



A HYDRA project case-based training session



Requirements
engineering using
scenario thinking
with the IDON method

<Presenter goes here>

Preface – introduction to the project

Preface from the Hydra Project Team:

- Hydra middleware facilitates application development based on a Service-oriented Architecture (SOA), to which the underlying communication layer is transparent.
- The Hydra platform allows the developers to rapidly develop solutions that are not only technically but also commercially viable.
- Hydra has developed three case-based training courses in which researchers, technology developers and business managers meet to exchange information and jointly create, analyse and augment realistic business models and business cases.

IST-2005-034891

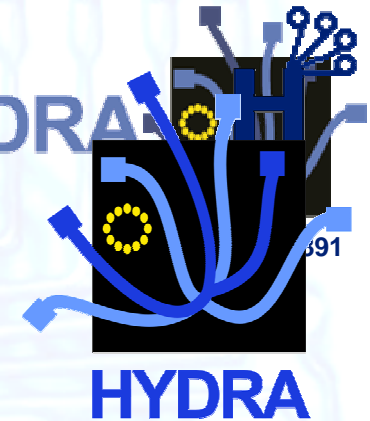


More information: www.hydramiddleware.eu



The HYDRA project

IST-2005-054691



- Middleware for Networked Embedded Systems
 - Embedded intelligence architecture
 - Wireless networks & devices
 - Service oriented architecture (SoA)
 - Trust, privacy and security
- Four year European research project
- Project budget 15 m€
- Co-funded by the EU Commission with 8 m€
- Ends in 2010





Partners in the Hydra project

- 12 partners
- 6 universities and research institutions
- 4 SME's
- 8 countries



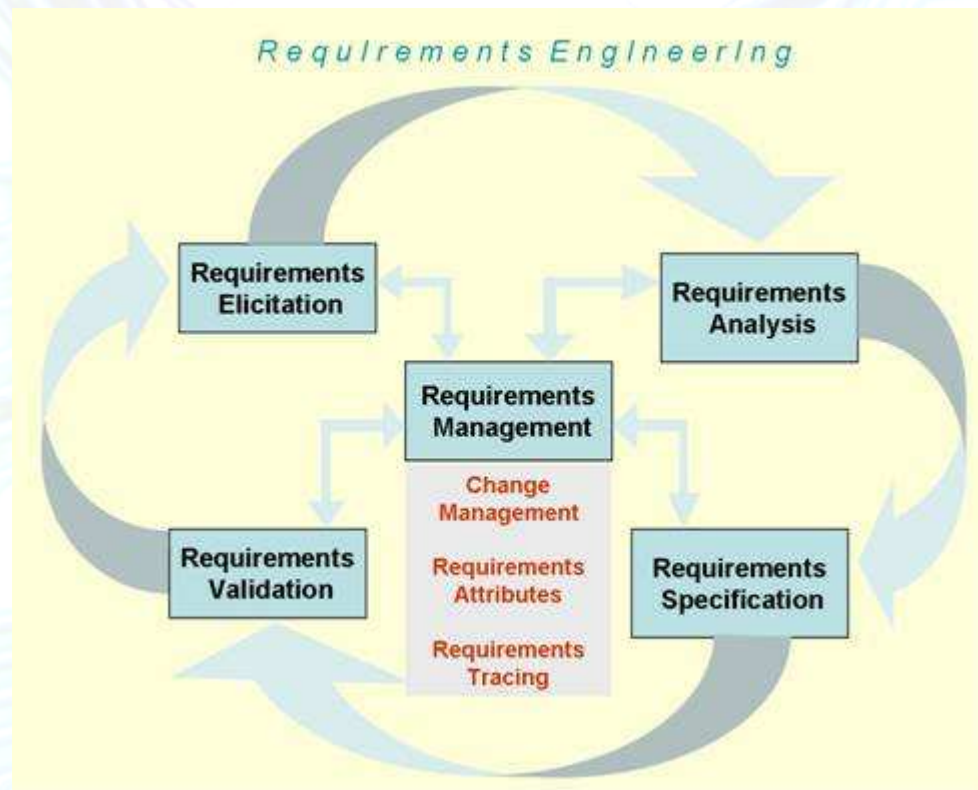
The University of Reading

19 June 2009

Hydra Training: Scenario Thinking



Requirements Engineering



Source: DACS Gold Practices, 2006

Provocations from the Middle Age



Midway upon the journey of our life
I found myself within a forest dark,
For the straightforward pathway had been lost.

