ISO 19170-1 DGGS as a model-based standard

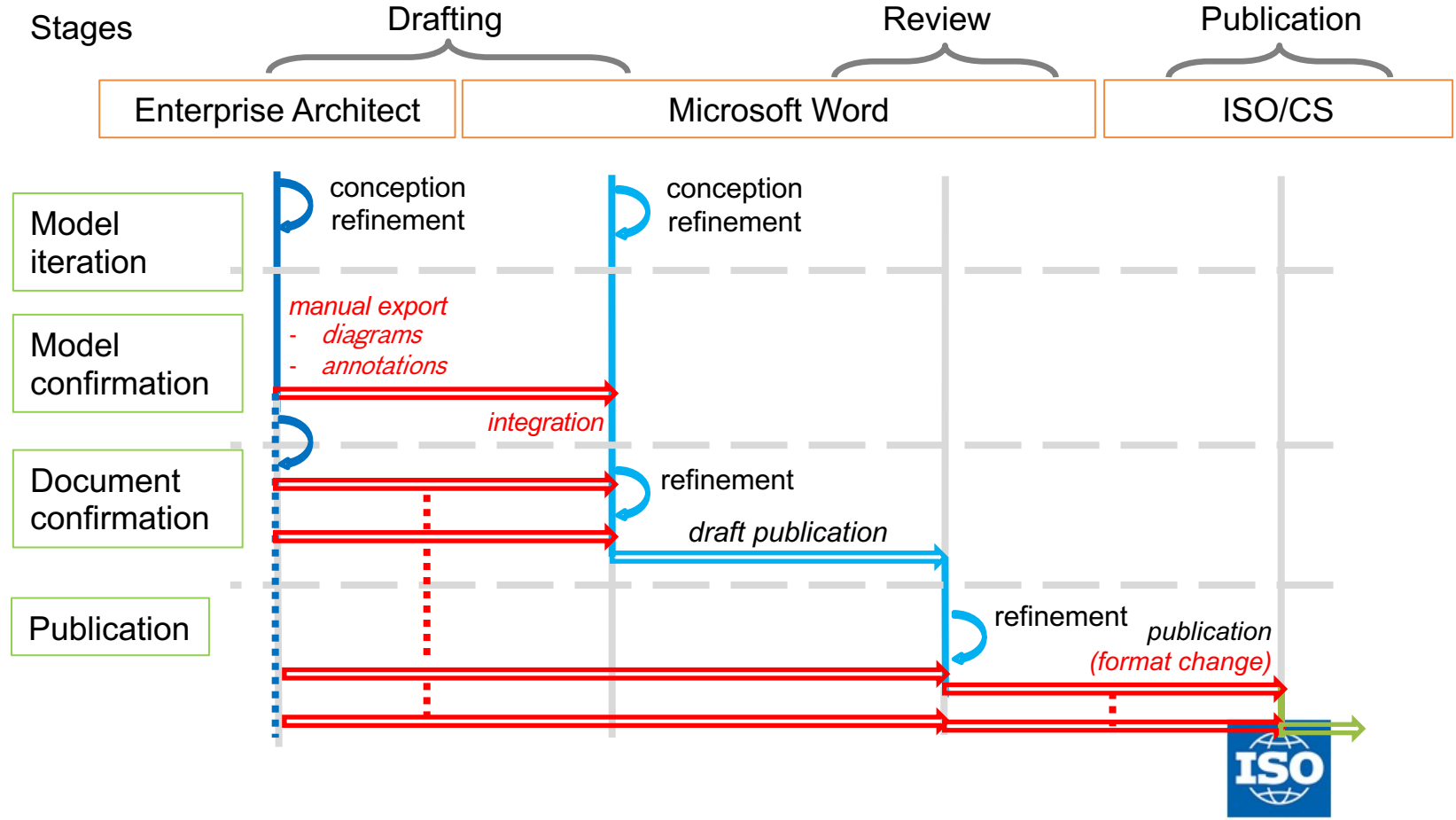ISO/TC 211 