

The Management School <i>Lancaster University</i>	SysSel
MSc in E-Business & Innovation (EBIN)	How To Select Your New Computer System: Pitfalls & Proven Methods

1 Slides

See back of booklet.

2 Selected Contact Details & References For System Selection Projects

1.	Package, system, supplier and outsourcing evaluations and selections. Technology/IT procurement including contract negotiation.	Martin Tate, IT Evaluation www.itevaluation.co.uk martin.tate@itevaluation.co.uk
2.	Providers of <i>Prince</i> project management method and <i>SSADM</i> systems analysis & design method. [Formerly <i>CCTA</i> .]	The UK Office of Government Commerce (<i>OGC</i>) www.ogc.gov.uk
3.	<u>Purchasing & Supply Management Model</u> from the Chartered Institute of Purchasing & Supply	CIPS www.cips.org
4.	Directory of suppliers and software in book and online form. <u>mi IT software directory</u> .	Computing mi (part of VNU) www.computingmi.co.uk
5.	Commercial service supplying details of potential systems. Their staff ask for a system profile and send details from those registered. [Caution this is <i>not</i> comprehensive, as IT vendors pay to register their products.]	The Computer Users Information Service www.cuis.co.uk
6.	Erling S. Andersen, Kristoffer V. Grude and Tor Haug <u>Goal Directed Project Management: Effective Techniques and Strategies</u>	Kogan Page (Jun 2004) ISBN: 0749441860
7.	Benjamin B Tregoe & Charles H Kepner <u>The New Rational Manager: An Updated Edition for a New World</u> (available via the KT website) Management text on problem analysis, decision analysis and situation appraisal. Covers scoring techniques (including <i>weighted attribute</i>) for formal, rational decision-making within organisations.	Kepner-Tregoe, Inc (worldwide) www.kepner-tregoe.com Kepner Tregoe Ltd (UK) KT-UK@kepner-tregoe.com
8.	Nathan Hollander <u>Guide to Software Package Evaluation and Selection: The R2ISC Method</u>	Amacom (Jun 2000) ISBN: 0814405533

3 *Origins & Heritage Of The Method*

This section shows the originators of the various aspects of this method. See the prior section for contact addresses of the organisations mentioned.

3.1 OGC – standards in UK government IT

- *Prince* project management, including *project board* (PB) and *project sponsor*.

3.2 Kepner/Tregoe – formal decision-making techniques

- Mandatory requirements.
- Scoring techniques (part of).

3.3 LBMS – methods & CASE tools (Learmonth Burchett Management Systems Ltd, now part of Computer Associates).

- Original Tasklist for *LBMS Package Evaluation* (method created in 1988).
- Scoring techniques (part of).

3.4 IT Evaluation – further development/application of method

- Integration of *Responsibility Chart* into method.
- Method of scoping by ‘triage’.
- Techniques for contacting suppliers for feasibility costings.
- Techniques for incorporating and presenting best practice to the user before interviews, including the ‘Aunt Sally’ or ‘Straw Man’ RDD.
- Creation of scoring definitions.
- Use of key project documents as attachments to contract.
- All formats shown, including advanced use of word processor & spreadsheet for document generation or automation, plus mass email for RFI.
- Use of PC packages, tablet note-taking, CASE tools, product databases and projectors (with live models) to aid team productivity and meeting effectiveness. Use of customer relationship management system for calls, email shots & project history log.
- Visualisation techniques such as charts to show value for money or fit of shortlist.
- Links between this evaluation/procurement method and IT service management.

4 Reference Material – Selected Example Formats

4.1 Example RDD (Table Of Contents)

<u>Contents & Controls</u>	<u>System Selection Method</u>	<u>Example RDD</u>
Management Information		109
Client Access To Data	0278	109
Example Analyses Required	0279	109
Reports On Main Monthly Business Measures	0280	110
Reports To Express Contract Performance	0281	110
Health & Safety Information	0282	110
Regional Sales Performance	0283	111
Key Performance Indicators & Balanced Scorecard	0284	111
Executive Information System (EIS)	0285	111
KPIs For Quality Management	0286	112
Required Graphs Or Charts	0287	112
Reconcile Order Book With Forecasted Value	0288	112
Data Cube	0289	113
Environment		114
Integrated System	0290	114
On-Site Remote Facilities Are The Most Important	0291	114
Pick Lists	0292	114
Usability Of System	0293	115
Flexible & Understandable Interface	0294	115
Screen Formats	0295	115
Use Of Colour Under User Control	0296	116
Low Amount Of Training Needed For Customer Users	0297	116
Notes Facility	0298	116
Multiple Windows Across Companies	0299	116
Printing	0300	116
Business Process Mapping	0301	117
Report Generator	0302	117
Create General Export Files In Common Formats	0303	118
User Defined Fields	0304	118
Secure Access, With Role-Based Permissions	0305	119
Rapid Setup & Removal Of User, With Delegated Access	0306	120
Interface		121
From Legacy System Data For Migration	0307	121

This illustrates one part of the Requirements Definition Document format (RDD). It also shows some examples of ‘*standard*’ requirements. These would usually be included in the RDD, whether or not they were explicitly requested during requirements definition interviews.

