

Spreadsheet Control & Remediation

*A scalable approach to mitigating
enterprise-wide spreadsheet risks.*

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Session Objectives

The purpose of this session is to:

1. Discuss common control risks associated with the use of spreadsheets for financial and other business functions
2. Present a scalable approach to mitigating enterprise spreadsheet risks.

Spreadsheets – “easy and free”

- Companies typically have dozens, hundreds, sometimes thousands of relevant spreadsheets.
- Spreadsheets often serve as bridges between source transactional data and GL.
- They **change** rapidly.
- They are **highly customized**,
- They may be very **complex**.
- They are often a **basis for financial statements**.

Common Spreadsheet Related Risks

- **Integrity of Financial or Operational Results**
- **Spreadsheets can pose threats to information security**
 - Once data is extracted to a spreadsheet, the infrastructure controls become irrelevant
- **Spreadsheets can conceal fraud or exacerbate errors**
 - Complex spreadsheets have plenty of space to hide information or faulty logic
- **Existence of complex spreadsheets increases dependency on owner of the spreadsheet.**

Spreadsheet Risks are Pervasive

A manually compiled spreadsheet that was not completed accurately caused Symmetricom Inc. to overstate earnings by \$3.4 million. 2007

A spreadsheet type caused the **University of Toledo to lose \$2.4M in projected revenue. 2004**

An erroneous formula caused Emerson Construction to place an accepted bid for an understated value of \$3.7 million.

Kodak restated financials in 2005 when a severance accrual “had a few too many zeros” in a spreadsheet. **Raises loss by \$9 million.**

Multi-million dollar petroleum price fixing case in Australia thrown out of court because of faulty spreadsheet. Government investigator falsified evidence and hid it in a spreadsheet macro.

A currency trader at Allied Irish Bank used a series of spreadsheet subterfuges to hide losses. When the fraud was finally discovered, **his losses amounted to \$691.2 million. 2001**

Source: **European Spreadsheet Risks Interest Group**

<http://www.eusprig.org/stories.htm>

Scalable approach to mitigate spreadsheet risks

1. Establish spreadsheet risk management standards / policies
2. Inventory relevant spreadsheets
3. Conduct risk assessment and categorize by relevancy
4. Eliminate / reduce number of high risk spreadsheets
5. Build a secure repository to store spreadsheets
6. Enforce distribution controls on spreadsheet documents based on their risk profiles
7. Train spreadsheet owners / improve spreadsheet design and controls
8. Leverage automated testing tools

#1. Risk Management Standards / Policies

- Spreadsheet risk is pervasive, therefore risk mitigation requires senior management ownership and supporting standards / SOPs addressing:
 - Discovery / Inventory
 - Inspection / Risk Assessment
 - Design
 - Monitoring

#2. Discover / Inventory Relevant Spreadsheets

- Target areas on network folders where spreadsheets reside
- Question process owners to identify repositories of critical spreadsheets hidden in their personal files or email
- Consider using 3rd-party indexing software:
 - Scan network drives, or
 - Scan files as opened

3. Risk Assessment Considerations

- **Materiality Risk:** Considers the total dollar value and its relationship to the financial reporting process.
- **Purpose Risk:** Considers the spreadsheet output and its use. For example, is the spreadsheet used for analytical reasons or supporting a financial reporting calculation / journal entry.
- **Complexity Risk:** Consider factors such as the frequency of changes to data and formulas, consistent use of formulas and the complexity of those formulas, the size of the spreadsheet and the amount of inputs and outputs performed by the spreadsheet.

4. Eliminate High Risk Spreadsheets

- Whenever possible, eliminate high-risk spreadsheets:
 - **RELY** upon reports from existing applications, customize as appropriate.
 - **REFACTOR** business process to reduce the need for spreadsheets.
 - **REPLACE** spreadsheets with software applications.

5. Secure Repository

- For spreadsheets that remain in the environment, consider building a secure repository such as a portal website.
- Catalog spreadsheets by title, purpose, user audience, and revision frequency
- Define roles who may read and change spreadsheets by process instead of by folder
- Coordinate administration of security privileges in the repository with corporate I.T. general computing controls processes.

6. Distribution Controls

- Encrypt and digitally sign spreadsheets that contain any restricted / controlled information.
 - When spreadsheets are transferred between people or emailed outside of the organization, the recipient must authenticate to a company server before being able to open the spreadsheet.
- This approach is especially useful when sensitive data needs to be transmitted to third-parties (i.e. auditors, vendors) that reside outside of the organization's I.T. infrastructure.