(Dante Alighieri, La Divina Commedia, Inferno, 1306)

FOREST DARK = COMPLEXITY

Technology discontinuities

Pervasive On Demand era

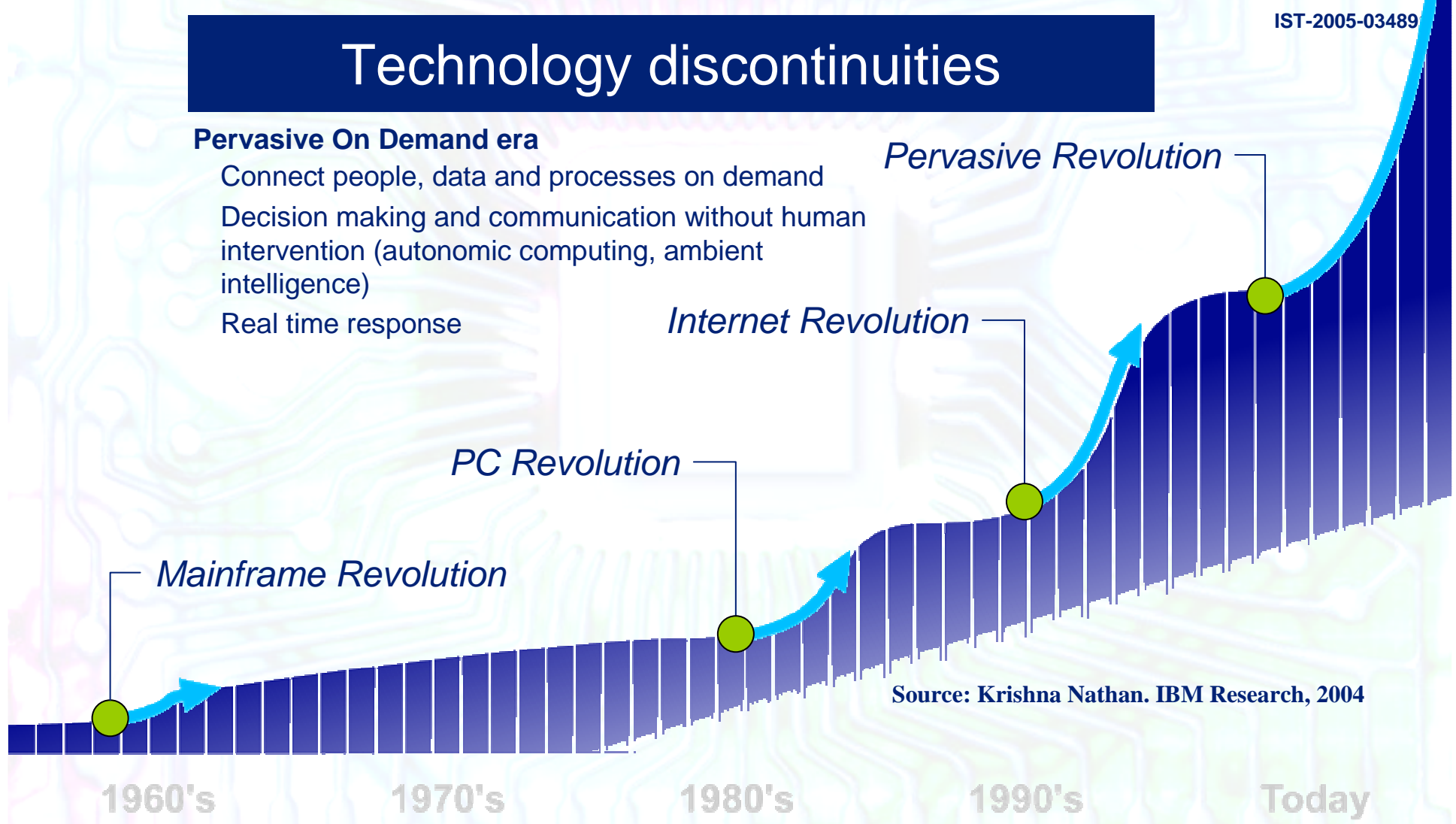
Connect people, data and processes on demand
 Decision making and communication without human intervention (autonomic computing, ambient intelligence)
 Real time response