Ad-hoc for Automated Documentation
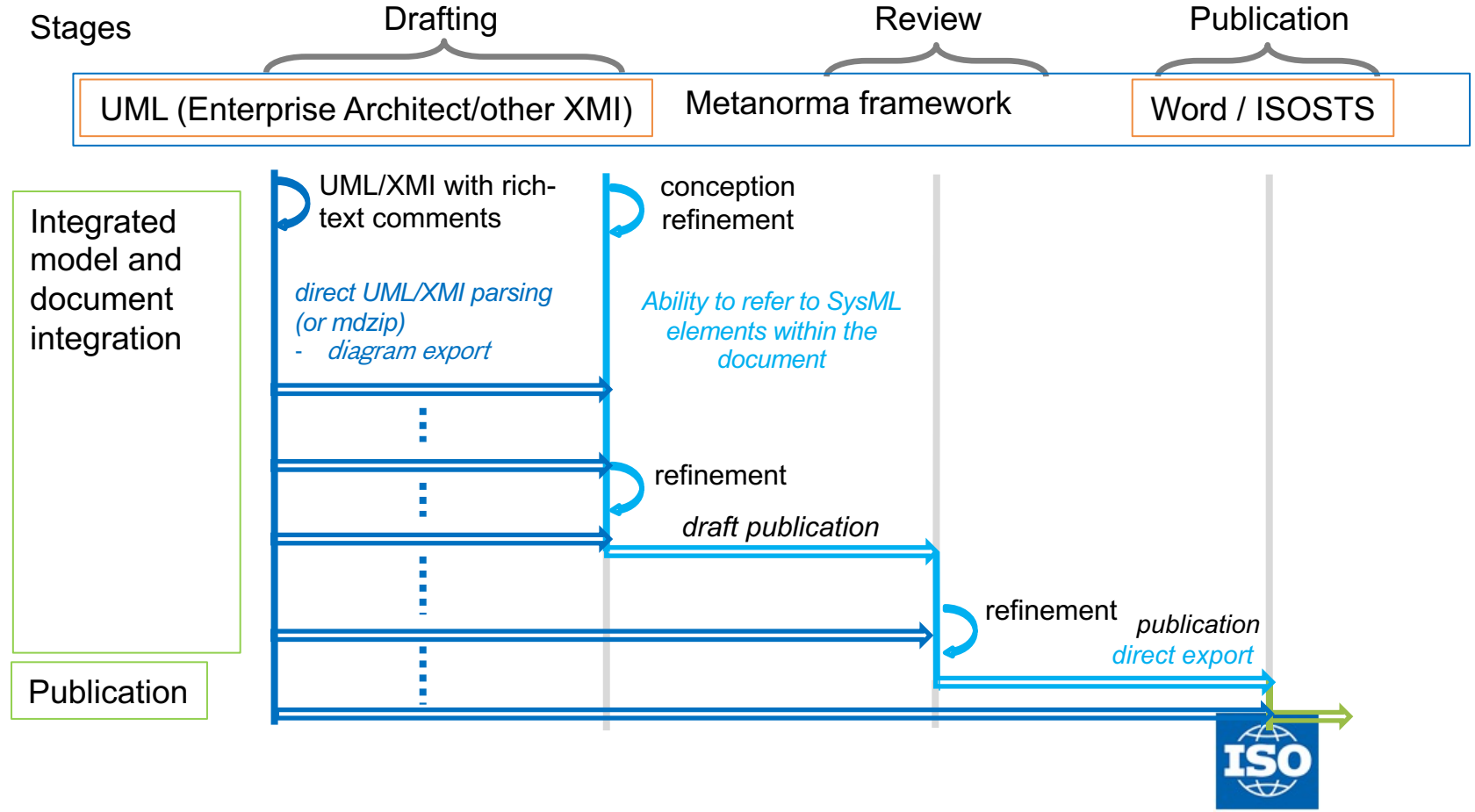
April 23, 2021

