PROPOSED CONCEPTS FOR A TOOL FOR MULTIDIMENSIONAL PERFORMANCE MODELING IN SOFTWARE ENGINEERING MANAGEMENT

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AGENDA

- **Problems**
- **Multidimensional performance models**
- **Proposed concepts**
- **Conclusion**

PROBLEMS

- Software - complex intangible product
  - Does not really have „physical” existence ?
  - It changes very rapidly
  - It always has to be adaptable
  - Difficulties when specifying the requirements
  - High expectations regarding software
- One-dimensional models - various viewpoints must be taken into account concurrently
- Represent quantitatively and in a consolidated manner various viewpoints while keeping track of the values of the individual dimensions

PROBLEMS

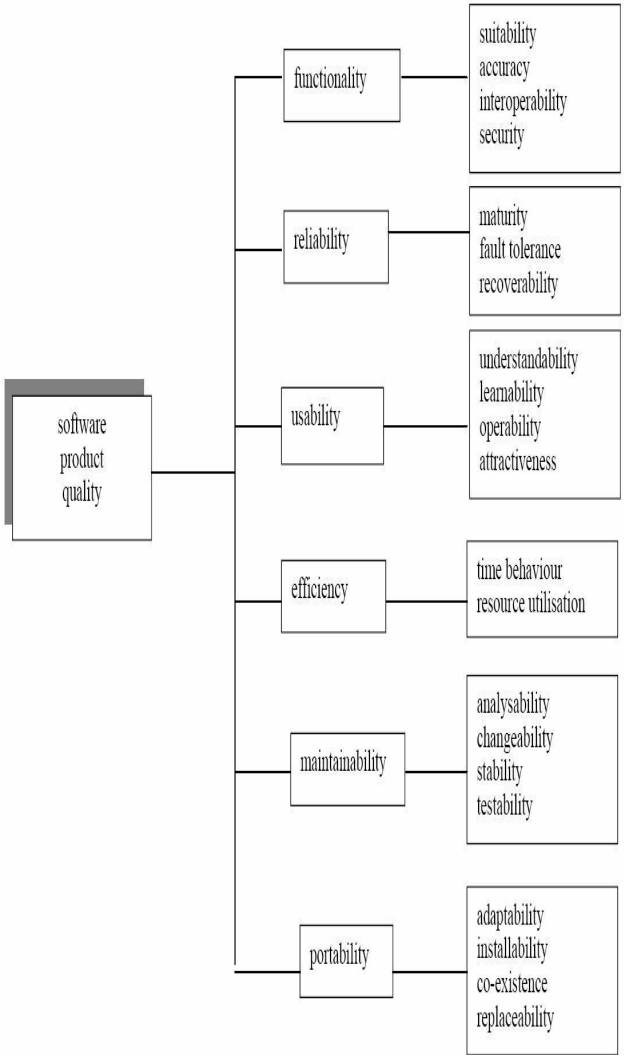
- A number of tools dealing with quality
- Few in the area of software engineering performance
- Limited on multidimensionality representation

Multidimensional performance models in SE

ISO 9126

- 1980 Standard
- internal and external quality
- model is generic
- standard framework

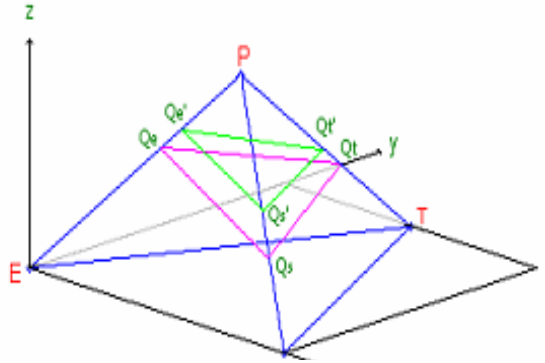
- hierarchy is strict : each high-level quality characteristic is related to exactly one set of sub characteristic

