S1000D Support in Oxygen

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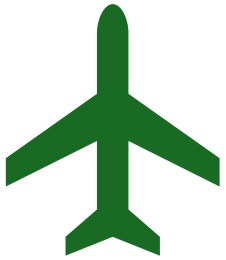
Agenda

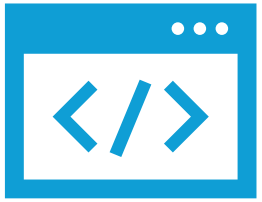
- What is S1000D?
- Why S1000D?
- Key concepts: DM, PM, BREX, CSDB
- S1000D support in Oxygen
- Creating, editing, and validating content
- AI, review, and collaboration
- Best practices, future plans, Q&A

What is S1000D?

International specification for technical publications using XML.



Widely used in aerospace, defense, rail, energy, and more.



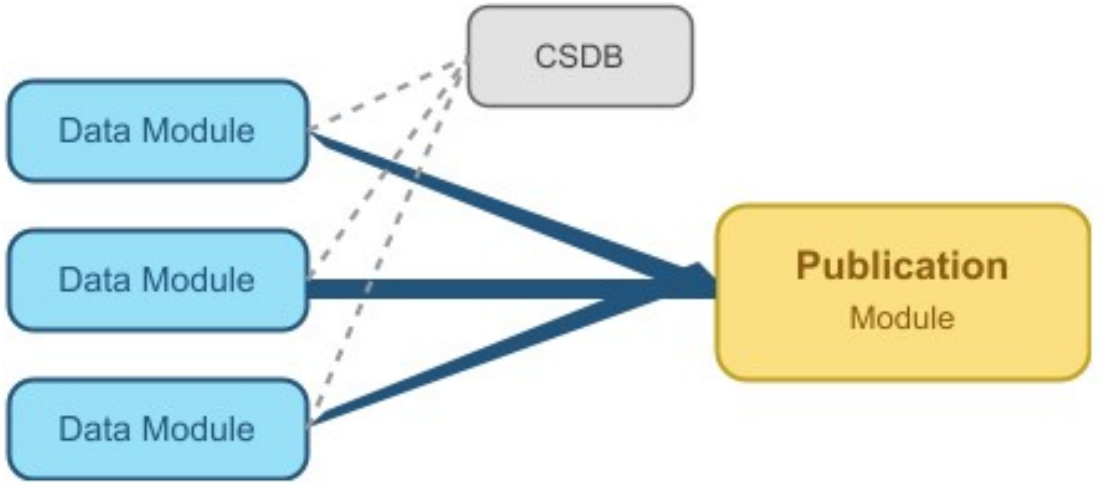
Enables modular, reusable, and interoperable documentation.

Why S1000D?

- Reduces duplication (modular content).
- Supports multi-platform publications (PDF, IETM, IETP, HTML).
- Drives consistency via strict schemas and business rules.
- Enables collaborative, multi-organizational authoring processes.

Key Concepts of S1000D

- Data Module (DM): The building block; self-contained, reusable XML units.
- Publication Module (PM): Collection of DMs; forms a manual or book.
- BREX: Business rules data module; project-specific content rules.
- CSDB: Common Source DataBase; manages content, versions, and workflow.



S1000D Document Structure

- Data Module types: Descriptive, Procedural, Fault, Illustrated Parts Data (IPD), Wiring, etc.
- Mandatory sections: identAndStatusSection, content, applicability & conditions.
- Strict coding/identification: DM Codes, ICNs, etc.

```
<dmodule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:noNamespaceSchemaLocation="http://www.s1000d.org/S1000D_4-1/xml_schema_flat/learning.xsd">
    <identAndStatusSection>
        <dmAddress>
            <dmIdent>
                <dmCode modelIdentCode="S1000DBIKE" systemDiffCode="AAA" systemCode="D00"
                    subSystemCode="0" subSubSystemCode="0" assyCode="00" disassyCode="00"
                    disassyCodeVariant="AA" infoCode="200" infoCodeVariant="A" itemLocationCode="T"
                    learnCode="T10" learnEventCode="B"/>
                <language countryIsoCode="US" languageIsoCode="en"/>
                <issueInfo issueNumber="001" inWork="00"/>
            </dmIdent>
            <dmAddressItems>
                <issueDate day="31" month="12" year="2012"/>
                <dmTitle>
                    <techName>Bicycle</techName>
                    <infoName>Servicing: Attention</infoName>
                </dmTitle>
            </dmAddressItems>
        </dmAddress>
        <dmStatus> </dmStatus>
    </identAndStatusSection>
    <content>
        <learning>
            <learningAssessment>
                <title/>
            </learningAssessment>
        </learning>
    </content>
</dmodule>
```

Question: How are you using S1000D today?

