Its not the model - its what you do

SPIN-UK, 2 February 1999

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- Change - approaches and strategies for SPI
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Characteristics of s/w process models...

- Examples of models:
  - SPICE
  - CMM
  - Bootstrap
  - Trillium
  - ISO 9000-3

…Characteristics of s/w process models...

- Models describe/prescribe *what* development practices are advisable
- They do not describe how

…Characteristics of s/w process models

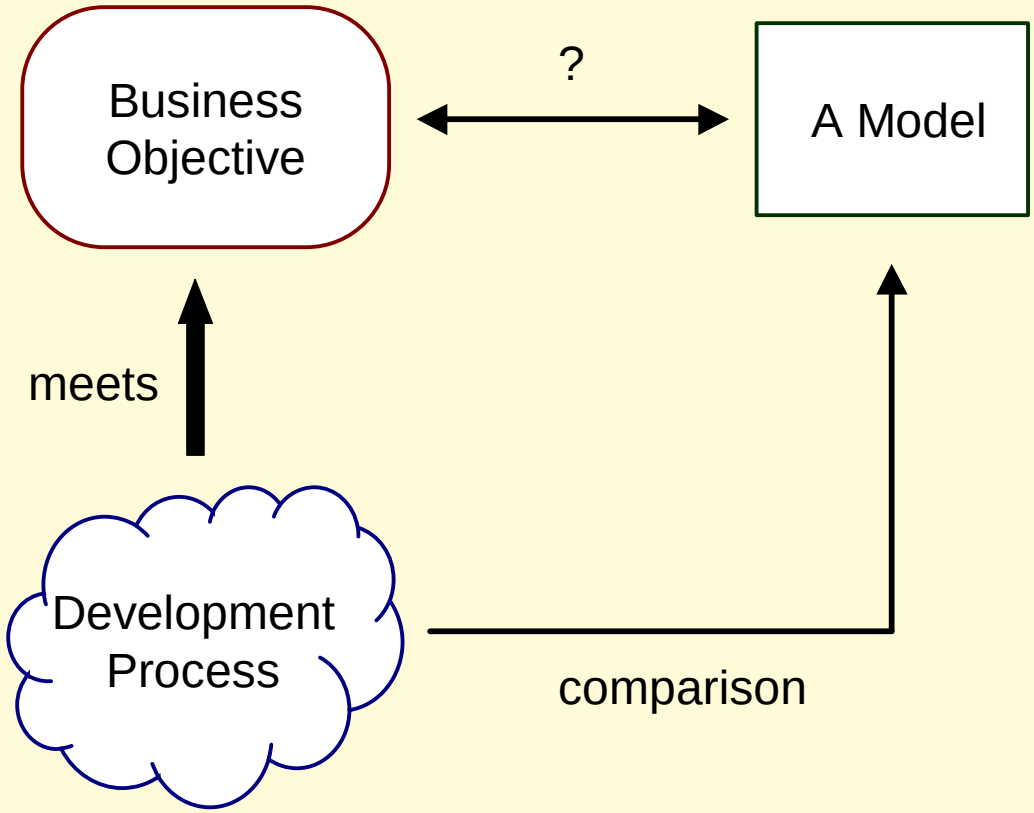
- Models tend to be:
  - generic
  - abstract (specifications rather than particulars)
  - static, or steady state*
  - conservative
  - well considered (easy to criticize, difficult to improve)

* Abdel Hamid, Madnick ‘Software Project Dynamics’ model is a notable exception

Using the models...

- Models are used for:
  - comparison
  - emulation
  - sources of information and ideas

…Using the models...



…Using the models...

- Used in business context
  - what are business requirements for s/w development?
  - how do these relate to model requirements?
- Need to know how to compare (assess, evaluate, audit)
- Need to know how to emulate (make changes)
- ‘Judgement’ is critical
  - indicates deficiencies

…Using the models

- Judgement is required:
  - there is no equivalent to production engineering or production management for s/w
  - need to identify ‘appropriate technology’
    - distinguish state of practice from state of art
    - keep it simple
  - need disinterested view of industry practices and cultures

