

estimate

estimate • analyze • plan • control

Earning more with lower risk

Ton Dekkers
Galorath International Ltd

UKSMA, London, 14th October 2010, 14:30

Ton Dekkers - Roles



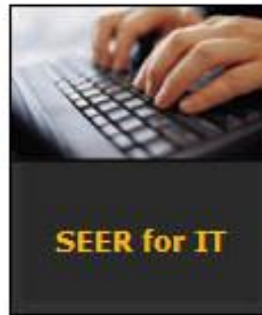
- Galorath International Ltd
Director of Consulting
Netherlands based
- Netherlands Software Metrics Association (NESMA)
President
- International Software Benchmarking Standards Group (ISBSG)
Immediate Past President
- Common Software Measurement Int. Consortium (COSMIC)
COSMIC Functional Size Measurement 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 = invoerveld
 Code offerte

Optie A
 Standaard pakket + maatwerk

Optie B
 Volledig maatwerk

<p>Samenvatting OFFERTE</p> <div style="border: 1px solid black; padding: 5px;"> <p>Assignment Standard Package Additional development Maintenance & Support Realisation services Non functional DRAA Maintenance & Support</p> </div>	<p>OPDRACHT</p> <table border="0"> <tr> <td>Standaard pakket</td> <td style="text-align: right;">\$ 483,333.33</td> <td></td> </tr> <tr> <td>Aanvullend ontwikkeling</td> <td style="text-align: right;">\$ 8,000,000.00</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;"><i>fixed fee</i></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">\$ 8,483,333.33</td> <td></td> </tr> <tr> <td>Beheer en Onderhoud</td> <td style="text-align: right;">\$ 6,786,666.67</td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">\$ 15,270,000.00</td> </tr> <tr> <td colspan="3">VOORTBRENGINGSSERVICES</td> </tr> <tr> <td>Niet functionele</td> <td style="text-align: right;">\$ 347,222.22</td> <td></td> </tr> <tr> <td>ORAA</td> <td style="text-align: right;">\$ 500,000.00</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">\$ 847,222.22</td> <td></td> </tr> <tr> <td>Beheer en Onderhoud</td> <td style="text-align: right;">\$ 100,000.00</td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">\$ 947,222.22</td> </tr> <tr> <td>Totaal</td> <td></td> <td style="text-align: right;">\$ 16,217,222.22</td> </tr> <tr> <td>Omzetbelating</td> <td></td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td>GUNNIGSWAARDE</td> <td></td> <td style="text-align: right;">\$ 16,217,222.22</td> </tr> </table>	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	Totaal		\$ 16,217,222.22	Omzetbelating		\$ -	GUNNIGSWAARDE		\$ 16,217,222.22
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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