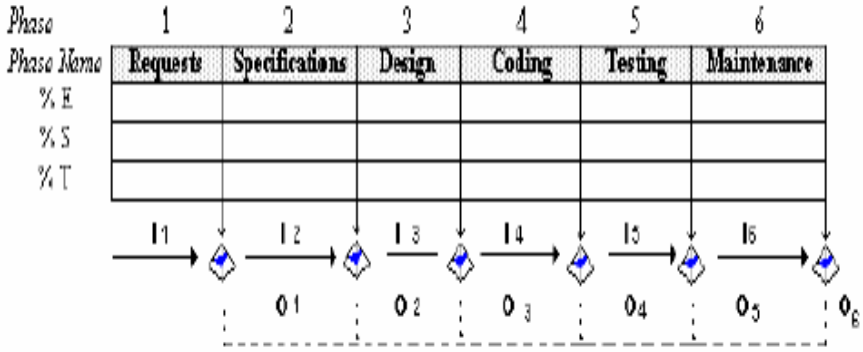


Multidimensional performance models in SE

QEST

- Abran & Buglione
- Open model
- Performance : **Global vision**



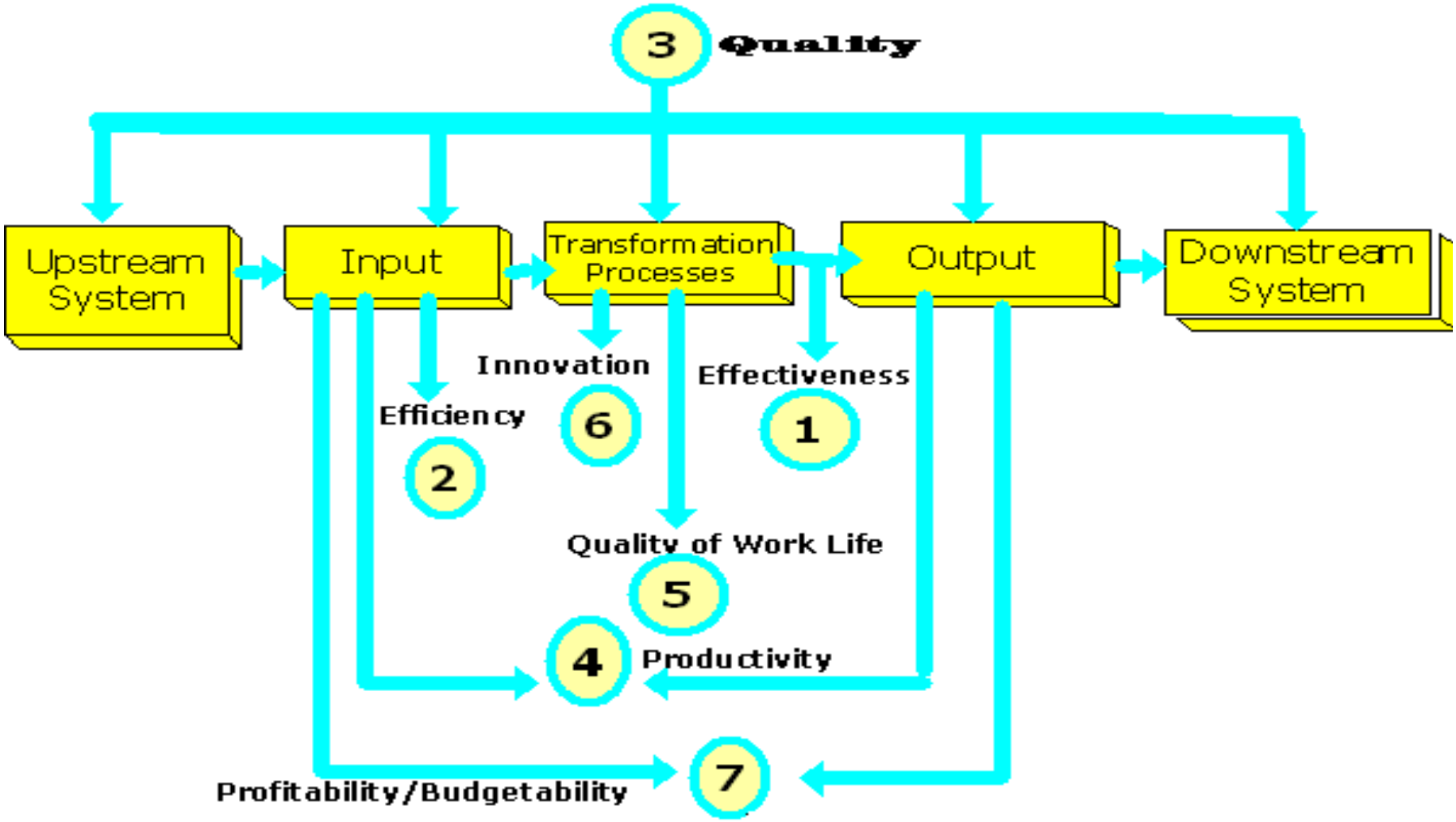


QEST+Lime

- **Q** QUALITY FACTOR
  - **E** ECONOMIC — ***Dimension Economic (managers)***
  - **S** SOCIAL — ***Dimension Social (users)***
  - **T** TECHNICAL DIMENSIONS — ***Dimension Technical (developers)***

