



**Selecting a pool of Suppliers
using a Rapid CMMIsm Based approach**

The RACE Against Risk

Authors

**Hilary J Bush, Anthony L Rollo
Software Measurement Services Ltd**

Agenda

- **Requirement**
- **Overall Approach**
- **Our Starting Point**
- **‘Rapid’ supplier Capability Evaluation (RACE)**
- **Results**
- **Future**
- **The talk will highlight where we had problems and what we did to overcome them.**



The Risk In Software Acquisition

- **You may acquire software by:**
 - building it in-house
 - purchasing shrink wrapped packages
 - commissioning bespoke development
 - outsourcing your development and Maintenance
- **This talk is concerned with the last two**
 - The process I am about to discuss is illustrated with a case study of bespoke acquisition



The RISKS

- **You do not know how capable a supplier is**
- **For a contract to supply bespoke software**
 - You will need reliable estimates of cost
 - Delivery to time, budget and quality requirements
- **For an outsourced contract you need to see**
 - Cost saving
 - Faster delivery
 - Improved quality
- **You need evidence the supplier can achieve these**
 - They may claim level 5 Capability – on one site
 - Can this be translated to your site?
 - Can you verify the achievement?
 - Should you accept the cheapest bid?



The Scenario

➤ The Client:

- a Large UK Public Sector Organisation

➤ The Intention

- To change the approach to acquiring software
 - From internally managed projects
 - using contract staff – for specialist skills
- To Managed Solutions
 - awarding contracts for supply to suitable software houses
 - providing own staff to supplier for specialist skills



The Requirement

- **Establish a group of preferred suppliers to;**
 - Speed up the acquisition of software
 - Reduce the risk of acquiring software
 - Provide a group of trusted suppliers
 - Establish a relationship of trust and mutual benefit
- **The suppliers;**
 - Gain preferred access to potential contract bids
 - Receive a software process capability evaluation
 - Obtain the basis for a process improvement plan



The Approach

- **The Intention is to reduce risk**
- **So a Multifaceted approach is recommended**
- **The Client should conduct due diligence**
 - **Financial checks**
 - **Visits to reference sites**
 - **Visits to suppliers sites**
 - **Etc.,**
- **This is followed by:**
- **A 'RApid' supplier Capability Evaluation (RACE)**
 - **This is the main subject of this talk**



The Background

- **SMS has carried out rapid evaluations for many different clients**
- **These have taken various forms**
 - Two suppliers in five days – team of three
 - One large project – team of six ten days
- **These have been characterised by**
 - The use of a single team
 - Late working to achieve the timescale



The Starting Point

We have to;

- **evaluate a large group of candidates (14)**
- **design the process to be:**
 - Repeatable, Rapid, Reliable, Scalable
- **complete the evaluation**
- **write a report for the client**
- **write a report for each candidate**
- **document and deliver the process**
- **complete the whole exercise in three months**



‘RApid’ Capability Evaluation

Main Steps

- | | | |
|----------------------------------------|---|----------------|
| 1. Agree plans with the client | } | Phase 1 |
| 2. Agree process areas to be evaluated | | |
| 3. Develop Questionnaire | | |
| 4. Document Review | } | Phase 2 |
| 5. On-site visit | | |
| 6. Consolidate data | } | Phase 3 |
| 7. Analysis and comparisons | } | Phase 4 |
| 8. Report on candidate rankings | | |