- We actively author S1000D content
- We review or consume S1000D content
- We are planning or evaluating S1000D
- We work with XML, but not S1000D yet
- I’m here to learn the basics (use the question panel)

Common Authoring Challenges

- Complex XML structure and metadata requirements
- Need to comply with schema and project rules
- Managing reusable content and references
- Supporting multiple configurations and variants
- Ensuring consistency across teams and organizations

S1000D Support in Oxygen

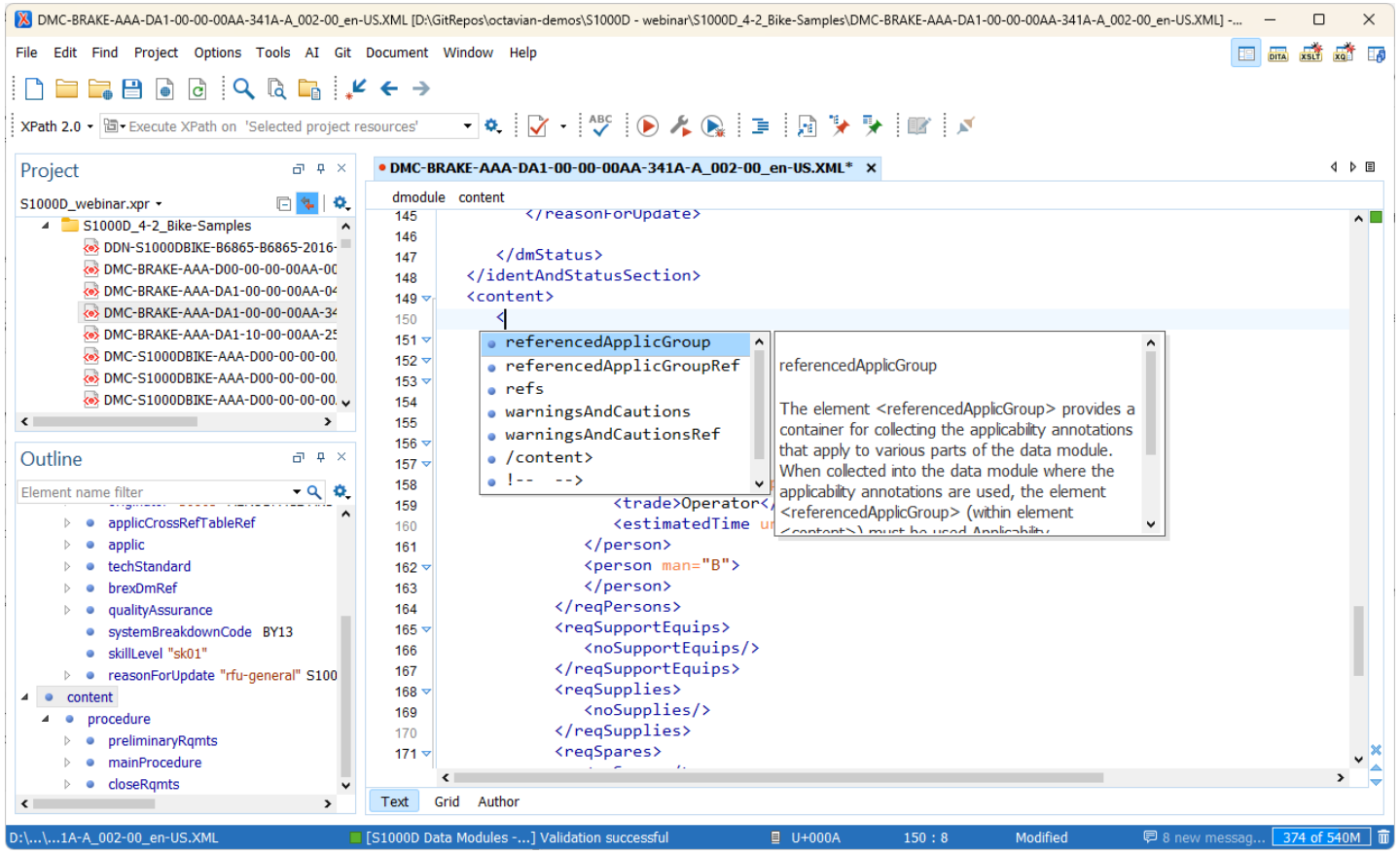
- Built-in support for structured S1000D v4.x authoring
- Available across:
  - Oxygen XML Editor Desktop
  - Oxygen XML Web Author
  - Oxygen XML Editor Eclipse plugin
  - Oxygen Content Fusion
- Designed to reduce friction and increase consistency

