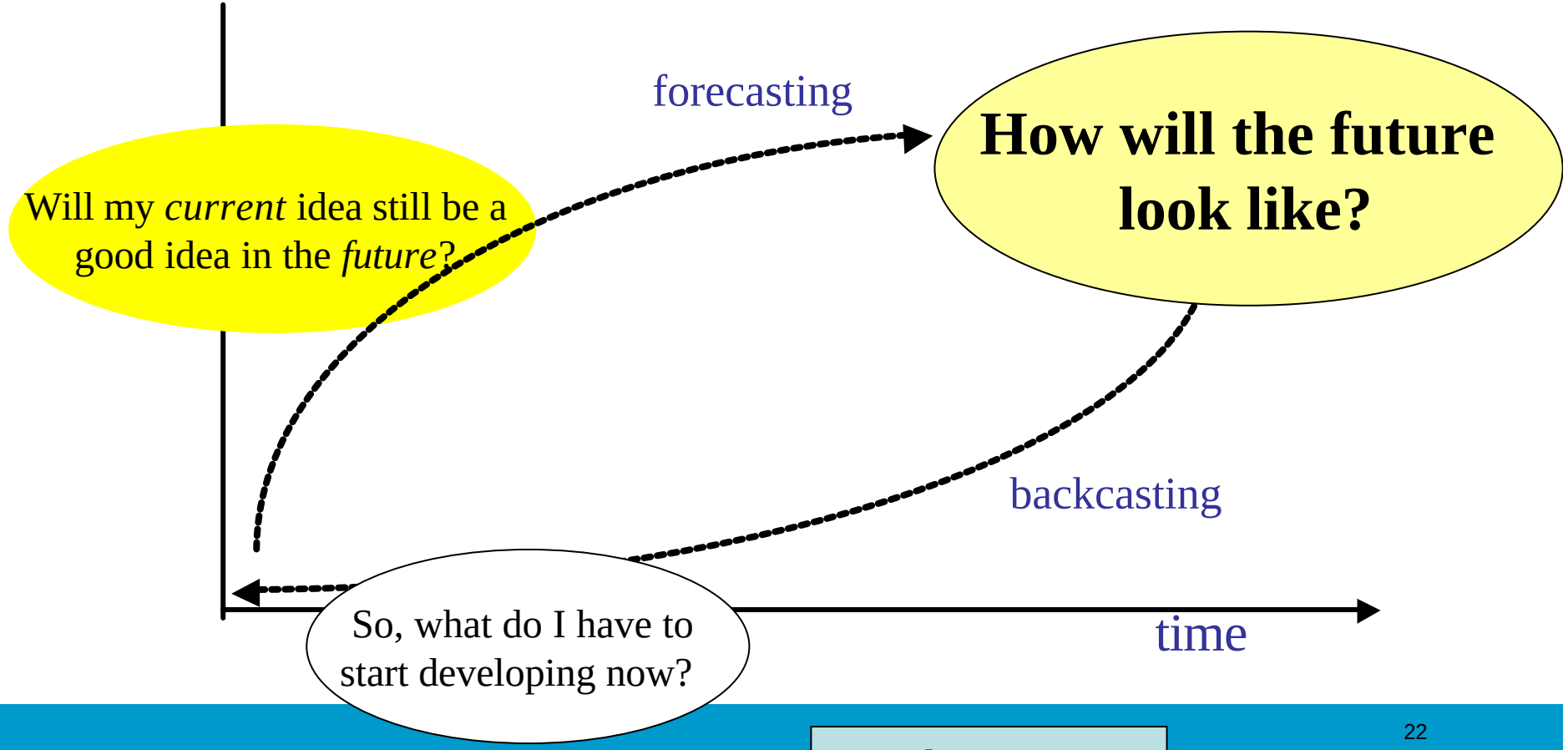
3. Futures research & innovation: *Innovation takes time!!*



Based on: Brian Twiss (1992)

