

# estimate

estimate • analyze • plan • control

## Earning more with lower risk

Ton Dekkers  
Galorath International Ltd

UKSMA, London, 14<sup>th</sup> October 2010, 14:30

# Ton Dekkers - Roles



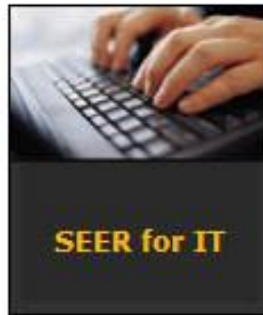
- Galorath International Ltd  
*Director of Consulting*  
**Netherlands based**
- Netherlands Software Metrics Association (NESMA)  
*President*
- International Software Benchmarking Standards Group (ISBSG)  
*Immediate Past President*
- Common Software Measurement Int. Consortium (COSMIC)  
COSMIC Functional Size Measurement Method  
*International Advisory Committee*
- Dutch Association of Cost Engineers (DACE)  
*WG Parametric Estimation*

# About Galorath



***Galorath's SEER products are used to parametrically estimate effort, duration, cost, and to gauge risk***

- A software publisher / research firm with four products:



- Over 30 years in business
- Hundreds of customers, many Fortune 500
- Headquartered in El Segundo, CA (U.S.); office in Andover (U.K.) with staff nationwide in the U.S. and in Europe
- Professional services organisation provides consulting and training



# Challenge (I)

- Tender Dutch Tax Office  
New Full Tax Information System  
Incl. Registration, Levying, Controlling & Reporting
- Provided size
  - Initial work
    - Base Application                      5000 Function Points
    - Time Frame                              2 Years
  - Extended work
    - Enhancements                        3000 Function Points
    - Time Frame                              3 Years
- Support  
5 Years



# Customer View

- IT should be beneficial to business
- The organisation should focus on core business
  - IT Risk to supplier / IT Risk shared with supplier
  - (Out)Sourcing
- Cost reduction
  - Value for money
  - Transparent proposal
- Standardisation
  - Packages
  - Process
- Customer Satisfaction
  - On time, on budget with the agreed functionality AND quality

# Supplier View

- IT services should be profitable
- The organisation should be compelling
  - Prepared to take / to share the customer risks
  - Profiling as an (Out)Sourcing partner / party
- Cost effective
  - Value for money
  - Competitive proposal
- Standardisation
  - Process & Procedures (Factory)
  - Risk Management
- Customer Satisfaction
  - On time, on budget with the agreed functionality AND quality

## Challenge (II)

The customer requested in the proposal:

- An all-in price per Function Point
- Approach (Development, Test, Quality Assurance)
- Technology
- Organisational Structure

This requires from supplier:

- Functional “excellence”
- Transparent estimates / right expectations
- Function Points knowledge / experience
- Historical data



# Proposal (Template)

**Gegevens gegadigde:**

Naam

Code offerte

= invoerveld

**Optie A**

Standaard pakket + maatwerk

Offerte Standaardpakket + maatwerk

**Optie B**

Volledig maatwerk

Offerte Volledig maatwerk

**Samenvatting OFFERTE**

**Assignment**  
 Standard Package  
 Additional development  
 Maintenance & Support  
**Realisation services**  
 Non functional  
 DRAA  
 Maintenance & Support

**OPDRACHT**

Standaard pakket	\$	483,333.33	
Aanvullend ontwikkeling	\$	8,000,000.00	
<i>fixed fee</i>	\$	8,483,333.33	
Beheer en Onderhoud	\$	6,786,666.67	
			\$ 15,270,000.00

**VOORTBRENGINGSSERVICES**

Niet functionele	\$	347,222.22	
ORAA	\$	500,000.00	
	\$	847,222.22	
Beheer en Onderhoud	\$	100,000.00	

	\$	947,222.22	
<b>Totaal</b>	\$	16,217,222.22	
<b>Omzetbelating</b>	\$	-	

**GUNNIGSWAARDE** \$ 16,217,222.22

# Supplier

## Opportunities

- New system will replace current system simplified and downsized
- Current System developed by supplier
- Local positioned
- Development Framework operational able to convert components current system

## Risks

- No Function Point Knowledge
- Mapping indicated size on current application
- Limited Historical data