Creating New S1000D Content

- Templates for Data Modules and Publication Modules
- Support for S1000D Issues:
  - 4.0
  - 4.1
  - 4.2
- Templates for common DM types
- Faster and more standardized content creation

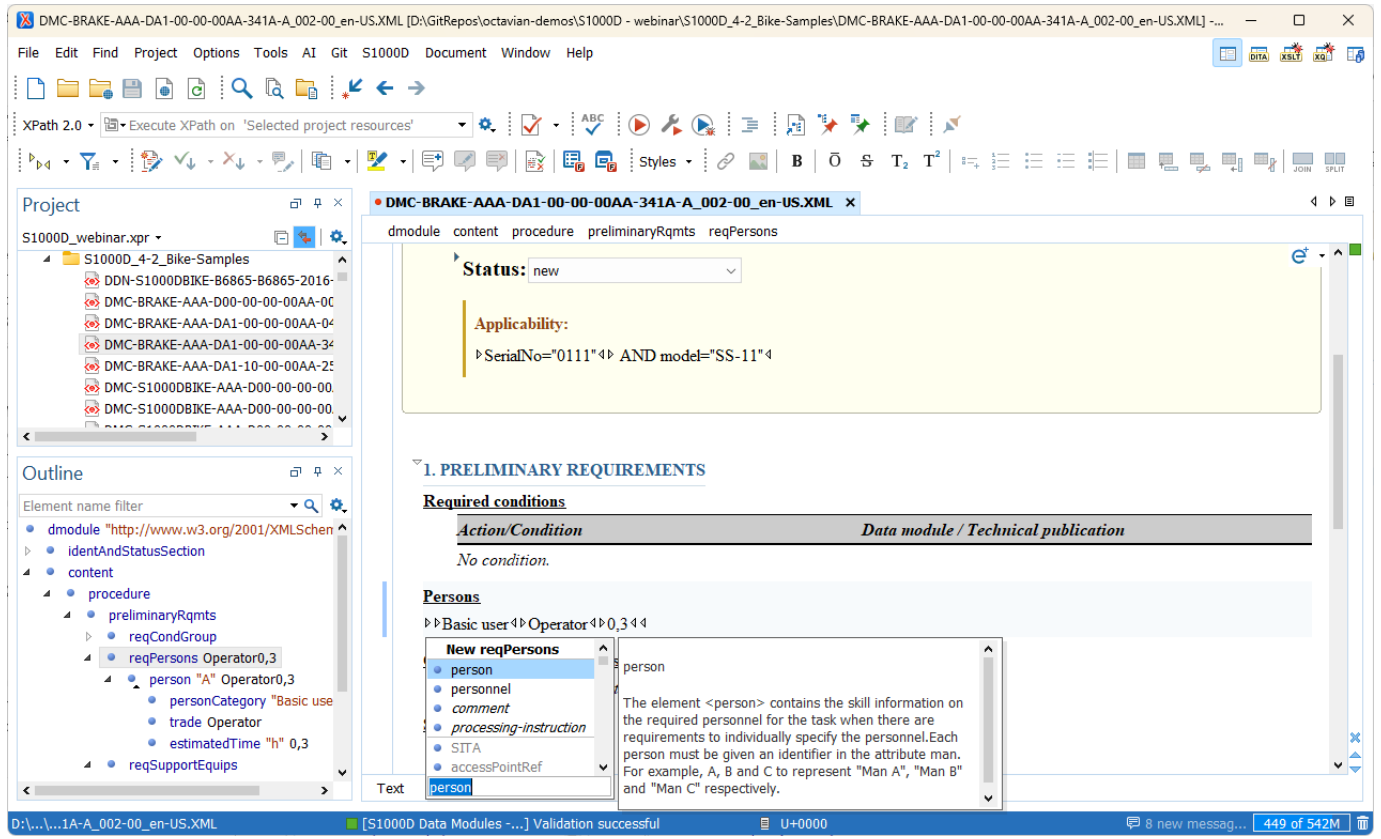
Editing in Oxygen XML Editor

- Schema-guided editing
- Intelligent content completion
- Element and attribute documentation
- Guided authoring support