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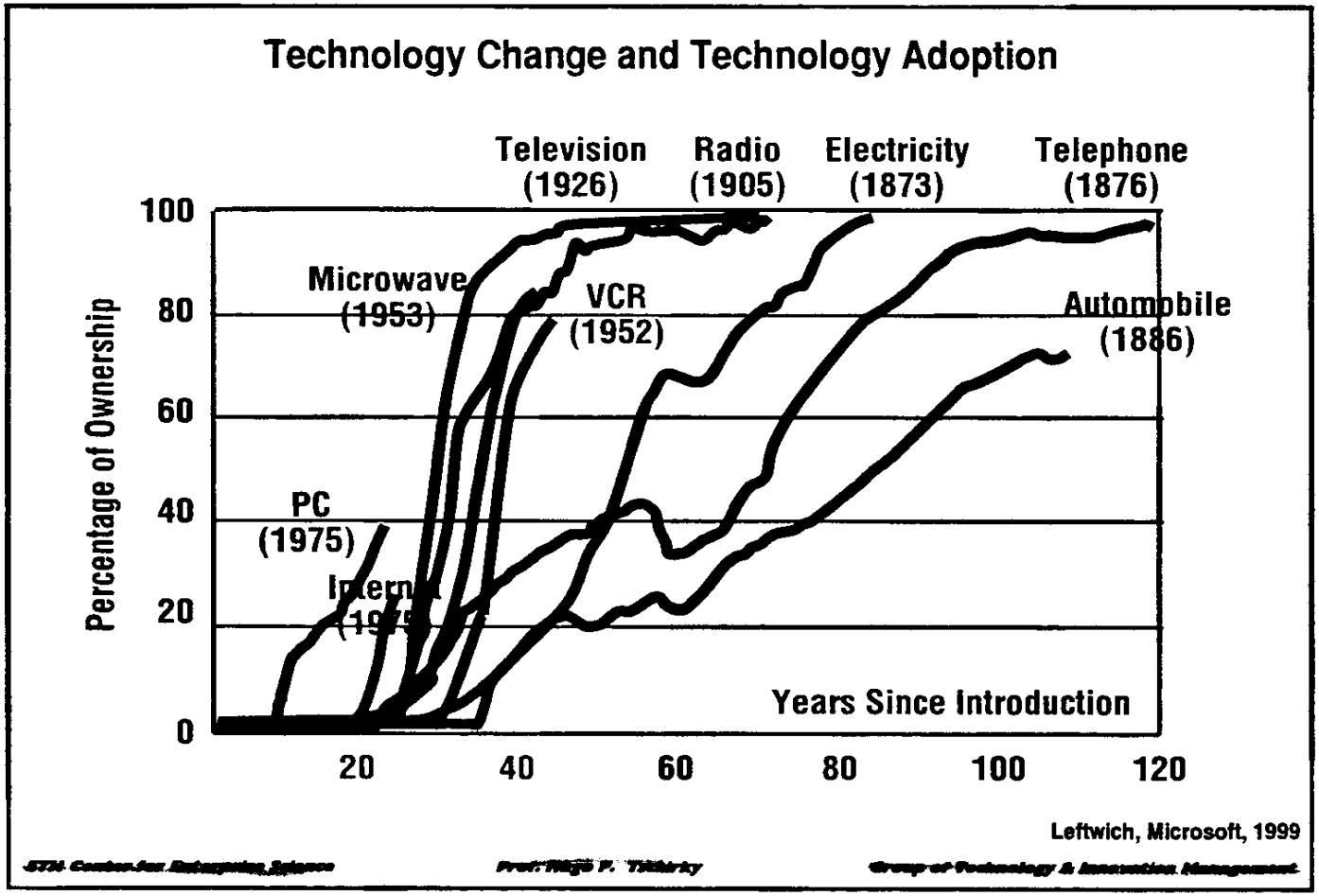
3. Things are going fast…..



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3.…but not always that fast….

"If, over the past 30 years, the automotive and aircraft industries developed at the same rate as have chips that power PCs, a Rolls-Royce would cost $ 2.75 and a Boeing 767 would cost $ 500 and could circle the globe in 20 minutes on 5 gallons of gas."

3. Forecasting and innovation

Twiss, 1992:

Stage of the innovation process	**Technology forecasts**		
	Importance	Accuracy	Financial effect of error
Idea generation	High	Medium	Low
Technical feasability	High	Medium	Low
Design & development	Low	High	Medium
Preparation for production & marketing	Very low	High	High
Post launch	-	-	-

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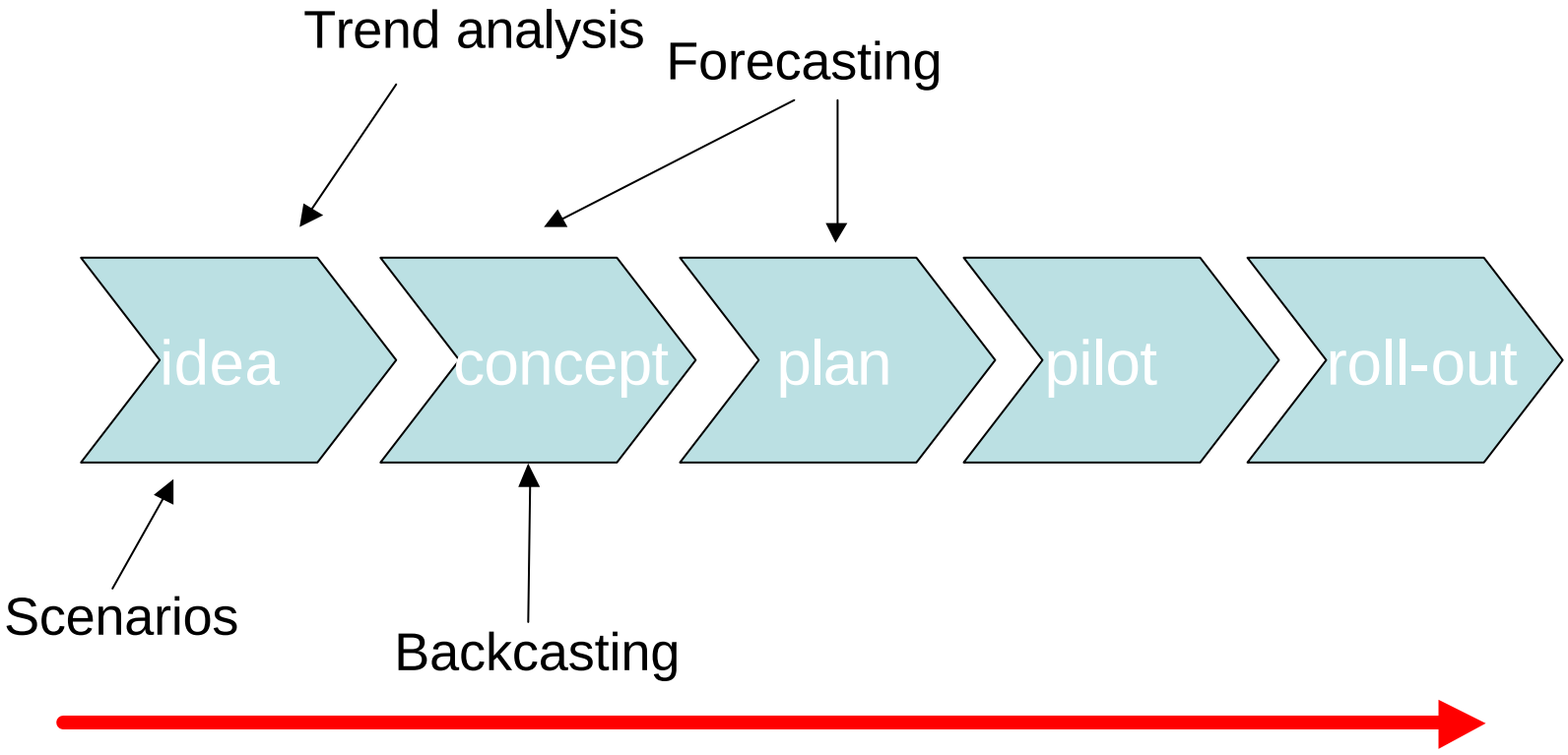
3. Forecasting and the *innovation-proces (1st gen.)*:



