



Control Enhancement Projects based on Size Measurement

Ton Dekkers



SOGETI

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What management wants



- Projects successful within
Quality, Time & Money

- Fast time-to-market
Assured delivery date

- Performance

In-house, contractors, suppliers

- Transparency
IT-Governance

Functionality



- **Fixed**

Changing requirements is no risk, it's a fact

Possible solution: Slide Puzzle Mgt / Evolutionary Project Mgt

- **& Budget**

Performance based project

Optimised productivity, most benefit and value for money

- **& Time**

Performance based project

Maximised functionality, most benefit, not cost effective

- **Budget & Time**

Performance based project

Optimised functionality, ineffective performance ,
less cost effective

- **& Quality**

Possible solution: Quality Tailor-Made

Performance measurement



- Productivity =
$$\frac{\text{(actual) effort}}{\text{size}}$$

- Delivery Rate =
$$\frac{\text{(actual) elapsed time}}{\text{size}}$$

- Defect Density =
$$\frac{\text{number of defects (period)}}{\text{size}}$$

- Reliability =
$$\frac{\text{hours fixing (period)}}{\text{size}}$$

- Price Performance =
$$\frac{\text{costs}}{\text{size}}$$

- Functional Size Measurement

The process of measuring Functional Size

- Functional Size

A size of the software derived by quantifying the Functional User Requirements

- Functional Size Measurement Method

A specific implementation of FSM defined by a set of rules, which conforms to the mandatory features of ISO/IEC 14143 - part 1:

A measure of the amount of information processing required to be carried out by the software [‘what’ the user wants the software to do, not ‘how’] and excludes the influence of technical and quality requirements (ISO/IEC 9126).

Lets have a closer look at



- Enhancement
- Measurement Model(s)
- FPA - FPA enhancement
- CFFP - CFFP enhancement
- Application
- Conclusions

Enhancement definitions

	Ad hoc	Estimation	
		project / release	
	Corrective	Perfective	Adaptive
Technical	Necessary	Necessary	Added value
Functional	Necessary	Added value	Added value



