The news this week

- 15 Nov: Sarbanes-Oxley act into effect in USA
  - Requires management to report on its assessment of internal controls over financial reporting in the annual filing.

- 16 Nov: Carizzo Oil & Gas corrects share price
  - Error in spreadsheet that tracks avg no. warrants and options outstanding. Understated ~2m shares
  - Actual diluted net income/6mths $0.19 not $0.21

- 17 Nov: Make IT Secure P-P initiative in Ireland
  - MakeITSecure.ie
Current concerns

- UK Customs and Excise (can enforce compliance!) find more than 10% of audited spreadsheets have problems. 2001: £1m error in one spreadsheet.
- FDA 21 CFR Part 11 Warning letters on spreadsheet validation (LabCompliance.com)
- Considerations for Sarbanes-Oxley section 404 (PwC)
- An uncontrolled error in a spreadsheet can subvert all the controls around it.

So, what’s the problem?
What’s the problem?

- Spreadsheets not taken seriously, uncontrolled
- Used by “near experts” → overconfidence
- Q&D, planning decisions, operational processes, valuations, financial reporting and analysis
- [http://panko.cba.hawaii.edu/ssr](http://panko.cba.hawaii.edu/ssr) Ray Panko (Errors in 91% of 54 spreadsheets, cell error rate 2% - 12.5%)
- [www.eusprig.org/stories.htm](http://www.eusprig.org/stories.htm) European Spreadsheet Risks Interest Group (60 as of Nov’04)

Next: more recent research

Recent statistics on Model Error Rates

Financial Modelling of Project Financing Transactions
(Robert J Lawrence MSc Jasmine Lee FIAA MCom, Institute of Actuaries of Australia Financial Services Forum 26-27 August 2004)
Based on the thirty most financially significant projects that Mercer Finance & Risk Consulting reviewed y/e 30 June 2004.
- Average 2,182 unique formulae per model
- Average 151 issues raised during the initial review
- Average six versions required to produce a model that could be “signed-off”.
- One spreadsheet needed 17 revisions to resolve 239 issues


So, how can we manage these risks?
How to manage EUD risks

- End User Development Skills
- Prevention - education, automation
- Detection & correction - reviews
- Process - controls

First, prevention…

Good practice: Prevention

- Prevent errors through awareness and training
- Risk assessment & appropriate level of control
- Build in testability
- Follow development lifecycle
- Change, version, access control, backup

Next .. data validation
Examples of data control

- Use cross-checks, control totals, and validations
- Provide data entry validation, error trapping
- Data control for externally linked data
- Protect cells and worksheets for authorised users
- Hide unused toolbars, menus

Next: How to go about a model review

Good practice: Detection

- Review early to avoid late rework costs
- Risk – based testing
- Different levels of review
- Different kinds of testing
- Software tools for effectiveness
Risk assessment, scoping

- Inventory spreadsheets & their usage
- What is the dependency on key spreadsheets?
- What is the risk – revenue, costs, reputation, regulatory sanction?
- What controls are necessary?
- Adequacy of existing controls?
- Gap analysis, actions to close

Next: high level review

High level review

- Get an authorised working copy and scan it for viruses
- Auditing tools provide a static analysis and overview
- Look for evidence of correct use of cell/sheet protection.
- Create a diagram of the sheet and database structures to aid understanding.
- Form an opinion of the need for detailed review
- Prioritise risk given your time and resources

Next: detailed review
Detailed review

- Check formulas and their clones for arithmetic and semantic correctness.
- Excel commands: select errors, precedents, dependents
- Auditing toolbar, formula evaluation (Excel 2002+)
- Known error-prone functions: lookup, financial, …
- Does the model work as expected?
- Checklist includes calculation, precision, circular, range name usage, array formulas, complexity, embedded constants, incomplete structure, mixed units, hidden data, …

Next: how can we test spreadsheets?

Different kinds of testing

- What is your role?
- checking against business requirements
- replicate a “shadow” model
- running test cases
- auditing tools
Software tools

- SpACE methodology
- EXChecker
- Operis Analysis Kit
- Spreadsheet Professional
- Spreadsheet Detective
- XLAnalyst
- Rainbow Analyst
- XLSior test runner
- Code Tracer
- XLSpell style checker
- Navigator Utilities
- ActiveData data analysis
- DACS (lab traceability)
- ClusterSeven (change log)

This list maintained at: http://www.sysmod.com/sslinks.htm
Monthly newsletter at: http://www.sysmod.com/praxis/

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Summary

- Are management aware of the risks?
- What spreadsheets do you depend on?
- How are they managed vs. should be?
- Educate in best EUD practice
- Review and testing as with any other important information system
- Audit and control around the processes

Contact

Patrick O’Beirne
Spreadsheet audit consultant
Systems Modelling Ltd
055 - 22294
POB2004@sysmod.com
www.sysmod.com