Ronald Tse

Users of Metanorma Model-Based Standards (MBS)
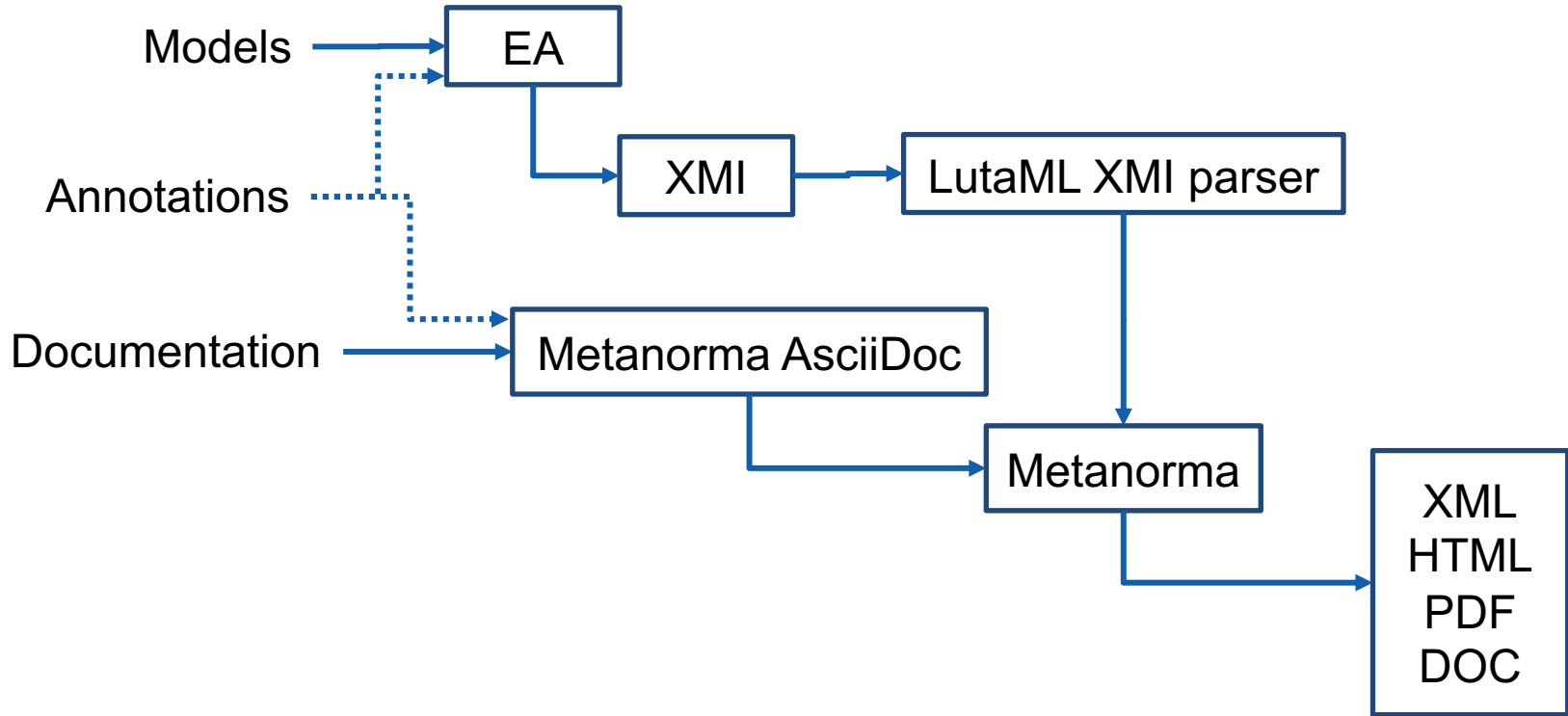
ISO/TC 211 publication goes through a complex juggle