Visual Authoring and Usability

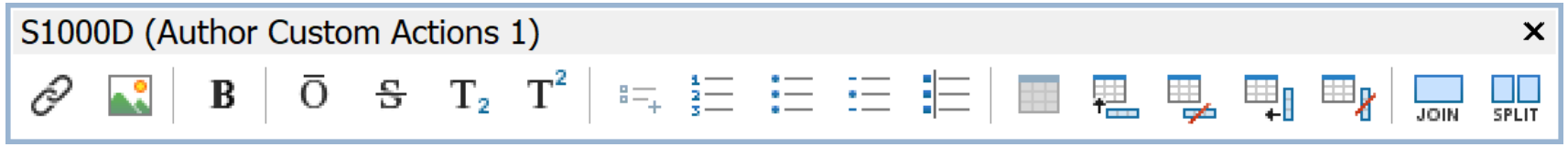
- Author mode for visual editing
- Form-based / outline views for non-XML users
- Dedicated editing actions
- Easier navigation through complex structures
- Better usability without sacrificing validity



Author Editing Actions

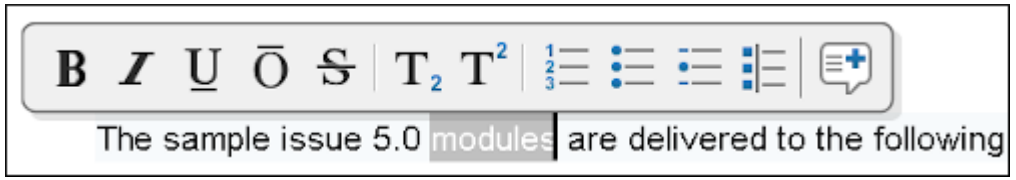
Dedicated toolbar and S1000D menu actions

- **Insert content**: Insert Reference, Insert Image
- **Text formatting**: Bold, Overline, Strikethrough, Subscript, Superscript
- **Lists**: Insert List Item, Insert Sequential List, Insert Simple Random List, Insert Unordered Random List, Insert Definition List
- **Tables**: Insert Table, Insert Row, Delete Row, Insert Column, Delete Column, Join Cells, Split Cell



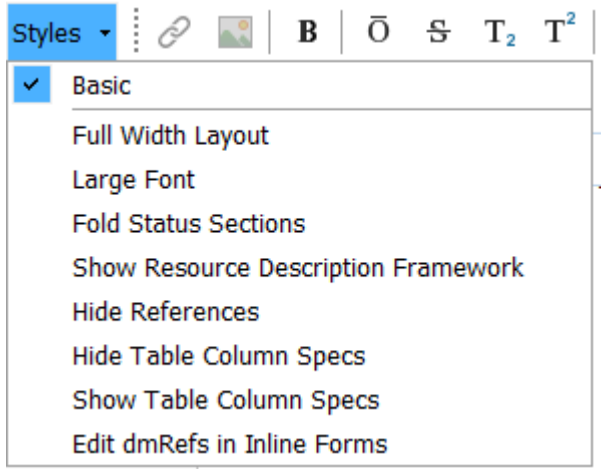
Floating Contextual Toolbar

- Most common S1000D Author mode actions are available on a dynamic floating toolbar
- The toolbar offers actions tailored to the current S1000D editing context