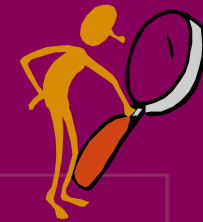
Necessary



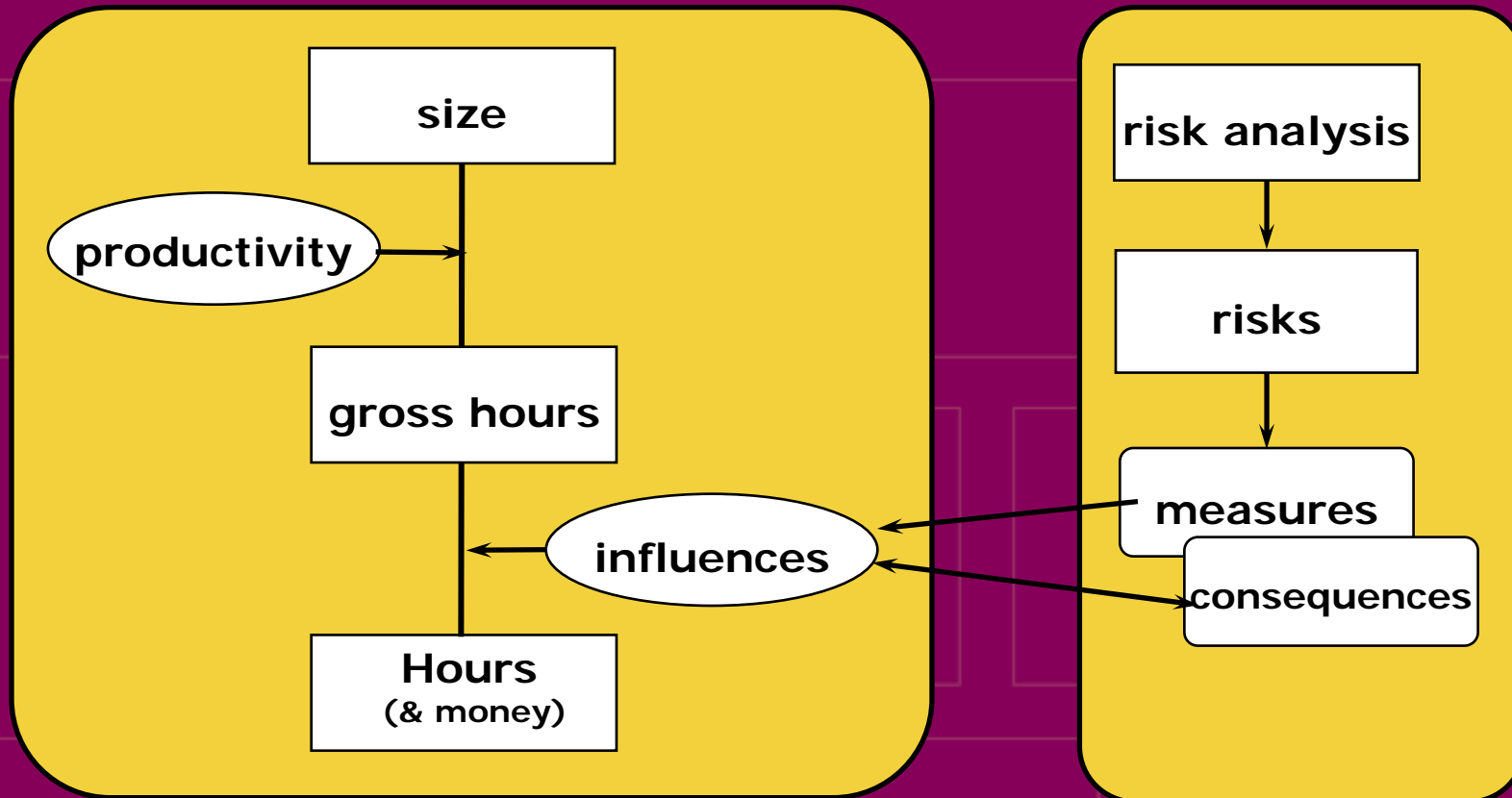
Added value

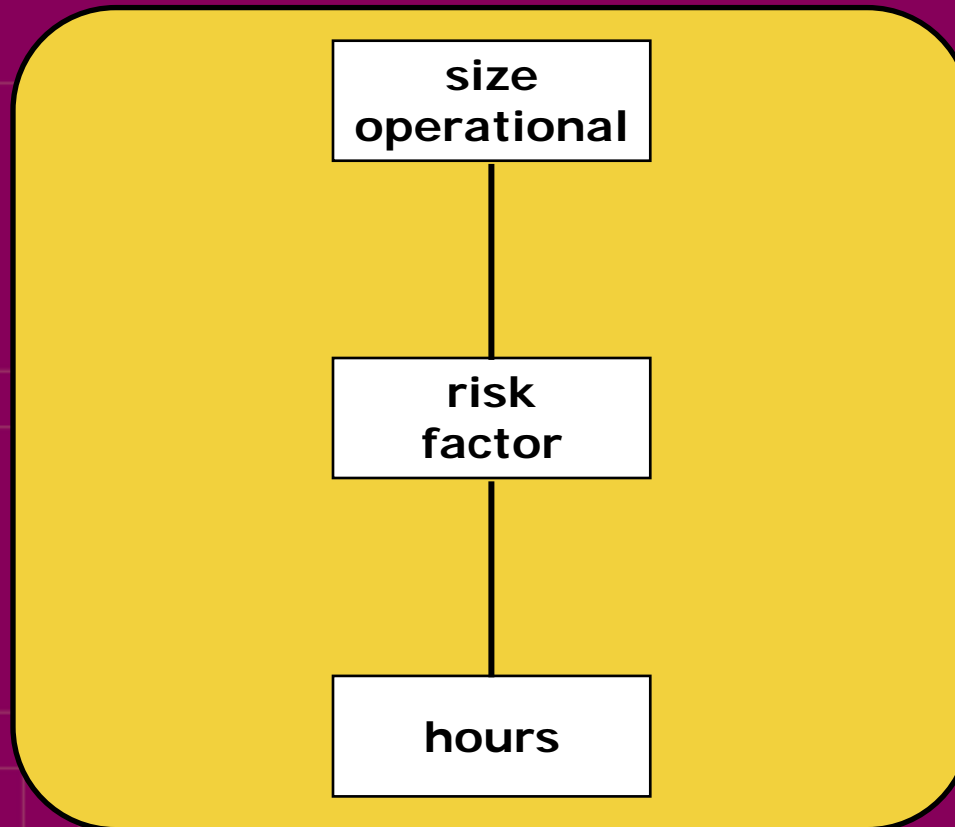
Enhancement types

- Added functionality (**new**)
- Changed functionality
 - I low complexity
 - II average complexity
 - III high complexity
- Deleted functionality
- Unchanged functionality
 - functionality to be tested
 - no activities



