

# 43<sup>rd</sup> European Quality Congress

Pre-Congress

## Business Excellence for Software Organisations

Tuesday, June 8<sup>th</sup>, 1999  
Madrid, Spain



## **Sources (survey, not statistics)**

- **Direct Software Process Assessments (SPICE) (3)**
- **ISO 9000 certification campaigns (7)**
- **Training managers and engineers in software evaluation and metrics (8)**
- **ESSI reports analysis (25)**
- **SPICE Trials Phase 2 Report \***
- **Comparison with literature and other experiences**



## **Understanding BG's in SME's**

**Generally conceived as "high level" goals:**

- **greater**
  - revenue
  - market share
  - competitiveness
- **reduced**
  - costs
  - time to market



# How are BG's understood?

## Difficulty in:

- 1. Clearly understanding BG's
- 2. Perceiving BG's the same way by different roles in the Organisation
- 3. Realising that checking for BG achievement implies
  - expressing BG's in terms of factors or sub-Goals
  - measurement



## 1. BG's poorly understood

- **Definition level**
  - usually closer to the top management area (financial, market share)
- **Contents**
  - usually too vague or abstract (“better”, “more”, “reduce”, “optimise”)
- **Priority**
  - more objectives at a time?



## **2. Different BG perceptions through the organisation**

- **Manager's**
  - difficulty to associate business improvement value with single aspect of software process
- **Software engineer's**
  - unclear vision of priorities for BG's
- **Technical leader's**
  - typically a manager in SME's: shares both top manager's and engineer's problems



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## **3. Realising necessity to measure BG achievement**

- **Common BG in the survey: "greater revenue": easy to measure but:**
  - too late detection
  - difficult to associate factors (sub-BG's)
- **Decomposing BG's and measuring: way to know whether BG's are being achieved or not, and in what extent**



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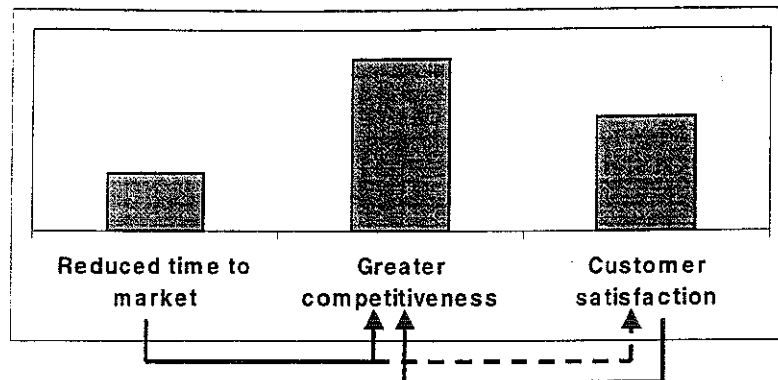
## **Main issue: BG analysis**

- **Two dimensions for BG's :**
  - Level of definition
  - BG's list at a given level
- **Need to map BG's between definition levels**
- **The “higher” (= less technical) the definition level, the more difficult to measure progressing achievement**

## **Operational model for BG's**

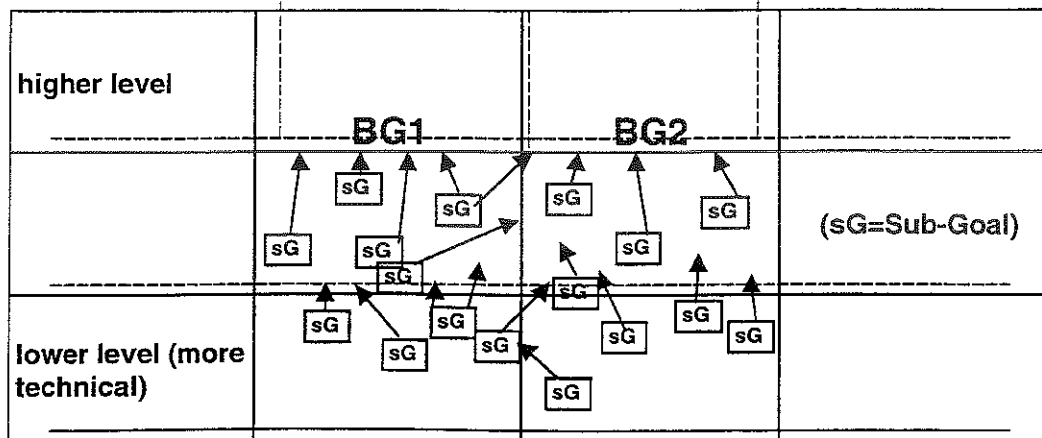
- **Set definition levels**
- **Profile and prioritise BG's at any definition level**
- **Establish inter-level mappings (BG and sub-BG's)**