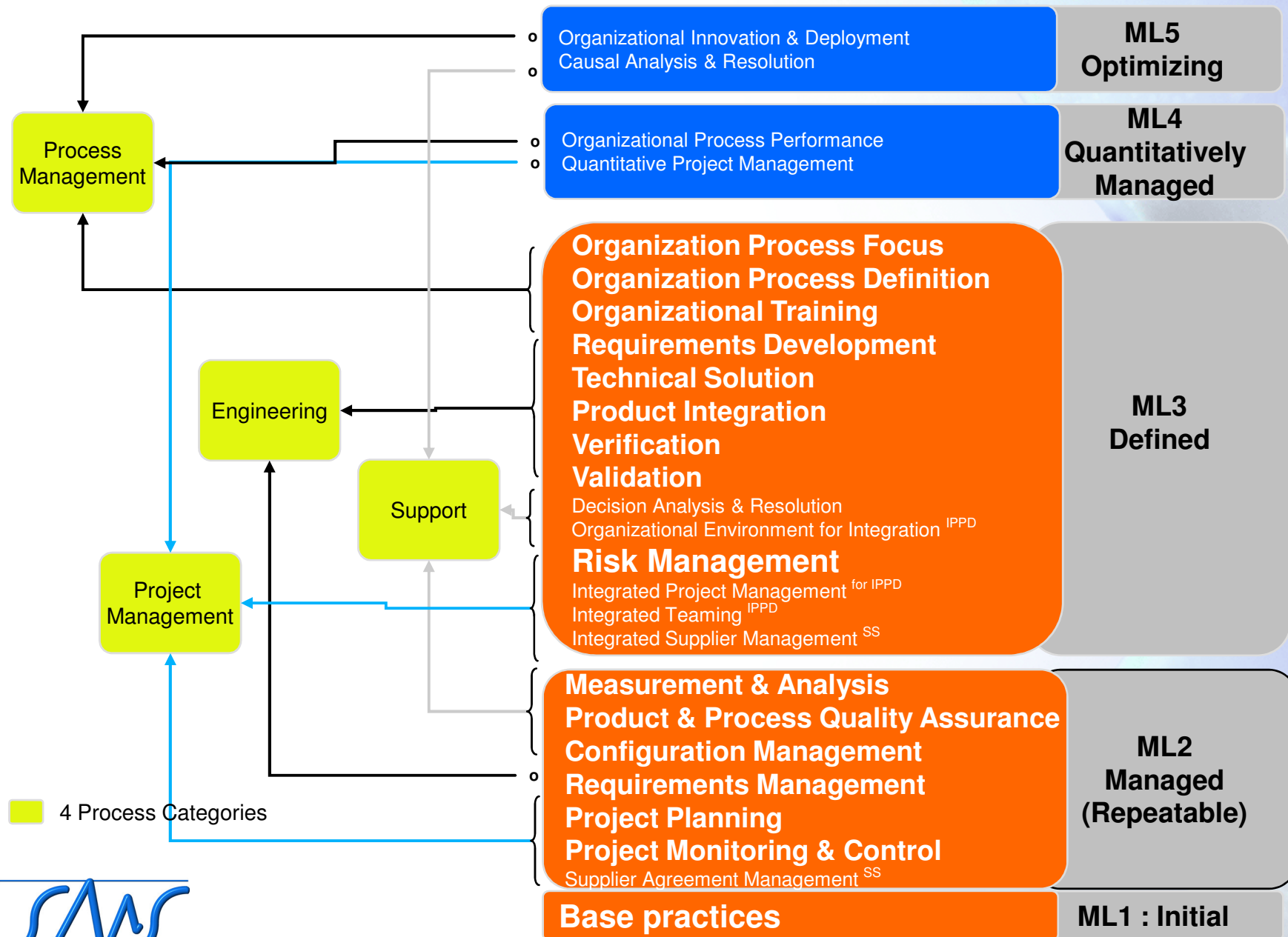
We must also deliver some intermediate work products and the final process description and assets



Process Areas

- Initial discussion with client stakeholders
- CMMI(i)sm was specified
- Client required suppliers to be ranked
- Staged versus Continuous
- Scope versus time constraints
- Agreed on;
 - Continuous representation
 - Basic categories
 - Plus Risk Management PA
 - Plus some elements of SEI PCMMsm
 - Communication and coordination, performance management, workforce planning, Staffing





The Questionnaire

- **Intended to be automatically scored**
- **Intended to contain 'open' questions**
 - Engaged questionnaire specialist
- **Open questions not possible in time-scale**
 - and very difficult to automate
- **So designed using yes/no answers**
- **Also included:**
 - **Section on Generic Practices**
 - **Index to documentation**
 - to allow evidence to be demonstrated
 - **Corroborative questions**



PA	Practice	Question	Answer	Evidence	Page Ref	Required/Suggested Evidence
CM	SP1.1	Do projects use formal configuration management to identify, control, and make available their work products? (work products refers to all documents, and not merely code)	y	CM01	All	Examples of Configuration Items lists from the CM system, Copy of current Organisational definition of Configuration Management
CM	SP1.2	Are documented procedures available to projects, on controlling changes to configuration items/units?	y	CM02	13	Project change control procedure
CM	GP 2.10	Are the Configuration Management process activities reviewed with senior management and any issues resolved?	n			copy of review minutes



The Document Reviews

- **Two days to review**
- **Reviewed by evaluation team leaders**
- **Obvious conventional review would not work**
- **Questionnaire becomes the main driver**
- **Task completed in the time allowed 2 weeks**
- **Extra hours were worked**
- **Some provisional rankings allocated**
- **Follow up information established**
- **Review tool partially completed**



Corroborative Questions

PCMM For Personnel Manager						
PA	Practice	Question	Answer	Evidence	Page Ref	Required/Suggested Evidence
WP	A4	Do project managers receive training in workforce planning?	Y	WP4 on-line	Training record	Skills audit / training records
WP	P1	Are the current and anticipated organisation's workforce needs documented from inputs provided by each unit?	Y	WP64		Anticipated service delivery
S	P9	Is HR kept informed of upcoming project skills requirements?	(y/n)			Skills analysis projection

PCMM For The Project Manager						
PA	Practice	Question	Answer	Evidence	Page Ref	Required/Suggested Evidence
CC	A1	Have you ever attended training in communications and coordination activities?	(y/n)			
WP	A4	Have you ever attended training in workforce planning?	N			
WP	P1	Is there a mechanism for informing HR of prospective workforce needs?	Y	staff request		example request or report
S	P9	Is there a mechanism for informing HR of prospective project skills requirements?	(y/n)			skills analysis projection



The Review Tool

	Baselines of identified work products are established		
<u>SP1.1</u>	Identify the configuration items, components, and related work products that will be placed under configuration management	Check at Interview	CM4b gives config. process for Project X 4B1 gives list of components but at what release
<u>SP1.2</u>	Establish and maintain a configuration management and change management system for controlling work products	Check at Interview	CM4b gives config rules for Project X
<u>SP1.3</u>	Create or release baselines for internal use and for delivery to the customer	Check at Interview	we have a list of CR's and the version they go into we have config rules, where is the definition of what is in which version baseline?
GP 2.10	Review the activities, status, and results of the configuration management process with higher level management and resolve issues	Check at Interview	Not reviewed with management?