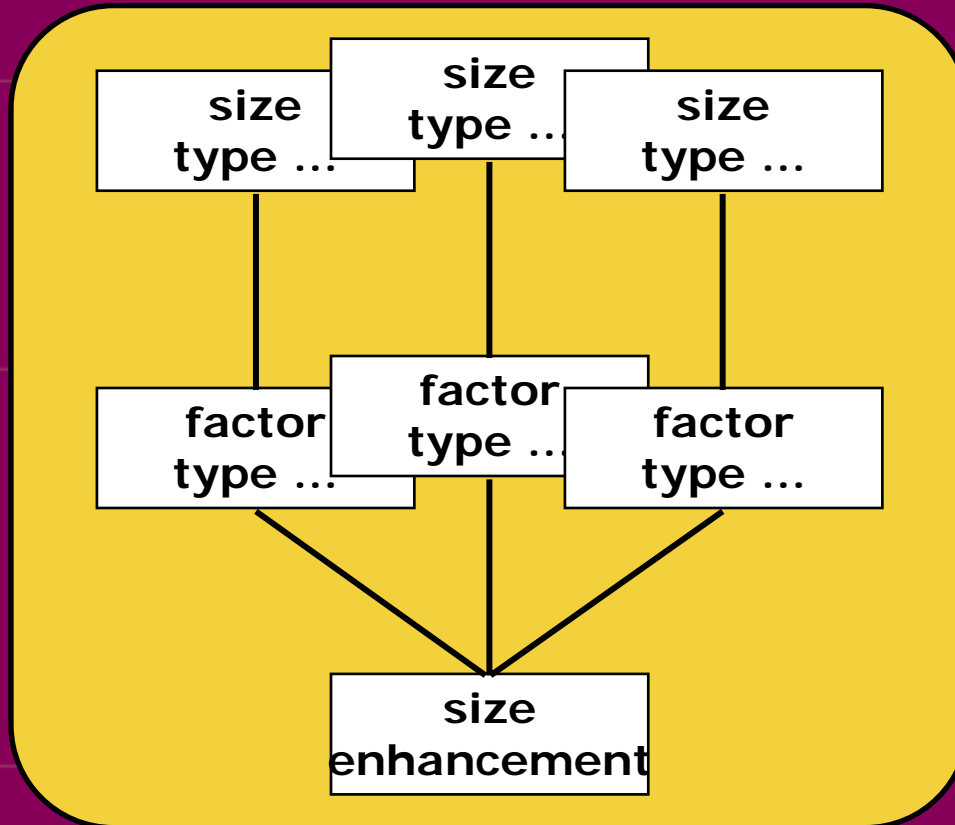
The measurement concept





risk factor
~

productivity
~
reliability



enhancement type

factor

~

relative
productivity

Size Project / Release

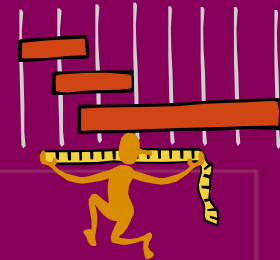


size new project / release =
number of size units changed

+ number of size units added

+ number of size units deleted

[+ number of size units to be tested]



Changes measured relative to the items* used to size functionality.