4.2 Example RDD (Prime List of Requirements)

C. Prime List: Requirements, Grouped By Function Section: Human Resources	System Selection Method Example RDD
<p>Basic Employee Details</p> <p>Employee details should be on the new system. If it does not have a 'full blown' HR module, the basics include:</p> <ul style="list-style-type: none"> ▪ staff number; ▪ address; ▪ NI number (NINO); ▪ current location (place of work); ▪ office, mobile and home telephone numbers; ▪ next-of-kin. 	0053
<p>Employee Groups</p> <p>Employee details should include the ability to set up groups such as for fire lists or car pools.</p>	0054
<p>HR Management Reports & Workforce Profile Management</p> <p>The system should feature management reports to profile and anticipate skills issues.</p> <ul style="list-style-type: none"> ▪ Show salaries, staff age profiles and KPIs. ▪ Find those skills held by a small number of people, and recognise their expected retirement 	0055

This illustrates the main Requirements Definition Document (RDD) format, and typical wording of requirements.

4.3 Example RFI

System Selection Method - Example RFI (Request For Information)		
	Information	
	Do customers have systems running today with the following business volumes, or more? {0025}	
23	<ul style="list-style-type: none"> £300m annual turnover. 	
24	<ul style="list-style-type: none"> 2,000 employees. 	
25	<ul style="list-style-type: none"> 2,000 suppliers. 	
26	<ul style="list-style-type: none"> 200 active contracts, each with 150 codes to classify costs. 	
	Supporting critical field lengths/formats and maintaining current analysis codes. {0030, 0184} Does the system allow each financial posting to a project or ledger to be classified using all four of the following:	
27	<ul style="list-style-type: none"> contract number; 	
28	<ul style="list-style-type: none"> a 15-character product code; 	
29	<ul style="list-style-type: none"> a 5-digit 'transaction code'; 	
30	<ul style="list-style-type: none"> an additional 4-character 'sub-analysis code'? 	
	Sales & Marketing	
	Does the system include a customer database {0033} with:	
31	<ul style="list-style-type: none"> customer short code (a unique look up separate to the main customer name); 	
32	<ul style="list-style-type: none"> territory code, with effective dates. 	

Example of the sort of form emailed to system suppliers, for them to 'turn round' - complete and send back.

4.4 Example Definitions

<u>System Selection Method – Example Of Scoring Definitions</u>			
<i>Name</i> Customer & Supplier Details		<i>Reference</i> 0081	
<i>Issues</i>			
Amount of data, including fields listed as important in RDD			
Whether customer and supplier files are separate, with risk of duplication, or integrated with 'role'			
0	1	2	3
No explicit support in current version without program code modification.		Important fields demonstrated But Separate files	Important fields demonstrated With Common list with coded roles and one entry can have multiple roles such as supplier and customer

These record the basis for allocating points. There is one such form per scored requirement.

4.5 Example Scoring Spreadsheet – Format

System + Supplier Evaluation		Shortlist After Responses To Requirements Document			IT Evaluation - A Division Of Decision Evaluation Ltd					
Categ	Requirement Title	Nbr	Wgt	Perfect	Package A			Package B		
				Max	MatchA	Fit Xtd	Fit %	MatchB	Fit Xtd	Fit %
Customer/Supp	Customer & Supplier Details	0081	5	15	3	15	100%	2	10	67%
Customer/Supp	Grouping Contacts	0082	3	9	2	6	67%	2	6	67%
Customer/Supp	Hold Company Registration & VAT Numbers	0083	2	6	0	0	0%	2	4	67%
Customer/Supp	Contract Quotations Status, Version & Re-Use	0084	1	3	0	0	0%	2	2	67%
Customer/Supp	Secure Order Form	0085	5	15	2	10	67%	3	15	100%
Customer/Supp	Levels of Bill of Material	0086	3	9	0	0	0%	2	6	67%
Customer/Supp	Notice Of New & Changed Tenders	0087	4	12	2	8	67%	3	12	100%
Customer/Supp	Customer Contribution & Profitability	0088	2	6	1	2	33%	2	4	67%
Customer/Supp	Customer Changes Own Account Information	0089	4	12	1	4	33%	3	12	100%
Customer/Supp Total				87		45	52%		71	82%
Sales/Marketing	Customer Price List	0090	4	12	2	8	67%	3	12	100%
Sales/Marketing	Telephone Scripts	0091	1	3	0	0	0%	3	3	100%
Sales/Marketing	Reports On Main Sales Measures	0092	5	15	2	10	67%	2	10	67%
Sales/Marketing	Cost of Campaign	0093	2	6	2	4	67%	3	6	100%
Sales/Marketing Total				36		22	61%		31	86%
Tech & Design	Staff-To-Service Expertise Matrix, With Controls	0094	5	15	3	15	100%	2	10	67%
Tech & Design	Drill Down & Drill Across	0095	2	6	3	6	100%	2	4	67%
Tech & Design	Screen Prints	0096	5	15	1	5	33%	2	10	67%
Tech & Design	Archiving & Retrieval	0097	4	12	2	8	67%	2	8	67%
Tech & Design	Fax From Desktop	0098	3	9	2	6	67%	2	6	67%
Tech & Design	Contribute To ISO 9002	0099	4	12	2	8	67%	3	12	100%
Tech & Design	Report Generator	0100	2	6	1	2	33%	2	4	67%
Tech & Design Total				75		50	67%		54	72%
Supplier Consid	Soundness Of Supplier	0101	4	12	3	12	100%	2	8	67%
Supplier Consid	Reference Sites	0102	3	9	3	9	100%	1	3	33%
Supplier Consid	Training Available from Author	0103	4	12	3	12	100%	1	4	33%
Supplier Consid	Relationship With 3rd-Party Help Desk	0104	3	9	3	9	100%	1	3	33%
Supplier Consid	Relevant Data Migration Experience	0105	4	12	0	0	0%	3	12	100%
Supplier Consid	Formal Implementation Method	0106	3	9	3	9	100%	1	3	33%
Supplier Consid Total				63		51	81%		33	52%
Grand Total				261		168	64%		189	72%