7. Train Spreadsheet Owners

- Training considerations:
 - Solution design standards
 - Spreadsheet design standards
 - Spreadsheet control techniques
- Training / skills should correspond to risk levels of spreadsheets in the collection.
- Conduct skills assessment

Solution Design Standards

- Document understanding of risk of proposed solution
- Match the solution design to the functionality requirements and risks (see #2.)
 - Acquire / build / modify report
 - Build software application
 - Build / modify spreadsheet
 - Do nothing
- Sketch layout of worksheet / workbook.
- Document I/O flow
- Document Logic Requirements
- Design Controls
- Document development
- Independent verification

Spreadsheet Control Best Practices

- **Access control:** Limit access to the spreadsheets, formulae, data by:
 - ✓ Storing them centrally and assigning appropriate access restrictions.
 - ✓ Password controls at file level
 - ✓ Cell locking over sensitive cells that are important for data processing, such as formulas and master data.
- **Change control:** Establish a process for making changes to the spreadsheet, including documenting the change in a tab within the spreadsheet.
- **Documentation:** Ensure that the appropriate level of spreadsheet documentation is maintained and kept up to date to understand the business objective and specific functions of the spreadsheet. Document logic for key functions. Include this in a cover page / tab.

Spreadsheet Control Best Practices

- **Source validation:** Reconcile data inputs to source documents to confirm that data are input completely and accurately.
- **Logic inspection:** Have someone other than the user or developers of critical spreadsheets inspect the spreadsheets' logic. This review should be formally documented.
- **Testing:** Formally test the spreadsheet by having someone who is independent of the business process review it. Have that individual confirm that the spreadsheet:
 - Processing and related output is functioning as intended
 - Complies with design standards.

Data Integrity Validation Controls

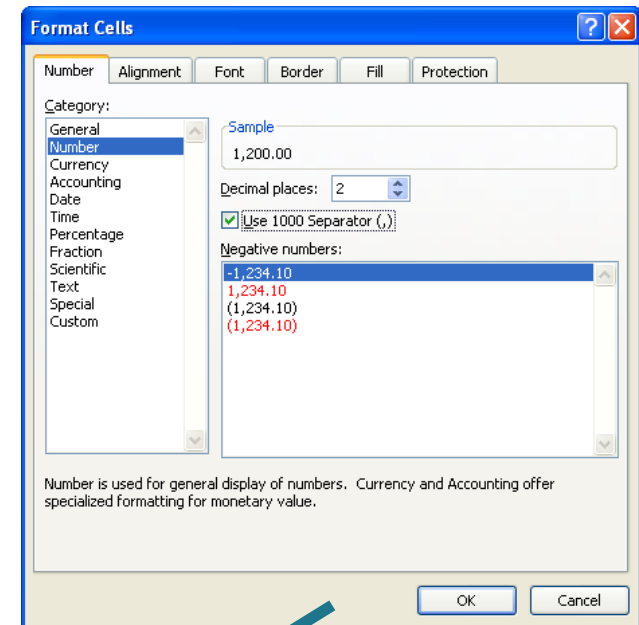
Use data validation logic when feasible, e.g., a date can only be entered as a date value.

For instance, if the rule in your spreadsheet is *“Numerical values should always be in decimal form, with two digits, and greater than 0”*

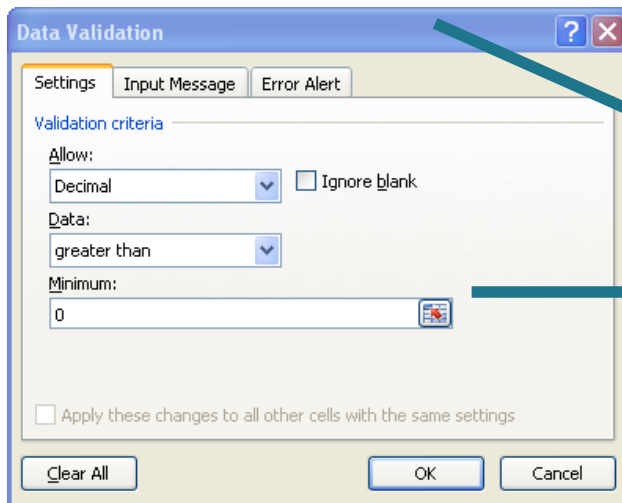
Then, apply two types of validation:

- #1. Format all cells containing numerical values to have a two-digit decimal

Right click on the cell value and choose “Properties” to access this menu.