# Risk Mitigation

## No Function Point Knowledge

- Hire a consultant with knowledge / experience
- Conduct training to understand the concept

## Mapping indicated size on current application

- Size the current application

## Limited Historical Data

- Analyse available data
- Map on current possibilities (Framework)
- Validate with external data (ISBSG / SEER)

# Training

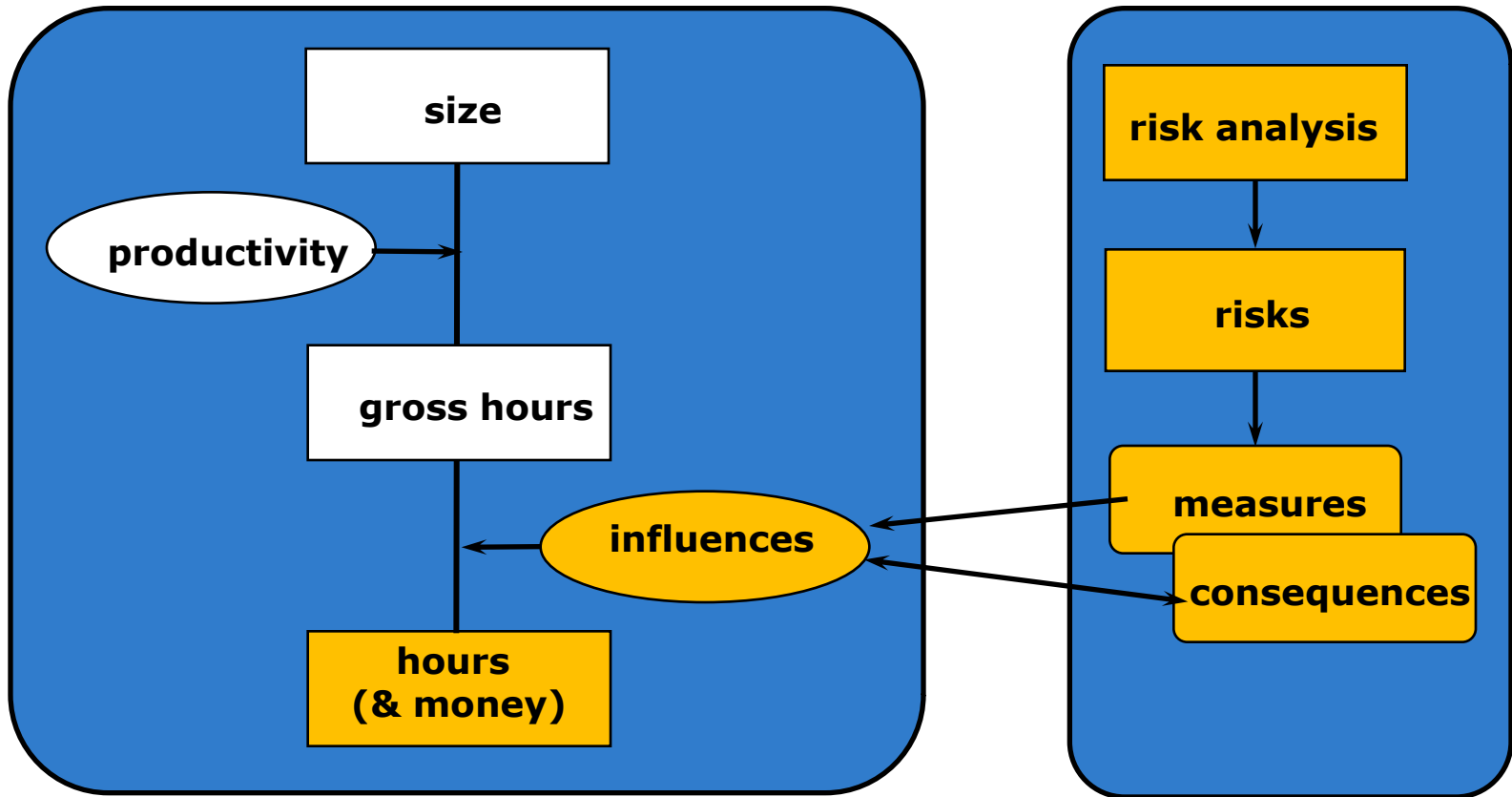
## Basic Principles Function Points

- System Boundary
- Logical Files (ILF / EIF)  
Transactions (EI / EO / EQ)
- Examples from sizing exercise
- Benchmark (ISBSG)