Number of changes =

number of measured items added

+ number of measured items changed

+ number of measured items deleted

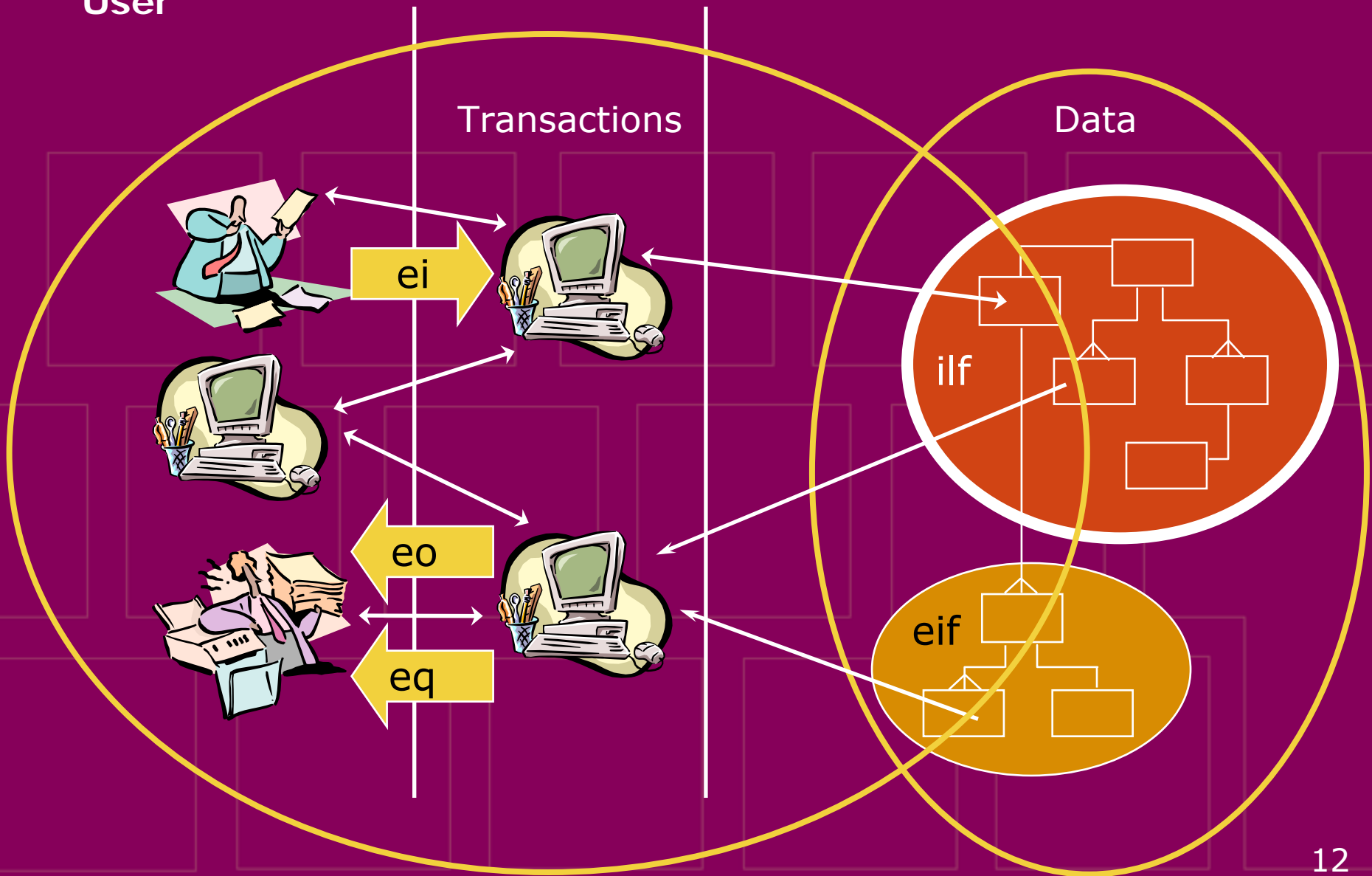
**Items defined by Functional Size Measurement Method.*

Function Point Analysis

User

Transactions

Data



All of the components are rated based upon:
DET's, and either RET's or FTR's *)

Component	RET's	FTR's	DET's
External Inputs (EI)		✓	✓
External Outputs (EO)		✓	✓
External Inquiries (EQ)		✓	✓
External Interface Files (EIF)	✓		✓
Internal Logical Files (ILF)	✓		✓

*)

RET Record Element Types
FTR File Types Referenced
DET Data Element Types

FPA: Rating (values)



Complexity types

- Low
- Average
- High

Function points (fp) per component:

- ILF 7, 10 or 15 fp
- EIF 5, 7 or 10 fp
- EI 3, 4 or 6 fp
- EO 4, 5 or 7 fp

FTR	DET	1-5	6-19	>19
0-1		L(4)	L(4)	A(5)
2-3		L(4)	A(5)	H(7)
>3		A(5)	H(7)	H(7)

