visual editor

The present and future of editing our wikis

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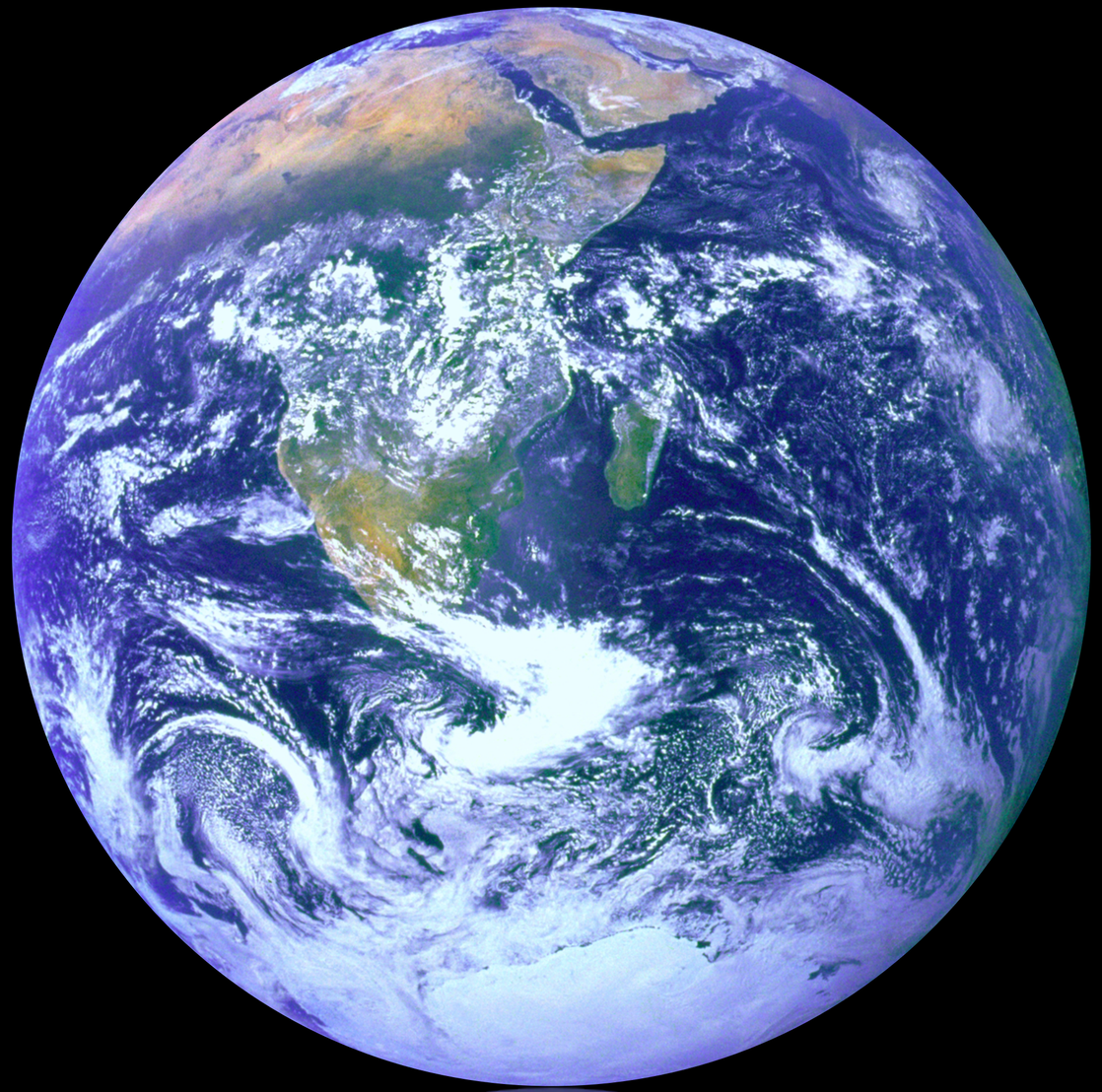

Overview

Image: https://commons.wikimedia.org/wiki/File:The_Blue_Marble.jpg – public domain original from NASA; adjusted by User:Deglr6328

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Why a visual editor?

