



Model Certification Protocols

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Guidance

1. EC 1105-2-407

2. Protocols for Certification of Planning
Models dated July 2007



EC 1105-2-407

Planning Model Improvement Program (PMIP)

States that planning models have to be certified and provides some general criteria for different levels of documentation.



Protocols

1. Provides an outline for documentation of model by developer.
2. Provides a procedure for technical review of model.



Reasons for PMIP

1. Models were being developed and used that had not been checked.
2. Several models were discovered to have computational errors or were inappropriate to the situation.



Problem not confined to Corps

Eight of the Worst Spreadsheet Blunders

– Thomas Wailgum , CIO



Reason 1: Human Error

This isn't about software defects within the applications, such as [Microsoft Excel](#) or OpenOffice. The problems associated with a spreadsheet ordinarily do not reside in the software program itself. It's those imperfect human beings who are using the applications: inputting data, copying and pasting numbers from row to row and column to column, and writing inaccurate formulae



Reason 2: Human Error

Research abounds on the prominence of spreadsheet errors. One project found that 80 percent of spreadsheets contain significant errors. "That means that of every five spreadsheets, at most one will give the correct results," writes [Louise Pryor](#), an actuary and consultant who specializes in software risk management



Reason 3: Consequences

"Uncontrolled and untested spreadsheet models therefore pose significant business risks. These risks include: lost revenue and profits; mispricing and poor decision making due to prevalent but undetected errors; fraud due to malicious tampering; and difficulties in demonstrating fiduciary and regulatory compliance



Example

"There was a big flap recently over Fidelity's Magellan fund estimating in November that they would make a \$4.32/share distribution at the end of year, and then not doing so. A letter of explanation was sent to the shareholders...from J. Gary Burkhead, the President of Fidelity, including the following pertinent items: During the estimating process, a tax accountant is required to transcribe the net realized gain or loss from the fund's financial records (which were correct at all times) to a separate spreadsheet, where additional calculations are performed. The error occurred when the accountant omitted the minus sign on a net capital loss of \$1.3 billion and incorrectly treated it as a net capital gain on this separate spreadsheet. This meant that the dividend estimate spreadsheet was off by \$2.6 billion..."



PMIP

The Corps program to address the problem of errors in worksheets (models) and the use of models inappropriate to the problem.



Steps in Model Certification

1. Documentation.
2. Conceptual review.
3. Computational review.



Step 1: Documentation

1. Description of situation and how model is an appropriate depiction of situation.
2. Description of how model works.
3. Proof of computational tests.



Step 2: Conceptual Review

1. Determination if model is an appropriate depiction of situation.
2. Complex/controversial/national use – external peer review.
3. Simple/straight-forward/project specific – internal peer review.



Step 3: Computational Review

1. Review model test in documentation.
2. Independently run and test model.
3. Run model jointly with developer.



Administrative Process

1. Proponent – user of model, usually a District.
2. Planning Center of Expertise – develop certification plan.
3. Headquarters – review and approve certification plans. Ultimate decision maker regarding certification.



Proponent

1. Pays for model certification.
2. Notifies appropriate Planning Center of Expertise that model requires certification.



Planning Center of Expertise

1. Develops model certification plan.
2. Implements model certification plan.
3. Recommends certification to HQ.



Headquarters

1. Review and approve model certification plan.
2. Ultimate decider on model certification.



Certification Plan depends on

1. Type of model.
2. Importance of model.



Types of Models

1. Corporate developed by Corps
2. Regional/local developed by Corps
3. Commercial
4. Other agencies



Importance of Model

1. Critical or peripheral to decision making
2. Complex or simple



Level of Review

1. Extensive
2. Intermediate
3. Limited
4. General



Planning Models

1. Corporate – national use - FDA.
2. Local – project specific development and use – Center Hill Dam simulation model.



Experience to Date

1. Zero models have been certified to date.
2. Rules are still being defined.



Personal Experience to Date

1. Developed and documented two simulation models used in two different rehabilitation studies (local models).
2. Documentation reviewed by person experienced in @risk software.
3. Net-meeting with reviewer to walk thru model.



Personnel Experience to Date

1. Both models recommended for regional-use certification.
2. Certification request at HQ.
3. Districts proceeding with budgeting for projects.



Personnel Experience to Date

1. Each project is unique.
2. Expensive to include features in model not essential to problem.
3. Result is that a new version of model is developed for each study.



HQ Expectations for Future

1. Tool box of certified models available to all users.
2. User manuals available for use of models.
3. Training available for use of models.



Questions

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