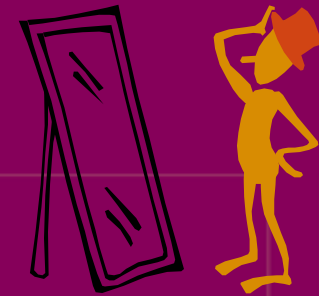
- EQ 3, 4 or 6 fp

FPA: counting example

Functional Process

Print birthday list (sorted by department)

- Request HRM



Transaction Type

FTR
DET

External Output

employee, department
d-name, e-name, e-dayofbirth

Complexity
Score

Low
4 fp

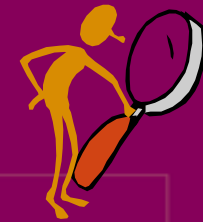
Functions (EI, EO, EQ)

Δ FTR	Δ DET	0-1	2-5	>5
0		L	L	A
1-2		L	A	H
>2		A	H	H

Logical files (ILF, EIF)

Δ RET	Δ DET	0-1	2-5	>5
-		L	L	A

Enhancement types (FPA)



• Added functionality	1.00
• Changed functionality	
I low complexity	0.25
II average complexity	0.50
III high complexity	0.75
• Deleted functionality	0.10
• Unchanged functionality	
- functionality to be tested	0.10
- no activities	-

FPA Enhancement: example



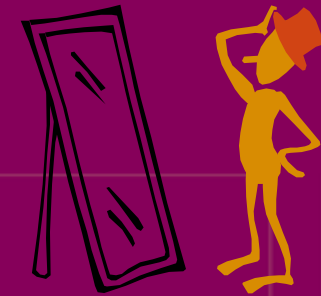
Functional Process

Print birthday list (sorted by department)