On-Site Visit

- **The On-Site Visit lasted 2 days per supplier**
- **Typical Visit:**
 - 11 Members of staff in individual interviews
 - 4 - 6 development staff in a group interview
- **Completed ratings at the practice level**
- **Observations:**
 - Recorded on strengths and weaknesses



Scoring System

- **Scores were allocated;**
 - on the basis of evidence seen
 - if evidence could not be produced in the time then it would be regarded as non-existent
- **The Scoring system was:**
 - Fully Satisfied
 - Largely satisfied
 - Partially satisfied
 - Not satisfied



SP1.1	Identify the configuration items, components, and related work products that will be placed under configuration Management	Fully Satisfied	All products put under CM even meeting minutes, report etc.
SP1.2	Establish and maintain a configuration management and change management system for controlling work products	Fully Satisfied	
SP1.3	Create or release baselines for internal use and for delivery to the customer	Fully Satisfied	
GP2.10	Review the activities, status, and results of the configuration management process with higher level management and resolve issues	Not Satisfied	Tends to be reviewed by exception reporting of issues



Moderating the process

- **Because we had three SMS teams**
- **Visiting multiple suppliers each**
- **There was concern about comparability**
- **This was dealt with by a number of tactics**
 - By having a two day workshop before the first visit
 - By having a meeting each Friday to discuss issues
 - By using a team member to move between teams and address any differences perceived



Feedback issues

- **Our preference is to report to supplier first**
- **This allows any errors of fact to be corrected**
- **However the timescale would not permit this**
- **So the tactic adopted was:**
 - To speak the rating for each goal or practice
 - Seek agreement from the other team member(s)
 - Allow the interviewee to raise any objection
 - Objection must be reinforced with evidence
 - This is not an invitation to an argument!



Data Consolidation

➤ **Project manager and one other**

- Extract data from 'reporting' tool into 'findings' tool
- Perform a series of calculations to provide;
 - Radar charts of results (footprints)
 - A series of bar chart comparisons at process level
 - Detailed results at practice and goal level
- Collate a set of strengths and weaknesses
- Check the findings with the original data
- Moderate the comments





Analysis of the Results

or

What can you do with all this data?

Objectives of the Evaluation

- **Ranking and selection**
- **Comparisons**
- **Risk evaluation**
- **Reporting objectively**
- **Planning for process improvement**
- **Building relationships**



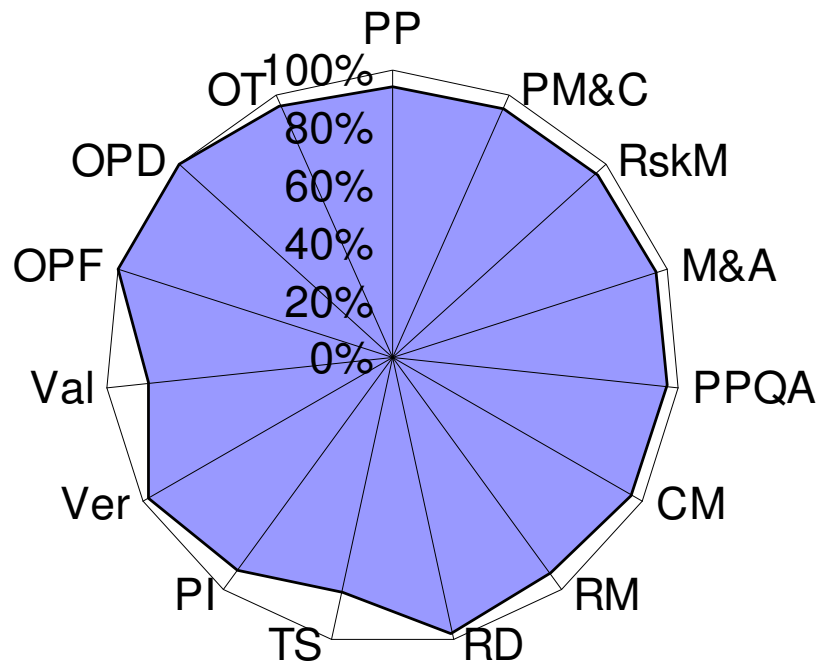
The Requirements

- **Ranking and selection needs**
 - Distinct, reliable scores
 - Lack of duplicates
- **Comparisons need**
 - Detail
 - Method of presentation and digestion
- **Risk evaluation needs**
 - Detail per process area
 - Continuous categories are also helpful here
- **Reporting objectively needs**
 - A repeatable, reliable process
 - Reusable tools
- **Planning for process improvement needs**
 - Detail about strengths and weaknesses
- **Building relationships needs**
 - Trust!