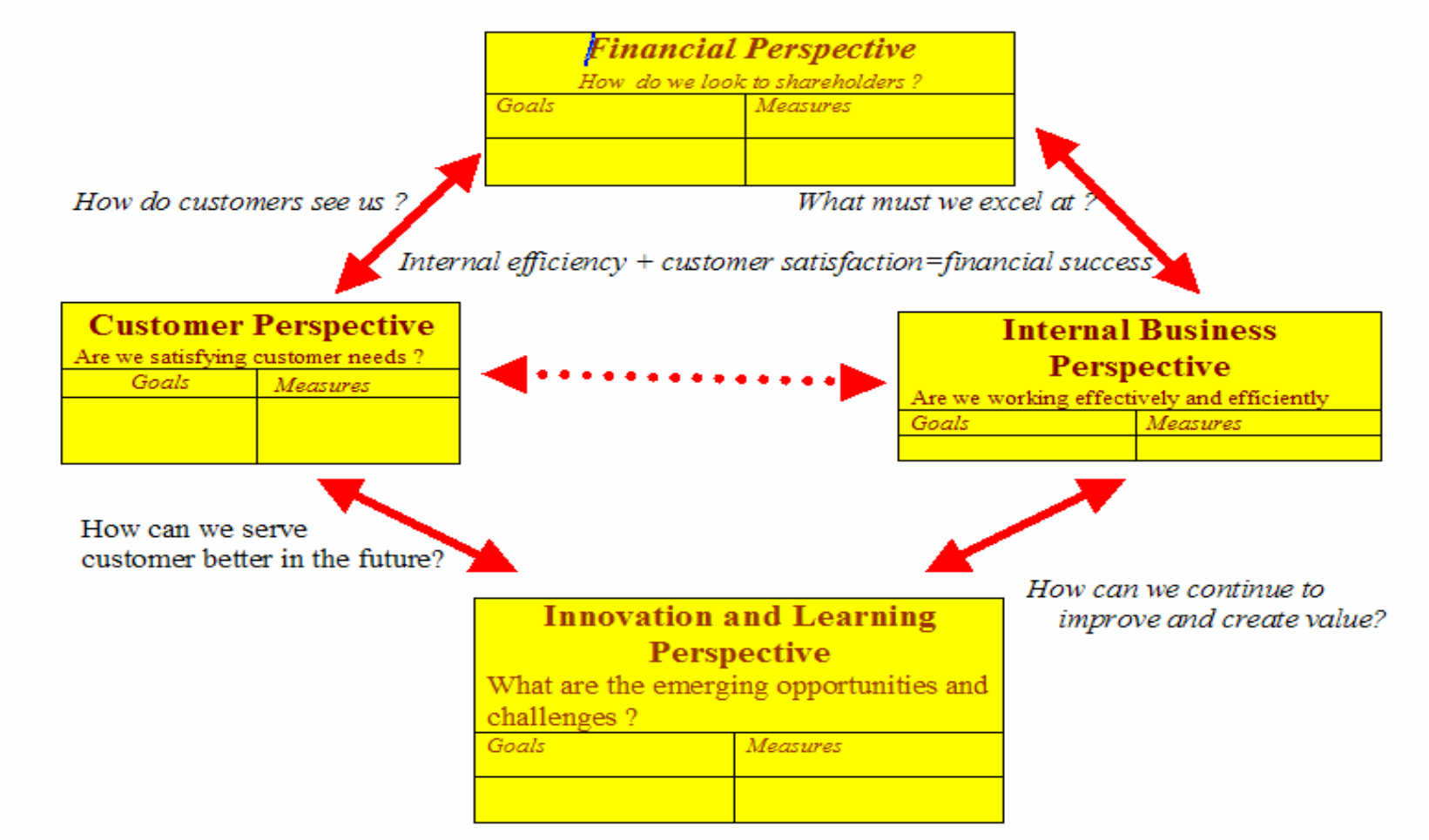
Framework available in MANAGEMENT

SINK&TUTTLE



Framework available in MANAGEMENT

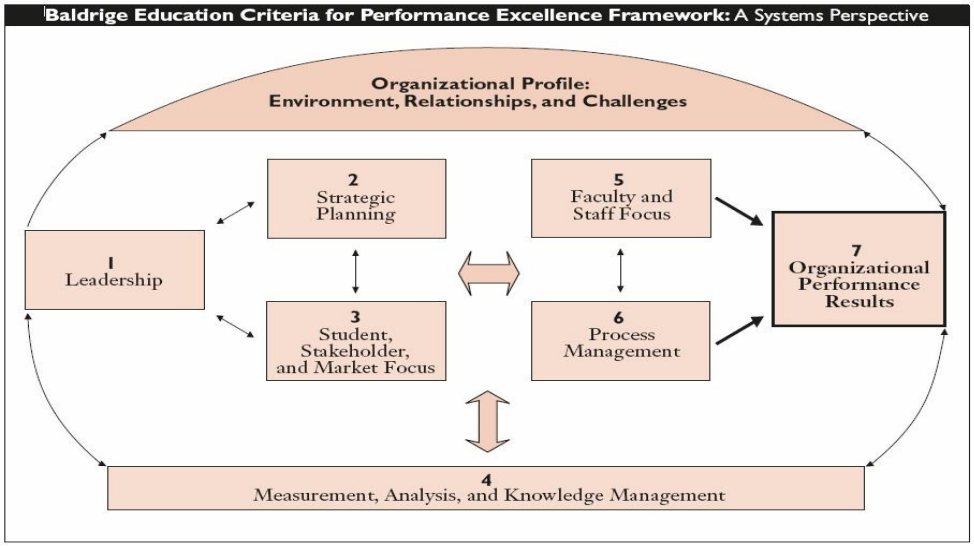
KAPLAN & NORTON