Pervasive Revolution

Internet Revolution

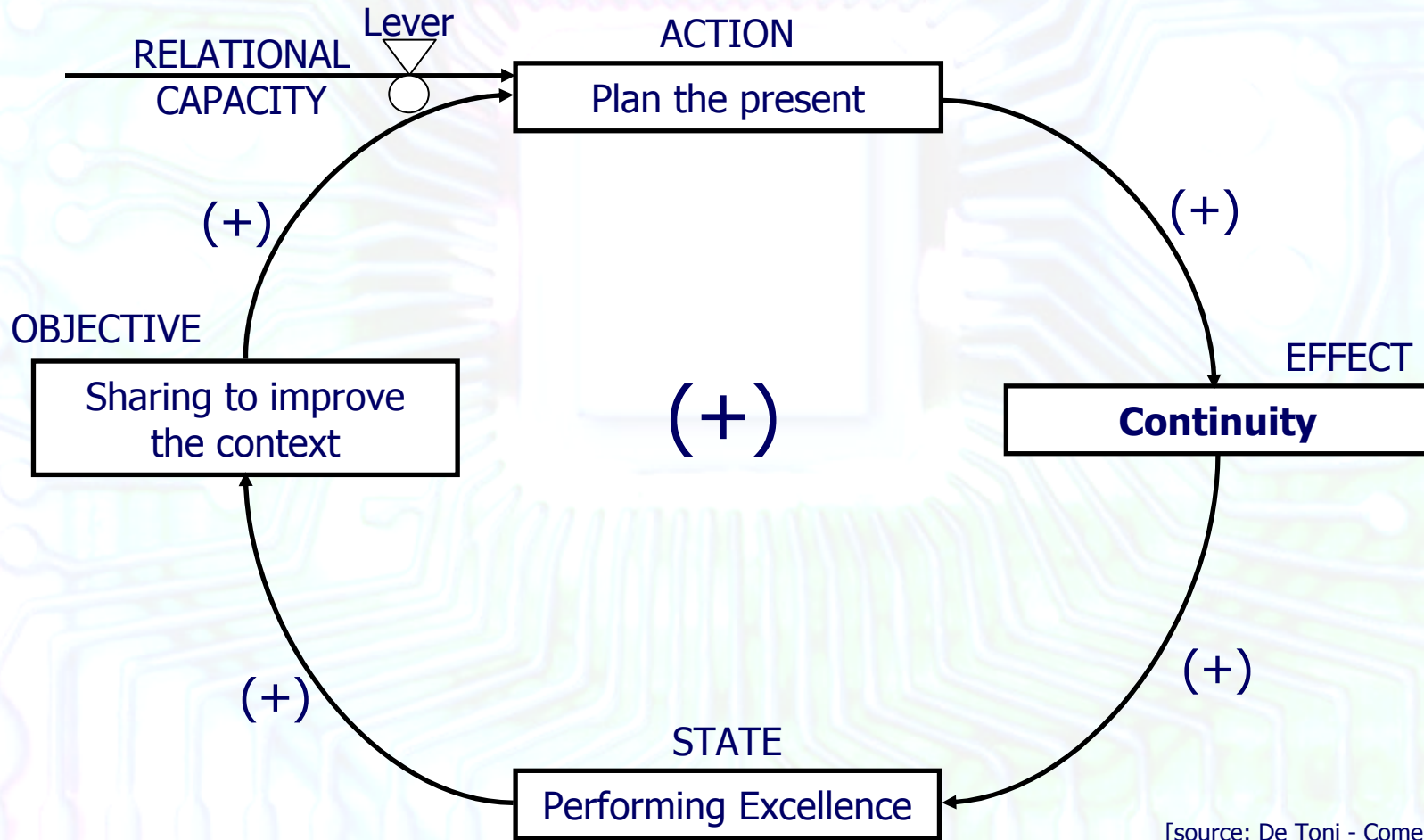
PC Revolution