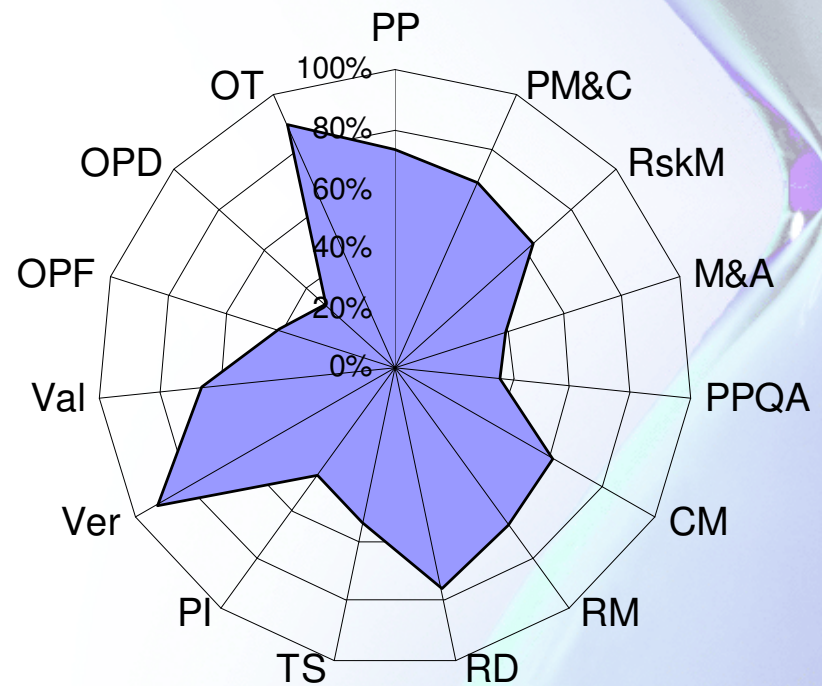


Comparing Process Areas

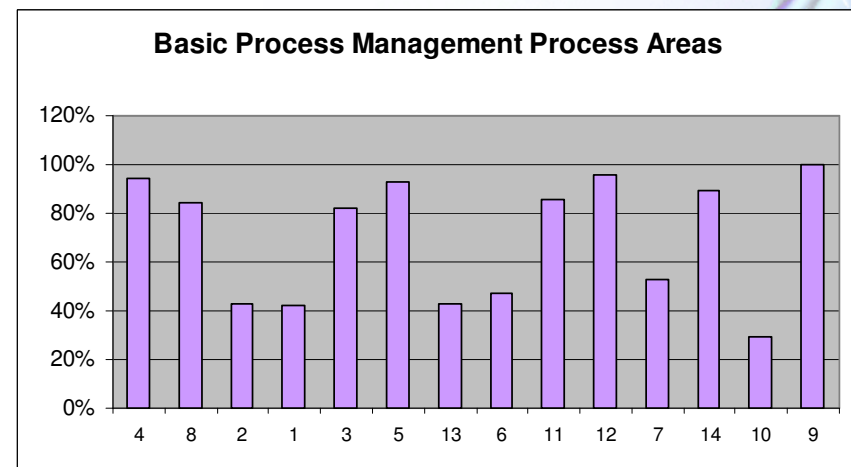
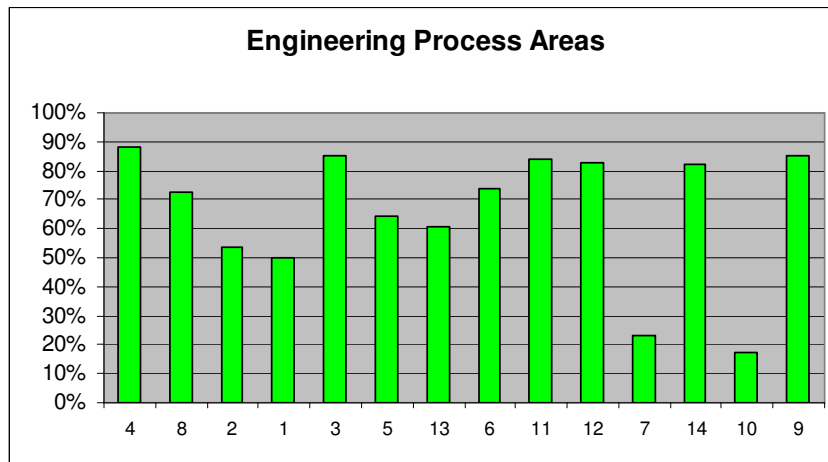
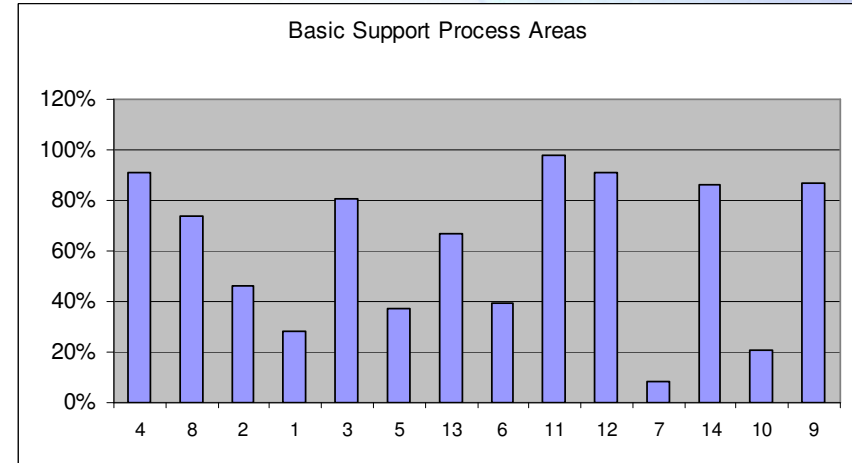
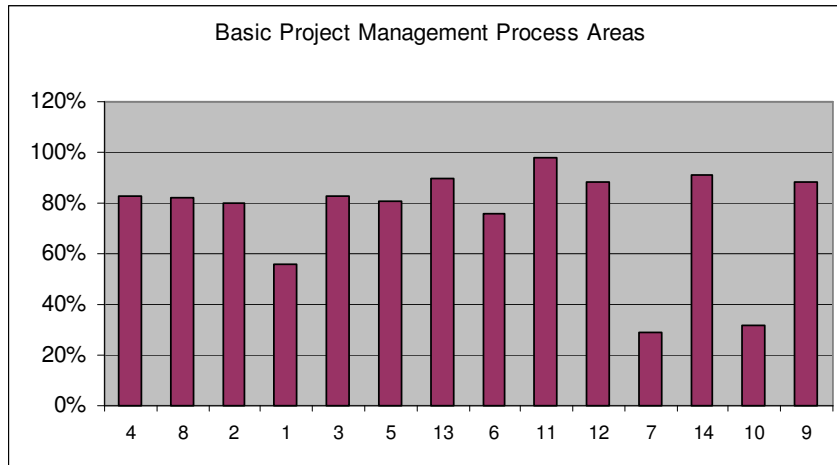
Sample Footprint Supplier X