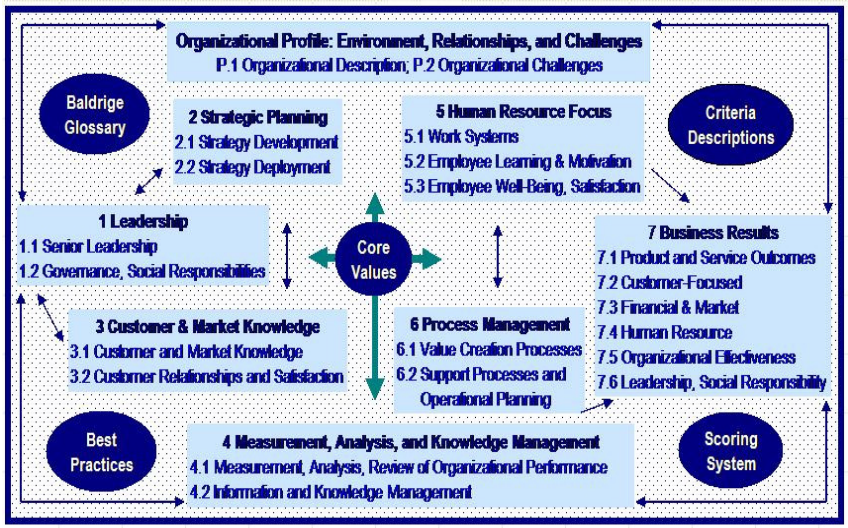


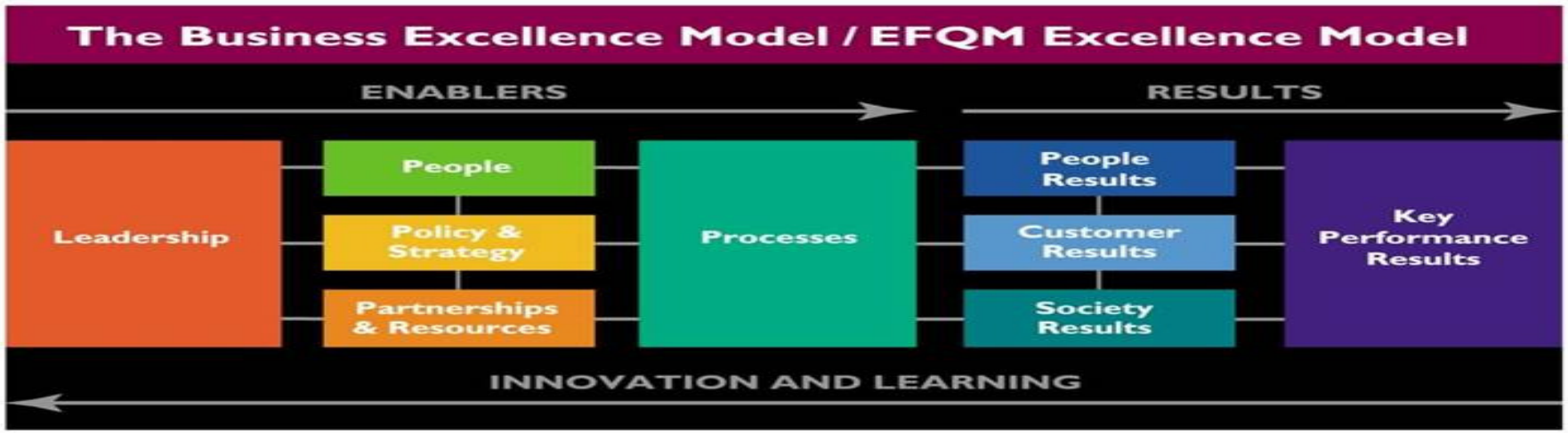
Framework available in MANAGEMENT

Quality Awards - Business Excellence

BALDRIDGE, EFQM ETC.