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3. Historical overview of generations of innovation-management (1):

- 1e generation: 1950 – 1970
  - technology (science) push; linear innovation-process; R&D institutes resemble organisational structure of universities; no link with strategy; market-aspects implemented too late; no professional project-management

- 2e generation: 1960 – 1980
  - market pull, linear innovation-process, project-management, R&D is re-active, not enough attention for the long term ('incrementalism')

Based on: Rothwell (1994), Niosi (1999), Liyanage, Greenfield & Don (1999)

3. Historical overview of generations of innovation-management (2):

- 3e generation: 1970 – 1990
  - combination market pull & technology push; link with strategy; interaction within intra- and extra organisational netwerks; only focus on product & process innovation; only focus on creation instead on exploitation

- 4e generation: 1980 – now
  - ……

Based on: Rothwell (1994), Niosi (1999), Liyanage, Greenfield & Don (1999)

3. Historical overview of development of innovation-management (3):

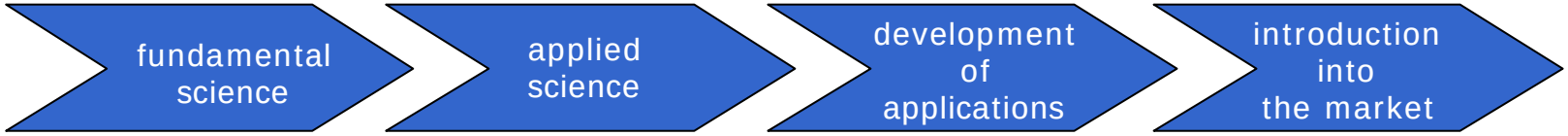
- Development characteristcis:
  - Evolutionary
  - Increasing complexity
  - Overcoming the disadvantages of previous generations
  - Adjustment to a changing environment (societal, economical strategic, organisational)
  - Principle of 4th generation are still under dispute
  - Generations are not wholly time-dependent but rather contextual. Example: government still uses the linear model (generation 1). The most competitive industries think and act in terms of the 4th generation.

3. Telecom developments and their impact on innovation management

- R&D alliances
- parallel, integral and cyclical innovation-processes, feedback loops
- more actors involved
- emphasis on shortening development time
- broad view on innovation

= 4th generation of innovation management >> Cyclic Innovation Model

3. Pipeline-model, supply driven



- One-directional causal processes
- Large distance between science and market
- Costly and lengthy process
- All processes take place within 1 organisation: 'closed innovation'

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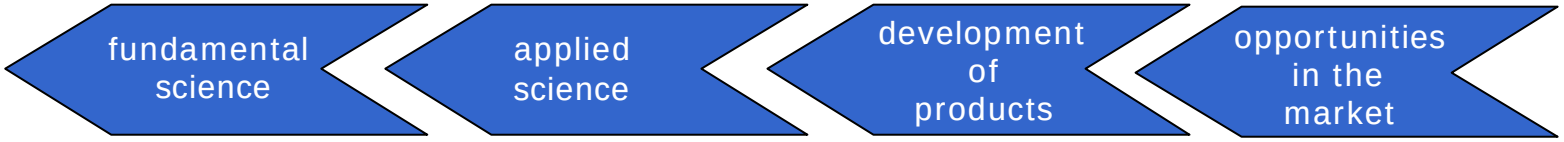
3. Pipeline-model, demand-driven



- One-directional causal processes
- Large distance between science and market
- Costly and lengthy process
- Science is too much ‘following’