- Drop in new contributors is a major issue for Wikimedia
- Wikitext stops people becoming contributors or staying
- Not an appropriate environment for the 21st Century
- Prevents us from providing other helpful editing tools

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Development history

- Discussion for many years since 2004
- Became a core goal in mid-2011 and we started work
- Working out if we can do it
- Iterative code development based on feedback & data

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Deployment history

Available:

- … on a wiki (mediawiki.org) from Jun 2012
- … for real edits by users (opt-in alpha) from Dec 2012
  - English only at first; other Wikipedias since Apr 2013
- … for real edits by all users (opt-out beta) from Jul 2013
  - English only at first; more Wikipedias since & to come

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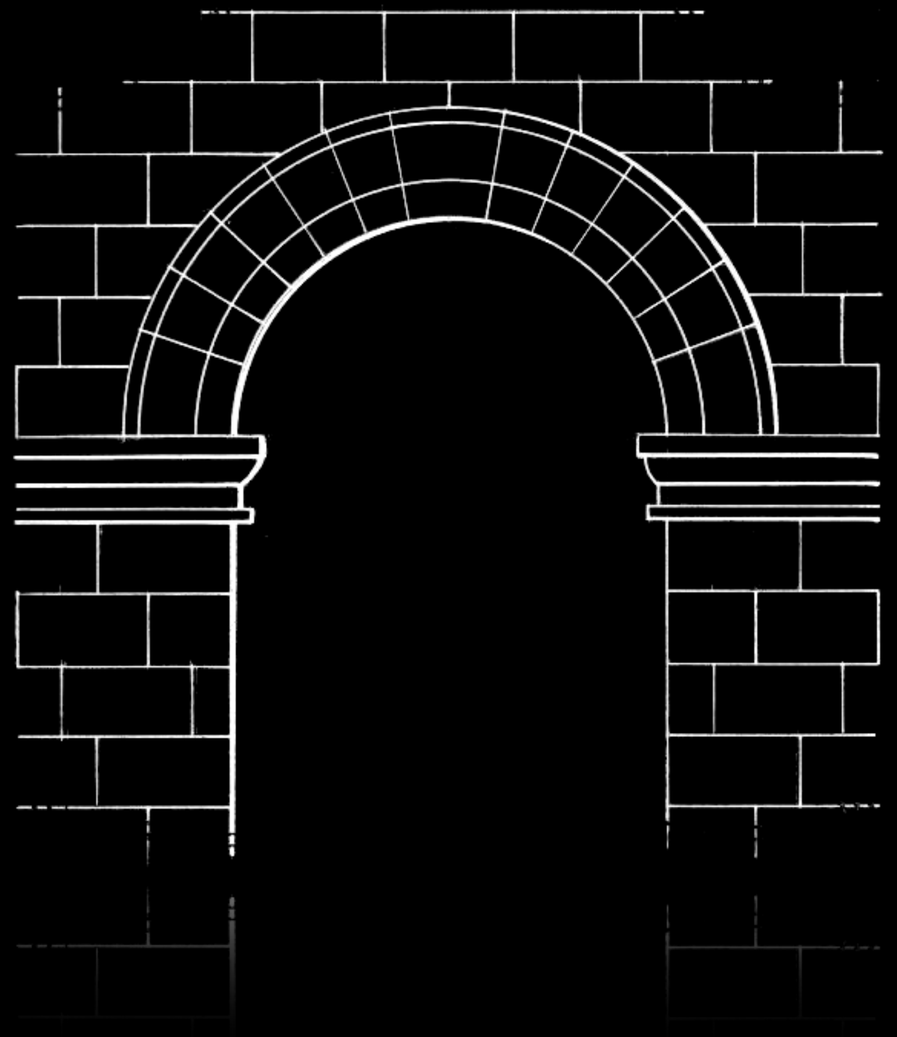