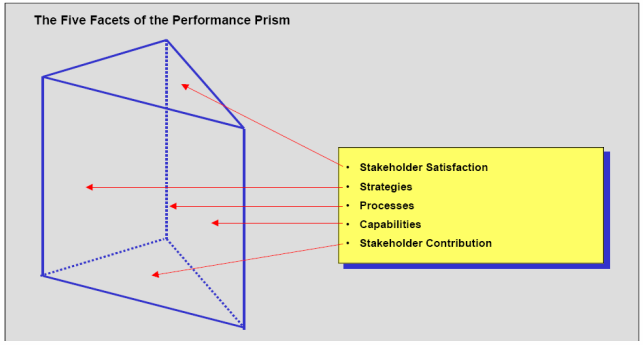




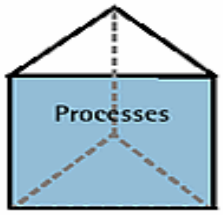


Framework available in MANAGEMENT

Prism



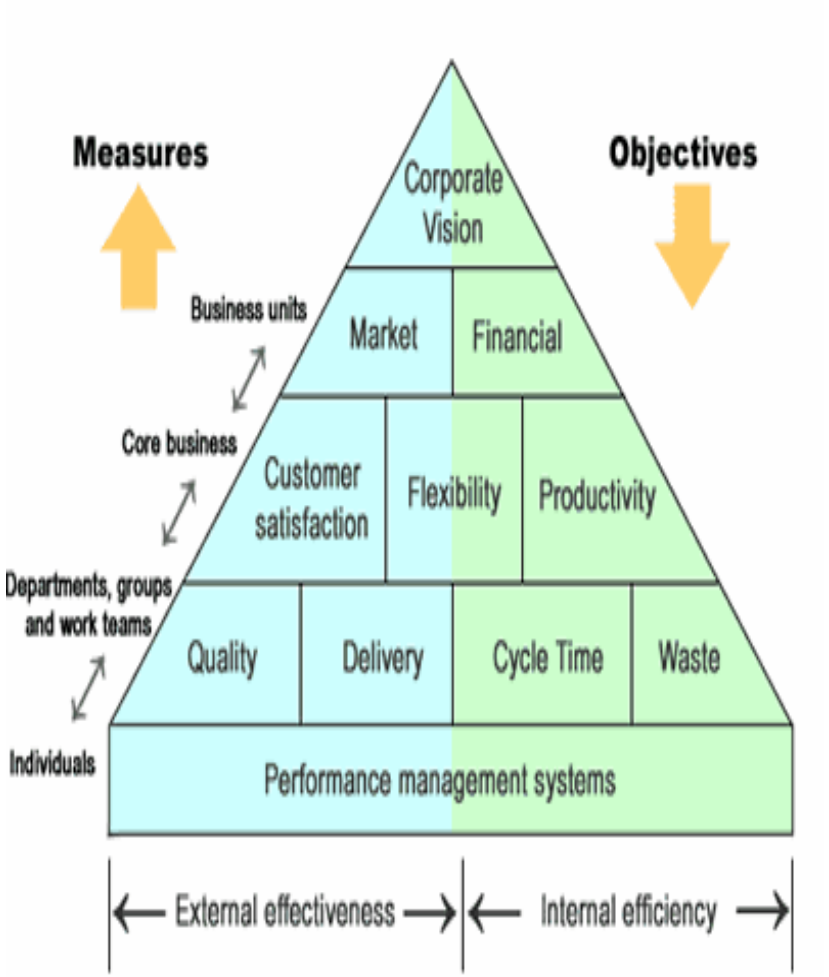
- Corporate
- Business unit
- Brands/products/services
- Operating



- Develop products & services
- Generate demand
- Fulfill demand
- Plan & manage enterprise