S1000D CSS Styles

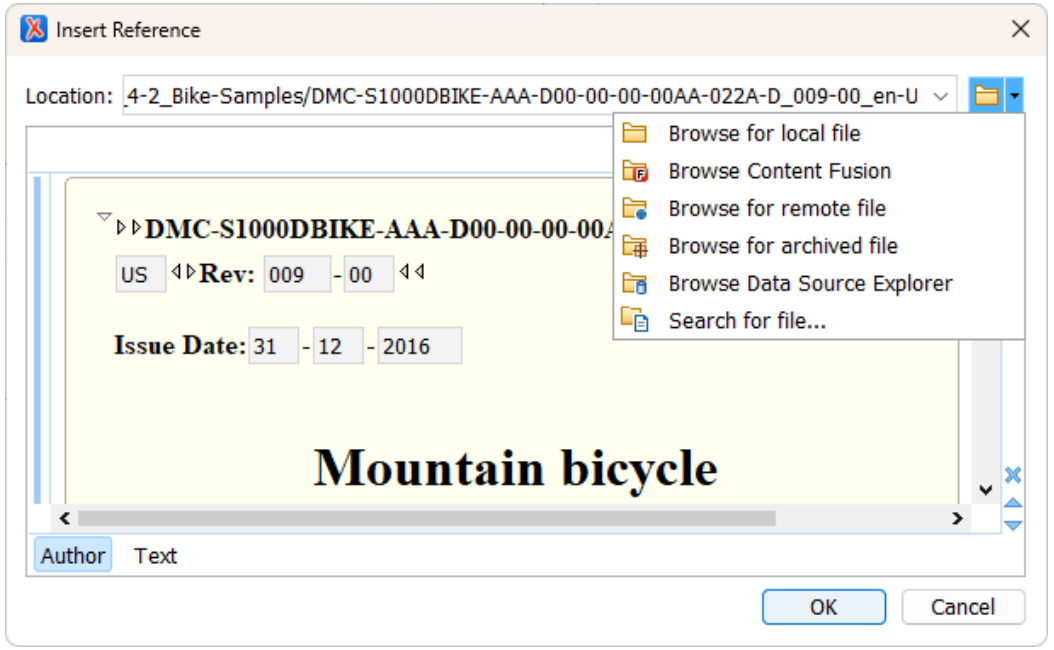
- Common CSS styles that can be added:
  - Basic
  - Full Width Layout
  - Large Font
  - Fold Status Sections
  - Show/Hide References
  - Show/Hide Table Column Specs
  - Edit dmRefs in Inline Forms



These styles help customize how S1000D content is displayed.

Cross-References and Linking

- Internal references to elements in the same DM
- References to other Data Modules
- External references using xlink
- Inserting References via Drag/Drop
  - Data Modules
  - Publication Modules
  - Illustrated Content