4.6 Example Scoring Spreadsheet – Notes

Example of scoring mechanism. The list of requirements is extracted from the Requirements Definition Document - usually the Table Of Contents.

This example shows two systems, but there would be more columns for more candidates. There would also be many more rows, with more categories and more entries per category.

- Note the weight (**Wgt**) reflects the importance of the requirement. Recommended range for weight is 1-5.
- The score (**Match**) reflects the degree of fit - for each candidate system. Recommended range for match is 0-3.
- The multiplication of weight times score magnifies the gap between systems of different capabilities - ‘rewarding’ packages that are strong in important areas.

Note the column for **Perfect** score (weight x 3). This is used to calculate & show maximum points. It means the spreadsheet can show fit as a ‘percentage perfection’ at Requirement, Sub-Total & Grand Total levels. These index numbers become highly significant (usually the most significant numbers) during decision-making.

4.7 Example Negotiation Agenda

System Selection Method - Example Of Negotiation Agenda						See actions below at General Meeting Notes				
Nego Priority	Ref	Request	Calc Method	Affected Hrs/Week/ User	Est Value	Open	BATNA	Worst	Best	Agreed Inc Customer Resp'y
A. Costs & Terms										
0 Must	005	Verify/update scope of supply esp number of users	Scope		N/a	Confirm no changes to AM costing document Monday 17/10/05	None	Rework in 24 hours		Yes confirmed no Supplier changes to 'CostsV2.doc' - subject to later discussion about Project Reporting Users
0 Must	006	Attachments to contract (A)	Risk		CoPQ	Attachments to contract must include: (a) RDD (b) scores (c) linking definitions	Delist supplier - must agree - requirement 0372	Must agree		Agreed in principle - normally covered in standard contract 'warranty clause'
4 Could	007	Attachments to contract (B)	Risk		CoPQ	Attachments to contract "may" include: (1) this list updated with agreements (2) demonstration outline	Excluded from contract	Don't bother		No need
0 Must	011	Price: software - discuss Supplier supply of Oracle 10G RDBMS licenses, at attractive rate	Discount		£2,000	Supplier interested in supplying? Explore, as part of this overall discussion - may be bonus business - agree version / no of processors	Buy separately	List price from Oracle	10% discount	Supplier prefer to supply - will be included in bundled price
0 Must	012	Confirm Microsoft Project interface in standard package costing	Risk		N/a	Formality - confirm Microsoft Project interface is included in standard system & therefore current costing	Pay extra	Heavy discount - asked - Free verbal agreement		Yes confirmed - interface included in standard system (but not Microsoft Project itself)
0 Must	013	Project budget: clarify Windows CALs	Avoided cost		£37,100	Reassurance awaited as to whether Customer need Windows CALs to run application	Massive cost to buy Windows CALs	Subsidised CALs	No CALs needed	CBT AM to check
0 Must	014	Price: software - overseas payroll	Risk		N/a	Clarify jurisdictions available & costs per country	Undetermined - risks unexpected costs	Confirm what is available	Clearly priced with PLC discount	CBT PO to check
0 Must	015	Price: software - 'Possible Reduction For Types Of User' - see 'CostsV2.doc' p7	Discount		£10,000	Clarify facilities available to Project Reporting & Field Service users - assess number of main users replaced	Not usable	Unsuitable	Clearly priced with discounted user cost	Not feasible - everyone needs document management so cannot use these reduced-function users
0 Must	016	Price: software - user licensing type	Lower license count		£50,000	Clarify position re concurrent user licensing as option	Named users	Named	Concurrent	Not a pricing option - named users only
0 Must	018	Price: pay for users in blocks as system installed	Interest earned		£25,000	Year One - possibly BTL users only	In full upfront	In full upfront	Pay just before needed	CBT - Supplier UK Financial Year is December - beware constraints on revenue recognition rules - if conditions or 6 months out cannot count in figures - therefore if commitment beyond June 2006 Supplier have to book two projects (Heywood + Dorking) - AM to cost (x + y) >
0 Must	019	Price: pay for modules as system installed	Interest earned		£500	Year One - no international packs - countries added as needed - see 'CostsV2.doc' p7	In full upfront	In full upfront	Pay just before needed	Extra countries already not priced on a 'buy once' basis - pay when needed
0 Must	020	Price: software - phased "module" cost - option to buy "future" modules at agreed price, if buy before Apr 2008	Discount		£10,000	Discuss future module pricing - not covered in 'CostsV2.doc' p8 - assume BTL lead & Dorking gap possible	No agreement - risk of monopoly pricing - BTL need most modules	No agreement - incremental user cost only	Same as current deal	See 018
0 Must	021	Cost for extra users (c50-75) in two years after initial implementation	Discount		£48,000	Discuss future pricing - see 'CostsV2.doc' p8	No agreement - calculated risk monopoly pricing	As quoted (already discounted)	Further discount of 5%	Supplier agreed to extend to 'before Apr 2008' - note discount already built in to figures for blocks of users - normally average £2,400 per user