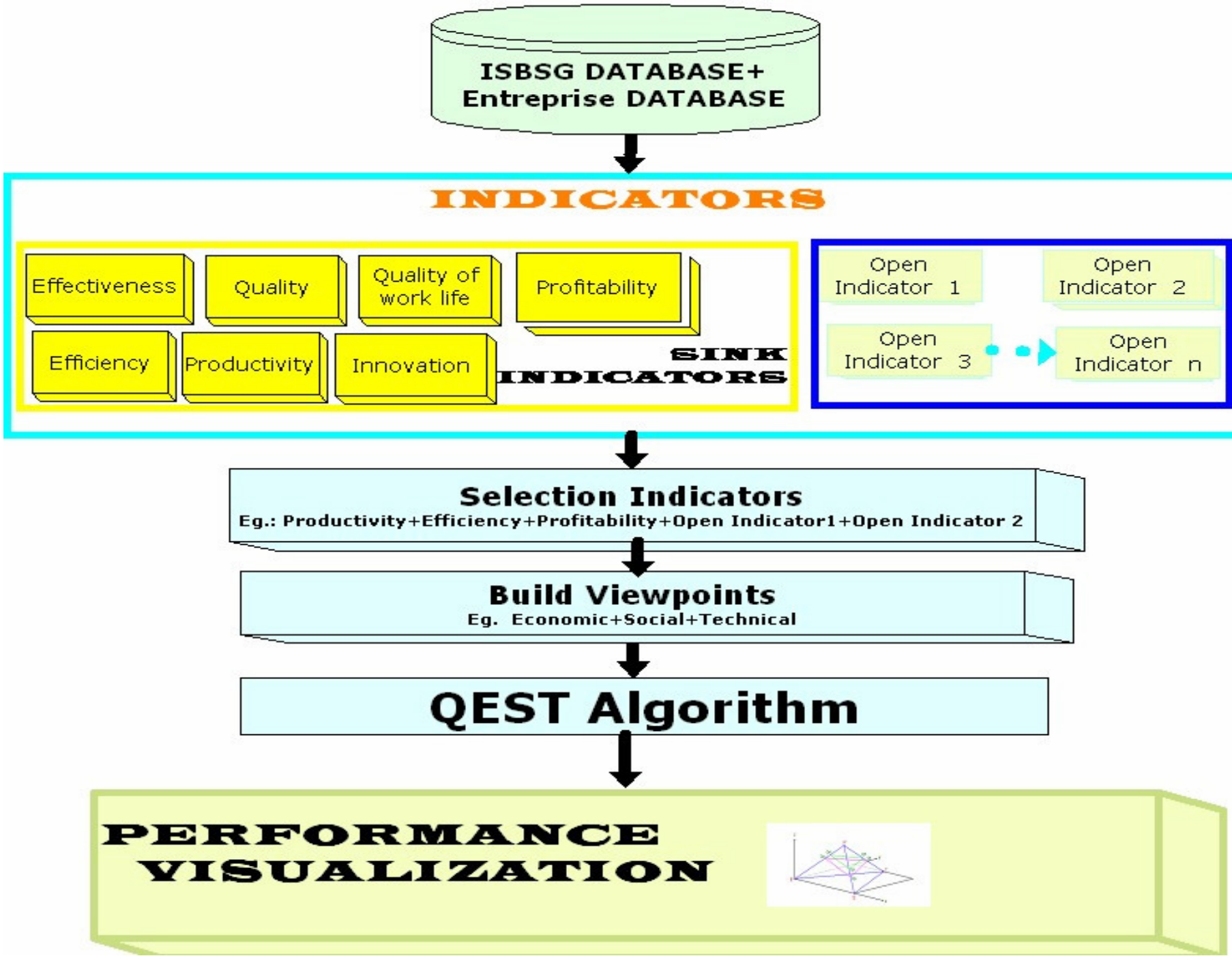
- People
- Practices
- Technology
- Infrastructure