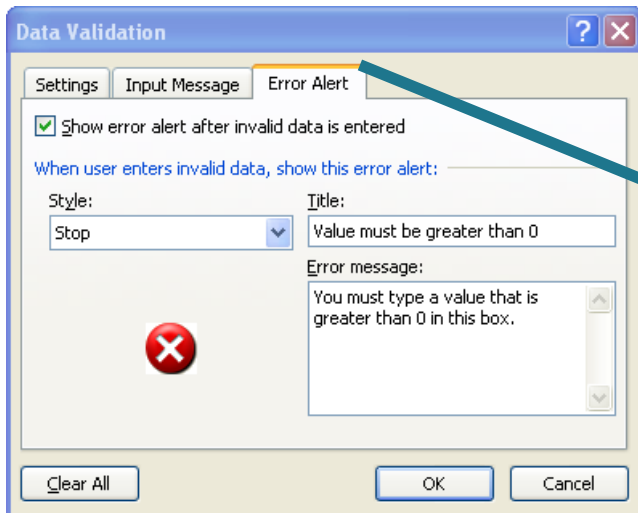
#2. Establish Data Validation Controls and error alerts.



The screenshot shows the 'Data Validation' dialog box with the 'Settings' tab selected. Under 'Validation criteria', the 'Allow' dropdown is set to 'Decimal', the 'Data' dropdown is set to 'greater than', and the 'Minimum' field is set to '0'. There is an unchecked checkbox for 'Ignore blank' and another for 'Apply these changes to all other cells with the same settings'. Buttons for 'Clear All', 'OK', and 'Cancel' are at the bottom.

Select the cells and choose “Data Validation” from the “Data” menu.

- Change the “Allow” drop-down to allow only decimals
- Change the “Data” drop-down to allow numbers ‘greater than’
- Change the “Minimum” field to 0.



The screenshot shows the 'Data Validation' dialog box with the 'Error Alert' tab selected. The 'Show error alert after invalid data is entered' checkbox is checked. The 'Style' dropdown is set to 'Stop'. The 'Title' field contains 'Value must be greater than 0'. The 'Error message' field contains 'You must type a value that is greater than 0 in this box.' A red 'X' icon is visible in the background. Buttons for 'Clear All', 'OK', and 'Cancel' are at the bottom.

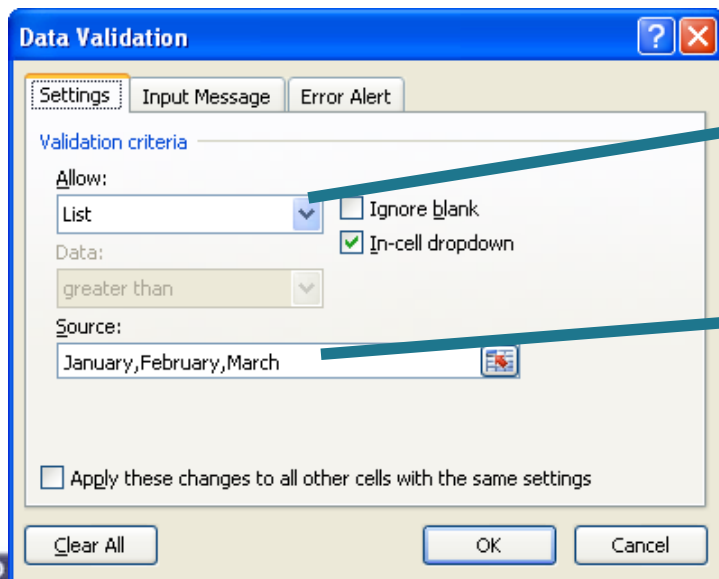
- Configure an error message that displays when someone enters an invalid value.

String validation example:

For instance, if the rule in your spreadsheet is

“The value should be one of the following: January, February, March.”

Apply validation to restrict the entries to Jan, Feb, March



The screenshot shows the 'Data Validation' dialog box with the following settings:

- Tab: Settings
- Validation criteria: Allow: List, Data: greater than
- Source: January,February,March
- Options: In-cell dropdown (checked), Ignore blank (unchecked)
- Buttons: Clear All, OK, Cancel

Change the “Allow” drop-down to “List”

Type in a list of values segregated by commas -- “January,February,March”

String validation from a long list of values:

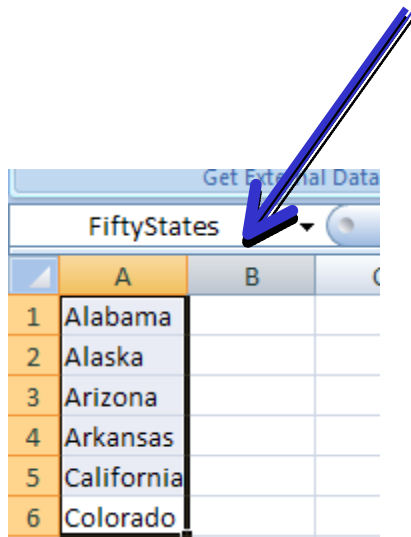
If the rule in your spreadsheet is

“The value should be one of the 50 US States”