When negotiating such an expensive & high-risk purchase, it is best to agree with the others in the negotiation team the concessions you seek (and are prepared to trade). Many items come from analysing the package scores for deficiencies. Note the small font prevents the document being read upside-down by the package supplier's negotiator! The right-hand column records agreements during the meeting.

4.8 Example Responsibility Chart

Proj Responsibility		X – Executes the work D – Takes decision solely/ultimately d – Takes decision jointly P – Manages progress T – Transfer of information/knowledge C – Must be consulted I – Must be informed eg copy documents A – Available to advise S – Provides support eg technique/documentation													
		Senior Mngmnt Team (SMT)	Project Board (PB)	Project Sponsor	Project Manager	Evaluation Team	Interviewees	Change Mngmnt Advisors	IT Advisors	Negotiation Team	Implementation Team	System/Package Suppliers	Hardware Suppliers		
1	Authorise project	D	C	C	P				T	T					
2	Determine scope	I	D	C	P				S	S					
3	Study feasibility inc cost	I	C	d	d	C			S	S		C	A		
4	Establish phasing	I	D	C	P	I	I		S	S			A		
5	Study best practice (desk search)		I	I	P	I			X	T		I	A		
6	Capture requirements (interviews)		I	C	P	I	C		X				A		
7	Document requirements (RDD/SoUR)		I	C	P	I	C		X			I	I		
8	Weight requirements		X	C	P				S	I		I			
9	Trawl marketplace			I	P				X				C		
10	Evaluate longlist (RFI)			I	D				X				C		
11	Review longlisting & select shortlist		X	C	A				S				I	I	
12	Visit shortlist (RDD/SoUR)			I	P	X			S					C	
13	Score for fit			I	P	X			S					C	
14	Analyse gaps			I	P				T	A		I		A	
15	Review eval & select demos		X	C	A				S					I	I
16	Demonstrate preferred system(s)	C	C	C	C	T	C		S			I	X	I	
17	Check reference sites		I	I	X				S			I		C	
18	Negotiate terms		I	I	P				S		X			C	
19	Agree contract	d	d	C	P				I		C			C	
20	Install system	D	C							A		X	C	S	

This is typical, but an *example*. Responsibilities will differ on different projects. In a live project, this role/responsibility matrix would be backed up by a list (or matrix) of people in each group (such as the *PB*). Alternatively, the columns might be named individuals.

Guest Lecture at EBIN 15-Feb-07

How To Select Your New Computer System: Pitfalls & Proven Methods

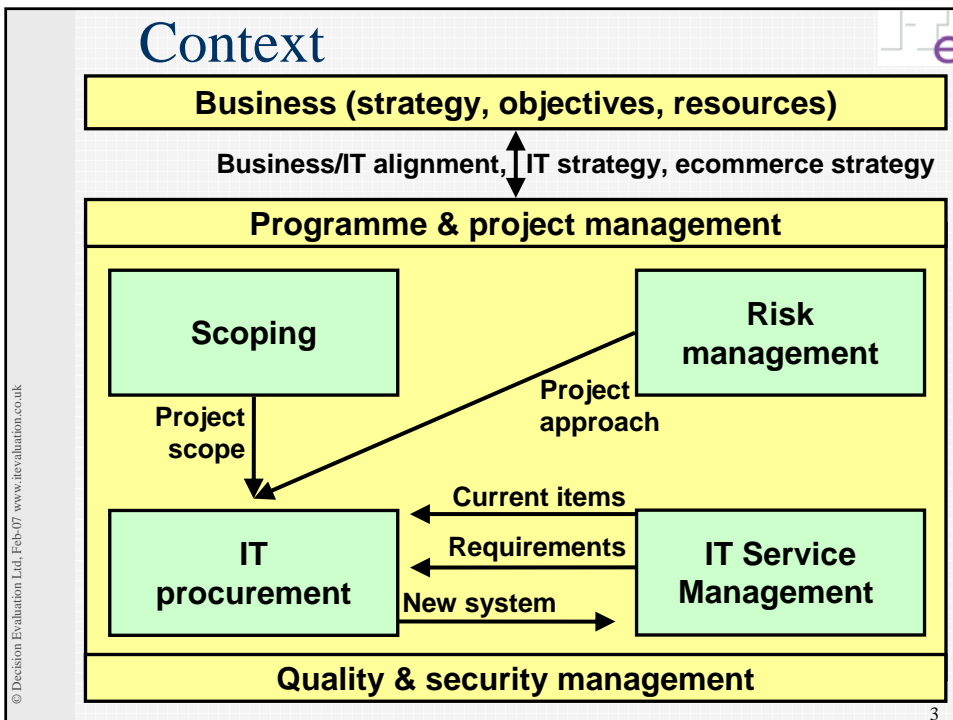
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“Ensuring clients buy IT that fits.”
Impartiality, knowledge, method, reliability & savings on:

- IT system reviews;
- IT strategy;
- IT supplier evaluation & system selection.