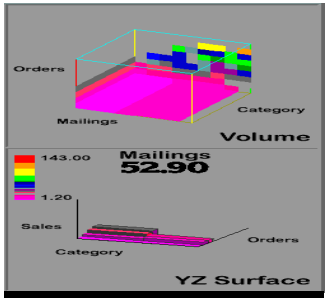
Pyramide

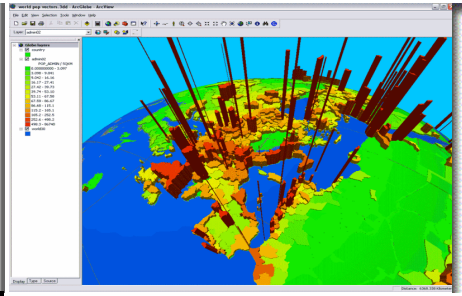


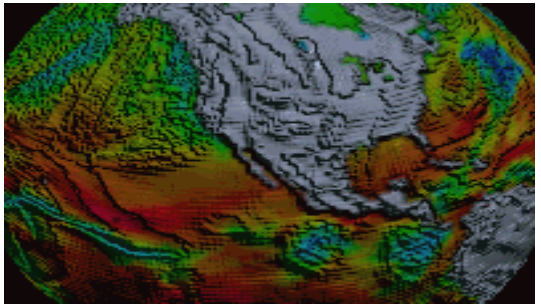
PROPOSAL CONCEPT

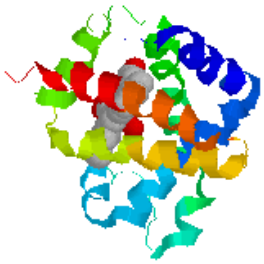
- adopt the Sink and Tuttle organizational framework
- build on the open, generic and geometrical QEST
- enable different visualization techniques to analyze data
- future potential scenarios on performance
- International Software Benchmarking Standards Group (ISBSG)

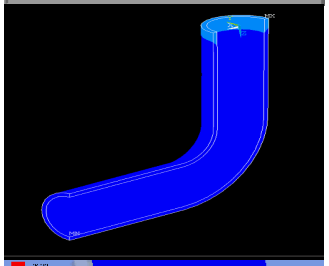

ISBSG DATABASE+
Entreprise DATABASE
INDICATORS
Effectiveness
Quality
Quality of work life
Profitability
Efficiency
Productivity
Innovation
SINK INDICATORS
Open Indicator 1
Open Indicator 2
Open Indicator 3
Open Indicator n
Selection Indicators
Eg.: Productivity+Efficiency+Profitability+Open Indicator1+Open Indicator 2
Build Viewpoints
Eg. Economic+Social+Technical
QEST Algorithm
PERFORMANCE VISUALIZATION





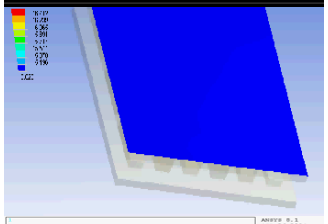


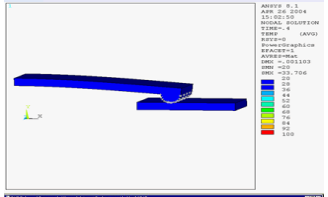


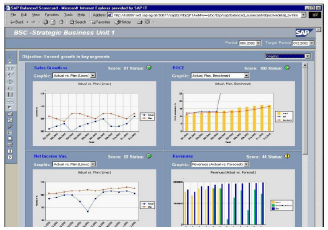


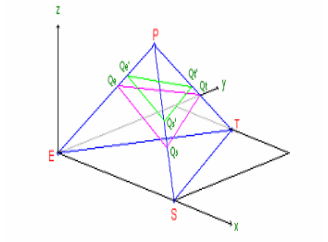
CONCLUSIONS

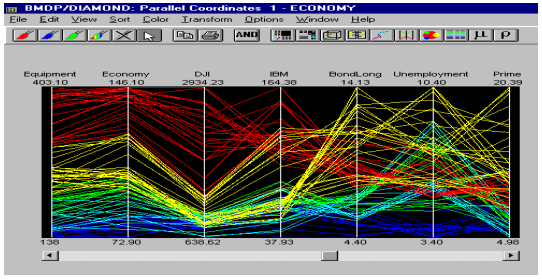
- Performance is not one-dimensional
- Performance-inherently multidimensional
- Performance management models in SE should support concepts and terminology which are specific to SE