- Request HRM

RfC

add surname to birthday list



Transaction Type

FTR

DET

External Output

employee, department

d-name, e-name, e-sur, e-dayofbirth

Complexity

Low

Score

4 fp

Impact

Low

Impactfactor

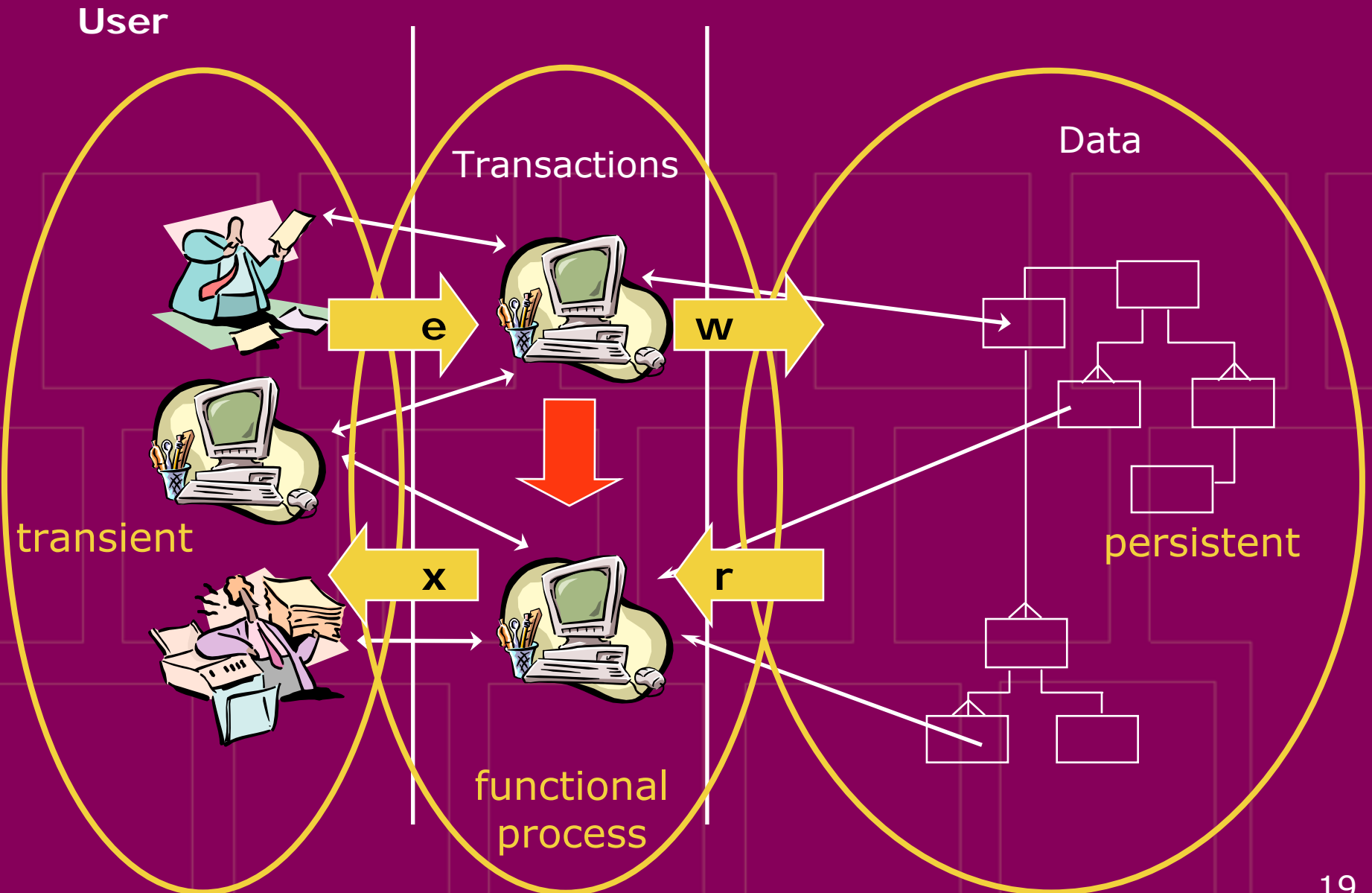
0.25

[Δ FTR= 0, Δ DET = 1]

Score

1 mfp

COSMIC Full Function Points



CFFP: Rating (values)



All of the components are rated based upon:
existence of (single) data groups

Scores per component:

- **E**ntry 1 cfsu
- **e**Xit 1 cfsu
- **R**ead 1 cfsu
- **W**rite 1 cfsu

cfsu

cosmic functional size unit

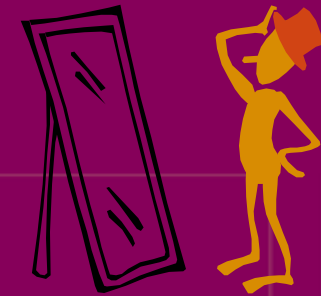
CFFP: counting example



Functional Process

Print birthday list (sorted by department)

- Request HRM



Data Group

employee
department

Data Elements

e-name, e-dayofbirth
d-name

Data Movements

Read

Read

Exit

Exit

Exit

employee [e-name, e-dayofbirth]

department [d-name]

employee [e-name, e-dayofbirth]

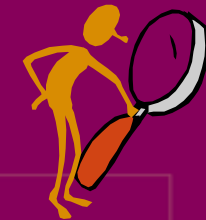
department [d-name]

messages

Score

5 cfsu

Enhancement types (CFFP)



Functional Proces		
change	1.00	Effected Data Mov.
new	1.00	All Data Movements
remove	0.10	All Data Movements
test	0.10	All Data Movements
replace*	1.10	All Data Movements

* replace = remove + new

CFFP: counting example



Functional Process

Print birthday list (sorted by department)

- Request HRM

RfC

add surname to birthday list

Data Group

employee
department

Data Elements

e-name, e-sur, e-dayofbirth
d-name

Data Movements

Read

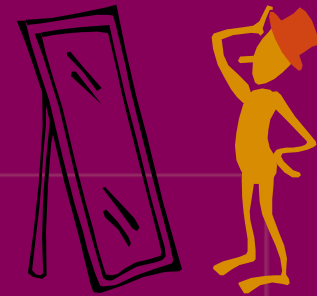
employee [e-name, e-sur, e-dayofbirth]
department [d-name]