Mainframe Revolution



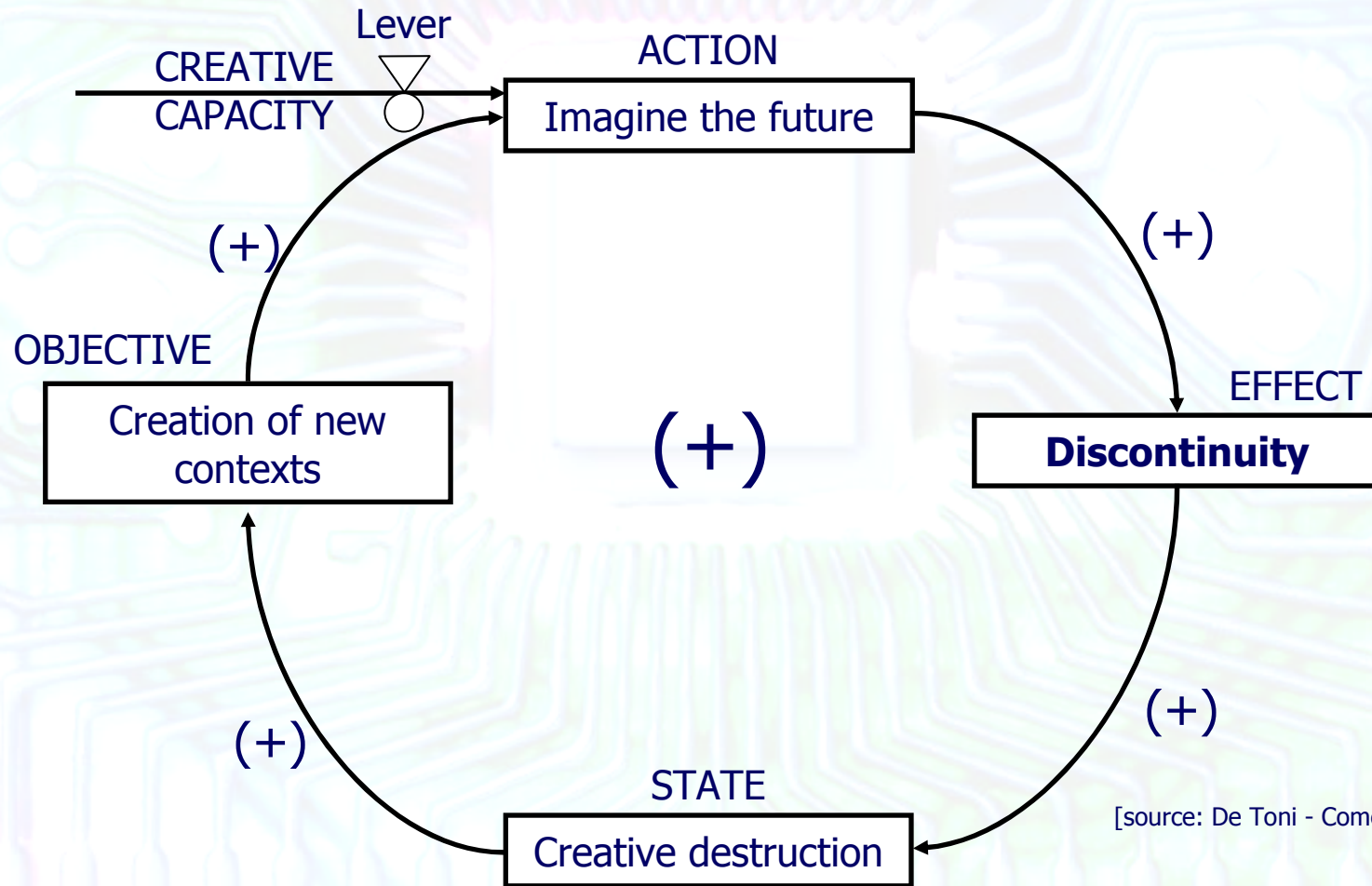
Source: Krishna Nathan. IBM Research, 2004