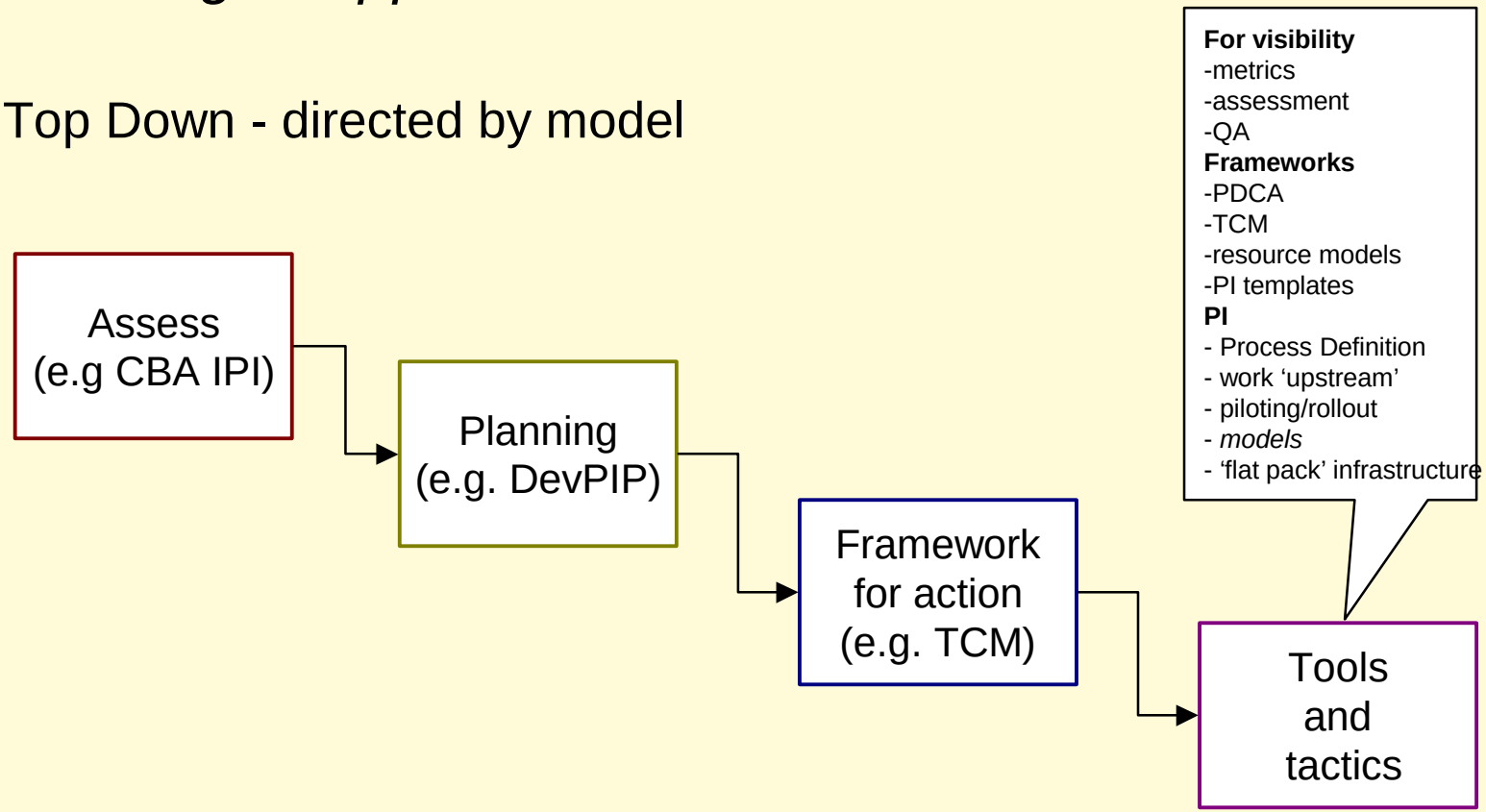
Change - approaches to SPI...

- Top down
  - directed by model
  - directed by business need
- Bottom up
  - fix current development problems

(these are not exclusive)