Exit
Exit

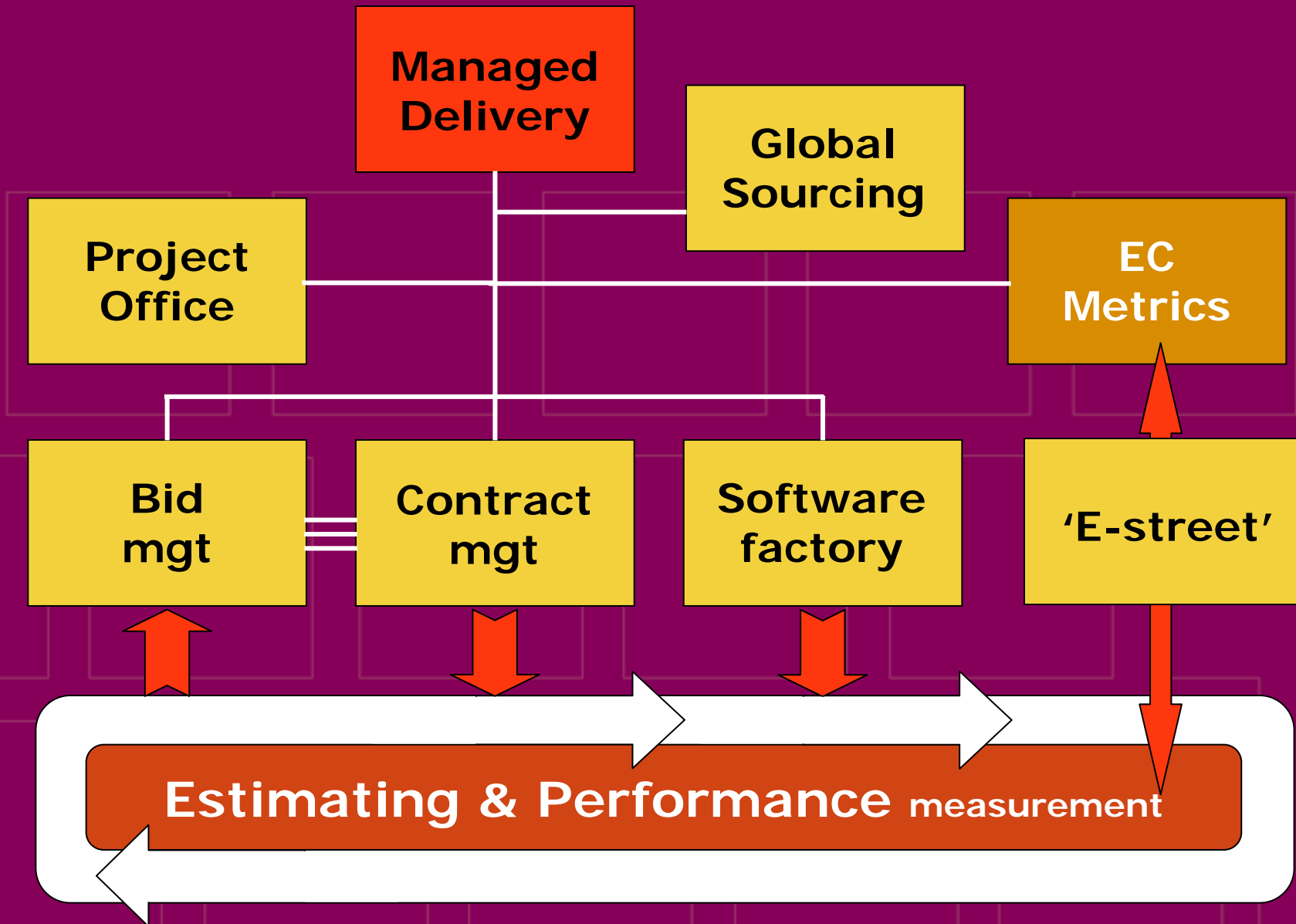
employee [e-name, e-sur, e-dayofbirth]
department [d-name]
messages

