Measuring SAP
or other ERP Applications

Can it be Done?

Introductions

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- Software Management Methods
- Freelance Measurement Consultant
- Dublin based, assignments (almost) everywhere
    - B. Comm., MICS, CFPA, CFPS
    - 25 years experience in Software
    - 5 years as independent consultant
    - 10 years Functional Size Measurement
    - avid amateur gardener, and bridge player

Why Measure SAP?

- Determine comparative cost of support
- Determine comparative cost of upgrade
- Monitor process improvement
- Negotiate contracts from a position of knowledge
  - what does it cost to support SAP compared with other software?
- Maintain repository of software assets

Can we rely on measurement of SAP?

- Is the measured size consistent?
- How fast can we do it?
- What will it cost?
- What can I do to control the process?

Verifying consistency

- Check against measurement of similar applications delivered in other ways
- Know the expected size range
- Know the expected contribution to size from file types
  - Release 6 of ISBSG repository says 27% contributed by files

Speed of Counting

❧ For agreed levels of detail,
- the speed of counting is comparable with measuring non-SAP software

Cost of Measuring SAP

- If the consultant measurement speed is maintained, no additional overhead for SAP
- Application expert time required may be higher, if the documentation is not available
- It is not unknown in software measurement for documentation to be bad enough to require full-time assistance from application experts during counting!

Controlling the Process

- Clarify the purpose, scope and boundary before starting.

- Get management support and buy-in

- Plan to have access to the right people at the right time, in advance.

Characteristics of SAP

- Generic Model
- Designed for efficiency
- Designed for non-intervention
- Many files to manage this
- Many Menus and Options
- Not all functions and / or files are in use in one installation

SAP Documentation

- Differs between versions
  - Style
  - Access to screen or print lists
  - Naming and Structure

Using the SAP Structure for FPA

❧ **Level 1** – Business Areas – Office, Logistics, Accounting, Human Resources

- **Level 2** – Business Functions – Financial Accounting, Treasury, Controlling

  - **Level 3** – Applications – General Ledger, Accounts Payable

    – **Level 4** – Major Modules – Account Management, Document Entry

      » **Level 5** – Major Functions - Manage Account, Manage Account Group

Implementation of SAP

- ❧ 'Vanilla SAP' totally (rare)
- ❧ 'Vanilla SAP' with table modifications only
- ❧ Tailored Functions
- ❧ A mixture of all 3

Preparing to Measure SAP

❧ Clarify the purpose
❧ Determine the scope
>> What is outside the scope of the measurement
❧ Determine the type of count required
>> detailed audit trail, or least-cost results
❧ Identify the boundary
>> project, application, enhancement, new build?
❧ Assess the information available
❧ Ensure appropriate assistance is available

Clarify the purpose

🙵 What will the results be used for?

  – Portfolio, estimate, contract negotiation etc.

🙵 What level of accuracy is required?

  • % variance required 10%, 20%?

🙵 What level of detail is required?

  » Detailed, cross-referenced
  » Default complexity

Scope of the measurement

❧ Project

- possibly include conversion software

❧ Application

- What SAP function groups are used
- What is tailored, bespoke etc.

Sources of Information Functions

- Menus
  - If a printout of dropdown menus is available
    - Mark the used functions
    - Identify multi-purpose functions
      - Particularly those that the support team use to maintain reference data
  - If reference cards are available
    - Identify used functions
    - Identify multi-purpose functions

More Sources of Information

- List of transactions (e.g. Release 2)
- List of reports*
- Job schedules
- Interface diagrams, context diagrams
- ABAP Program lists*
- Test plans, implementation schedules

* take some care to ensure you get a logical view here!

Information Gems

- Security authorisation lists
- Job Aids
- Training material
- Requirements documentation (rare)

Sources of Information
File Types

- If a list of tables / files is available
  - make sure the 'last modified' date is on it
    - eliminate those not modified since implementation
  - find out which contain no data (and eliminate)
  - Review the titles with the support team to check for business / non-business types
  - Review for access authority
    - if 'real' users and 'support' users don't have access…

Application Expertise

- Need more access to expertise than for other implementation tools

- The Business Support person is likely to be a good bet

- Don't need them all the time, but immediate access is important.

Planning

❧ Make sure all the resources you need are available

- Some documentation will need to be prepared in advance, so notify the appropriate people.

- Get commitment from the sponsor

- Plan the structure of the measurement report

Documenting the count

- SAP menu structure is useful, but most of the options will be redundant
  - SAP transaction codes
  - Menu hierarchy

- Do you structure around the file types?
  - Expecting CRUD list of processes

- Avoiding double-counting
  - SAP options crop up in several locations

Functional Size Measurement

- Focus on the Logical view
- Focus on Used Functions & File Types
- Business Requirements Documentation is vital
- It may be necessary to separately measure tailored and non-tailored functions

ABAP and all that

- Used for custom functionality
  - variations on the themes of SAP
  - Report writing
- Physical not logical
- Often done by a different team
  - remember to ask for the list - 'ABAP' is the password

Validate the Count

❧ Check the file-type contribution

❧ Review with the application expert

   • But remember their view is physical not logical

❧ Is the size comparable with other applications of the type, implemented in other ways?