## Basic Parametric Estimation

- (Simplified) Estimation Model
- Parametric Estimation (SEER for Software)

# Simplified Estimation Model



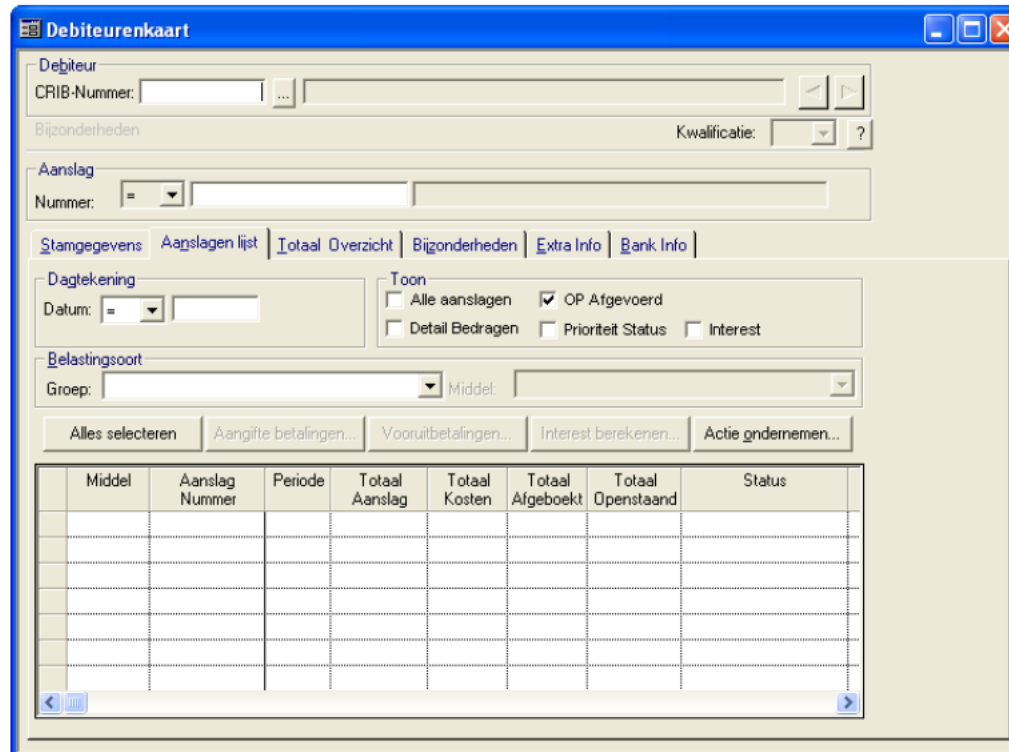
# User Documentation

## Debiteurenkaart

In dit venster kunnen gegevens betreffende de debiteur geraadpleegd worden en kunnen acties ten aanzien van deze debiteur ondernomen worden.

### Ophalen gegevens

1. Kies de hoofdmenu-optie **Invordering** en kies **Debiteurenkaart**. Het venster **Debiteurenkaart** verschijnt.



Middel	Aanslag Nummer	Periode	Totaal Aanslag	Totaal Kosten	Totaal Afgeboekt	Totaal Openstaand	Status

## Debtor Card

*Get data*

*Tabs*

*Core data*

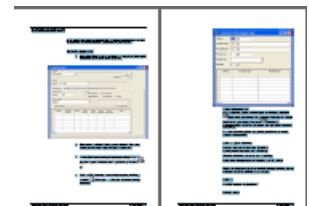
*Assessments*

*Totals*

*Details*

*Additional info*

*Bank Info*





# Sizing Sheet

Invordering	To Do	To Do		14	1	2 Upd (toewijzen) / Base - Detail
		Taak		5		1 Display
		Actie		13	2	1 Add - Upd ( in specific context) Display
			32			
	Debiteurenkaart	Debiteurenkaart		52	3	8 Upd (Bijz - Extra - Bank) / Display Base - Aanslagen - Totaal - Stam - Relaties - Bijz. - Extra - Bank
		Aanslagen		34	1	6 Upd interest / Betalingen - Verminderen - Hist - Kosten - Extra Info - Interest