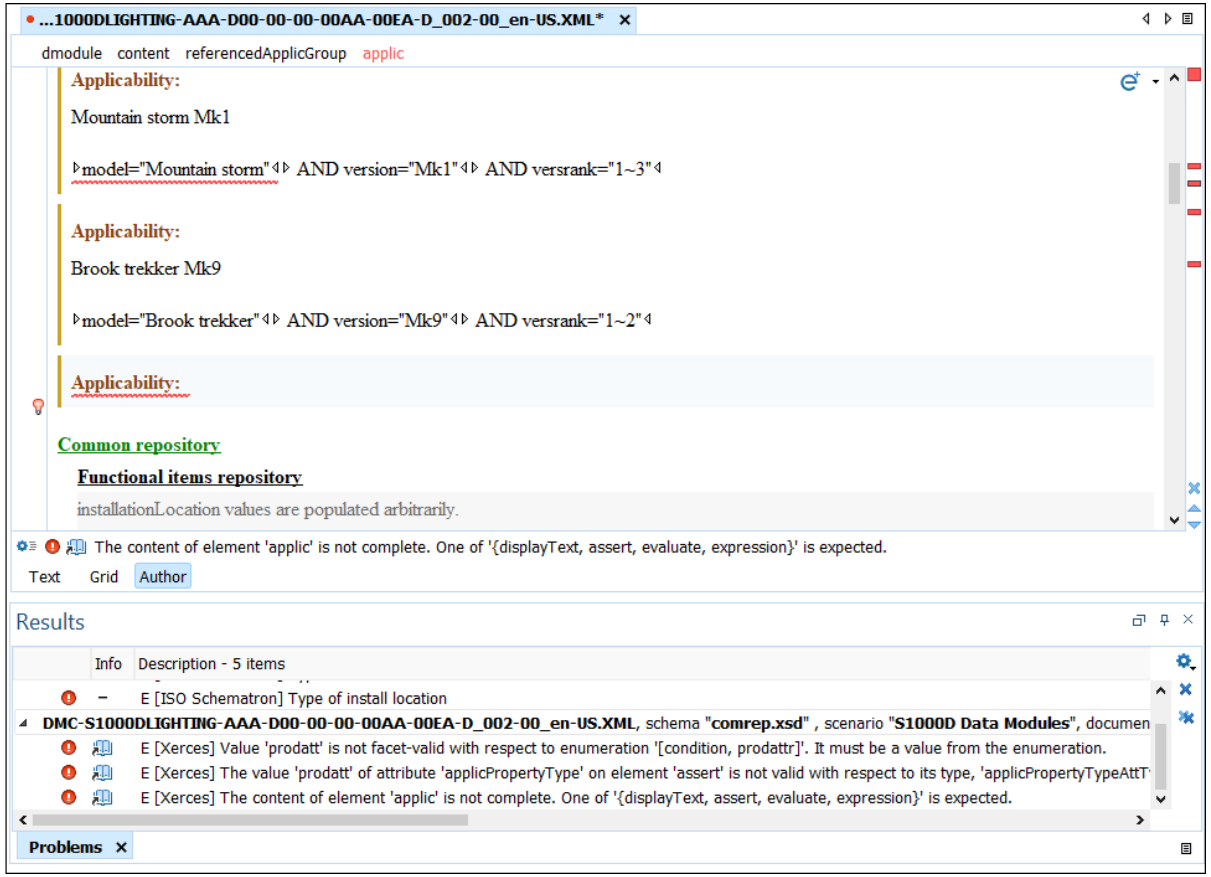
Display CGM Images in S1000D Documents

- CGM images are commonly used in S1000D documents
- To display these images in Oxygen XML Editor, install the CGM Add-on
- CGM Add-on is automatically installed when a CGM image is used in an S1000D document
- After installation, reopen the document to verify the CGM graphics are rendered correctly

https://www.oxygenxml.com/doc/ug-addons/topics/cgm-addon.html

Validation and Quality Checks

- Issue-aware XML schema validation
- Support for S1000D Issue 4.0, 4.1, 4.2, and others
- BREX and business-rules enforcement
- Style, spelling, and terminology checks
- Consistency checks for authoring quality

