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

- **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

Financial Perspective
How do we look to shareholders?
Goals
Measures

Customer Perspective
Are we satisfying customer needs?
Goals
Measures

How do customers see us?

Internal Business Perspective
Are we working effectively and efficiently?
Goals
Measures

Internal efficiency + customer satisfaction = financial success

What must we excel at?

Innovation and Learning Perspective
What are the emerging opportunities and challenges?
Goals
Measures

How can we serve customer better in the future?

How can we continue to improve and create value?
Framework available in MANAGEMENT

Quality Awards - Business Excellence

BALDRIDGE, EFQM ETC.

The Business Excellence Model / EFQM Excellence Model

**ENABLRERS**

- Leadership
- People
- Policy & Strategy
- Partnerships & Resources

**RESULTS**

- People Results
- Customer Results
- Society Results
- Key Performance Results

INNOVATION AND LEARNING
Framework available in MANAGEMENT

Prism

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 Indicator 1 + 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!