

# RFC-019: Documentation Pipeline

**Status:** Implemented **Date:** January 2026 **Author:** Derrell  
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## Abstract

This RFC specifies the documentation pipeline for the Library of Cyberspace: automated generation of canonical document formats from both Markdown and LaTeX sources, index catalogs, and future syndication feeds.

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## Motivation

Documentation must be:

1. **Preserved** – Multiple formats for long-term archival
2. **Accessible** – Viewable in any environment
3. **Discoverable** – Indexed for navigation
4. **Syndicated** – Subscribable for updates (future)

The pipeline automates generation of all canonical formats using the right tool for each source:

- **Markdown** → pandoc → prose documentation, RFCs
- **LaTeX** → pdflatex/latexmlc → mathematics, proofs, research papers

Computer science is math. Use the right tool for the job.

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## Source Formats

Format	Extension	Use Case	Pipeline
Markdown	.md	Prose, docs, RFCs	pandoc
LaTeX	.tex	Math, proofs, papers	pdflatex + latexmlc

## Output Formats

Format	Extension	Purpose	From MD	From TeX
HTML	.html	Web viewing	pandoc	latexmlc
PDF	.pdf	Archival, printing	xelatex	pdflatex
Plain Text	.txt	IETF tradition	pandoc	–

Plain text is not generated from LaTeX sources—math doesn’t render in plaintext.

All output formats are first-class citizens. None is derived or secondary.

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## Pipeline Specification

### Input

Source files following the naming convention:

```
rfc-NNN-short-name.md      # Markdown source
rfc-NNN-short-name.tex     # LaTeX source
```

Where: – NNN – Zero-padded RFC number (000–999) – short-name  
– Lowercase, hyphenated descriptive name

The pipeline auto-detects source format by extension.

### Output

For Markdown sources:

```
rfc-NNN-short-name.html    # Standalone HTML (pandoc)
rfc-NNN-short-name.pdf     # PDF (xelatex)
rfc-NNN-short-name.txt     # Plain text, 78 columns
```

For LaTeX sources:

```
rfc-NNN-short-name.html    # HTML (latexmlc)
rfc-NNN-short-name.pdf     # PDF (pdflatex)
```

Plus a navigational index:

```
index.html                 # Hypertext catalog
```

### Generation Commands

#### Markdown Pipeline (pandoc)

```

# HTML (standalone, no external dependencies)
pandoc ${doc}.md -o ${doc}.html --standalone --metadata title=""

# PDF (XeLaTeX with monospace font for code)
pandoc ${doc}.md -o ${doc}.pdf --pdf-engine=xelatex -V mainfont="Menlo"

# Plain text (IETF-style, 78 columns)
pandoc ${doc}.md -o ${doc}.txt --to=plain --wrap=auto --columns=78

```

## LaTeX Pipeline (pdflatex + latexmlc)

```

# PDF (native LaTeX - what it was made for)
pdflatex -interaction=nonstopmode ${doc}.tex
pdflatex -interaction=nonstopmode ${doc}.tex # twice for refs

# HTML (LaTeXML - proper math rendering, used by arXiv)
latexmlc --dest=${doc}.html ${doc}.tex

```

## Index Generation

The index.html catalog provides:

- RFC number and title
- Links to all four formats
- Clean, accessible HTML

Structure:

```

<table>
  <tr>
    <td>RFC Number</td>
    <td>Title</td>
    <td>html | pdf | txt | md</td>
  </tr>
</table>

```

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## Publication

### Local Workflow

```

# Generate all formats
./generate-rfcs.sh

# Commit to vault
seal-commit "Regenerate RFC documentation"

```

## Remote Publication

```
# Publish to web server
rsync -avz --chmod=D755,F644 -e ssh \
  *.md *.html *.pdf *.txt index.html \
  user@server:~/path/to/docs/
```

Permission model: - Directories: 755 (world-readable, owner-writable) - Files: 644 (world-readable, owner-writable)

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## Future: Syndication

### RSS/Atom Feeds

Future versions will generate:

```
rfc-feed.xml    # Atom feed of RFC updates
```

Feed entries will include: - RFC number and title - Publication/update date - Abstract - Links to all formats

### Subscription Model

```
;; Subscribe to RFC feed
(seal-subscribe "https://example.com/cyberspace/rfc-feed.xml"
  verify-key: publisher-public)
```

Integration with Vault subscription system (RFC-006).

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## Implementation

### generate-rfcs.sh

```
#!/bin/bash
# RFC Documentation Pipeline

RFCS=(rfc-000-declaration rfc-001-replication-layer ...)

for rfc in "${RFCS[@]}; do
  pandoc "${rfc}.md" -o "${rfc}.html" --standalone
  pandoc "${rfc}.md" -o "${rfc}.pdf" --pdf-engine=xelatex -V mainfont="Menlo"
  pandoc "${rfc}.md" -o "${rfc}.txt" --to=plain --columns=78
done
```

```
# Generate index.html
generate_index
```

## Dependencies

Tool	Version	Purpose
pandoc	2.x+	Markdown → HTML/PDF/TXT
pdflatex	TeX Live	LaTeX → PDF
xelatex	TeX Live	Markdown → PDF (via pandoc)
latexmlc	LaTeXML	LaTeX → HTML (optional)
rsync	3.x+	Publication

Note: latexmlc is optional. If not installed, LaTeX sources produce PDF only.

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## Security Considerations

### Integrity

Generated documents inherit integrity from: – Git version control (source) – Vault signatures (releases)

### Publication

Remote publication uses: – SSH key authentication – No sensitive data in documents – World-readable permissions only

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## References

1. Pandoc User's Guide
  2. LaTeXML – LaTeX to XML/HTML converter
  3. RFC-006 – Vault System Architecture
  4. Atom Syndication Format – RFC 4287
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## Changelog

- **2026-01-07** – Added LaTeX pipeline for math/proofs papers
  - **2026-01-06** – Initial specification
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**Implementation Status:** Complete **Script:** generate-rfcs.sh  
**Source Formats:** Markdown (.md), LaTeX (.tex) **Output Formats:** HTML, PDF, Plain Text (MD only)