Bacup Shoe | Biwater | Bombardier | Broadways Stampings | Business Link | Castrol | Connexions (Careers Service)
 Corporate Credit | DaimlerChrysler | Department for Work and Pensions (DWP) | Devil's Guide
 Galloway's Society For The Blind | Gateshead MBC | Halo Retail | Homestead CSL | Hotels & GH Association
 I Love My | Kelland | Lancashire Fire & Rescue Service | Lancaster University Management School
 Learning and Skills Council (LSC) | LEGO | M6 Papers | Nottingham City Council | Pearson | Pinacl Communication
 Red Box Design Group | RNIB | Royal & SunAlliance | Svenska Cellulosa Aktiebolaget | Travelodge | Turtle Wax

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System Selection Process - Why

- Rational & defensible decision
- Predictable timescale
- Thorough end-user involvement
 - Helps acceptance & change management
- Driven by requirements, not 'politics'
- More complete facts available before buy
- Top down approach
- Understanding of impact

Process strengths

- Management of risks
 - Avoid poor fit & 'package' modifications
 - Informality often loses control
 - Must compare systems to requirements
 - Consultation & control throughout
- Rigour deters unscrupulous vendors
- Strong contract as free by-product

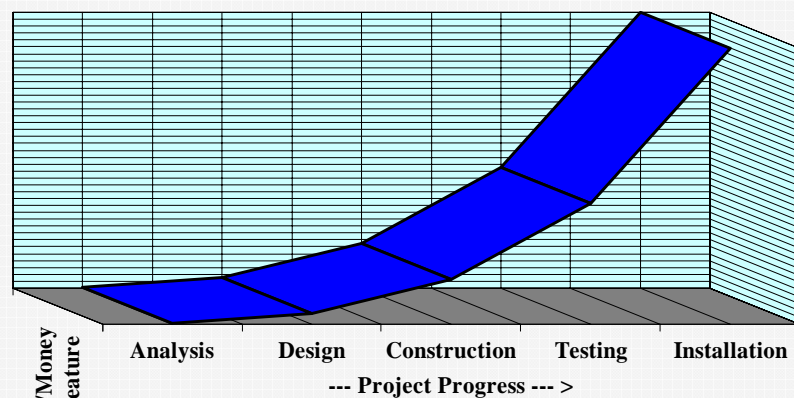
The Principles That Underpin

- Cost of change curve (\Rightarrow redundancy)
- Management attention curve
- Management by exception
 - Progressive shortlisting / police by exception
- Stakeholders
- Model-building to test requirements
- Rational decision-making – ‘evidence’
- Project & management effectiveness

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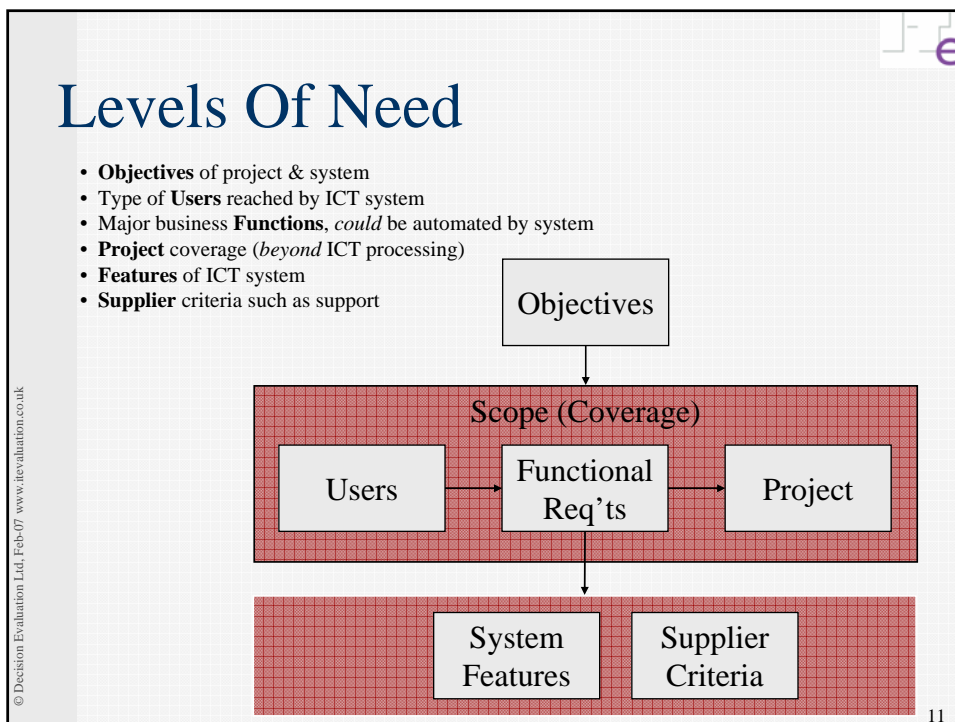
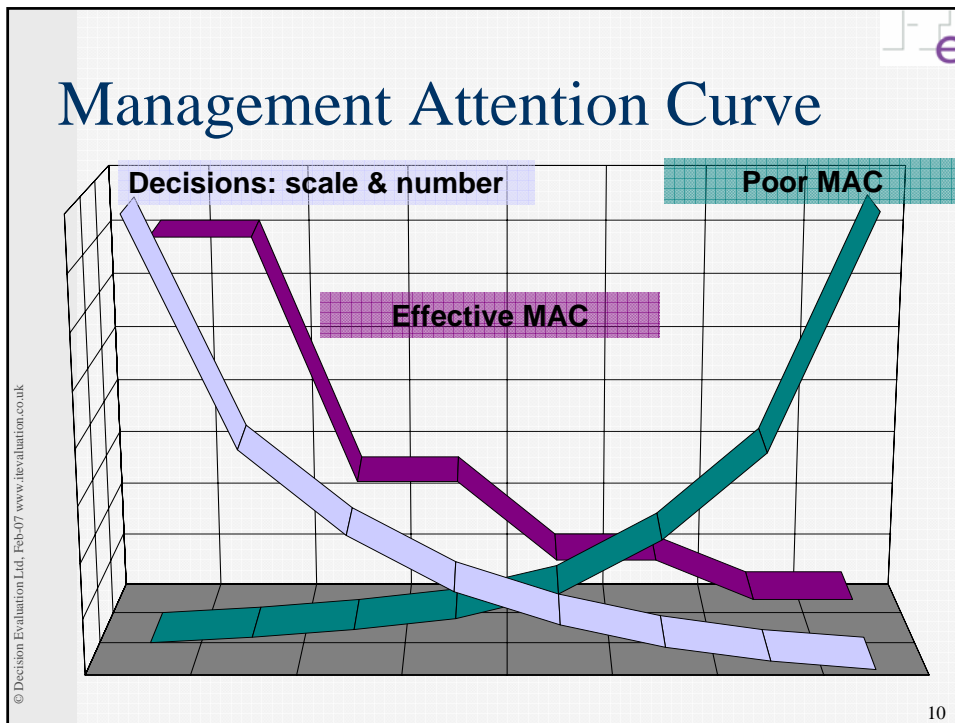
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Cost Of Change Curve

