

Common Experiment Workbook (Formerly *art* Workbook)

Rob Kutschke

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Outline

- Introduction
- Elements of Documentation
 - Defines some language.
- Overview of the *art* Documentation
- Relationship of the *art* documentation to the per experiment documentation.
- Targets for May 1

Introduction

- The *art* workbook is part of a much broader documentation project.
- The purpose of this talk is to sketch the broader project to show where the *art* workbooks within that broader project.
- It was clear in our previous meeting that we need to carefully define some language.

Target Audience

- Physicists (users and developers) on current and future experiments that use SCD supported software.
 - Including new experiments evaluating *art*. (eg. Darkside50)
- Some user levels:
 - Novice
 - Needs a grand tour, without a lot of detail.
 - Intermediate
 - Needs complete, well indexed and well cross-referenced explanations of how things work and how to use them.
 - Expert
 - Quickly find API details and a high level overview of functionality.
- A non-user role
 - Technical Developer (of art, for example).

Stakeholders

- The target audience
- Documentation developers
 - Heavey, Kutschke
 - Consultants:
 - Kowalkowski, Paterno, Green
 - Others for UPS/UPD, Grid, build system ...
- SCD Management

What Software Will be Included in this Documentation Project?

- All software supported by SCD for use by the target audience.
- Including:
 - *art*
 - SAM
 - Grid software, broadly construed
 - Any in-house elements of the tool chain on which the above depends
 - what have I forgotten
- Don't rewrite existing documentation: link to it.

The Rest of this Presentation

- Sketch the elements of the complete documentation suite
- Discuss how this outline addresses the three roles described on the previous page.
- Some details on the short term deliverables
 - art Workbook
 - art Users Guide

Elements of Documentation

- Prerequisites
- *Workbooks* – sets of *Exercises*
- *Reference Manuals*
- *User Guides*
- *Technical References*
- *External References*
- *Gap Filler Documentation*
- Glossaries and Indices
- Other ...
- All cross-referenced
- **Scope each correctly and understand interfaces**

Items in blue are defined on the following pages

Definition: *Exercise*

- Introductory text.
- Some example code to build and run.
 - It must “just work”.
- Explanatory text
 - Explains major ideas introduced in the exercise.
 - Refers to detailed information in other *Exercises*, in other *Workbooks*, and in the *Users Guide*
 - There should be few direct references to the *Reference Manual* and no references to the *Technical Manual* (different audiences).
- Suggested *activities*:
 - Modify code or config file, rebuild and rerun
- Where appropriate, answers to the *activities*.

Definition: *Workbook*

- A set of *Exercises*
 - Inherently sequential: Exercise N assumes that the user is familiar with all material in Exercises 0 ... N-1.
 - Sometimes the last few exercises will be independent of each other and may be done in any order.
- The normal entry point for a new user.
- Gives a grand tour of the documentation.
- Helps to define language and ideas that the user needs to use successfully the rest of the documentation.

Definition: *Users Guide*

- Everything that the user needs to know to make effective use of the tool:
 - Few people will read this cover to cover.
 - **Table of Contents, index, glossary are all critical.**
- Does not explain implementation details.
- Exercises will often refer into it.
- Appendices are a natural location for
 - Best practices, especially environment specific ones.
 - *Gap Filler Documentation*
 - Anything else that has no better home.

Definition: *Reference Manual*

- Documents the API
- Refers to the *Users Guide* for a users view of what the code does.
- Refers to the *Technical Manual* to explain how the internals work.
- Often auto-generated from annotated source code; eg Doxygen.
 - Plus ...

Very Strongly Recommend

- Keep the roles of the *Users Guide* and *Reference Manual* distinct – it's very tempting, but a very bad idea, to mix them together.

Definition: *Technical Manual*

- The inner details of how it all works.
- Target audience is developers and maintainers, both current and future.
- Some motivated users will look at but they are not the target audience.

Definition: *External References*

- Any material that is not part of this documentation project
 - ROOT, Geant4, CLHEP and boost documentation
 - C++ language reference
 - STL reference
 - Some C++ best practices documents
 - Existing SAM documentation
 - Existing Grid documentation
 - ...