Architecture

Image: https://commons.wikimedia.org/wiki/File:Arch_(PSF).png – public domain original from Pearson Scott Foresman

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How it works

VisualEditor:

- JavaScript client-side editor of our HTML+RDFa
- Unique needs – rich data model, generated content

Parsoid:

- Node.js server-side wikitext ⟷ HTML parser service
- Will eventually replace MediaWiki's core PHP parser

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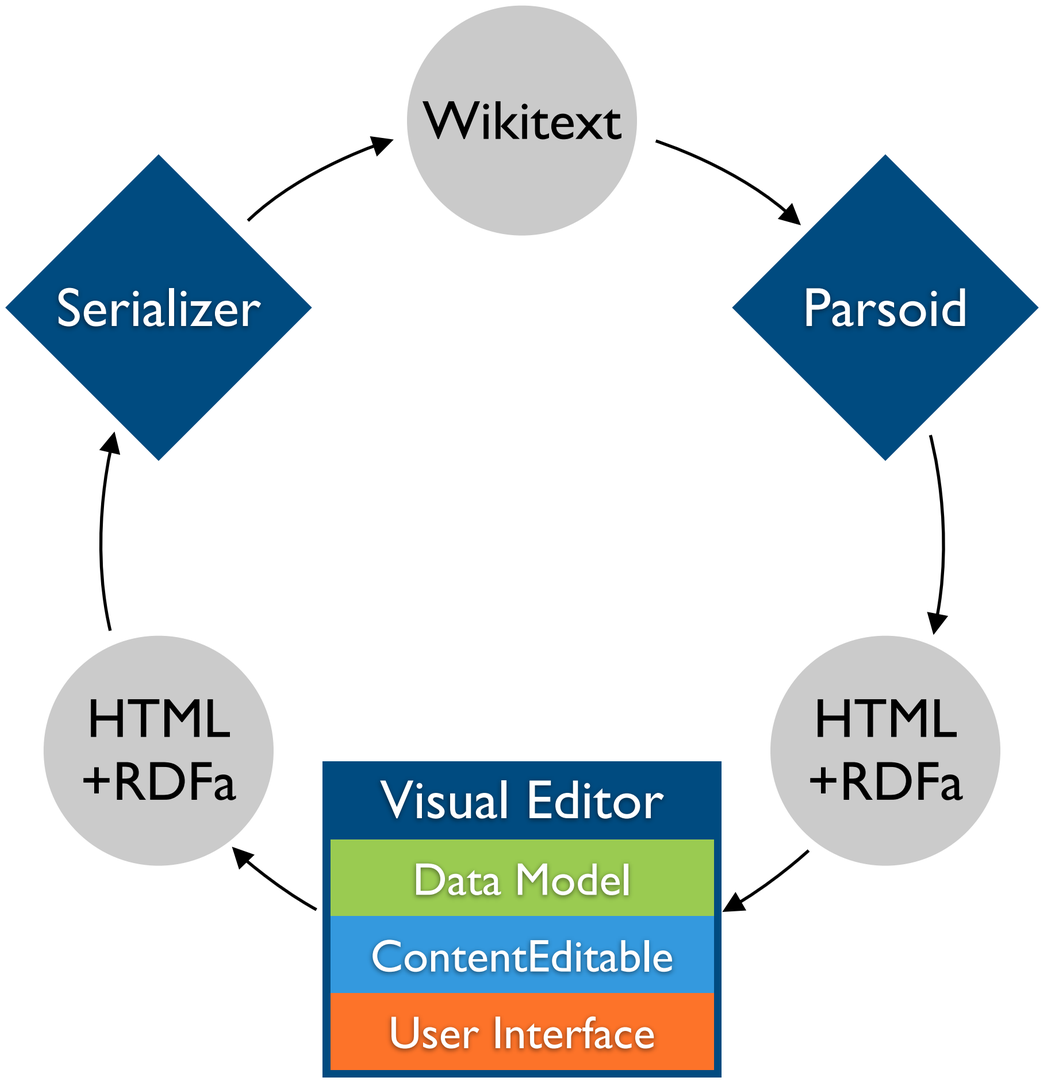
Anatomy of editing a page