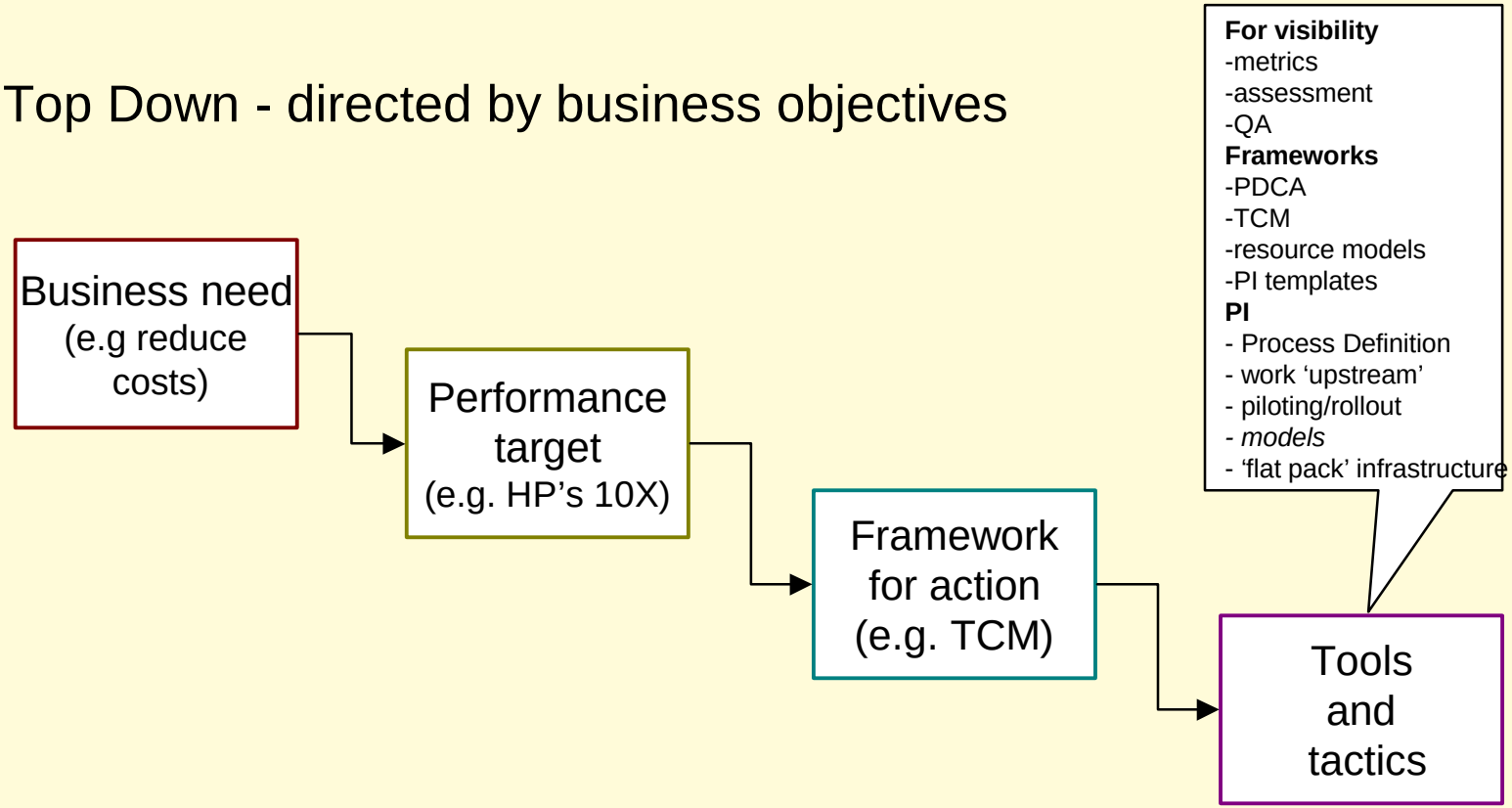
...Change - approaches to SPI...

Top Down - directed by model



...Change - approaches to SPI...