Definition: *Gap Filler Docs*

- Fill gaps in existing documentation
 - For docs that we do not own.
 - Prefer doc owners to improve their product but ...
- For example:
 - For parts of CLHEP, only docs are the header files:
 - Good enough for users with intermediate C++ skills
 - Not good enough for beginners; what is a .icc file?
 - Beginners see this very early in their learning
 - Hep3Vector, SystemOfUnits, Matrices
- Probably appendices to the [Users Guide](#)?

Review: Terms Defined So Far

- *Exercise*
- *Activity*
- *Workbook*
- *Users Guide*
- *Reference Manual*
- *Technical Manual*
- *External Reference*
- *Gap Filler Documentation*

Matching Elements with Level

- Novice
 - Needs a grand tour, without a lot of detail.
 - [Workbook](#)
- Intermediate
 - Needs complete, well indexed, and well cross-referenced explanations of how things work and how to use them.
 - [Users' Guide](#)
- Expert/Developer
 - Quickly find API details and a high level overview of functionality.
 - [Reference Manual](#)
- Art developer
 - [Technical Reference](#)

The *art* Documentation Suite

Introduction

1. What is a framework
2. Define Prerequisites
3. Overview of documentation
4. ...

Workbook

Exercise 1

- Activity 1
- Activity 2

Exercise 2

- Activity 1
- Activity 2

...

Exercise N

Reference Manual

Technical Reference

External Refs

Root, C++, STL, G4

...

Users Guide

Table of Contents

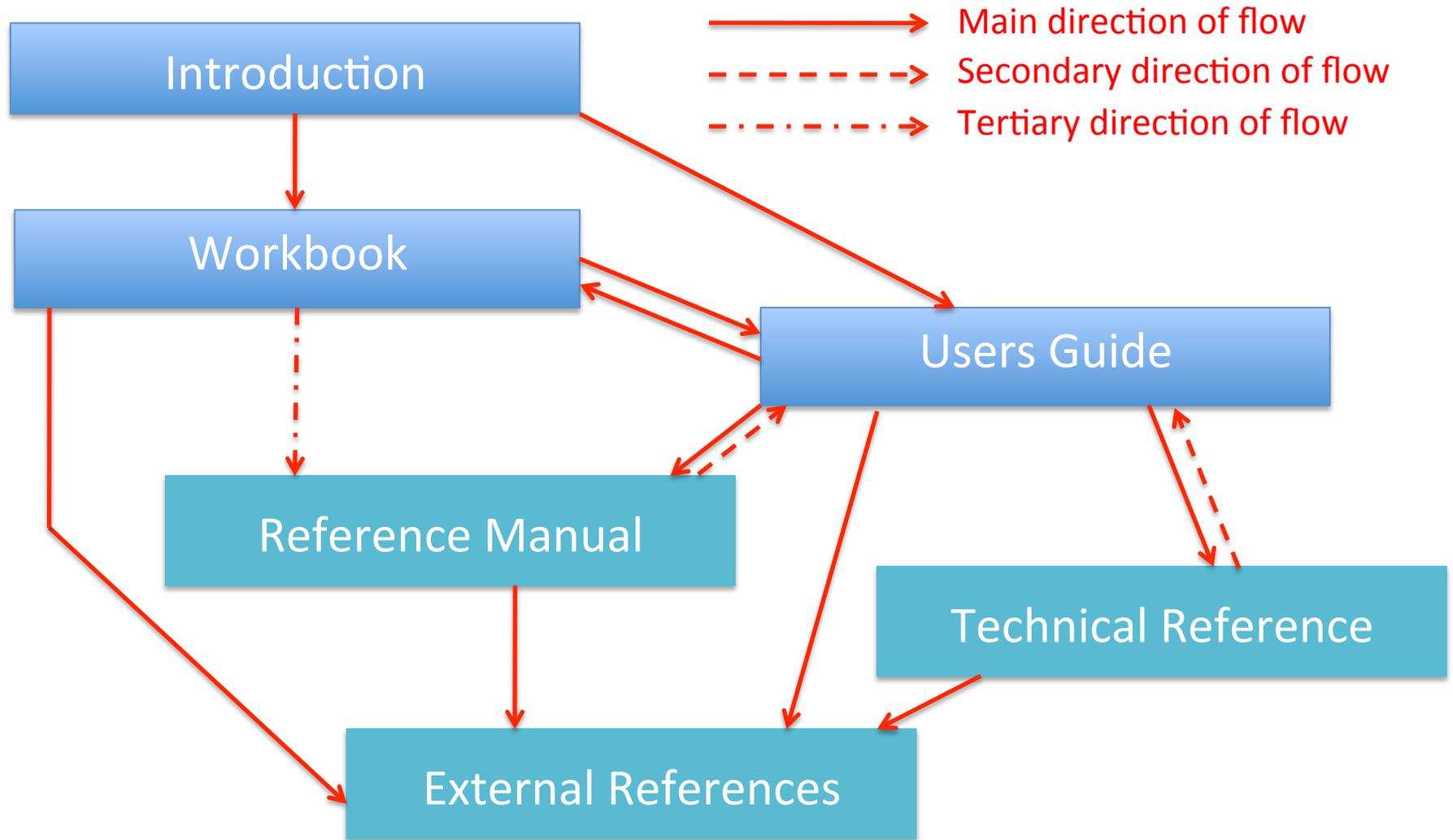
1. Users view of *art*
2. Modules
3. Services
4. FHiCL
5. Interface to G4
6. Interface to SAM
7.