Sample Footprint Supplier Y



Comparing by Category



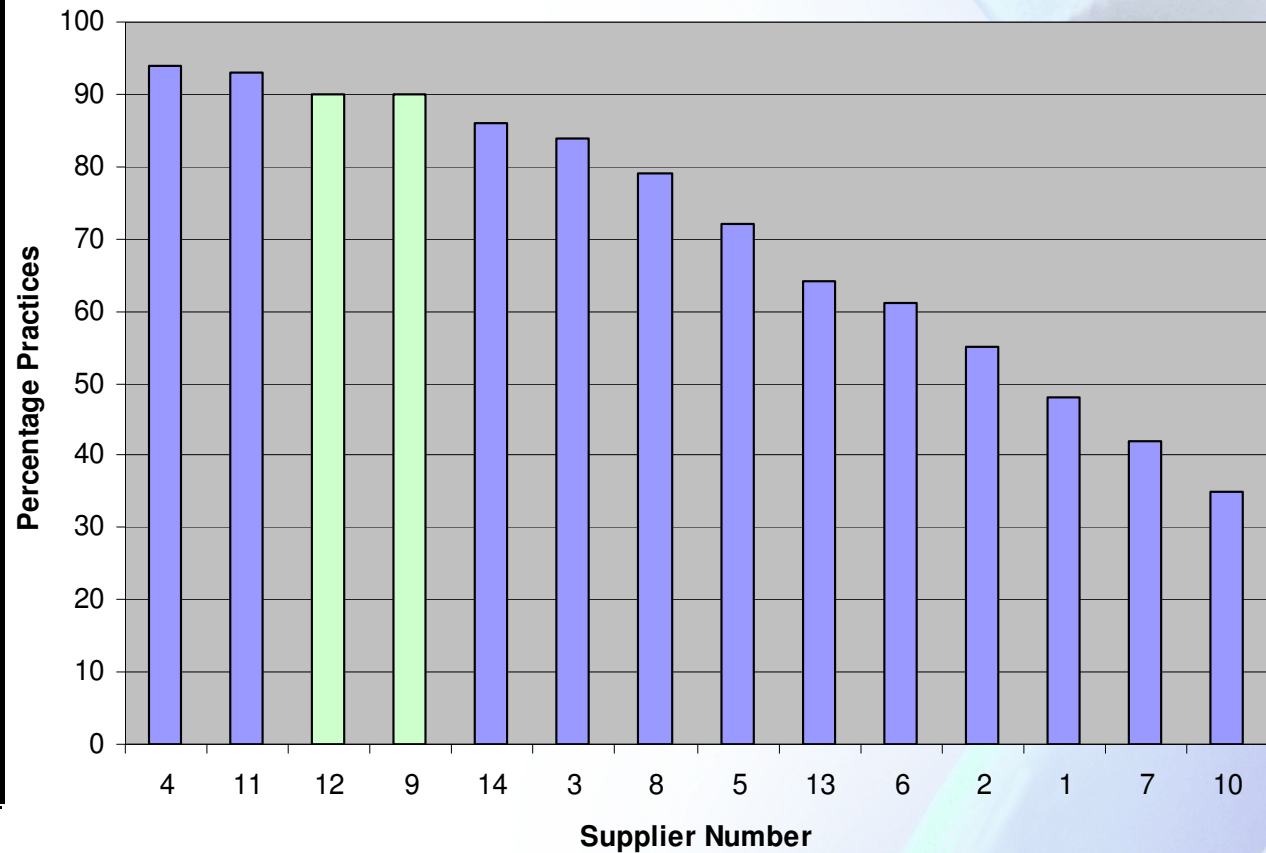
Ranking and Selection

- Alternative methods of ranking
 - **Maturity levels**
 - level 3 makes the scope very large (21 PAs)
 - does not prioritise
 - cannot give distinct results
 - **Capability levels**
 - **Process Areas achieved**
 - **Goals achieved**
 - **Practices achieved**
 - **Percentage practice achievement**
 - Obviously, the more detail, the better...
 - but how much do you need?