C	D	E	F	G	H
Level 3	Sum L1	Sum L2	Sum L3	EI	EO /EQ
Debiteurenkaart			52	3	8

## Remarks

Upd (Bijz - Extra - Bank) / Display Base - Aanslagen - Totaal - Stam - Relaties - Bijz. - Extra - Bank

Debtor card:

$$52 \text{ FP} = 3 \times 4 + 8 \times 5 \quad (3 \text{ EI} + 8 \text{ EO})$$

From user documentation

Update: Details, Additional info, Bank Info

Display: Card and 7 tabs

# Size Validation Core Application



## Sizing sheet results

- Size 4636 FP
  - Logical Files 138
- Validation: 33.59 FP / Logical File*
- Reference NESMA 35.00 FP / Logical File*
- 
- Technical Tables 240
- Validation: 19.32 FP / Technical File*
- Reference NESMA 25.00 FP / Technical File*

# Mapping indicated size

Organization	Inspectie der Belastingen	Inspectie der Belastingen	Eilandsontvanger/Landsontvanger
Tables in the database	40	32	240

- Core Application 4636 FP
- Application 1  
32 tables, 5 taxes  
 $32 * 19.32 * 5$  3095 FP
- Application 2  
40 tables, 1 tax  
 $40 * 19.32 * 1$  773 FP
- TOTAL current system **8504 FP**
- New System  
Assumption 60% current **5102 FP**

# Limited Historical Data

## Analyse Historical Data

- Validate current system
- Validate expert estimate new system
- Validate application developed with new Framework

## Determine activities included in base performance

- Mix waterfall (base design) / iterative (prototype)
- Proposal requirements (template)

## Finding reference material

- ISBSG
- Parametric Estimation (SEER for Software)

# Analyse Data (I)

## Validation current system

- Approx 8,000 FP
- 5 years operational
- 20% incremental enhancements  
New and changed functionality (50% – 50%)
- Developed equivalents 10,000 FP  
Team size 6 – 14 FTE  
Effort 75,000 – 85,000 hours
- Performance 7.5 - 9 hours / FP

## Analyse Data (II)

### Validation Expert estimate

- Assumed 5000 FP
- Expert 'performance' 3 – 4 hours / FP

### Validation system with development Framework

- Sized 600 FP (based on 30 technical files)
- Effort 5,200 hours  
includes training / learning curve
- Performance 8 - 9 hours / FP

### CONCLUSION:

Expert estimate likely too optimistic



# External Validation

### Create/Modify WBS Element

[Guide me using Project Assistant](#)

**SEER For Software**

**Create/Modify WBS**  
This dialog box lets you describe a new project or WBS element.  
**Switch to Wizard**  
Use the SEER Project Assistant to create a new project or work element.  
**Description**  
Enter text to uniquely identify the item  
**Notes**  
Enter work element notes.  
**Analyst**  
The analyst who is estimating this project.  
**Volume Inputs**  
(Project only) Select one or more sizing metrics  
**FBS Method**  
(Project only) For Function Based Sizing, select a

Description:

Analyst:

**Element Type**

Rollup  Program  Component  COTS  Unit

**Indenture**

Level 2

**Knowledge Base Selections**

Platform:

Application:

Acquisition Method:

Development Method:

Development Standard:

Class:

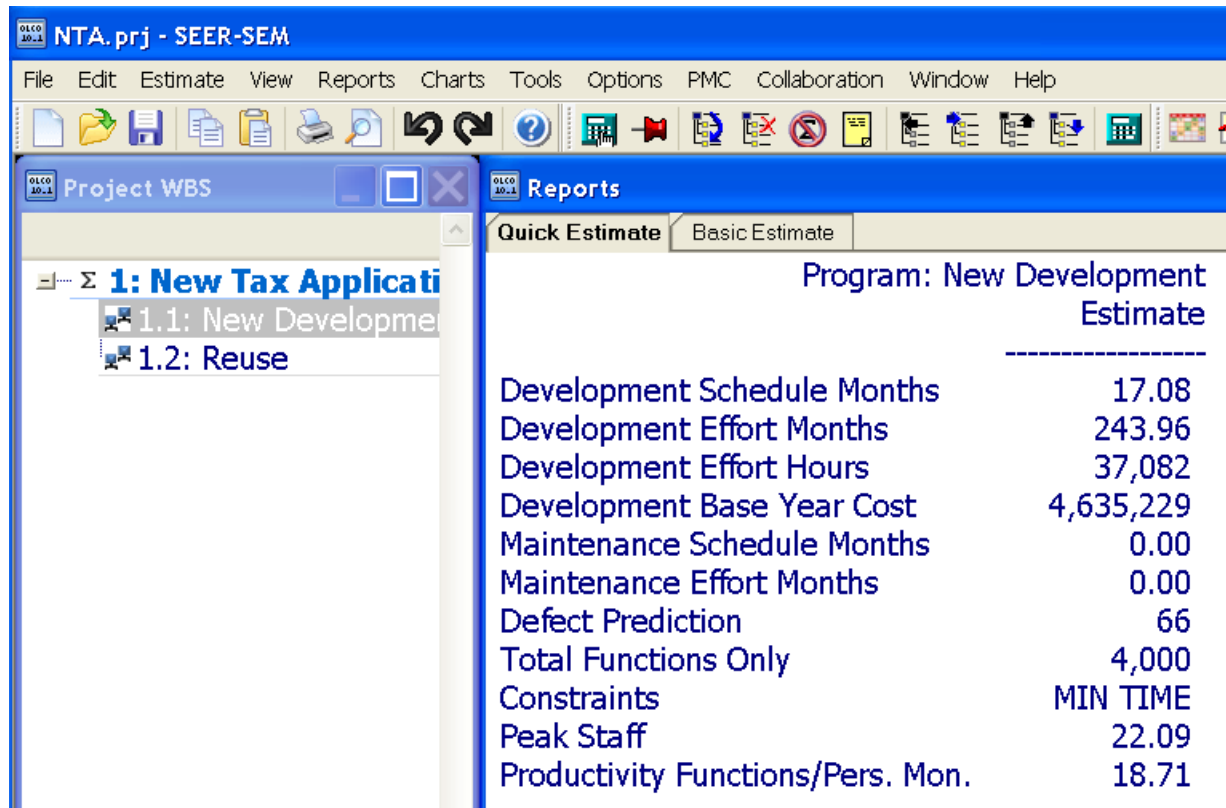
Sizing Methods:

Start Date:

Created 9/08/2010 17:18:02 Modified 9/08/2010 19:06:45

# External Validation (II)

- Assumed 4000 FP new development



The screenshot shows the SEER-SEM software interface. The main window is titled 'NTA.prj - SEER-SEM'. The menu bar includes File, Edit, Estimate, View, Reports, Charts, Tools, Options, PMC, Collaboration, Window, and Help. The toolbar contains various icons for file operations and estimation. The 'Project WBS' pane on the left shows a hierarchy: 1: New Tax Application, with sub-items 1.1: New Development and 1.2: Reuse. The 'Reports' pane on the right is set to 'Quick Estimate' and displays the following data:

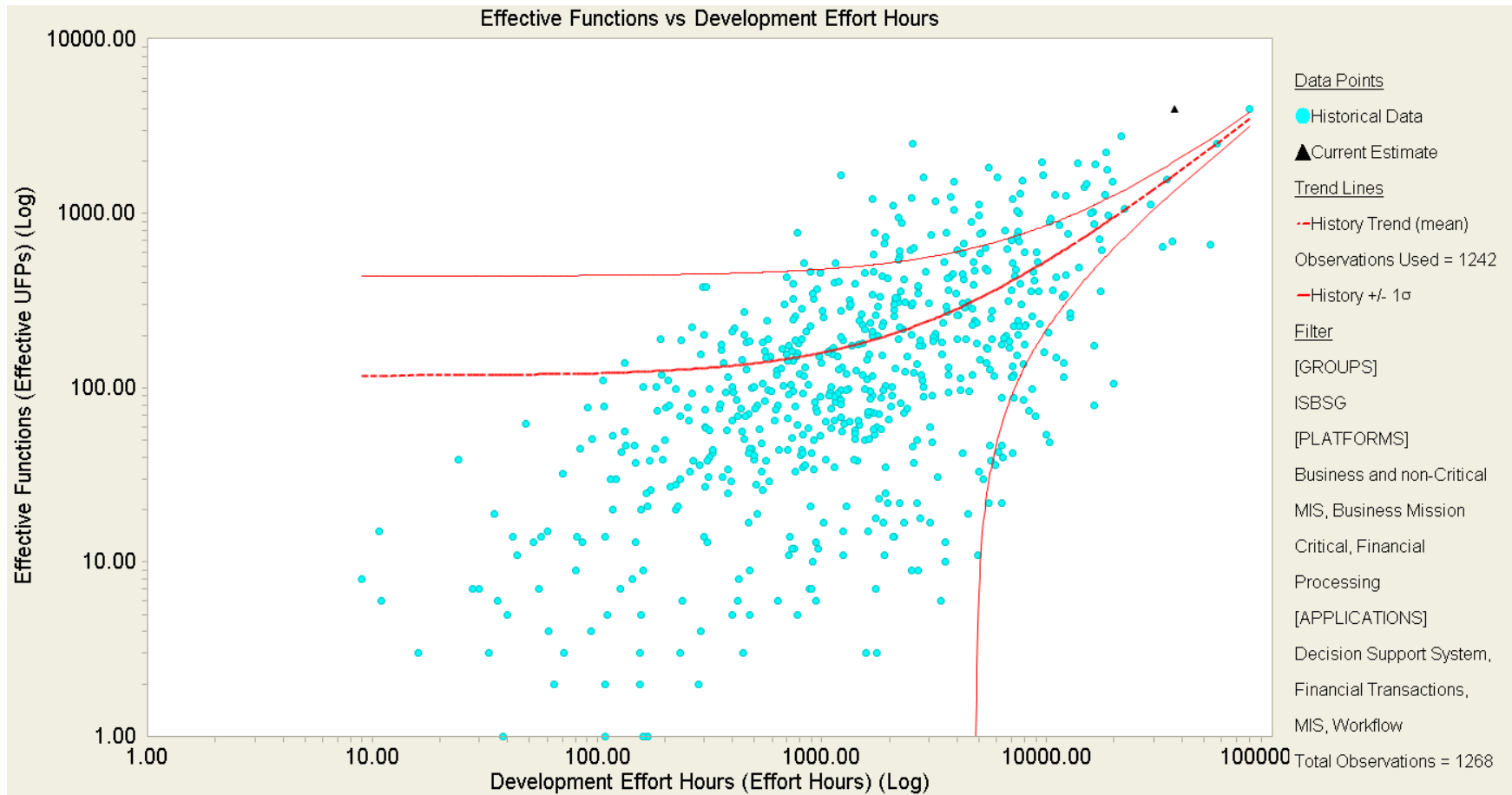
Program: New Development Estimate	
Development Schedule Months	17.08
Development Effort Months	243.96
Development Effort Hours	37,082
Development Base Year Cost	4,635,229
Maintenance Schedule Months	0.00
Maintenance Effort Months	0.00
Defect Prediction	66
Total Functions Only	4,000
Constraints	MIN TIME
Peak Staff	22.09
Productivity Functions/Pers. Mon.	18.71

- Performance 8.12 hours / FP (= 152 / 18.71)

# External Validation (III)



- Benchmark estimate with ISBSG



# Decision process (Options)

1. Expert estimate  
Mapping to 5000 FP
2. Parametric Based estimate

Option	1	2
Risks	Underestimation Less profit / loss Complex management Capacity planning Limited flexibility	Overestimation <b>Probability losing</b> Limited staff
Opportunities	<b>Probability winning</b>	More profit Easier management Flexibility

# Decision

## Parametric based estimate

- Less risk of underestimating
- Transparent and defensible
- Potential more profit
- Real incentive for innovation / improvement
- Assumed still competitive:
  - Project Delivery Rate – OK
  - Technology State of the Art – Framework
  - (Local oriented) Knowledge
  - Availability of software components

# Conclusion

## (After winning the tender)

Parametric based estimates provides

- Less risk of underestimating
- Transparent and defensible proposals
- Objective approach
- Realistic expectations on
  - Cost
  - Effort
  - Capacity required