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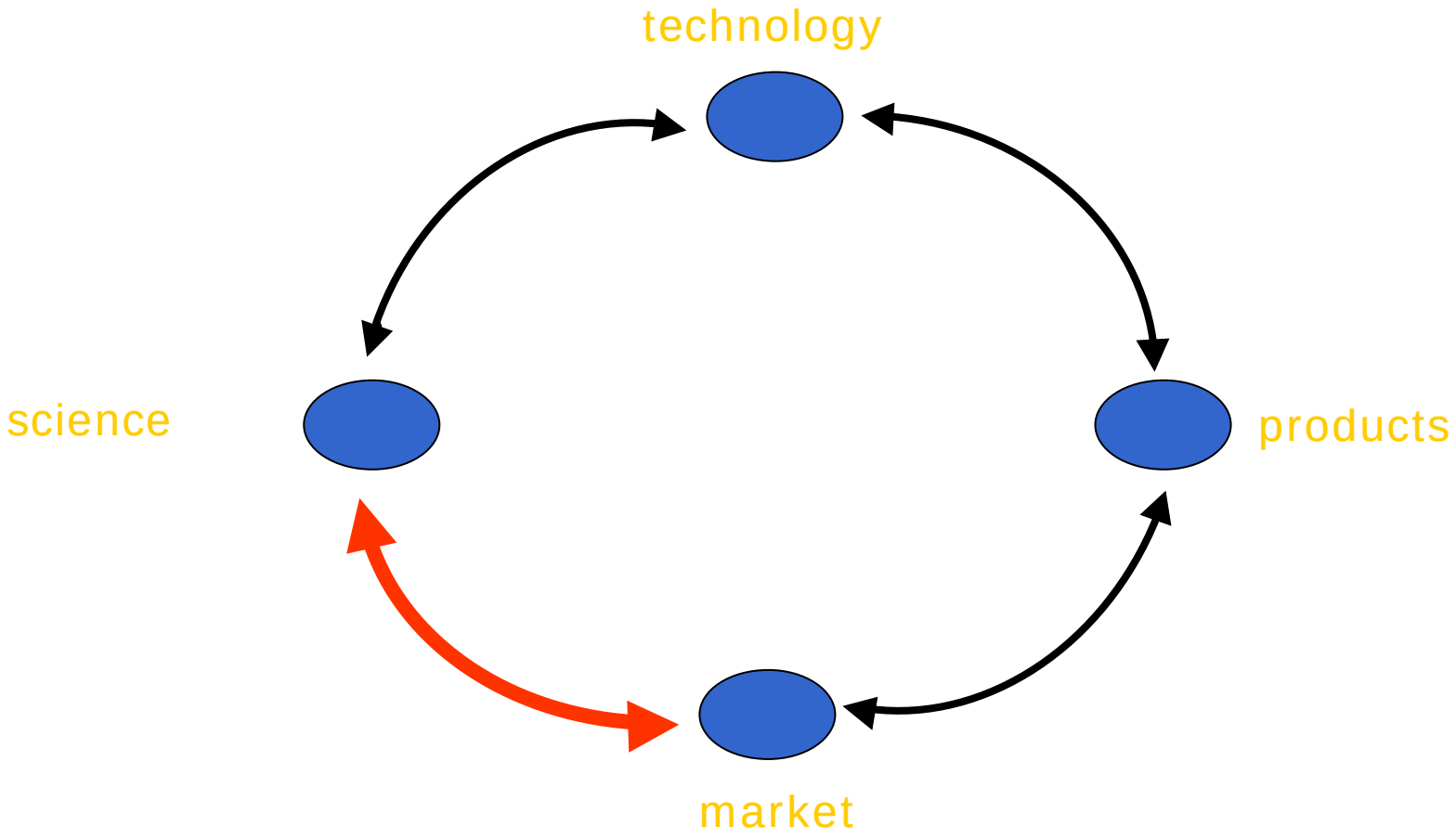
3. Solution: connecting the start and end



- From chain to cycle

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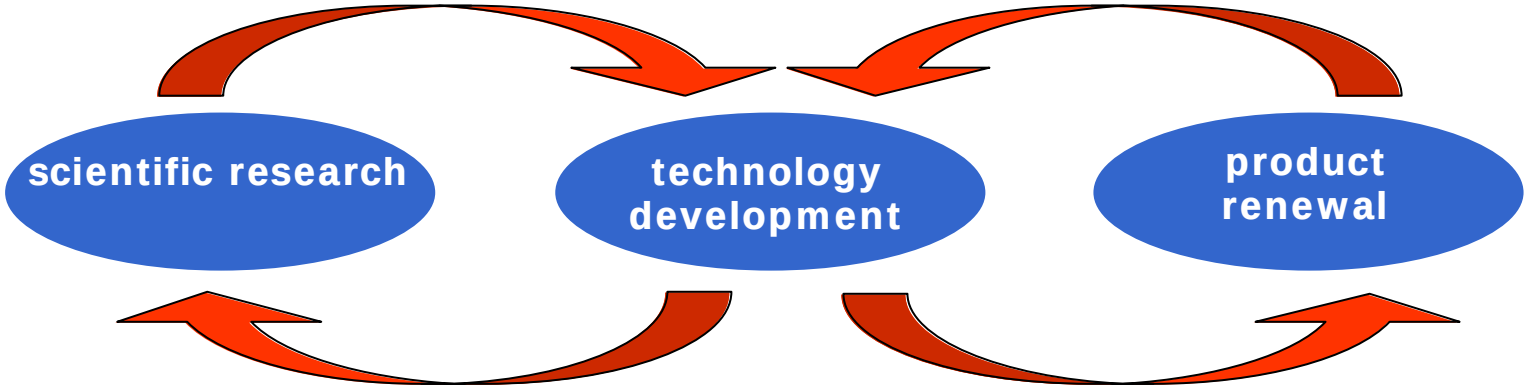
3. Dynamics around technology-development
(changing possibilities)



bèta knowledge cycle engineering cycle

- Science PUSH Technological research is driven by new scientific insights (LEFT)
- Business PULL Technological research is driven by new functional demands (RIGHT)