Continuity - the 'Excellence' Circle



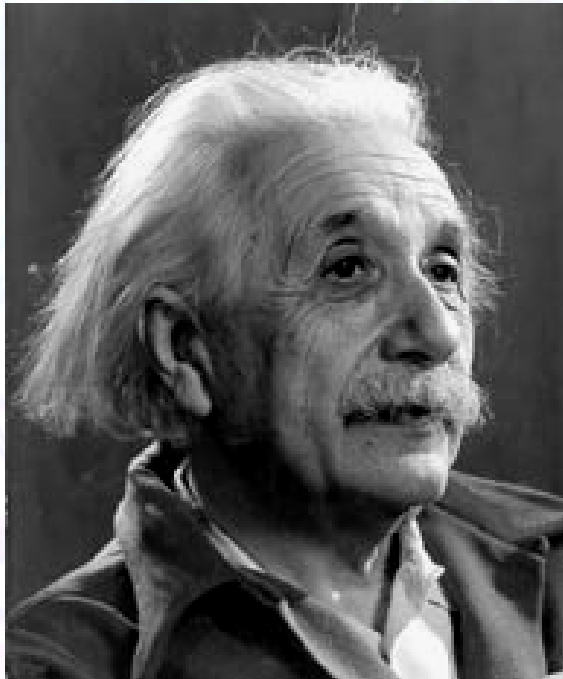
[source: De Toni - Comello, 2005]

Discontinuity - the 'Creation' Circle



[source: De Toni - Comello, 2005]

Continuity vs. discontinuity



Logic takes you from A to B.

Imagination takes you everywhere.

(Albert Einstein, 1955)

Imagine the future



- Strategic analysis
- Forecasting methods
- Scenario thinking methods
 - Brainstorming
 - "What if?"
 - IDON method
 - ...

A vertical rectangular image on the left side of the slide showing a sunset over a body of water, with the sun low on the horizon and its light reflecting on the water's surface.

Scenario Thinking

Pierre Wack, the originator of scenario thinking as it is commonly used today, described it as:

A discipline for encouraging creative and entrepreneurial thinking and action “in contexts of accelerated change, greater complexity, and genuine uncertainty.”

- Scenario Thinking is not about predicting the future and not about choosing the best way forward.
- The process of Scenario Thinking is as a tool for creating requirements specifications under uncertainty.

A vertical rectangular image on the left side of the slide showing a sunset over a body of water, with the sun low on the horizon and its light reflecting on the water's surface.

Scenario thinking

Scenario thinking achieves its purpose because of three fundamental principles:

- The long view
 - Scenario thinking requires looking beyond immediate demands and peering far enough into the future to see new possibilities
- Outside-in thinking
 - Thinking from the outside-in means pondering external changes that might profoundly affect your case
- Multiple perspectives
 - The introduction of multiple perspectives—diverse voices that will shed new light on your strategic challenge—helps you better understand your own assumptions about the future, as well as the assumptions of others

A vertical rectangular image on the left side of the slide showing a sunset over a body of water, with the sun low on the horizon and its light reflecting on the water's surface.

The IDON methodology

- Its primary value lies in the development of new skills for improving the definition and planning of future user requirements (*the long view*)
- We come to know the right questions to ask, where to look for missing pieces and how to spot unique opportunities (*outside-in thinking*)
- Deploying our skills enables us to acquire consistency and robustness in coherent long-term user scenarios (*multiple perspectives*)