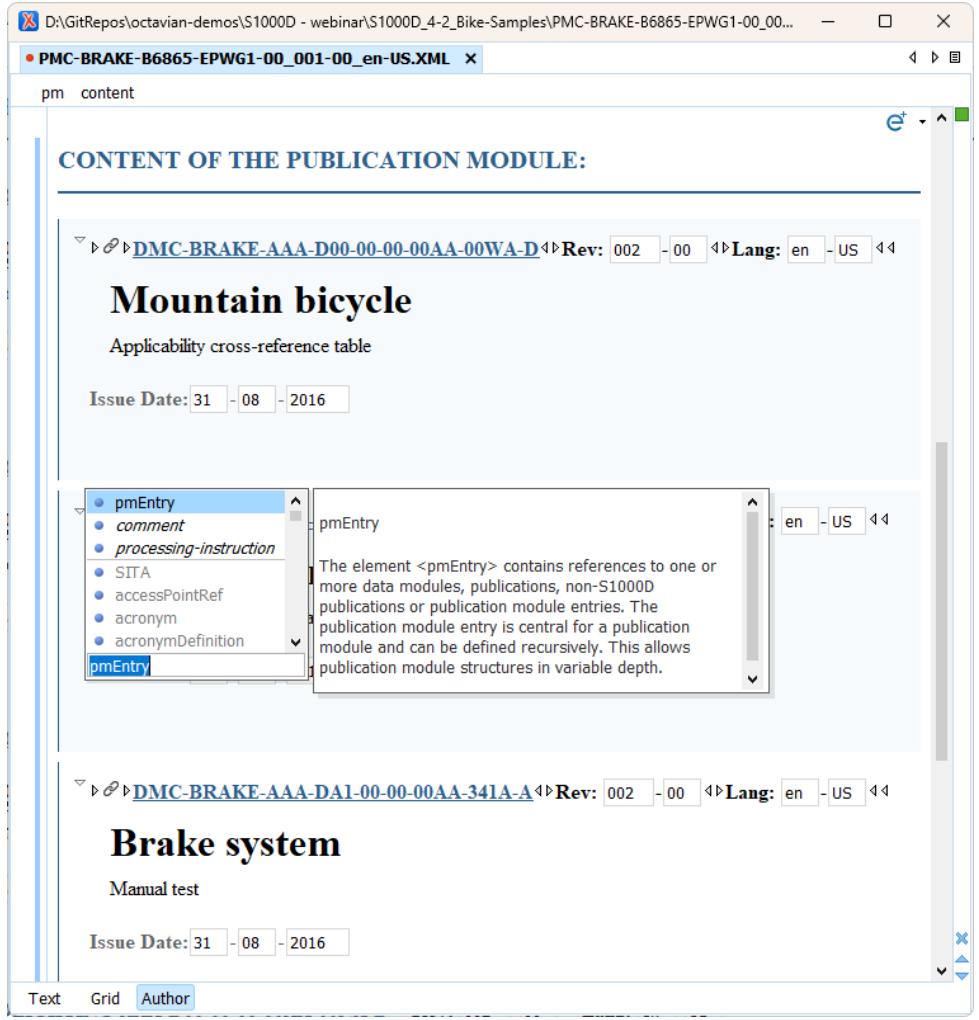


Working with BREX Modules

- Edit BREX modules directly in Oxygen
- Validate content against BREX rules
- Convert BREX constraints to Schematron
- Enforce project-specific authoring rules
- Improve consistency across teams and deliverables

Publication Modules and Assembly of Deliverables

- PMs organize Data Modules into manuals or books
- Support for creating and managing Publication Modules
- Helps assemble complete deliverables from reusable content
- Supports downstream publishing and structured output

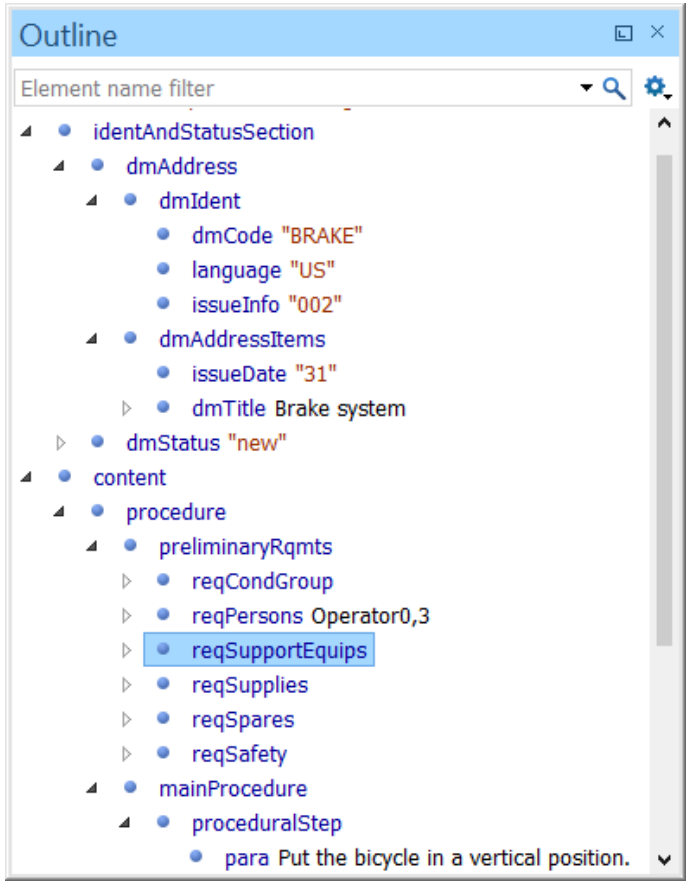


Productivity Features in Oxygen

- Smart Paste from Word and web content
- Element and attribute documentation
- Content completion guidance
- Helper dialogs
- Faster authoring with fewer structural mistakes