Appendices

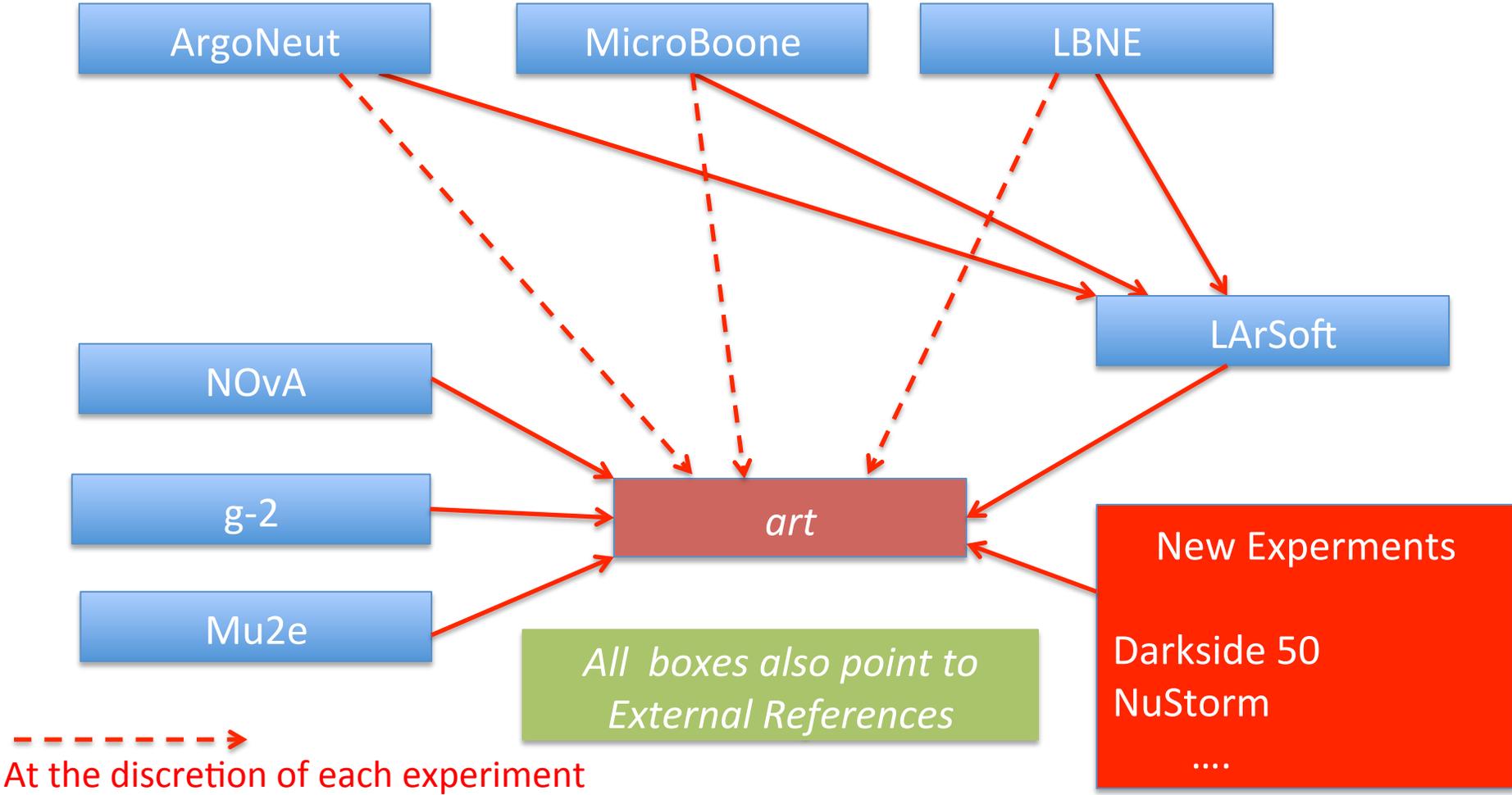
- I. Best Practices
- II. Trouble Shooting
- III. CLHEP gap Filler Docs
- IV. Glossary