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Anatomy of editing a page

- VisualEditor assets load when clicking Edit
- Integration asks for the HTML from Parsoid
- Data Model builds a linear model from this HTML
- Content Editable builds surface from the data model
- Editing tools give you a way to edit the surface
- The integration lets you save via Parsoid to MediaWiki

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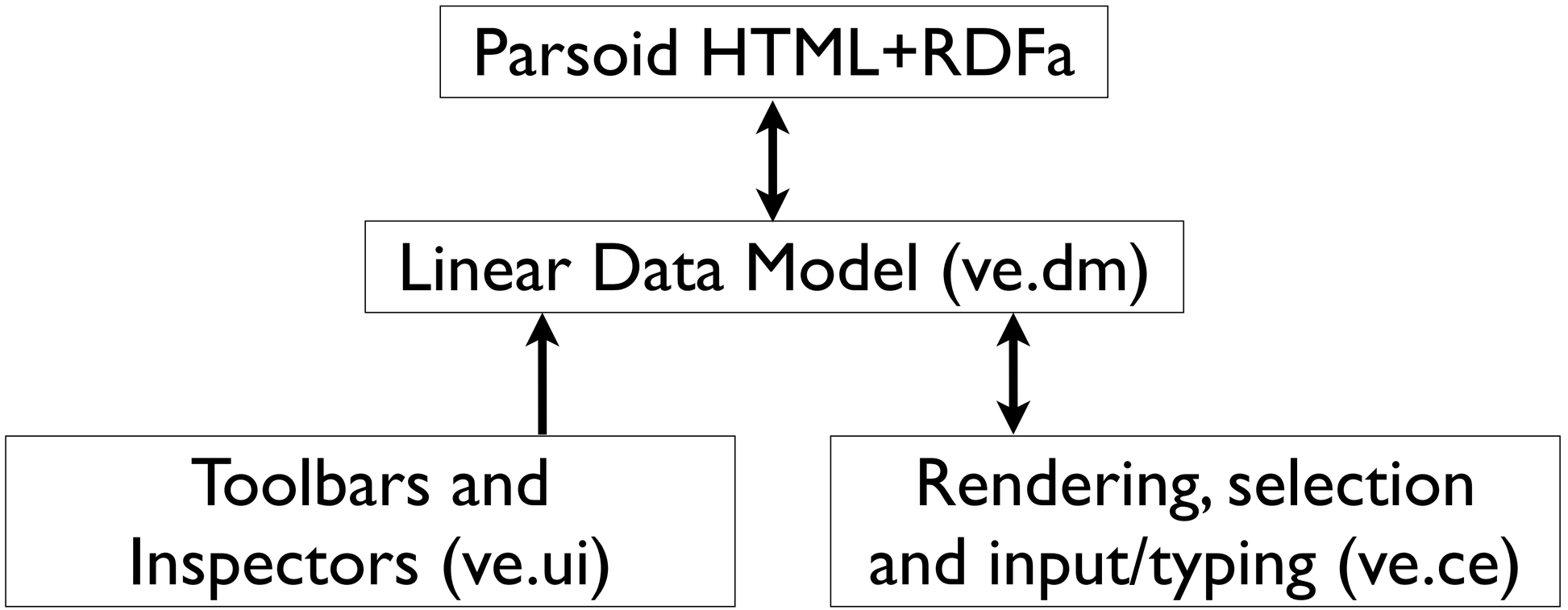
Transformations