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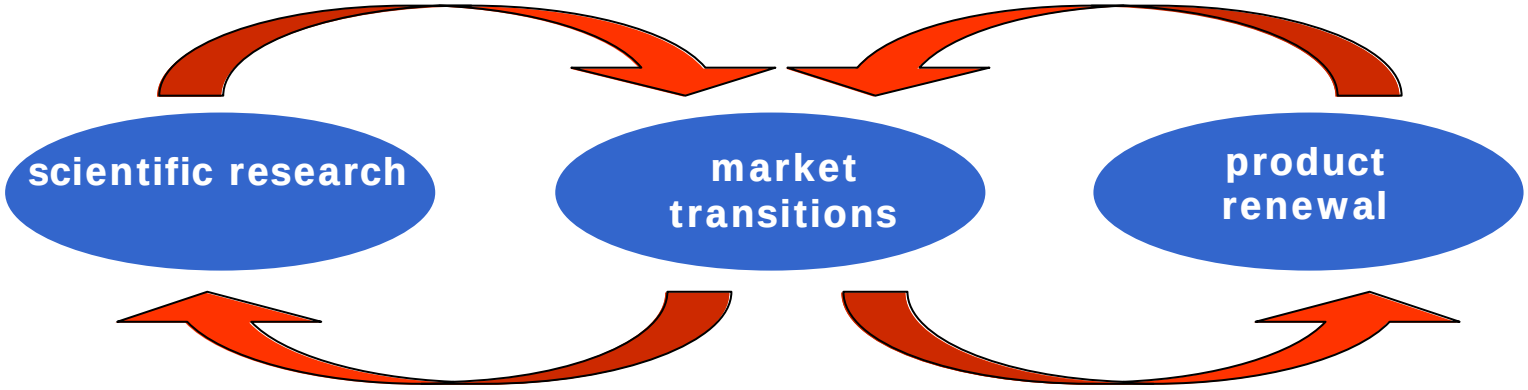
3. Dynamics around market transitions
(changes desirabilities)



- Scientific insight
- Changing *demand* to product-services combinations is decided by the dynamics of societal needs (LEFT)
- Economic process
- Changing *supply* of product-service combinations is decided by the innovation capabilities of businesses (RIGHT)

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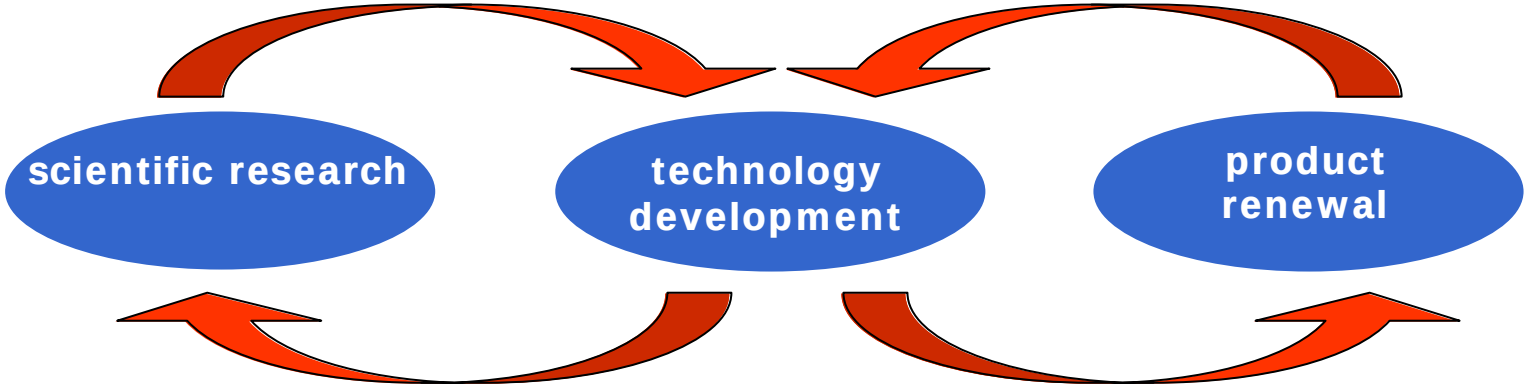
3. Combination of cycles



what is possible?

what is desirable?

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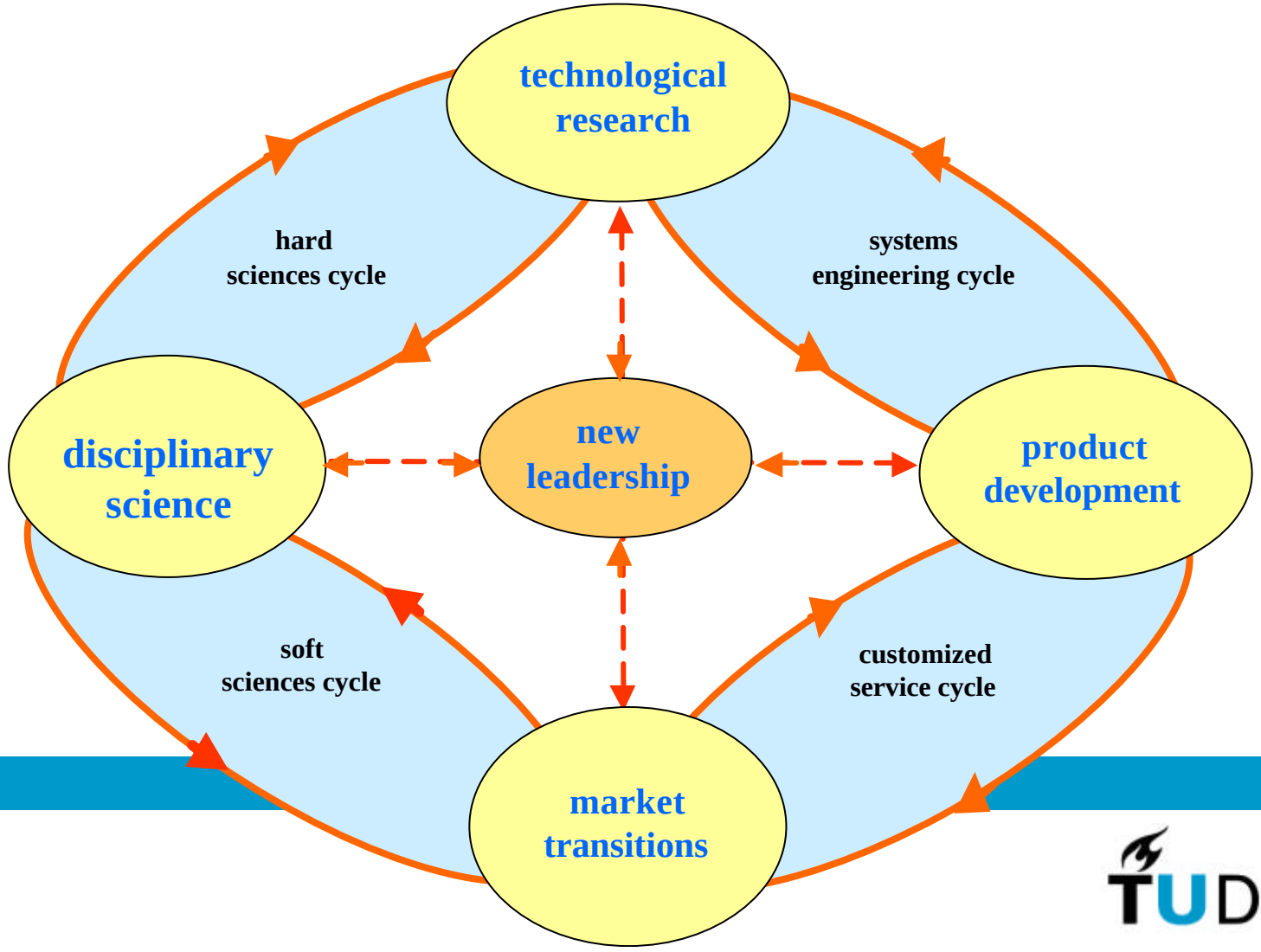
3. The Cyclic Innovation Model (4th gen.):



