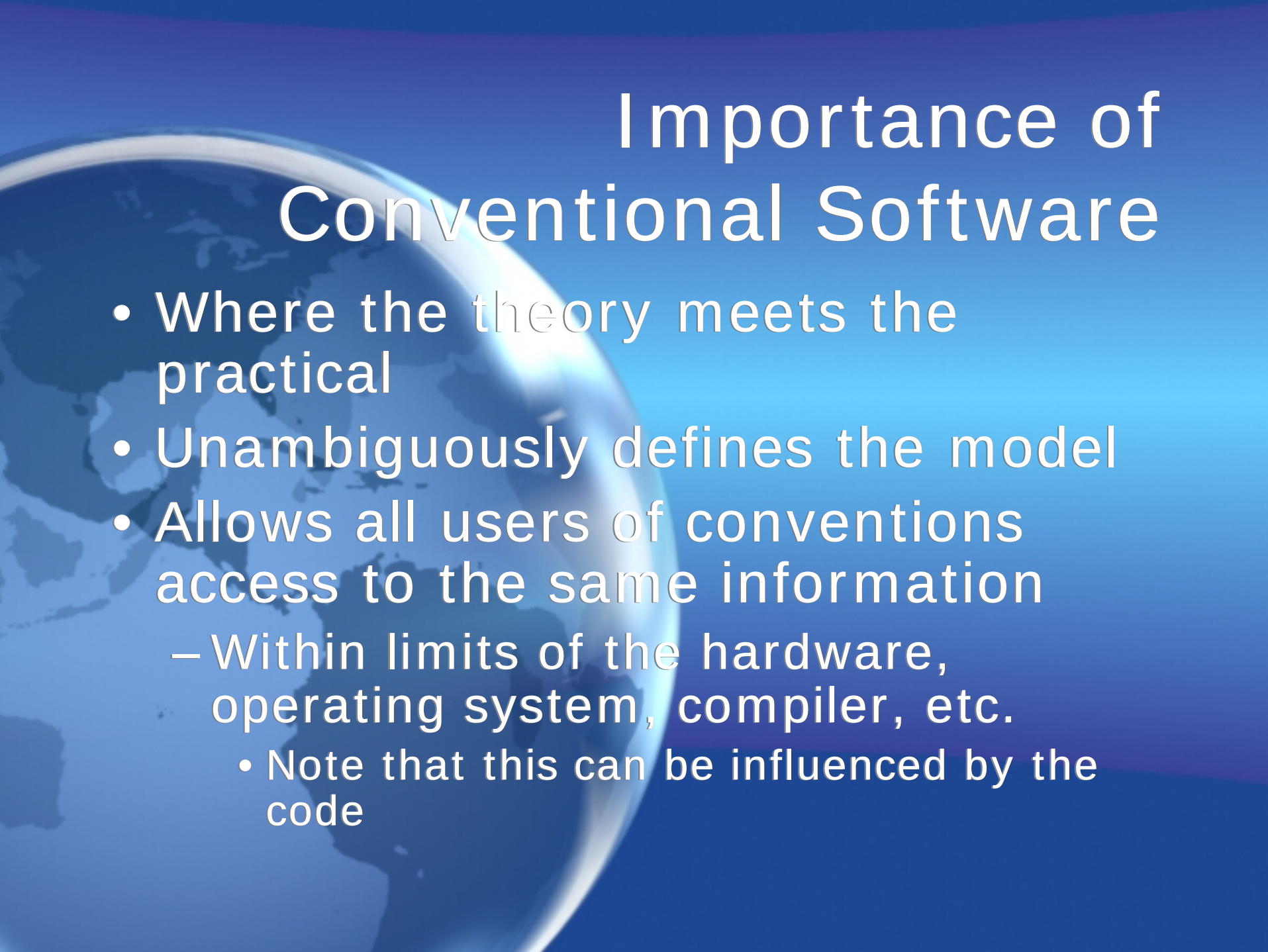




Does Conventional software need conventions?

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Importance of Conventional Software

- Where the theory meets the practical
- Unambiguously defines the model
- Allows all users of conventions access to the same information
 - Within limits of the hardware, operating system, compiler, etc.
 - Note that this can be influenced by the code

Current Situation

- Software (subroutines) are provided to the IERS Conventions by colleagues
 - Usually experts in the field
 - Software written to fit personal needs/tastes/styles
 - Validation of software performed
 - Usually

Software Practices

- Proper Design
- Test cases/unit testing
 - Product Quality/Correctness
- Code to design
 - Completeness/Maintainable
- Sufficient error trapping
 - Improve diagnostics and security
- Documentation
- Acceptance tests
- Upgrades managed through version control

Current Situation from a software engineering perspective

- Code is usually written in Fortran
- Often does not come with test case
- Consistency is not ensured because software is not designed to be integrated with other modules
- Limited or no error trapping
- Documentation of the code is variable
- Informal acceptance criteria
- Version control is not well defined

What languages should be supported?

- Currently all code is written in Fortran (no standardization between 4/77/90/95/2003)
 - Reasonable for EO scientific community
 - Reasonable for EO user community?
- Other language possibilities
 - C
 - C++
 - Python
 - Others?

Test Cases

- Should we provide test cases for each of the routines?
 - If so, how extensive?
 - Are there any implications for software acceptance?

Standardization of Code

- Does the coding need to be standardized?
 - SOFA produces standard code
- Sufficient error trapping?
 - Provide meaningful error messages

Documentation

- Are there standard things that belong in the comments?
 - Authorship/dates
 - Purpose
 - Variable definitions
 - Units
- Need for additional documentation?

Acceptance Criteria

- Current approval through the same process as other parts of the Conventions
 - Is this sufficient?
 - Is a more well-defined method necessary?

Version Control

- Currently no version control
- Should version control be instituted?
 - If so, how?
 - Manually
 - Minimum standard metadata
 - Through software
 - Subversion
 - Others?

Example of consistency concerns

- Simon et al. (1994) fundamental arguments occur independently in
 - IAU2000A/IAU2000B
 - PMsdnut
 - hardisp
 - Zonal tide routine
- Have the implementations been checked for consistency?



Resources

- Ultimately, this becomes a question of resources
 - Is any improvement in the usability of the product worth the cost of implementation?
 - Depends on the scope of implementation

Summary

- Need to determine
 - Scope of usage
 - Scope of obligation
 - What languages to support
 - What standardization to implement
 - Necessity of test cases
 - Necessity of version control
 - Acceptance criteria
 - Level of support