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Flexibility and modularity

- Designed to be very modular
- Can easily replace or extend existing tools
- Even with a user script or a gadget
- Can expand for new content, uses and platforms

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Data Model

Image: https://commons.wikimedia.org/wiki/File:Xmatrix.png – screenshot of XMatrix by Jamie Zawinski, licensed under the MIT/Expat licence

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Outline

- We can't edit the Parsoid HTML+RDFa directly
- Reliable conversion from HTML to a thing we can edit
- Round-trip back to HTML without corruption
- Synchronise with ContentEditable (both ways)
- Needs to support real-time collaborative editing

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Example

- Gives us a linear view of the HTML tree:
  `<p>Hi</p>`
  →
  `[{type:'paragraph'},'H','i',{type:'/paragraph'}]`
- Lets us create linear, fully reversible transactions (diffs)
- Keeps track of every change for undo/redo
- ...and collaboration

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Language challenges

- Data Model stores characters as an array of objects
- We changed from code units to grapheme clusters
  - n̂g (code units): [‘n’, ‘^’, ‘g’]
  - n̂g (grapheme clusters): [‘n^’, ‘g’]
  - This doesn’t work, so we’re reverting to code units

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Language issues

- Supplementary characters: 𨋢
- Complex grapheme clusters: (ᴅᴏᴏ)
- Combining accents: faç̀on
- Bi-directional: עב12345רית
- Input methods (East Asian, Indic, ...)

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Language testing

We need *your* feedback!

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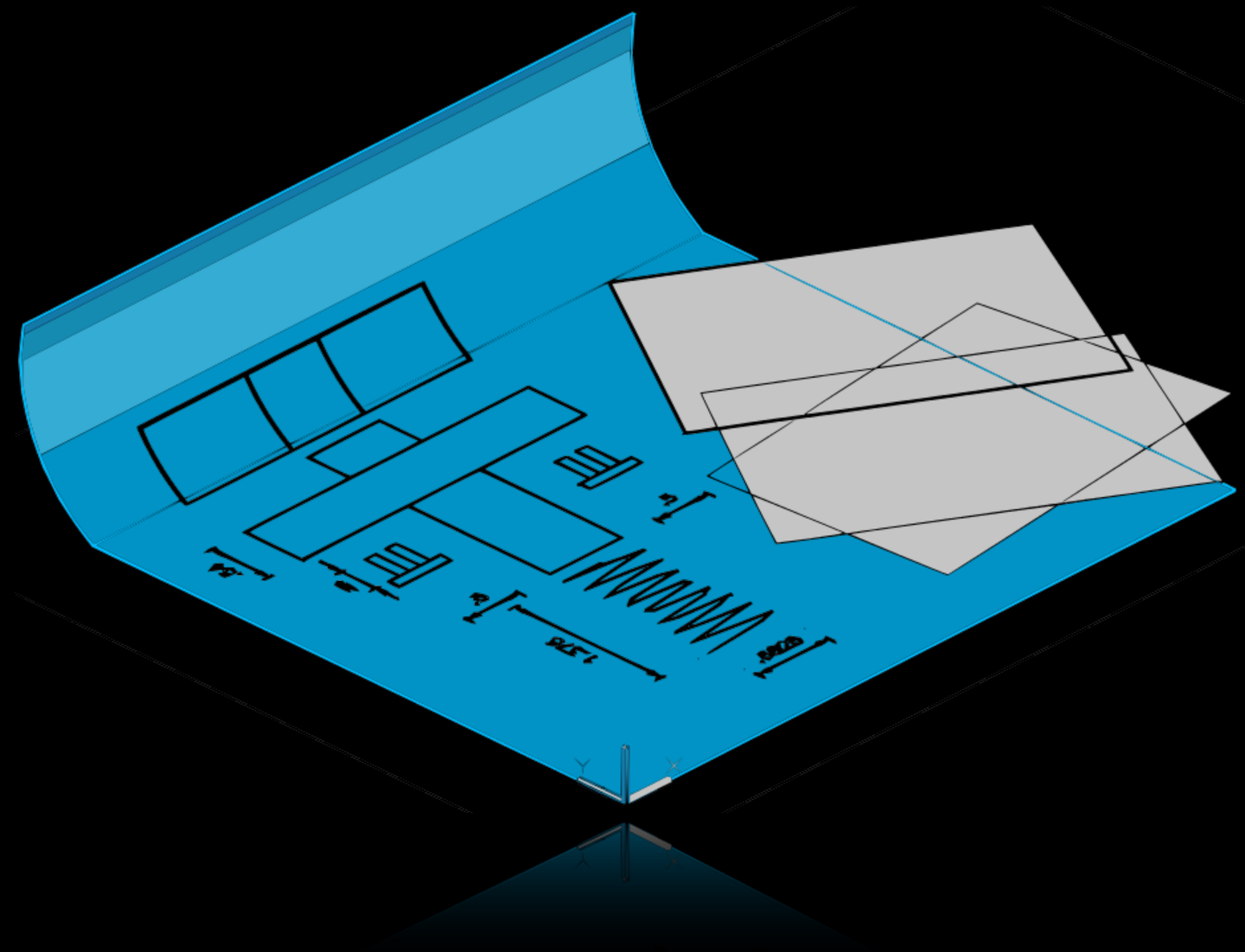