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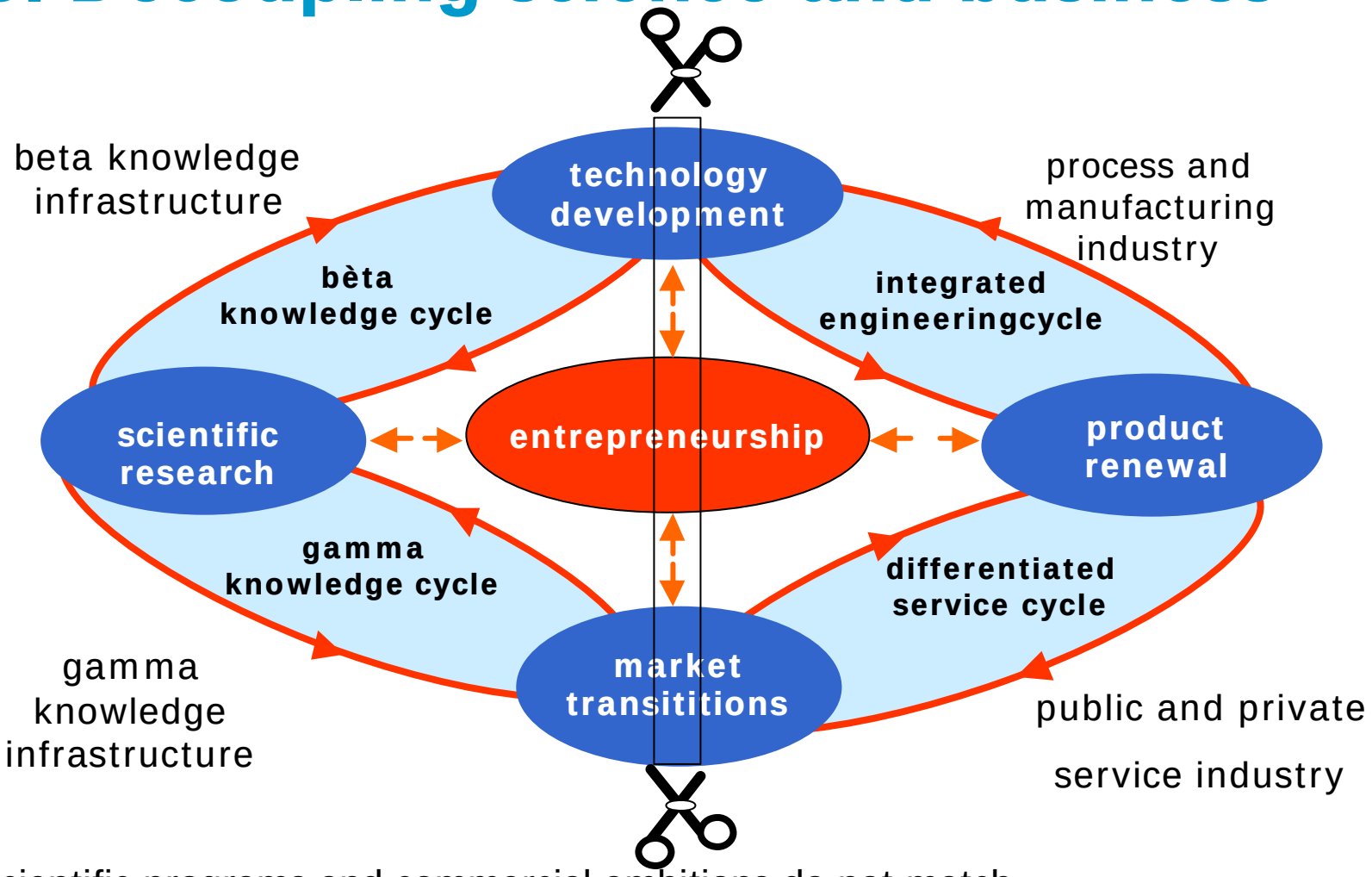
3. Decoupling science and business