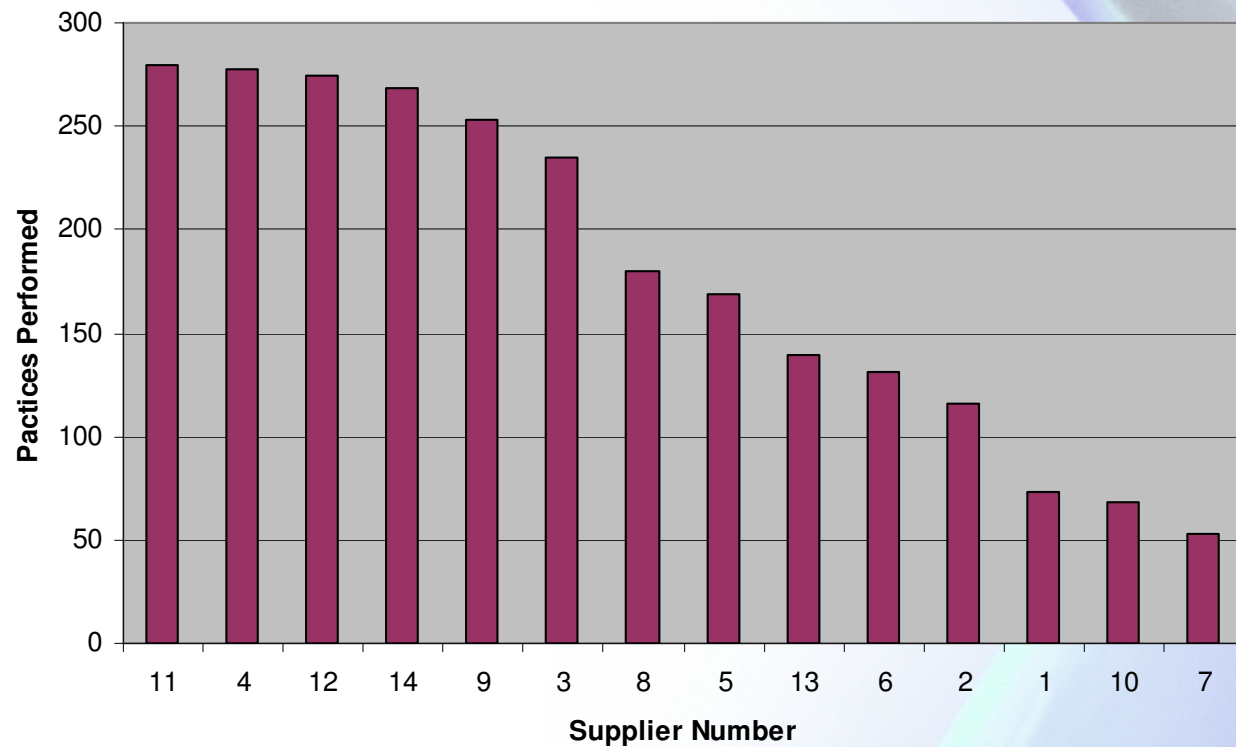
Average Percentage Practice Performed

Suppliers ranked	RACE %ages
4	94
11	93
12	90
9	90
14	86
3	84
8	79
5	72
13	64
6	61
2	55
1	48
7	42
10	35