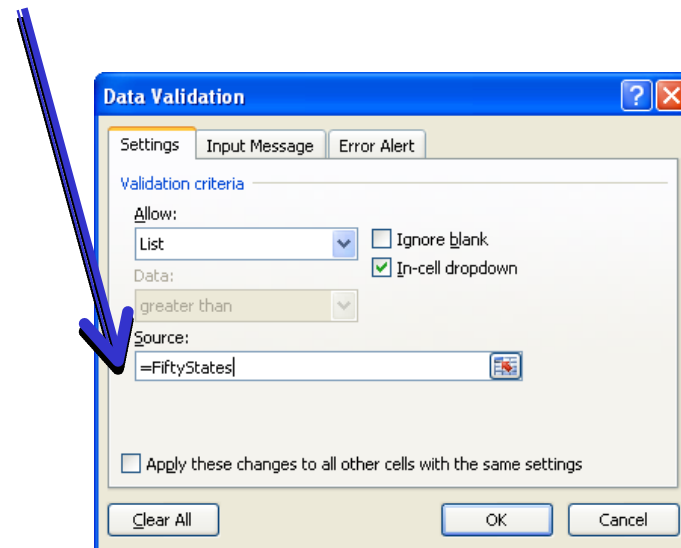
Create a list of the 50 US states in a separate tab

Create a named range for the list

Add the named range to the “Source” field



| | A | B | C |
|---|------------|---|---|
| 1 | Alabama | | |
| 2 | Alaska | | |
| 3 | Arizona | | |
| 4 | Arkansas | | |
| 5 | California | | |
| 6 | Colorado | | |



8. Leverage Automated Testing Tools

- Spreadsheets can be subject to quality-assurance testing during their design and after their deployment
- Independent tools can screen spreadsheets for known errors and report them to the spreadsheet user
- Testing can be scripted to recalculate values or perform reasonableness testing on spreadsheet data
- Effective automated testing can be used as a detective control on spreadsheets

Vendors of Automated Solutions

Spreadsheet Control applications:

- Compassoft
- Prodiance
- CIMCOM Software: SOX-XL, XL-Risk, XL-Audit

- Microsoft SharePoint Excel Services

Summary of Control functions:

Discovery, inventory.

Enhanced controls functionality at global, folder, file, cell level for:

- Security
- Change Control
- Notification
- Error detection

Document management, version control, security at file level

Spreadsheet Integrity Check Results

| Spreadsheet Summary | | | | | |
|---------------------|--------------------------------|---------------------|------------------|--------------|-----|
| Filename | L2 ASB_Ceded Premium_JT_V2.xls | Excel Version | Excel 97 onwards | Formulas | 228 |
| Author | Joseph D. Termine | Asset Versions | N/A | Errors | 57 |
| Title | | Worksheets | 9 | Arrays | 0 |
| Size | 254.00 KB | Hidden Sheets | 0 | Named Ranges | 471 |
| Created | 05/11/07 12:23 | Very Hidden Sheets | 0 | Validations | 10 |
| Modified | 05/11/07 15:25 | Formula Calculation | Automatic | Notes | 0 |
| | | Occupied Cells | 738 | Merged | 8 |

Lessons Learned

- Spreadsheet related risks are often underestimated / not understood; individually and in aggregate.
- Even long time spreadsheet users need training.
- Spreadsheet / EUC provisioning and control should be owned by corporate IT.
- Spreadsheet risk mitigation can require significant effort, costs, and time.
- Spreadsheet risk management requires continuous process, executive ownership / support.
- Mitigation should be tailored / scaled according to risks.

Risk Based Approach to Spreadsheet Management

| Risk | Type of Control | | |
|--------------------------------------|-----------------|---------------------|---------------------|
| | Mngt. / Manual | Excel | Automated |
| Overuse of Spreadsheets | ✓ | | |
| Does not meet business requirement | | ✓ | ✓ |
| Unauthorized Access to files / cells | | ✓ | ✓ |
| Version Control | | | ✓ |
| Backup / availability | ✓ | | ✓ |
| Changes not authorized, validated | | ✓ | ✓ |
| Changes not tracked | | ✓ | ✓ |
| Functionality integrity | | ✓ Detective only | ✓ Detective only |

Questions?

Thank you!