Score

2 (m)cfsu



Expertise Centre Metrics



Application: Outsourcing



Situation

- Relation
- Activities
- Object of interest

Benefits

- Controllability
- Value for money
- Costs
- (Customer) Satisfaction

Application: Release Mgt



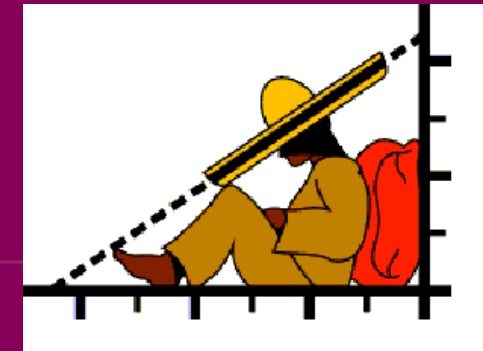
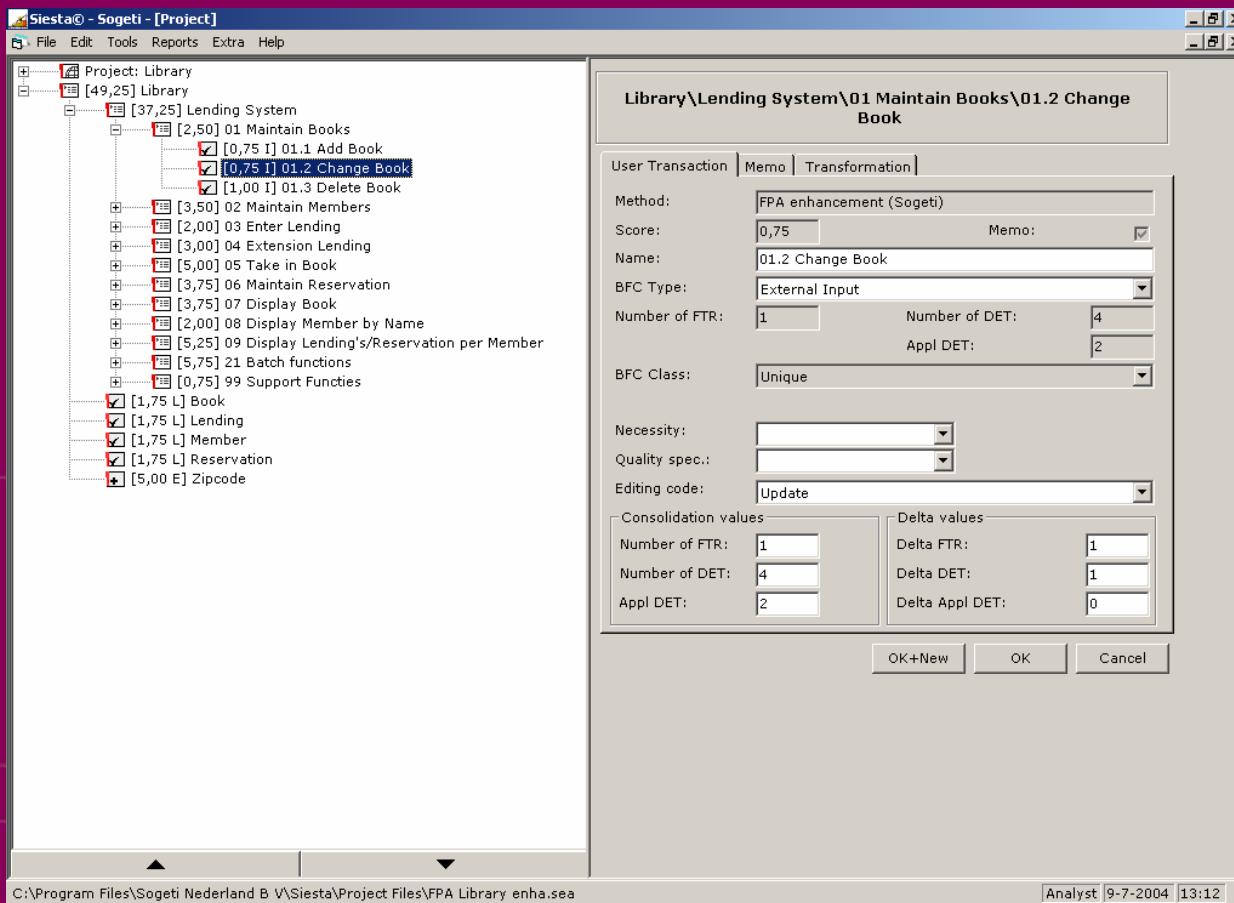
Situation

- Relation
- Activities
- Object of interest

Benefits

- Controllability
- Performance
- (Developer) satisfaction
- (Customer) Satisfaction

SIESTA (Sizing and ESTimating Application)



Multi-lingual:

- Dutch
- English
- German
- French
- Italian
- Spanish
- [Swedish]
- [...]

Supports most
ISO 14143 based
methods

Available: **now**
'Freeware': part of services / promotion

- Benefits

- + objectivity
- + re-use of available productivity rates
- + communication
- + proven in practice (applicability)
- "scientific" prove

- Supported Functional Sizing Methods

- + Function Point Analysis
- + COSMIC Full Function Points

- Useful to

- + Principal / Customer
- + Supplier



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SIESTA

Thanks for your attention

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SIESTA is een uitgave van Sogeti Nederland B.V.