Model-based authoring with Enterprise Architect

Stages

Drafting

Review

Publication

UML (Enterprise Architect/other XMI)   Metanorma framework   Word / ISOSTS

Integrated model and document integration

UML/XMI with rich-text comments

conception refinement

direct UML/XMI parsing (or mdzip)
- *diagram export*

Ability to refer to SysML elements within the document

refinement

draft publication

refinement

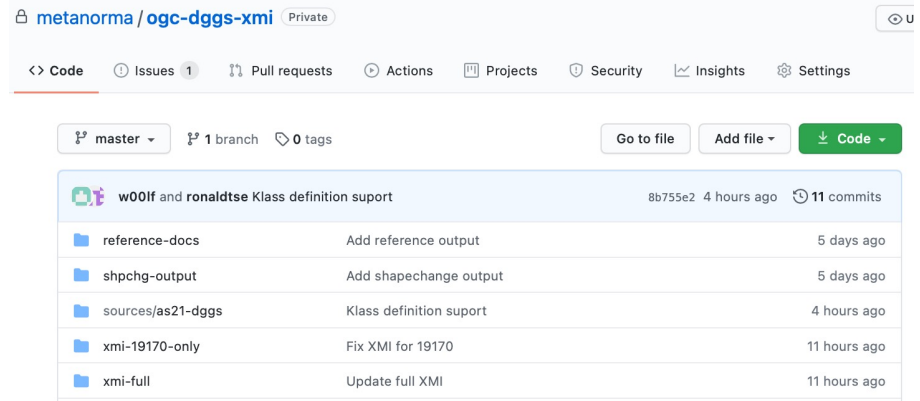*publication direct export*

Publication

Model-based authoring data flow with Metanorma

DGGS in Metanorma

- Direct access to DGGS XMI
- Copied over Metanorma document to new repository
- Previous version relied on Robert Gibb's program that extracted information from ShapeChange output
  - EA model => ShapeChange => HTML export => Custom program => Metanorma AsciiDoc

It works!

```
[lutaml, ../../xmi-19170-only/iso-19170-uml241-xmi242.xmi, context]
----
{% for main_package in context.packages %}
{% for root_package in main_package.packages %}
== {{ root_package.name }} package


{{ root_package }}

=== {{ root_package.name }} overview

The {{ root_package.name }} package is organized into
{{ root_package.packages.size }} packages with {{ 'TODO nested packages length' }} modul

[arabic]
{% for package in root_package.packages %}
. {{ package.name }} package comprises:
{% for module in package.packages %}
.. {{module.name}} module
{% endfor %}
{% endfor %}

{% for package in root_package.packages %}
=== {{ package.name }}
{% for module in package.packages %}
==== {{module.name}} module

{% if module.packages.length > 0 %}
{% for moduletwo in package.packages %}
```

7.3.1. Core RS using Zonal Identifiers with Structured Geometry module

7.3.1.1. Defining tables

1. Table 6 — Elements of Core RS using Zonal Identifiers with Structured Geometry::GlobeGeometry

2. Table 7 — Elements of Core RS using Zonal Identifiers with Structured Geometry::DiscreteGlobalGrid

Table 14 — Elements of Core Quantization Functions::DGG_Observation

Name:	DGG_Observation
Definition:	DGG_Observation is an abstract class holding ZonalIdentifier, OM_Observation tuples. In the context of Quantization, DGG_Observation holds records of Observations made with DataAssignmentProcess in assigning values to cells.
Stereotype:	Interface
Inheritance from:	TODO interface
Abstract:	true

7

ISO 19170-1 fully generated via EA model (90%)

Contents

Geographic information — Discrete Global Grid Systems Specifications —

Part 1:

Core Reference System and Operations, and Equal Area Earth Reference System

Information géographique — Système Global de Données Maillées Discrètes —

Partie 1:
Système de Référence et Opérations de Base, et Système de Référence Terrestre à Zone Égale

DIS stage

Potential issue: great power comes with great responsibilities

- <u>Inaccurate annotations</u> in model will carry on to document
  - Formatting errors in "Notes" field, such as "**Test Purpos**e"
  - Usage of RTF formatting mixed with AsciiDoc syntax (e.g. RTF formatting does not support definition lists)
- <u>Provide guidelines on input (model)</u>
  - What to enter in "Notes" field?
  - What diagrams to make/display?
  - Requirements/Tests in/out of model?
  - Conventions for skipping hidden diagrams/models (e.g. named with "Spare", "old")

Abbreviation 2.0/[req|conf]/core/rs/constraint/equal_area*Requirement::* _Equal Area?−?the DGGS Constraint of an Equal Area Earth Reference System SHALL be EqualArea_*Test Purpos*e:: To verify the DGGS ConstraintType of an Equal Area Earth Reference System is EqualArea.**Abbreviation**:: 2.0/[req|conf]/ea/ers/global_domain*Requirement::* _Global Domain?−?the DGGS Domain of an Equal Area Earth Reference System SHALL be the whole surface of the DGGS Reference Frame's Earth Model_*Test Purpos*e:: To verify the DGGS Domain of an Equal Area Earth Reference System is the whole surface area of the DGGS Reference System's Earth model.**Conformance Test Method**:: Inspect documentation of the DGGS specification.

- <u>Provide guidelines on output</u>
  - What is the canonical format on output?
    - Per package => per diagram => per model?
    - MBS from Clause 4 or 5?
  - Should disallow insertion of arbitrary text/diagrams within MBS portion

Thank you, questions welcome!