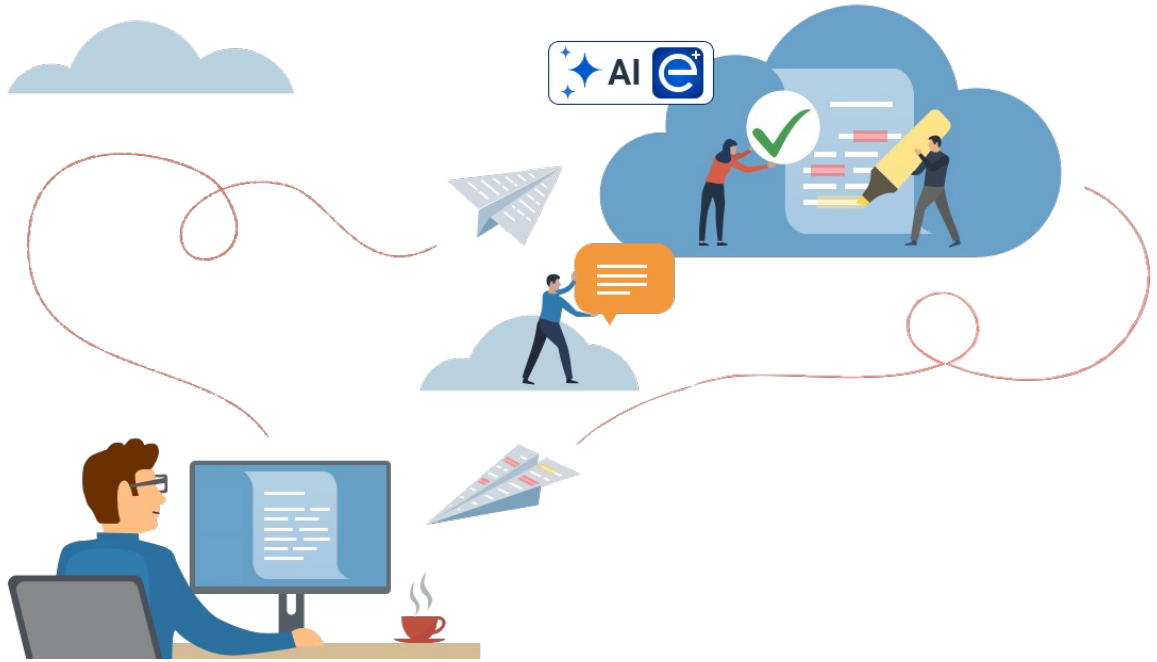
Usability Features and Consistency Checks

- Form-based and outline views for non-XML users
- Field-level guidance for required content
- Auto-insert for required elements
- Improves quality before formal validation



Review and Collaboration Using Content Fusion

- Browser-based review and collaboration
- Connect authors, reviewers, and SMEs
- Simplifies feedback cycles
- Reduces friction in distributed teams
- Supports more efficient review of structured content



https://www.oxygenxml.com/content_fusion.html

Comparing S1000D Content Changes

- File comparison for controlled changes
- Directory comparison for larger content sets
- Useful for version review and audits
- Helps identify structural and textual differences
- Supports governed authoring workflows

AI in S1000D

- AI can support structured authoring workflows
- Helps reduce repetitive authoring effort
- Can assist with consistency, suggestions, and author guidance
- Useful for accelerating review and content improvement
- Best used within governed XML and validation workflows

https://www.oxygenxml.com/ai_positron.html

Best Practices for a Consistent S1000D Experience

- Start from standard templates
- Use guided editing and required metadata wizards
- Validate early and often
- Keep BREX rules active and visible
- Align authoring, review, and publication processes

Support other S1000D versions

- Built-in support for S1000D 4.x, extendable to other versions (2.x, 3.x, 5.x, 6.x)
- Integrate external schemas through framework customization or XML catalogs
- Ensure compatibility using custom configuration for legacy and newer S1000D data
- For more advanced S1000D editing features ask our partners

Future Plans

- Publish Module to HTML or PDF
- Support for Applicability & Conditions
- Validate Directly with BREX Module
- Validate Module References
- S1000D Resources View
- …waiting for feedback

Question: Which planned S1000D feature is most important to you?

- Publish Publication Modules to HTML/PDF
- Support for Applicability & Conditions
- Direct validation with BREX modules
- Validation of module references
- S1000D Resources View

Other (use the question panel)

Resources

- The S1000D Web Site
- Oxygen XML Editor User Guide
- S1000D Framework Addon
- Oxygen S1000D Blog Post
- Oxygen S1000D Partners
- Oxygen Content Fusion
- Oxygen AI Positron

THANK YOU!

Any questions?

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