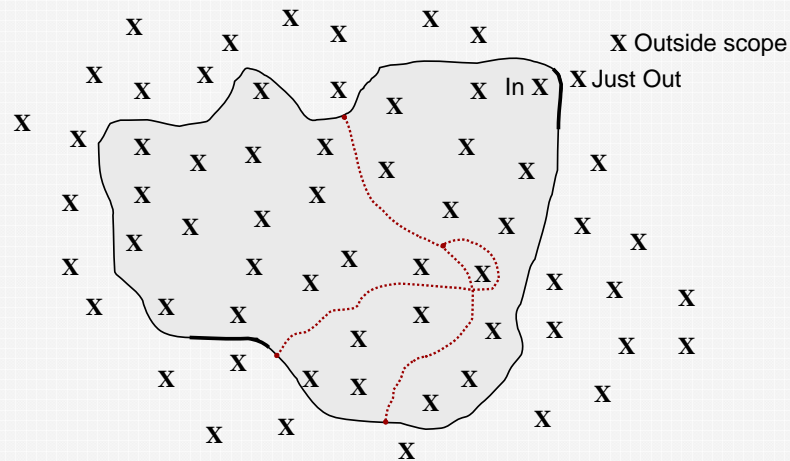


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Scoping Process

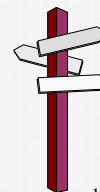


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12

Procurement Process – Summary

- Project start-up
 - Scope, finance, phasing
- Interviews for requirements definition
- Agree RDD
 - Revise Requirements Definition Document
- Market-place trawl
 - Usually *after* requirements
- Shortlisting
 - By Request For Information (RFI)

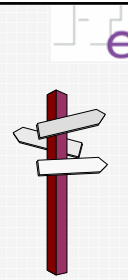


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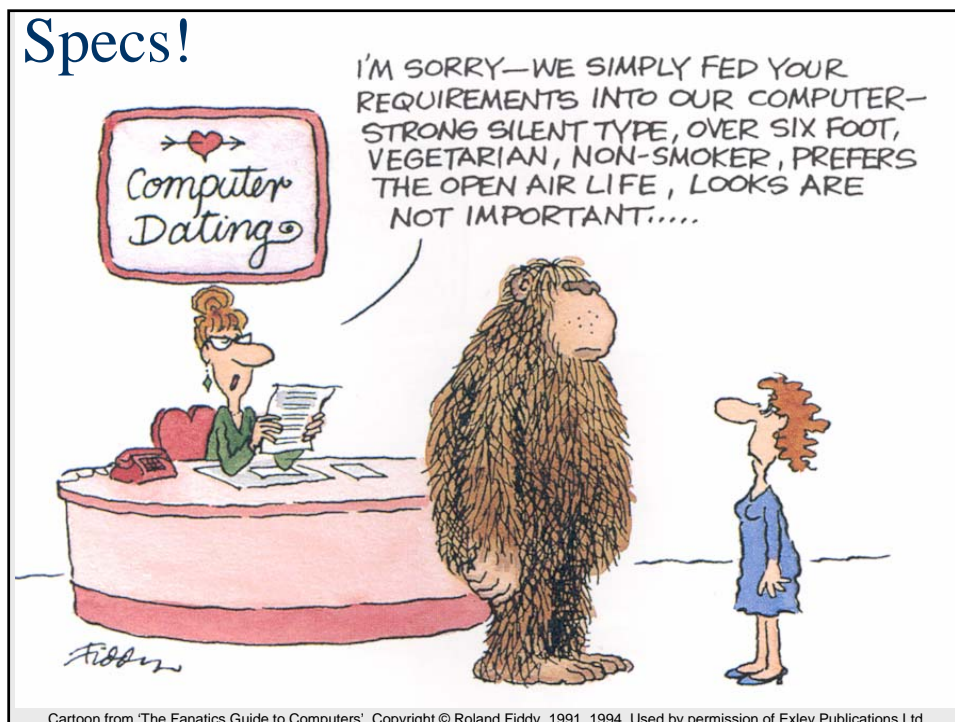
Process – Summary (B)