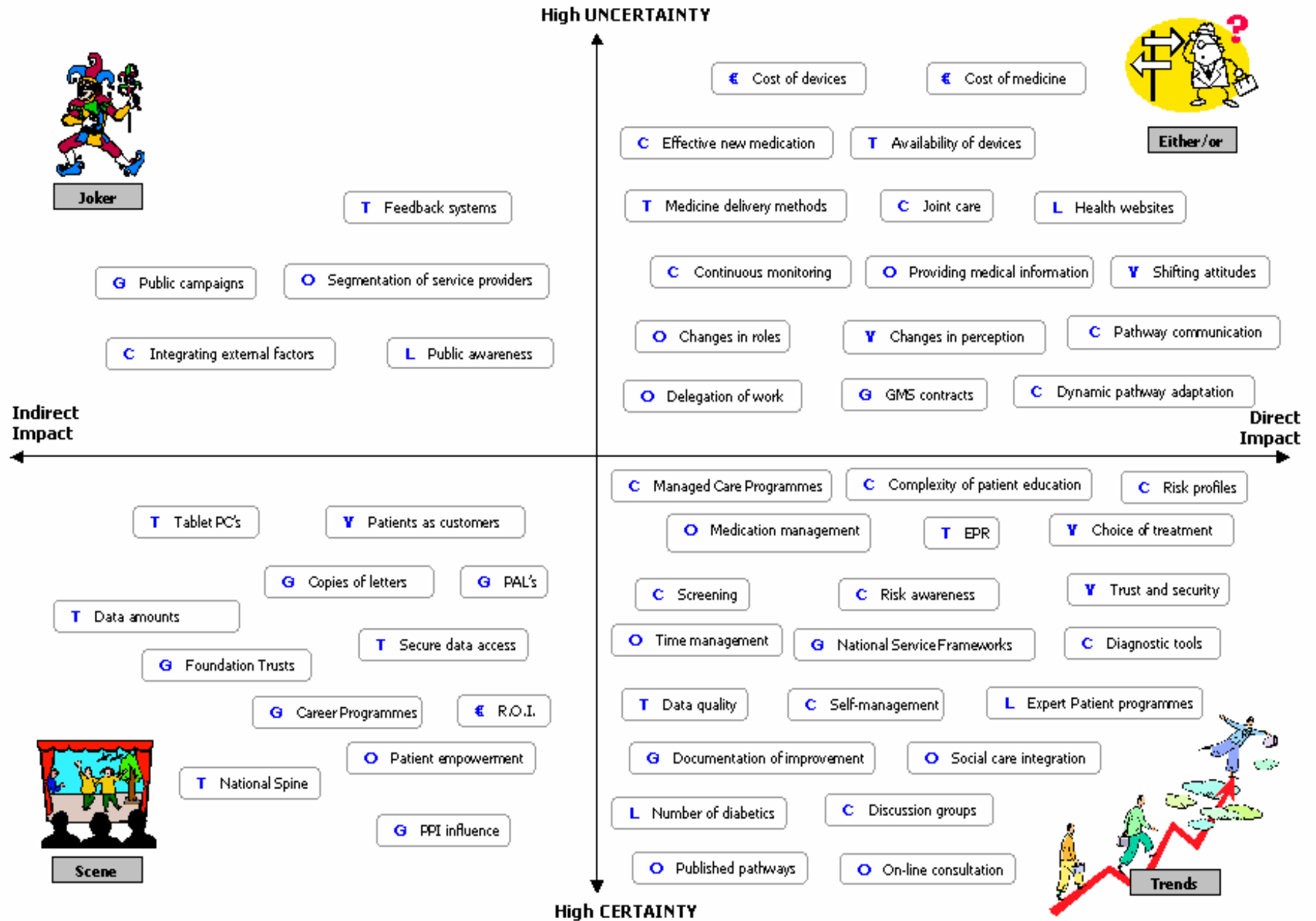
Walk-through the IDON method

- Use a facilitated group of experts with widely different backgrounds selected from each user domain
- Identify and group environmental factors
- Extract pivotal uncertainties and group them as either/or
- Extract strong associations and connections and group them accordingly
- Generating multiple images of the future
- Writing up the scenarios

A vertical rectangular image on the left side of the slide showing a sunset over a body of water, with the sun low on the horizon and its light reflecting on the water's surface.

Environmental Factors

- Technology trends
- Market trends
- Economic futures
- Social values and life-styles
- Ethical and value questions
- Production and logistic systems
- Ecological and environmental issues
- Global political influences