Top Down - directed by business objectives



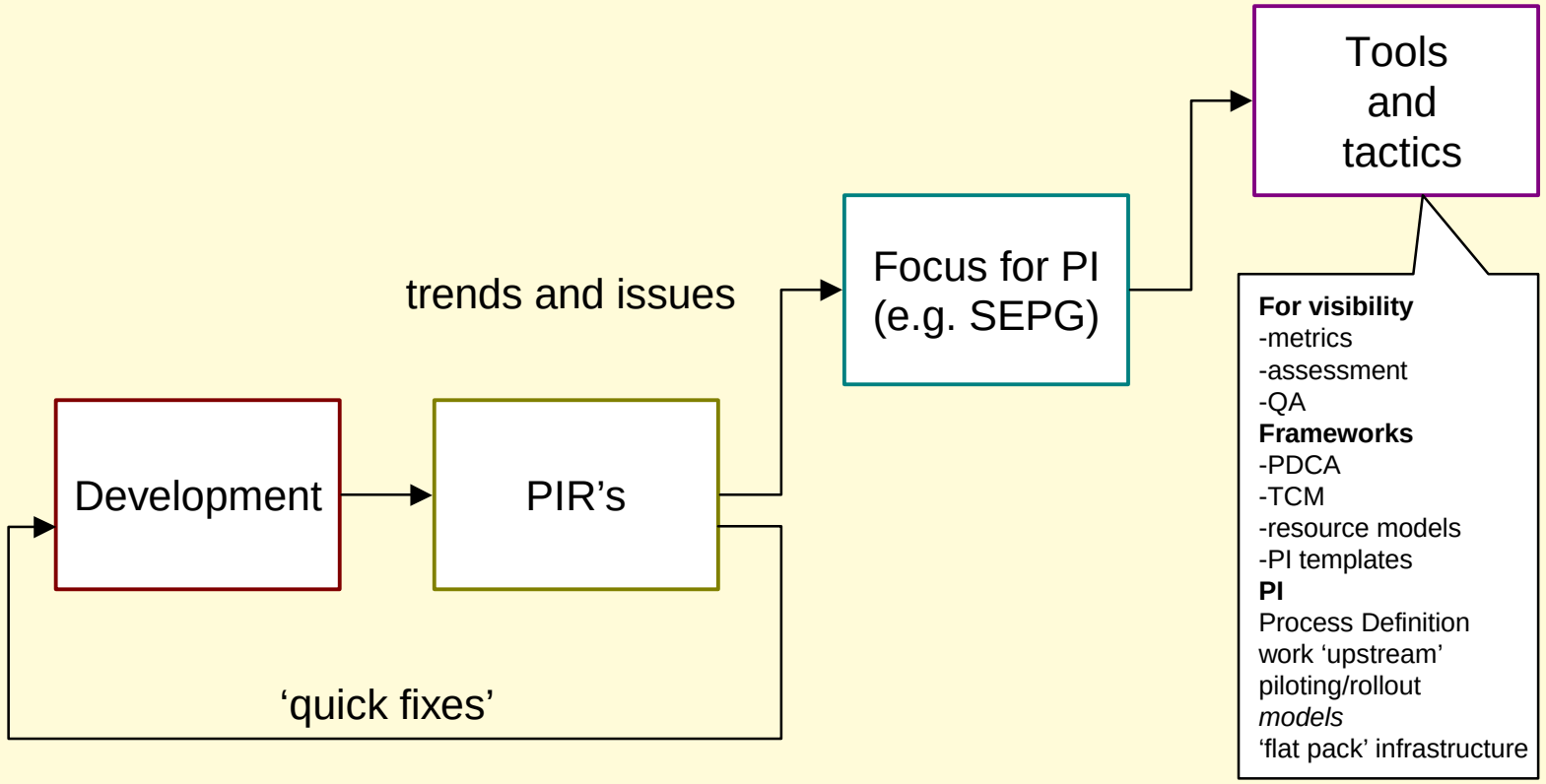
...Change - approaches to SPI...

10X

- "We need similar gains in the quality of our software products to achieve the same excellent reputation for quality that our hardware products have earned. For this reason I an extending the commitment made for hardware to software….
- "HP is to achieve a tenfold improvement in two key software quality measures in the next five years. The first measure is aimed at out design process; the second at our ability to solve problems once customers have our products in place. We will measure these improvements by...
- Post Release Defect Density - The total number of defects (KPRs) reported from any source, during the first twelve months after first shipment, divided by the size (KNCSS) of the product. This measure helps us to understand the effectiveness of our design and testing process and is in a format widely used in industry.
- "Open and Serious KPRs - The number of service requests classified as KPRs (Known Problem Reports) which have a severity of critical or serious which are not yet closed or signed off at the end of the month. This measure helps us to focus on the support process involved in providing permanent solutions to severe customer problems."
- *John Young HP's CEO, 24 April 1986*

...Change - approaches to SPI...

Bottom Up - e.g. PIRL



...Change - approaches to SPI...

Top Down - directed by model

- Strengths
  - available ‘off the shelf’
  - others have done it
- Weaknesses
  - may not address real issues
  - expensive
  - takes time
  - high risk

...Change - approaches to SPI...

Top Down - directed by business objectives

- Strengths
  - meets business needs
  - generates commitment
- Weaknesses
  - novel

...Change - approaches to SPI...

Bottom Up

- Strengths
  - addresses real developer needs
  - quick
  - cheap
  - effective
  - low risk
- Weaknesses
  - does not explicitly address business needs.

Tools...

- There are numerous tools and tactics for SPI
- They can be classified (loosely) into three types
  - Visibility
  - Frameworks for change
  - Analysis and production

…Tools...

Visibility

- Provide visibility and understanding of development processes
- Examples:
  - Quality Assurance
  - Measurement
  - Assessment

…Tools...

Frameworks for change

- Provide a secure, repeatable infrastructure for SPI activities
- Improve the probability of rapid completion of tasks
- Examples:
  - PDCA
  - TCM
  - PI templates
  - Grady - ‘spiral’

…Tools

Analysis and production tools

- Develop artefacts
- Build understanding and consensus
- Examples:
  - process definition
  - PIRs
  - ‘7 tools’
  - ‘upstream’ analysis
  - piloting and roll-out
  - ‘flat pack’ infrastructure, etc...

Summary

- Models are useful as static generic specifications
- Models can be used for comparison and emulation
- They do not address business needs or show how to make changes
- Strategies tactics and tools for change are being developed
- Select elements to build effective SPI strategy equipped with useful tools

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