   • Don't be mesmerised by the physical size of SAP

Using 3 FPA Methods with SAP

- Detailed measurement
  - IFPUG v4.1
  - MkII v1.3.1
  - COSMIC-FFP v2.1

- Measurement using averages/approximation
  - IFPUG 4.1
  - MkII 1.3.1
  - COSMIC-FFP v2.1

Detailed IFPUG 4.1

Identify Purpose & Boundary	• Always necessary
File Type identification	• Identify File Types for this application • Identify RETs, • Identify DETs & • Classify each according to the rules
Elementary Processes	• Identify each process • Identify how many file types referenced, to the degree necessary to classify the process • Classify the complexity according to the 4.1 rules
Calculate Size	• Apply IFPUG 4.1 rules to calculate size • Sum the sizes • Apply GSC & adjust
Cross-referencing	• If the client requires it, cross-reference file types referenced to transactions. (time consuming)

IFPUG 4.1 detailed counting

- File type identification is time consuming
  - maybe 10% of physical files correspond to logical file types in use
  - Classifying RET's is difficult
- file types are classified as 'low' complexity
  - Very few file types are 'average' in any software
- Cross-referencing file types to processes
  - little payback

Detailed MkII 1.3.1

Identify Purpose & Boundary	• Always necessary
Primary Entity Identification	• Identify Logical Entities • Identify components of System Entity
Logical Transactions	• Identify every logical transaction • Identify the input DET's for each • Identify the Output DET's for each • Identify the Entities Referenced by each
Calculations	• Separately sum the Input & Output dets, and Entity References for the application and apply weights. • Sum the total
Cross Referencing	• If not already done, & the client requests it, cross-reference the entities to the transactions.

Detailed MkII and SAP

- Continuous scale of size means
  - must identify all Logical Entity Types
  - must count entity references for each transaction

- SAP Logical Data Model
  - Doesn't exist, you will have to create one

- Effort required to count
  - because of the difficulty in obtaining adequate data, sampling is recommended

Detailed COSMIC-FFP

Identify Purpose & Boundary	• Always necessary
Mapping Phase	• Identify the Software Layers • Identify the Boundary • Identify triggering events & functional processes • Identify data groups (persistent, input, output)
Measurement Phase	• Identify sub-processes (Entries, eXits, Reads, Writes) • Assign size units (currently all = 1) • Calculate size • Aggregate results

Detailed COSMIC-FFP and SAP

- Continuous Scale of Measurement
  - Logical model problems like MkII
  - Data Groups for Entry and eXit movements

- Effort required for the count
  - As with MkII, sampling is recommended
  - Identifying input and output data groups might be a little easier than counting input dets and output dets in MkII - its marginal.

IFPUG 4.1 with assumptions

Identify Purpose & Boundary	• Always necessary
File Type identification	• Identify File Types • Classify as EIF/ ILF according to the rulesAssume Low complexity for all • If any file types seem to merit it, evaluate if they might be more complex
Elementary Processes	• Identify each process • Assume Average complexity
Calculation	• Sum the sizes attributable to the numbers of classified file types and elementary processes (Low ILF=7, Low EIF=5, Average EI=4, Average EO=5, Average EQ=4, Average ILF=10)

IFPUG 4.1 - Averaging

- Identify all the file types and classify
  - as EIF or ILF
  - Assume 'low' complexity
  - Look for exceptions

- Identify all the elementary Processes
  - Assume 'average' complexity

- Could assume CRUD processes for FT's
  - This would give a quicker count, but wider error margin

MkII Approximation - Sampling

Identify Purpose & boundary	• **Always necessary**
Primary Entities	• **Identify Logical Entities, but see below**
Logical Transactions	• **Identify every logical transaction** • **Select transactions deemed to be simple, average & complex** • **Measure the sample of transactions** • **Validate the sizes of simple average and complex transactions against a portfolio of applications that has been fully sized.** • **Rank the remaining transactions according to this scale** • **Find the most complex transactions and measure them separately if they are likely to be significantly larger than the rest of the complex transactions. If youdon't do this, you are likely to underestimate the size.**
Calculations	• **Use multipliers to calculate the sizes of each category of transaction and sum them.**

MkII Sampling and SAP

- Classify transactions as low, medium or high complexity, and measure a sample
- Only identify Entities that are referenced by the sample
- Saves dealing with all the physical files
- Need to count the extremely complex transactions and add them, to avoid undersizing

COSMIC-FFP with Sampling

Identify Purpose & Boundary	• **Always necessary**
Mapping Phase	• **Identify the Software Layers** • **Identify the Boundary** • **Identify triggering events & functional processes** • **Identify data groups (persistent, input, output)***
Measurement Phase	• **Identify every functional process** • **Select, with the client, functional processes deemed to be simple, average & complex** • **Measure this sample** • ***(*need to identify the data groups involved in these functional processes, at least)*** • **Validate the sizes of simple average and complex processes against another application, or a portfolio of applications that has been fully sized.** • **Rank the remaining functional processes according to this scale** • **Find the most complex functional processes and measure them separately if they are likely to be significantly larger than the rest of the complex processes. If youdon't do this, you are likely to underestimate the size.**
Calculate size	• **Aggregate results**

COSMIC-FFP and Sampling

- Sampling is carried out on the same lines as for MkII.

- It is necessary to identify the layers, but this is not a complex task.

  - There is likely to be one layer only.
  - There might be peer to peer cross-boundary data flows

Summary

- Detailed counting is not easy with SAP

  - Possibly slightly cheaper with IFPUG, but not much in it

- Approximation is probably more cost effective

  - Because of sampling MkII or COSMIC probably cheaper