- Scientific programs and commercial ambitions do not match
- Decoupling (left-right) explains the European innovation-paradox

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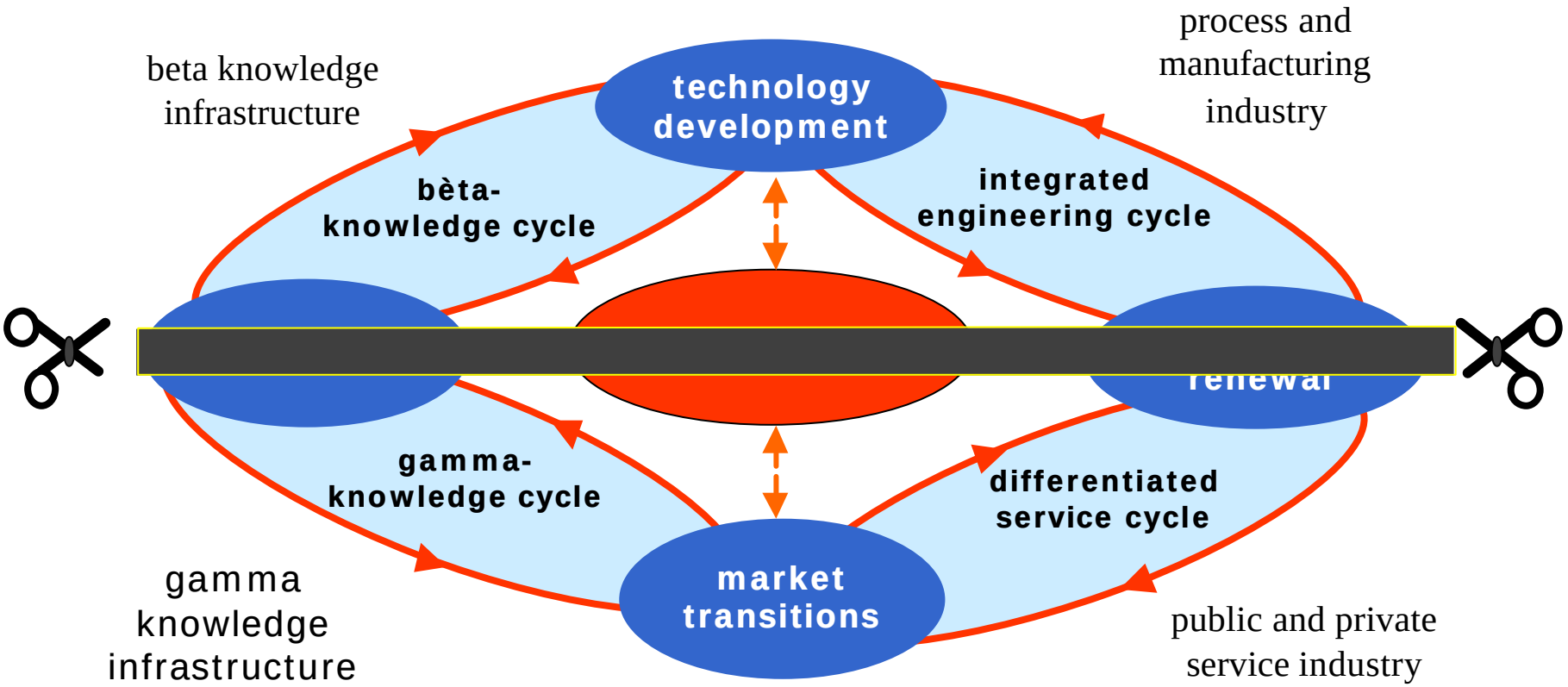
3. Decoupling technology and market



- Innovation is viewed too technically (‘what is possible?’)
- Societal aspects are often neglected (‘what is desirable?’)

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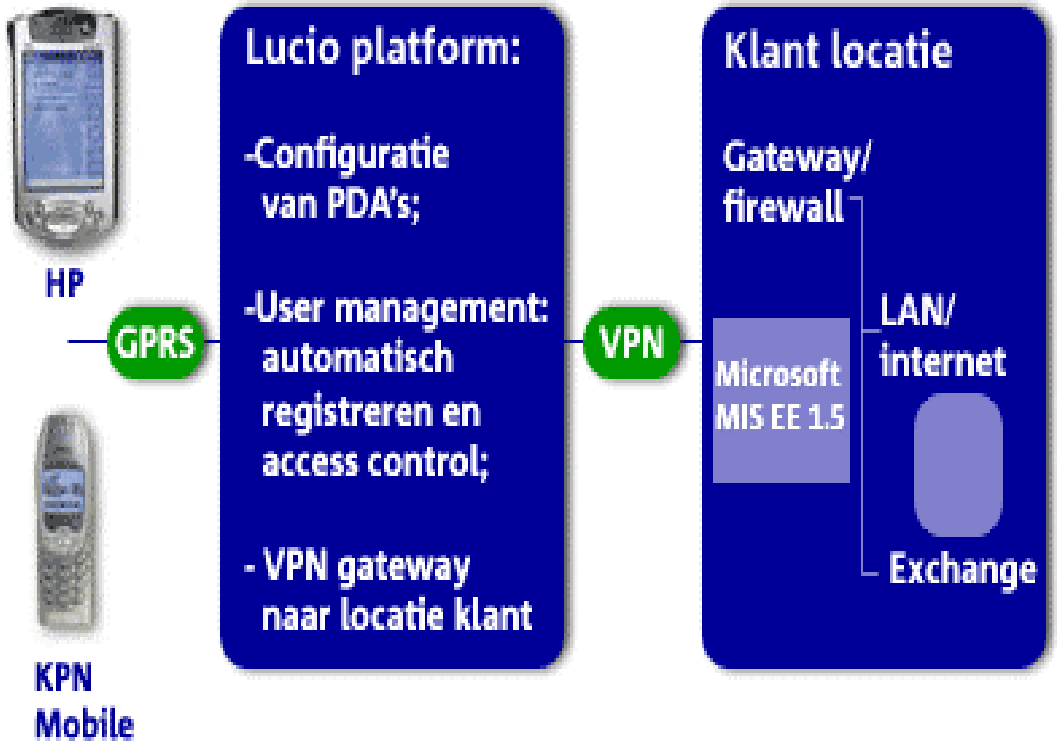
4. ‘Lucio’: a mobile data service