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Hierarchy of The Elements



Relationship of *art* Documentation to Documentation of each Experiment



About SAM and the Grid

- Existing SAM and grid documentation are external references.
- Details of the interactions among SAM, *art* and the grid workflow belongs in the *art Users Guide*
- Where do workbook exercises belong?
 - In the *art* workbook?
 - In the per experiment workbooks (or equivalent)?
 - The issue is what SAM data sets and VO will be used for the exercise; these are experiment specific.

About ROOT

- Don't repeat existing ROOT documentation.
- **Gap Filler Documentation**
 - Where to find the ROOT documentation.
 - Any tricks for using it efficiently?
 - ROOT can be used in many ways.
 - Describe some of the choices *art* made and why.
 - Recommendations for best practices of using ROOT in the *art* environment.
 - May be somewhat experiment specific?

Goals for May 1

- Introduction deployed
- **Workbook** and **Users Guide**.
 - Deployed in outline form with some content ...
- Some number of **Workbook** exercises, plus the backing documentation in the **Users Guide**.
 - Tested and deployed.
 - RK: prefers fewer done well to more done less well.
- Understand what it will take to deliver the full documentation project.

Draft Outlines

- Draft outline for the *art* Workbook
 - [https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's Outline](https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's_Outline)
- Draft outline for the *art* Users Guide
 - [https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's Reference Manual Outline](https://cdcvs.fnal.gov/redmine/projects/art-workbook/wiki/Rob's_Reference_Manual_Outline)
- Wiki for our working notes.
 - <https://cdcvs.fnal.gov/redmine/projects/art-workbook>

Technology Choice

- Requirements:
 - Version control
 - Support for structural revisions on the fly
 - Add new exercise/chapter
 - Split exercise/chapter into two
 - Multiple versions available at the same time.
 - Produce online-friendly and printer-friendly output.
- Propose:
 - LaTeX + source code management (cvs, svn, git?)
 - latex2html or equivalent

Anne's Role

- Editor and tech writer
 - Not a Subject Matter Expert (SME)
- Run the workbook exercises to ensure that
 - They “just work”
 - The documentation matches, is complete and links to details are in place.
- Work with Rob to finalize the technology choice.

Anne's Role (More Detailed)

- Deploy and maintain the outline on the site.
- Integrate existing material into the outline
 - Test that exercises work
 - Turn rough material from SME into the real deal.
 - Provide consistent look and feel
- Bring CMS experience
- Identify and keep records of
 - Undefined terms and ideas
 - Missing link targets
 - Existing material not (yet) incorporated
- Feedback to me on what is working and what is not, from the editor's point of view.
- Work with me to keep pressure on SMEs to produce the missing content.

Status of Workbook Code

- Advanced prototype working today.
 - In a git repository.
 - Based on a toy detector
 - Ideas were run past Kowalkowski, Paterno and Green.
- Deploy first draft early next week.
- Essentially complete a week or two after that.
 - A few working days of my time.