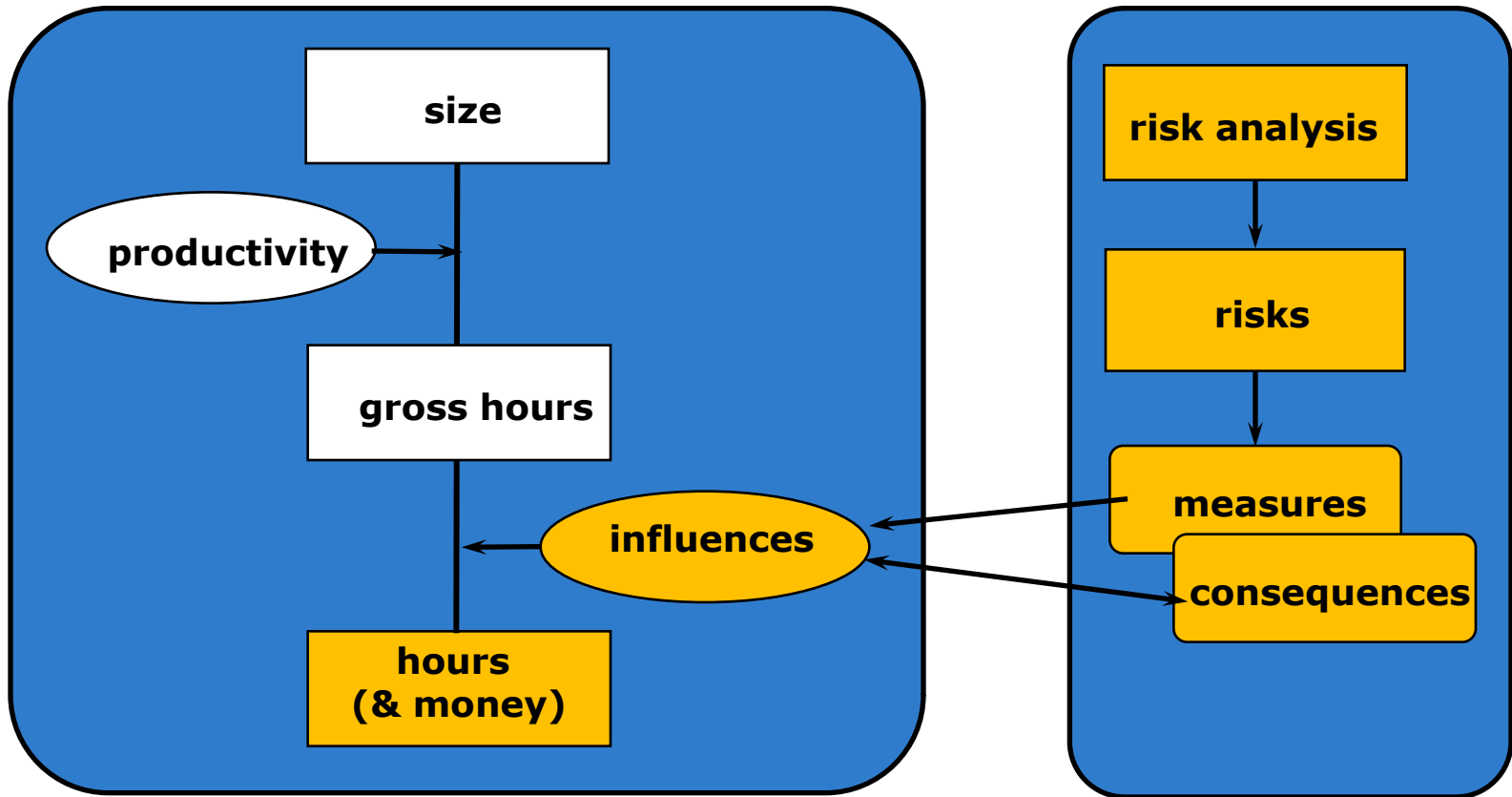
Basic Principles Function Points

- 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



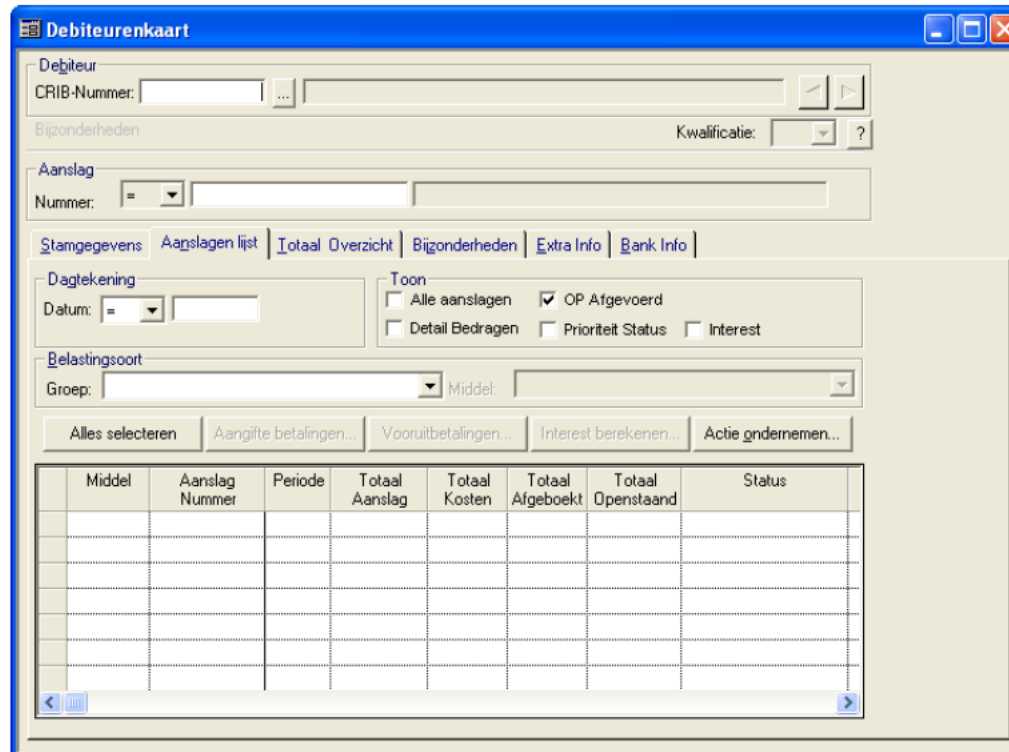
User Documentation

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.