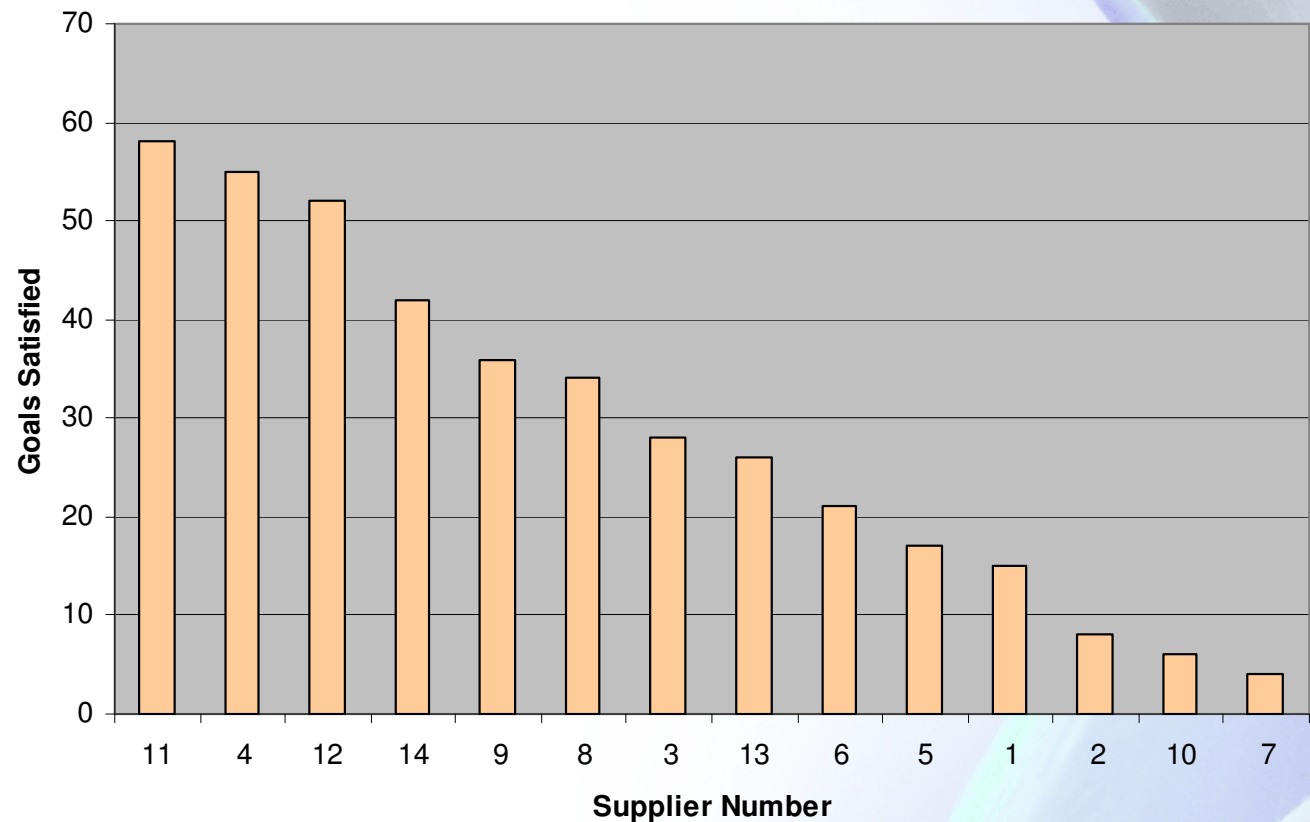
Number of Practices Performed

Suppliers Ranked	No Practices
11	280
4	278
12	275
14	268
9	253
3	235
8	180
5	169
13	139
6	131
2	116
1	73
10	68
7	53



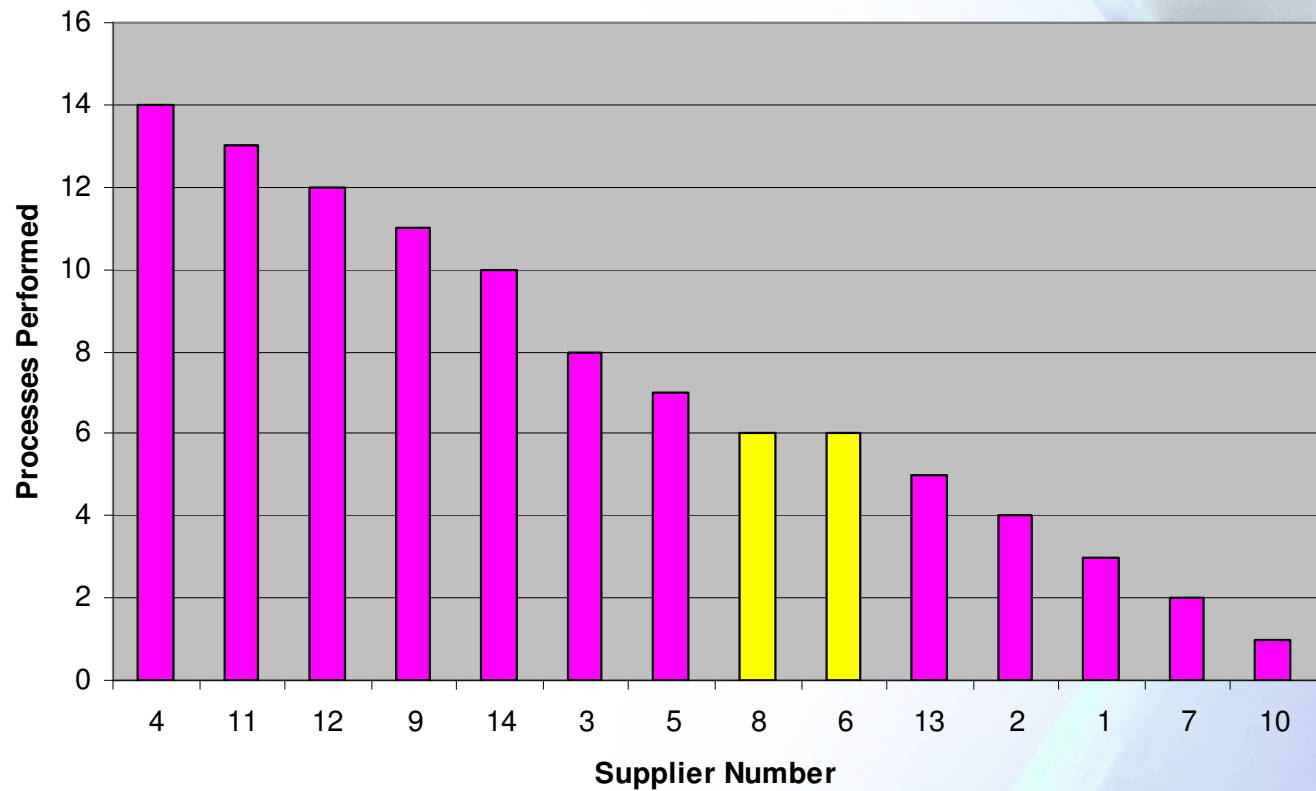
Number of Goals Fully Satisfied

Suppliers Ranked	Goals Satisfied
11	58
4	55
12	52
14	42
9	36
8	34
3	28
13	26
6	21
5	17
1	15
2	8
10	6
7	4