Content Editable

Image: https://commons.wikimedia.org/wiki/File:Polytechnic.svg – Available under CC-BY-SA 3.0 by [[User:Μηχανικός1]]

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Browser Content Editable

- Messes up HTML
- Inconsistent key handling
- Adds <br> tags

- Native text insertion
- Spellcheck
- Selection & cursor
- Equal rendering

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Programatic cursor handling

- Stop the browser's native cursor handling
- Prevent the cursor from entering protected elements
- Allows us to skip over non-editable elements
- Keyboard deleting is more predictable
  (we have control)

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SurfaceObserver

- Poll for content changes and notify model
- Use compositionStart + compositionEnd
- May be replaced with native MutationObservers

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Editing Tools

Image: https://commons.wikimedia.org/wiki/File:Blacksmith_anvil_hammer.svg – Public domain, uploaded by [[User: Midnightcomm]]

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Actually editing stuff!

Text formatting

- "Annotations" – things like **bold**, *italic*, link, …
- Includes more complex ones which need inspectors

Generated content

- References, templates, meta-data, media items, …
- Where VisualEditor is unique – a generic capability

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Current & future tools

- Bold
- Italic
- Link
- Lists
- In/outdenting lists

Coming soon:

- Language (`lang="en"`)
- Underline/Strikethrough
- Superscript/Subscript
- In/outdenting paragraphs

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Current & future dialogs

- Transclusion editing
- Reference editing/re-use
- Reference list editing
- Page settings
- Media inserting/settings

Coming soon:

- Code (`<syntaxhighlight>`)
- Equation (`<math>`)
- Hieroglyphics (`<hiero>`)
- Tables (`{| … |- … |}`)

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Usability is key

- Editing tools are critical to using VisualEditor
- Continuous iteration for improvement
- Unlike wikitext editing, discoverability is possible
- Provide full functionality but push “norms”
- Balance ease of use with consistency