Flip-flopping the pivotal uncertainties

| | | |
|--|---|---|
| Cost of devices | + | Medical devices will generally be affordable for all. |
| Will the cost of medical devices help patients getting the optimal treatment? | - | Medical devices will to be very expensive, only for the few. |
| Availability of devices | + | Plug & play devices and terminals will be available OTC. |
| Are there devices and terminals available for patients and healthcare workers? | - | Devices are rare and must be specially adapted to every patient. |
| Effective new medication | + | New, combination medication is available. |
| Will we have new medicine that only needs to be taken once a day or once a week? | - | Only traditional forms of medication are available. |
| Cost of medicine | + | Medication cost will be under control in most domains. |
| Will insulin and other essential medication be too expensive? | - | Medication costs are spiralling and treatment is expensive. |
| Medicine delivery methods | + | New delivery methods (e.g. implants) are available. |
| Are new efficient ways of medicine delivery / intake available to the public? | - | Medication is taken in the traditional form. |
| Joint care | + | Joint Care is very popular and the family are well educated. |
| Will family members be involved in the care management and how will we educate them? | - | It has proven too difficult to implement Joint Care in large scale. |
| Health websites | + | Health websites are natural supplements to GP for most people. |

Extract associations and connections

- Search for connections and associations between the various factors (uncertainties)
- Uncertainty areas connect because of the impact of their influence of each other, either because if one “flips” the other will “flop” or because they are likely to align by association
- Give the two clusters appropriate names
- Writing up the scenarios

Clustering the uncertainties

Ways and means

€ Cost of medicine

€ Cost of devices

C Effective new medication

G GMS contracts

T Medicine delivery methods

O Delegation of work

C Continuous monitoring

T Availability of devices

C Dynamic pathway adaptation

T Feedback systems

Attitudes

L Health websites

C Joint care

C Pathway communication

O Changes in roles

V Shifting attitudes

V Changes in perception

O Providing medical information

O Segmentation of service providers

Naming the sub plots

Big Flip Cluster "Ways and means"

- Medication cost will be under control
- Medical devices will be affordable
- Plug & play devices and terminals will be available OTC
- New delivery methods are available
- New, combination medication is available
- GMS contracts will continue to define some work procedures
- Doctors will increasingly delegate responsibility to others
- Patients are being remotely monitored for early warning
- Pathways are dynamically adjusted to the actual needs
- All sorts of health related information will be collected and kept

which leads to the name:

MULTI-FACETED HEALTH SYSTEM

Big Flop Cluster "Ways and means"

- Medication costs are spiralling
- Medical devices will to be expensive
- Devices are rare and must be specially adapted to every patient
- Medication is taken traditionally
- Only traditional forms of medication are available
- GMS will gradually fade out and loose their importance.
- Doctors will retain full control and responsibility for the patient
- Patients go occasionally to the doctor's office for check-up
- Doctors adjust pathways after careful examination and control
- Only journal data and medical notes will be stored in the EPR

which leads to the name:

ONE-WAY STREET HEALTH SYSTEM

Create multiple images of the future

| | |
|---|---|
|  <p>Self – management Focus</p> <p>One-way street High Noon</p> | <p>Patients as customers!</p>  <p>Multi-faceted</p> |
| <p>Healthcare system</p>  <p>Excuse me, Doctor</p> <p>Doctor</p> | <p>Healthcare system</p> <p>What's up, doc?</p>  <p>Focus</p> |



Discussion and action plans

- Selecting the third user domain
- Plan and arrange workshops
- Roles and assignments
- User requirements derived from scenarios?
- User requirements – who are the users?
- User validation



IST-2005-034891

Conclusion on training

We hope you enjoyed this training session.
Please fill in the questionnaire & attendance list.
Any questions?

Additional Courses & Training material is available.
For further queries regarding the project please contact the
project co-ordinator.

Thank You

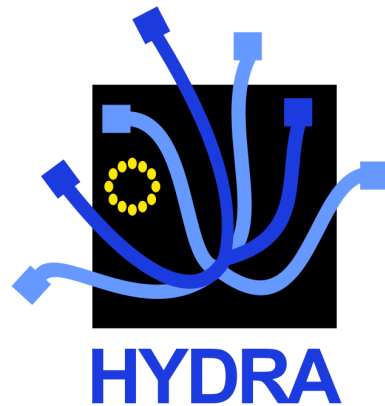
19 June 2009

yourwallpaper.com

Hydra Training: Scenario Thinking



Please come and visit us...



In-JeT ApS JT1
Jeppes Aakjærs Vej 15
3460 Birkerød
Denmark
jth@in-jet.dk
+45 45 82 13 24

www.hydramiddleware.eu

Slide 25

JT1

You should replace this with your own organisation

Jesper Thestrup; 20-06-2008