a. the system

b. the screen

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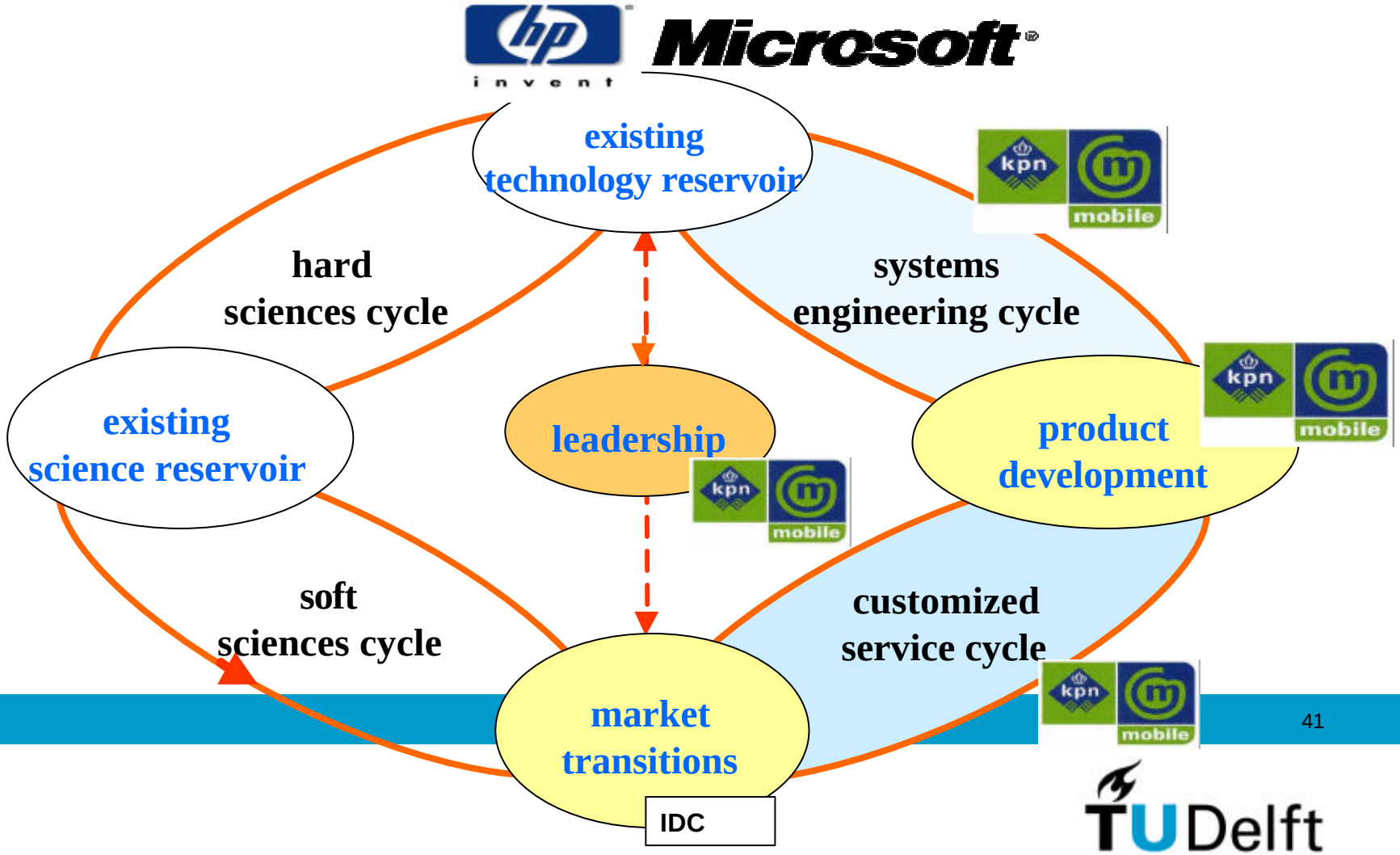
4. ‘Lucio’ and CIM combined



4. Forecasting problems with ‘Lucio’

- Different companies, different industries, different cultures, different time-horizons
- Different speeds of development (networks, services)
- Different perspective of and attitude towards market
- Sharing forecasting activities (data, methods, etc.)
- No linear innovation process!

5. Some concluding remarks:

- Forecasting:
  - Is an input to decisionmaking, not an output in itself
  - Is part of a wider set of methods to look at the future
  - Improving forecasting does not automatically mean improving the forecast
  - Choice of method depends heavily on type of innovation management and type of innovation
  - Forecasts within a telco depend very much on each other (and of other companies!)

- Every company has a ‘dream’:
  - But: *“On which vision of the future is that dream based?”*

  >> *FUTURE AUDIT* : “Are your plans future proof?”
- Rehearsing the future:
  - “Test your plans in different possible futures just as a pilot practices within a flight simulator”