The screenshot shows the 'Debiteurenkaart' window with the following fields and controls:

- Debiteur**: CRIB-Nummer: [] []
- Bijzonderheden**: Kwalificatie: [] ?
- Aanslag**: Nummer: [] []
- Stamgegevens**: Aanslagen lijst | **Totaal Overzicht** | Bijzonderheden | Extra Info | Bank Info
- Dagtekening**: Datum: [] []
- Toon**: Alle aanslagen OP Afgevoerd Detail Bedragen Prioriteit Status Interest
- Belastingsoort**: Groep: [] Middel: []
- Buttons: Alles selecteren | Aangifte betalingen... | Vooruitbetalingen... | Interest berekenen... | Actie ondernemen...
- Table**:

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

Debtor Card

Get data

Tabs

Core data

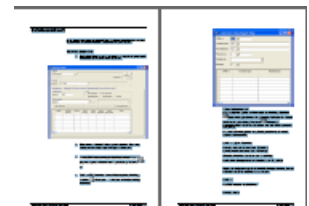
Assessments

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 - Verminderingen - 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

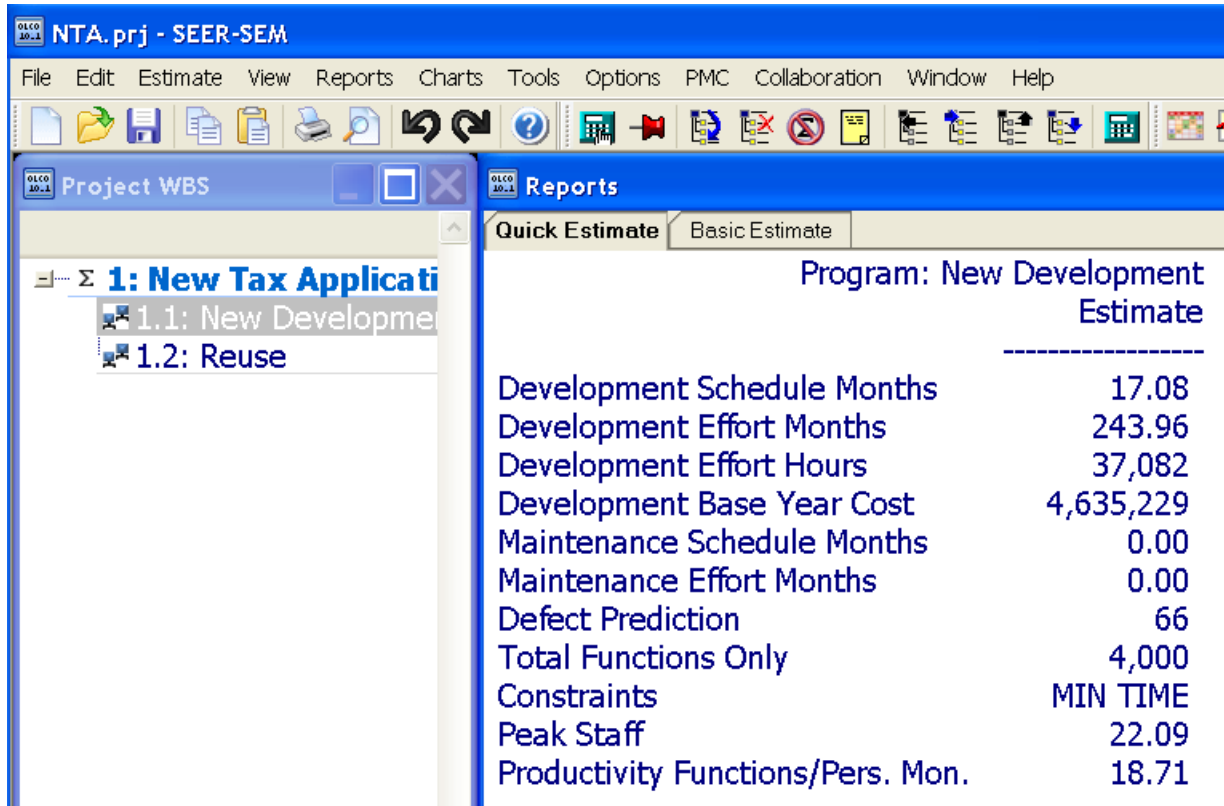
Sizing Methods

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:

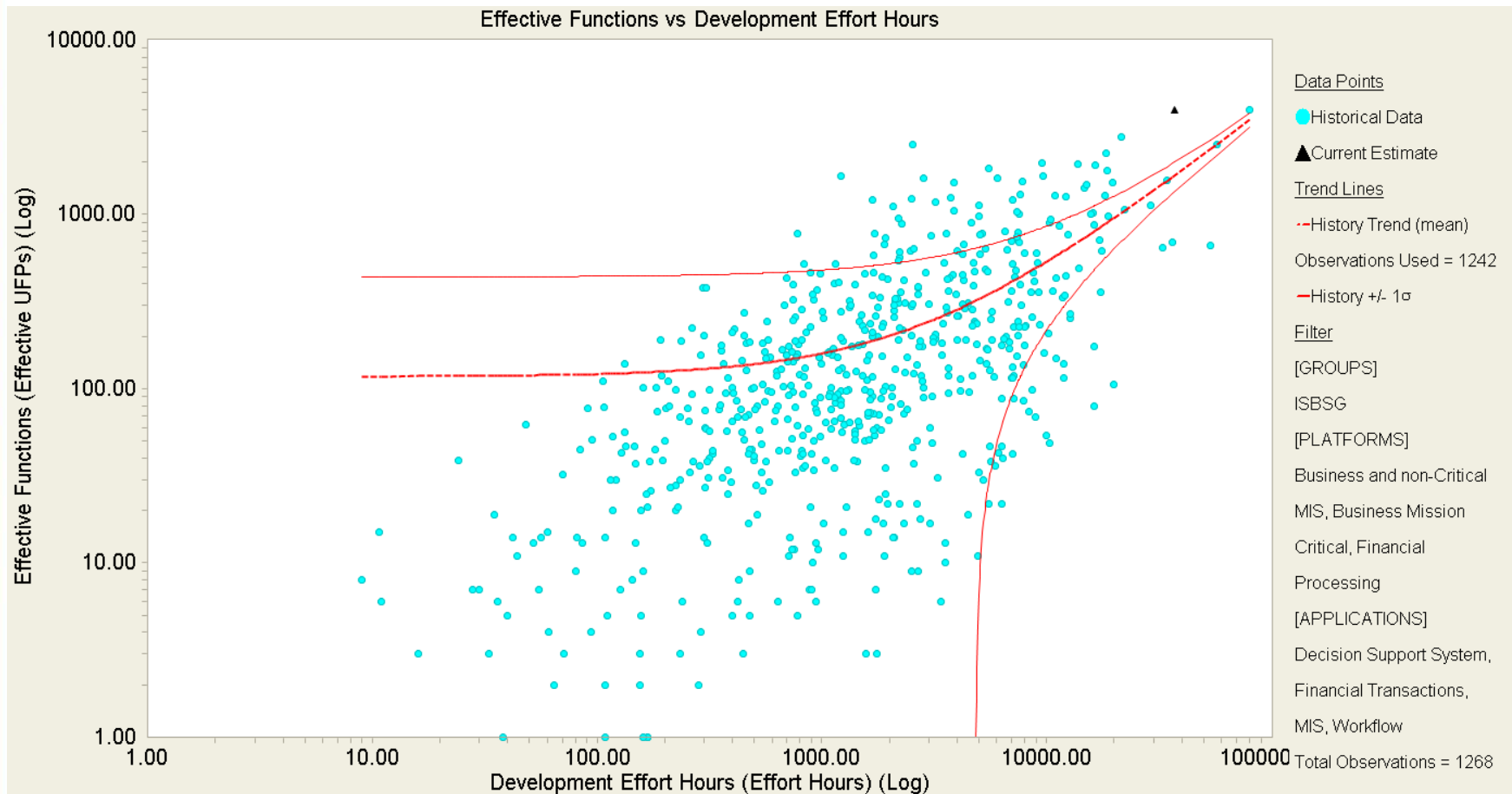
Program: New Development Estimate	
Development Schedule Months	17.08
Development Effort Months	243.96
Development Effort Hours	37,082
Development Base Year Cost	4,635,229
Maintenance Schedule Months	0.00
Maintenance Effort Months	0.00
Defect Prediction	66
Total Functions Only	4,000
Constraints	MIN TIME
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 Probability losing Limited staff
Opportunities	Probability winning	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