## Profiling and prioritising BG's (example at some high definition level)



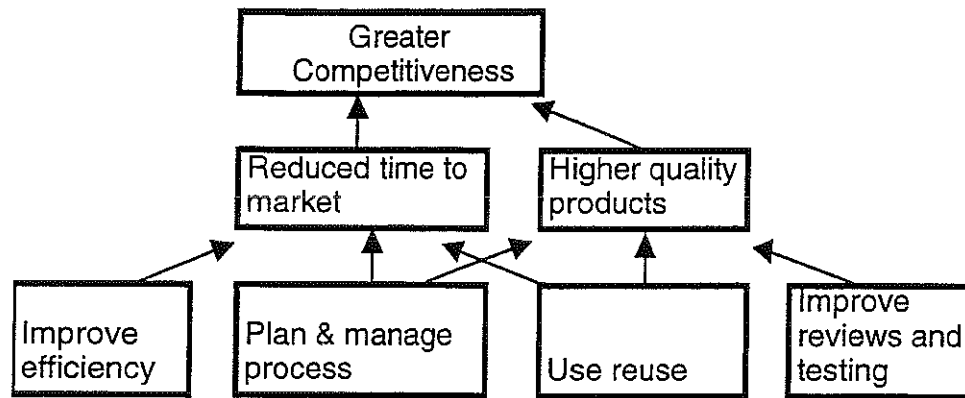
Difficult to separate BG's at higher definition levels (mutual dependency among BG's)

## Inter-level Mappings



- Mapping very complex (generally unknown)
- Use a subset

## BG mapping (example from the survey)



## Criteria for mapping (survey elaboration)

- Look for and select guidelines
- Exploit Organisation dependencies
- Use valuable consultancy (*direct survey finding*)
- Involve management (*direct survey finding*)
- Make easy-to-perform mappings
- Consider one single project as a way to start (but can't rest there)

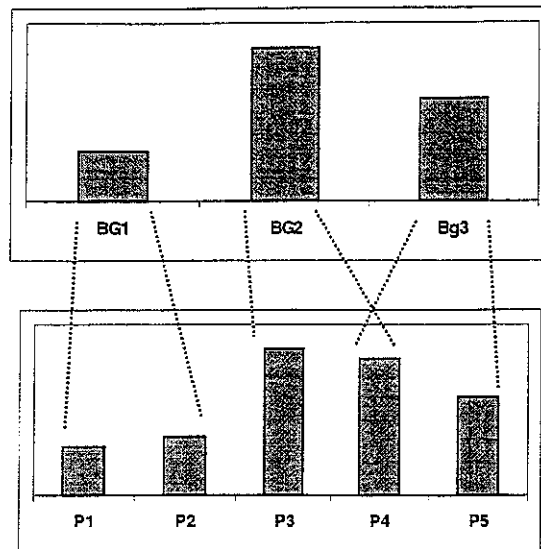
## **To extend mapping to software processes**

- **Map BG's to lower level definition**
- **Check organising and technical sub-Goals against available software process definitions (use existing software process reference models)**
- **Set profiles at sub-Goal and process level**

## **To extend mapping to software processes**

- **SPICE reference model mostly suitable**
  - **processes at the end of mapping determine the scope of assessment/improvement programme**
  - **process capability target profile determined by profiles in the operational BG model and by cost, time, resource**
  - **all inter-process dependencies already in the reference model: no need to re-investigate (costly), but need to check (less expensive) for applicability**

## Mapping process capability target profile to BG's



## Example of how to set the most recurring findings

- **Need for Procedures to have repeatable, less individual-dependent actions**
  - low cost to insert measurement
  - aims to level 3 (Established Process) as target capability for relevant processes
  - alignment to practical BG's like ISO 9000 certification

## Actual vs “ideal” approach

### Most actual:

- Understand BG's
- Get the most popular tools and methods (search for funds)
- Use them in software development for a while
- See what happens with respect to BG's

### Most wanted:

- Understand BG's
- Analyse and decompose BG's
- Map BG's to software processes
- Define and execute a SPI programme (search for funds)
- Check achievement by measurement

## Success factor

- The (minority) succeeding SME's mostly show the second approach. Some more work still to be done in BG decomposition and mapping

## **Conclusions**

- **SME's strive for better business but are reluctant to invest in SPI programmes**
- **To increase SME's motivation to SPI, a better understanding and analysis of business goals must be encouraged**
- **Profiling and decomposing BG's offers the best way to low cost mapping between BG's and software processes**
- **A process-profile focused SPI programme, as provided in the SPICE framework, can determine easier SME's involvement in an incremental way**