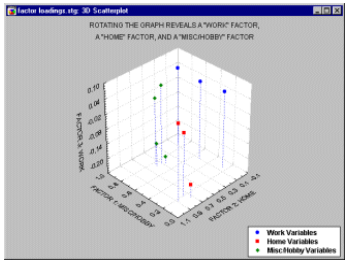


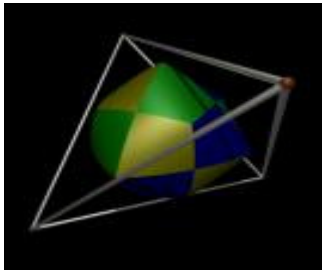


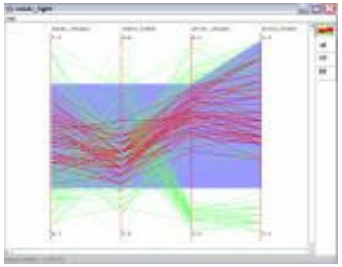


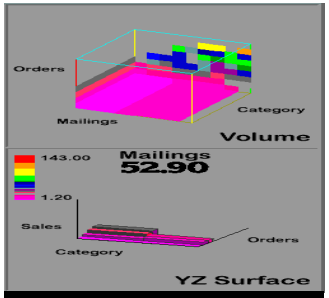


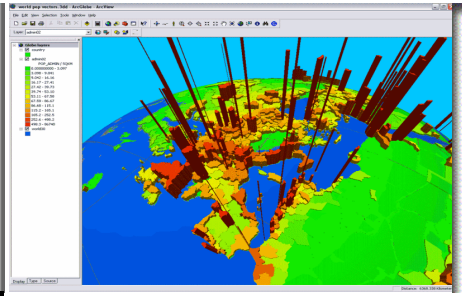


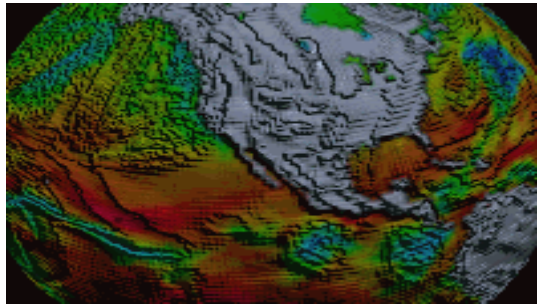


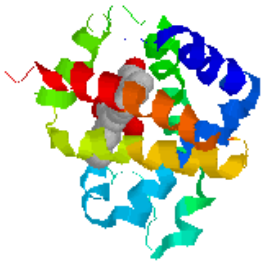


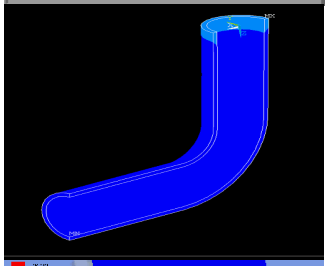






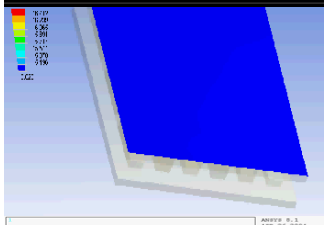


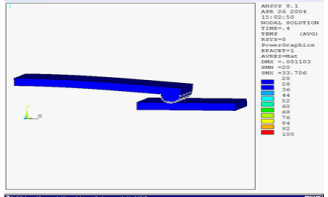


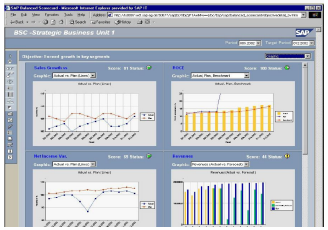


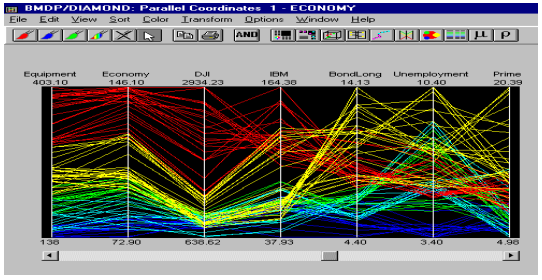
CONCLUSIONS

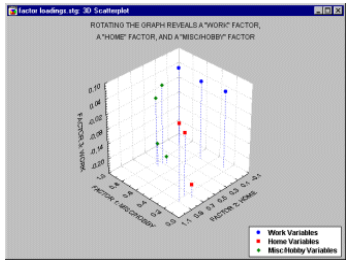
- end-product - intangible
- complex activity
- SE - relatively immature field
- models out of the box

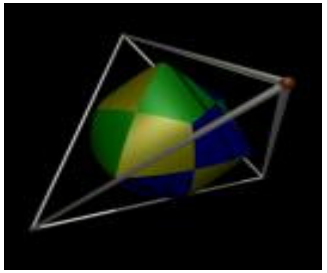


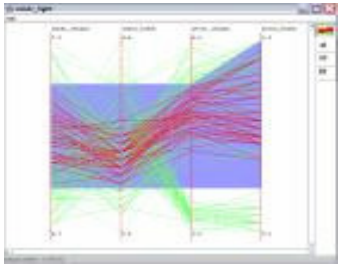












Question Time!

Merci de votre attention!

Thank you for your attention!