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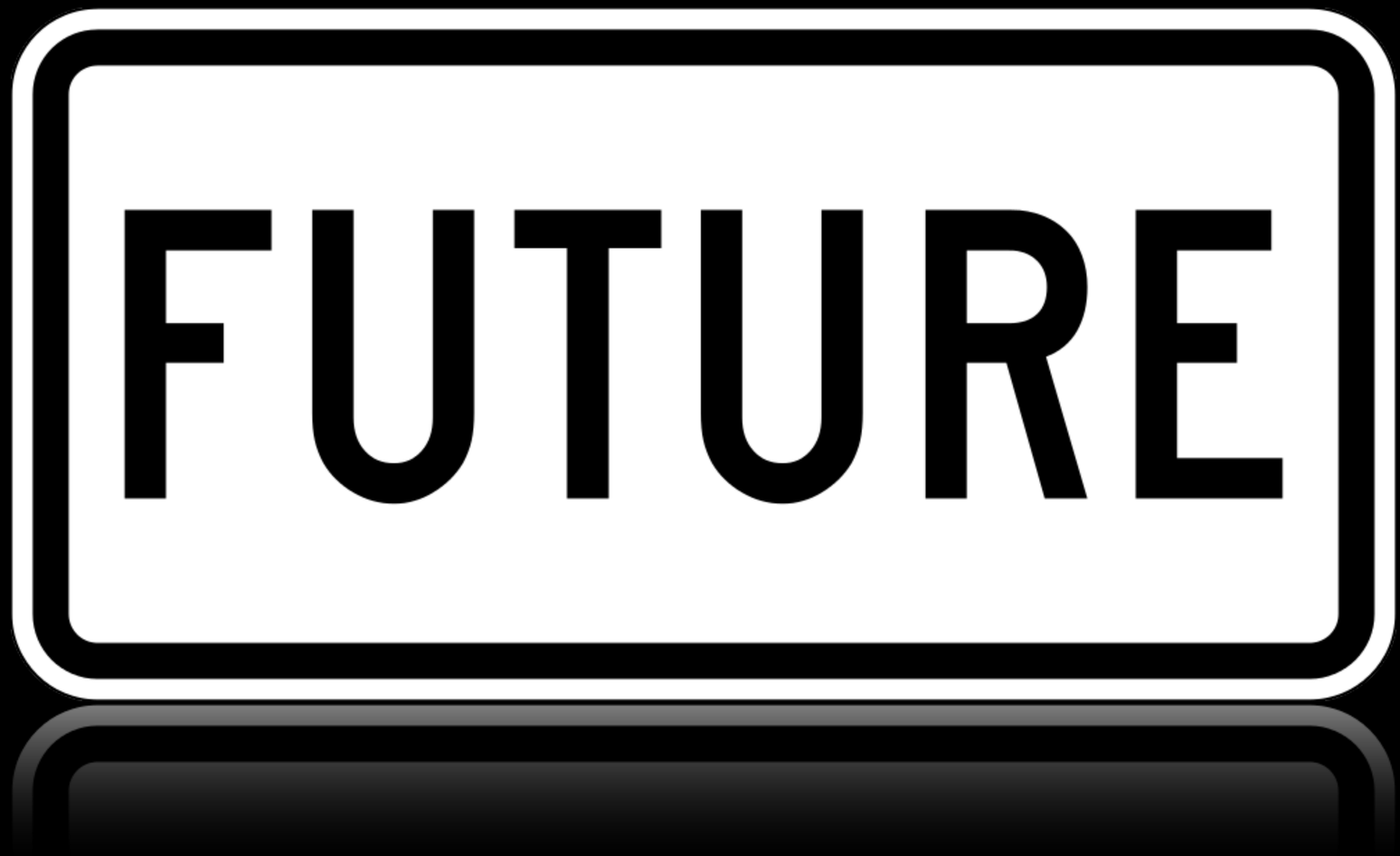

Next steps

Image: https://commons.wikimedia.org/wiki/File:Future_plate.svg – Public domain, created and uploaded by [[User:Ltljltlj]]

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What we're working on now

- Main focus is stability, usability, and performance
- Language features (IME, variants, section mark-up, …)
- Editing of tables, galleries, formulæ, code blocks, …
- Support editing on mobile, as part of Flow, and others
- Make available for other Wikimedia wikis & 3rd parties

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Questions?

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The present and future of editing our wikis

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