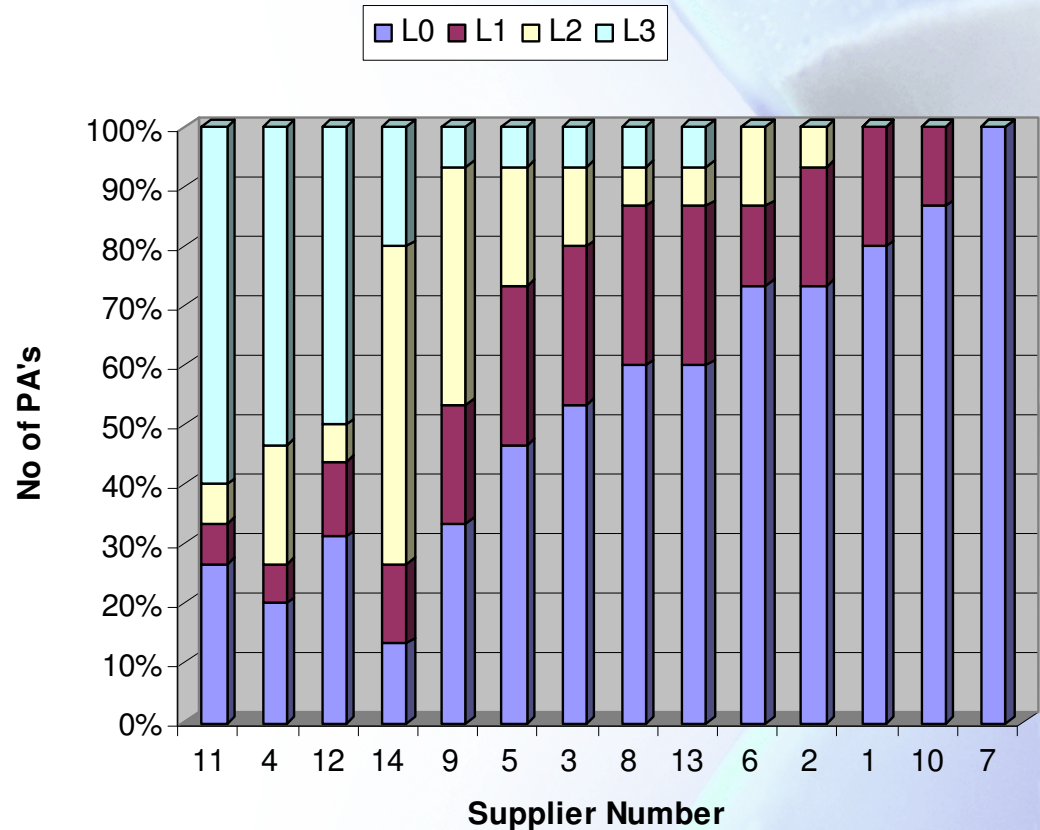
Number of Processes Performed

Suppliers Ranked	Processes Performed
4	14
11	13
12	12
9	11
14	10
3	8
5	7
8	6
6	6
13	5
2	4
1	3
7	2
10	1



Capability Levels 0 to 3

Suppliers	L0	L1	L2	L3
11	4	1	1	9
4	3	1	3	8
12	5	2	1	8
14	2	2	8	3
9	5	3	6	1
5	7	4	3	1
3	8	4	2	1
8	9	4	1	1
13	9	4	1	1
6	11	2	2	0
2	11	3	1	0
1	12	3	0	0
10	13	2	0	0
7	15	0	0	0



Ranking Methods Compared

% Practice Performed	# Practice performed	Goals Achieved	Processess Performed	Capability Level
4	11	11	4	11
11	4	4	11	4
12	12	12	12	12
9	14	14	9	14
14	9	9	14	9
3	3	8	3	5
8	8	3	5	3
5	5	13	8	8
13	13	6	6	13
6	6	5	13	6
2	2	1	2	2
1	1	2	1	1
7	10	10	7	10
10	7	7	10	7



The Health Warning

- **Ranking can be objective and repeatable**
 - But percentages are spuriously accurate
- **Selection cannot!**
 - Decisions require consideration
 - Do the Risk Evaluation
 - Use Weightings
 - client weighted practices – desirability
 - Adjust the expectations
- **Comparisons need experience and judgement**
- **There's an awful lot of data involved ☺**



Maintaining the Preferred Supplier List

➤ Suggestions

- The members submit process improvement plans
- These are approved by the client
- The exercise is repeated on members bi-annually
- New entrants will be permitted
 - Must first indicate an interest
 - Be provided with a briefing and pass initial checks
 - Undergo the same evaluation process
 - Have their results incorporated into the 'findings' tool
 - Demonstrate an acceptable level of capability



The Future of the 'RApid' Supplier Capability Evaluation

- It becomes productised and generalised
- It incorporates all process areas
- Extends to all capability levels
- Can be tailored to suit client
- More development is required
 - Develop a tailoring process (semi - automatic)
 - Make transitions between the tools automatic





Thank you for your attention.

We hope you found this presentation useful

Hilary J. Bush and Anthony L. Rollo

For further information visit www.measuresw.com