- Evaluation
 - Including visits by evaluation team
- Scoring of candidates
 - Possibly internal systems
- Demonstrations & reference sites
- Selection, negotiations & contract
- Installation
 - Post-implementation & benefits reviews



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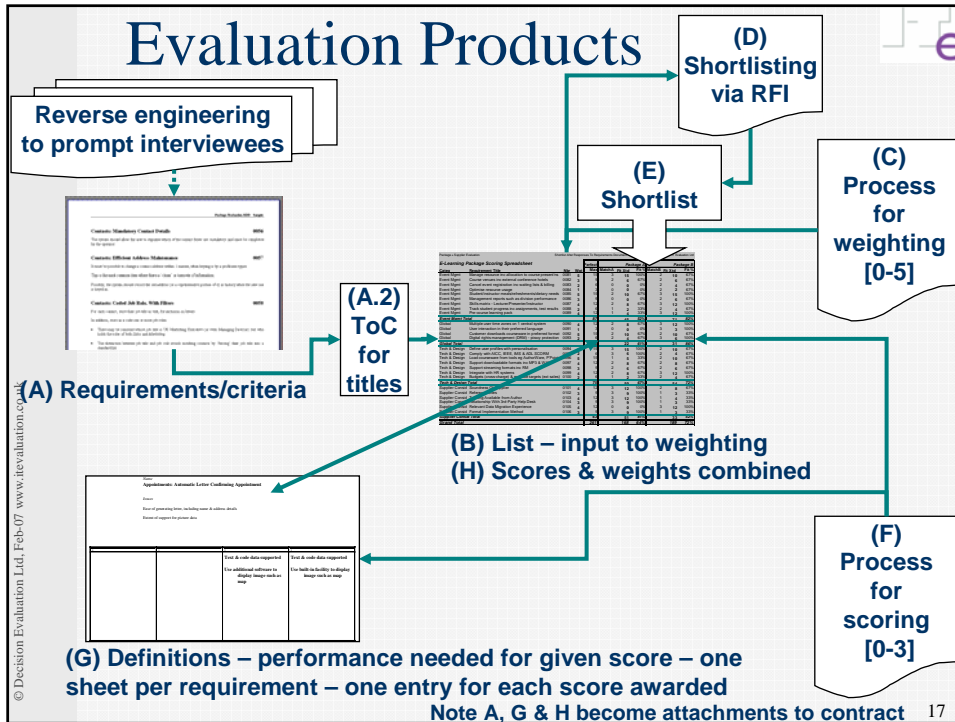
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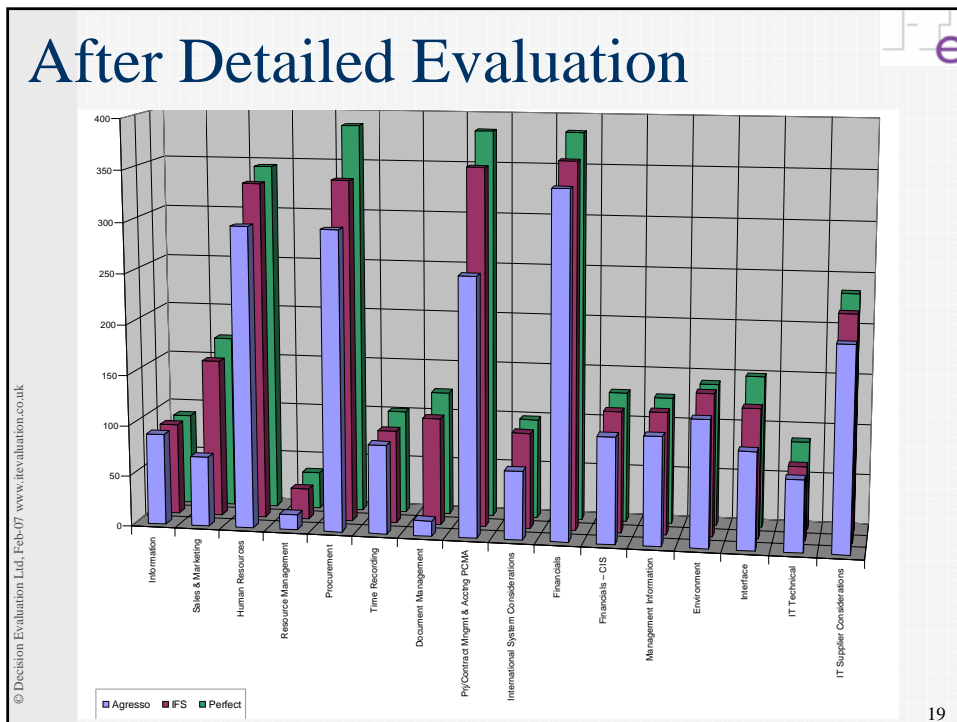
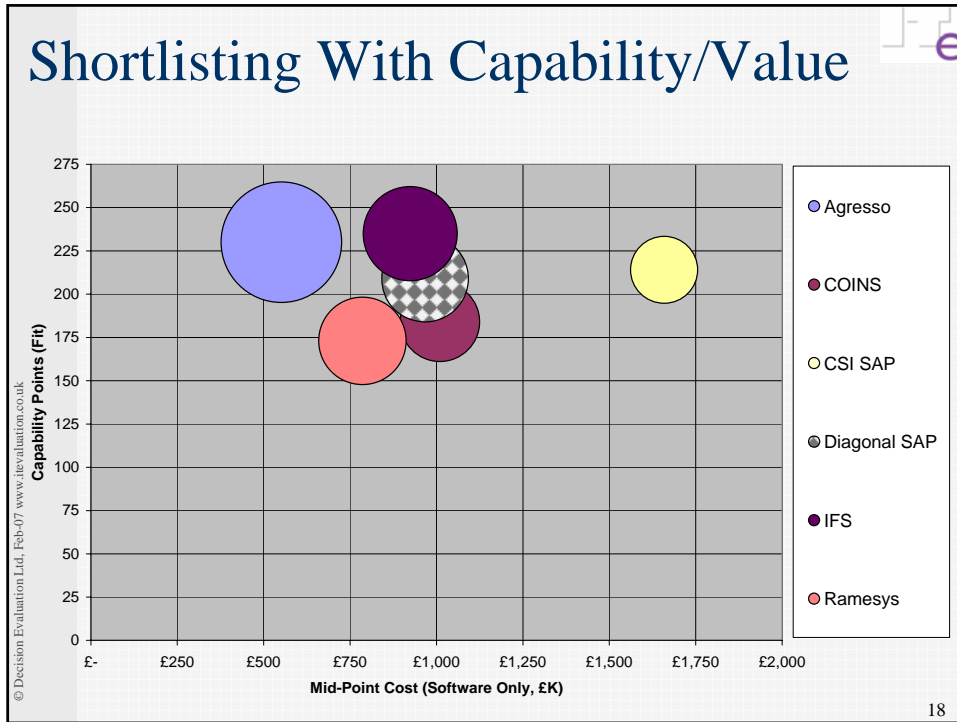


Scoring To Pick A Winner (Gna)

Package + Supplier Evaluation Shortlist After Responses To Requirements Document IT Evaluation Ltd

Category	Requirement Title	Nbr	Wgt	Perfect	Package A			Package B		
					Max	MatchA	Fit Xtd	Fit %	MatchB	Fit Xtd
Customer/Supp	Customer & Supplier De	0081	5	15	3	15	100%	2	10	67%
Customer/Supp	Grouping Contacts	0082	2	9	2	6	67%	2	6	67%
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Customer/Supp	Customer Changes Own	0085	4	12	1	4	33%	3	12	100%
Customer/Supp Total					87	45	52%	71	82%	
Sales/Marketing	Customer		5	15				3	12	100%
Sales/Marketing	Telep		1	3				3	3	100%
Sales/Marketing	Report		5	15				2	10	67%
Sales/Marketing	Cost c		3	9				3	6	100%
Sales/Marketing Total								31	86%	
Tech & Design	Staff-		4	12				2	10	67%
Tech & Design	Drill D	3	2	6				2	4	67%
Tech & Design	Screen		2	6				2	10	67%
Tech & Design	Archiving & Retrieval		4	12	0097	4	12	2	8	67%
Tech & Design	Fax From Desktop		3	9	0098	3	9	2	6	67%
Tech & Design	Contribute To ISO 9002		4	12	0099	4	12	2	8	67%
Tech & Design	Report Generator		2	6	0100	2	6	1	2	33%
Tech & Design Total				87	75	50	67%	54	72%	
Supplier Consid Total			63		51	81%		33	52%	
Grand Total			261		168	64%		189	72%	
Supplier Consid	Formal Implementation Method	0106	3	9	3	9	100%	1	3	33%
Supplier Consid Total				63	51	81%		33	52%	
Grand Total				261	168	64%		189	72%	





The Human/Customer Dimension

- Not just a 'buying experience'
 - Supports organisational & cultural change
 - Empowering – recognises operational requirements
 - Structured approach collects 'invisible' knowledge
 - Active listening – captures aspirations at all levels
 - Intolerant of mis-matched systems – reduces stress
 - Liberates & motivates staff
 - Holistic solution creates optimum working environment
 - Selection not distorted by dominant personalities
 - Decision makers get peace-of-mind
 - IT gets buy-in
 - Organisation can succeed where others fail

References

- See Handouts
 - GDPM
 - NRM
 - KT
 - CIPS
 - OGC (CCTA)
 - RISC