Templates are dead!
Long live templates!

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Wikitext pop quiz!

```
{{echo|#foo}}{{echo|#foo}}
```

How does this render?

1. foo
2. foo

WAT

[T14974](https://example.com/t14974) (behavior changed on [January 3, 2008](https://example.com/january) to fix bug 529)
Implicit newline insertion at start of template
Wiki text pop quiz! (2)

`{{echo| foo}}{{echo| foo}}`

*How does this render?*

```
foo foo
```

```
<pre>foo foo</pre>
```

WAT

Where did the implicit newline go?

Implicit newline only inserted before `*` `#` `:` `;` `{` `|`
I want to color my text.

How do I write this in wikitext?

{{Font color|black|yellow|2 + 2}}
I want to color my text.

2+2 = 4

How do I write this in wikitext?

{{Font color|black|yellow|2 + 2 = 4}}

RIGHT?

No, this produces:

yellow

WAT
I want to color my text.

2+2 = 4

How do I write this in wikitext?

{{Font color|black|yellow|<nowiki>2 + 2 = 4</nowiki>}} “nowiki”
or
{{Font color|black|yellow|2 + 2 {{=}} 4}} “braces”
or
{{Font color|black|yellow|3=2 + 2 = 4}} “named parameters”
or
{{Font color|black|yellow|2 + 2 &\#61; 4}} “entities”
Wikitext pop quiz! (3)

[http://example.com{{echo|:443}}]]

*How does this render?*

[[http://example.com
443]]

**WAT**

Oh, right:
Implicit newline inserted before * # : ; { |
Wikitext pop quiz! (4) “nowiki”

[http://example.com{{echo|<nowiki>:443</nowiki>}}]

How does this render?

:443

WAT

<nowiki> breaks link
Wikitext pop quiz! (5) “braces”

[http://example.com{{echo|{{::}}443}}]

How does this render?

As a link to http://example.com{{::}}443

WAT

(or same as previous if Template:: actually existed)
How does this render?

[http://example.com{{echo|1=:443}}]

WAT

(yeah, no surprise here)
Wikitext pop quiz! (7) "entity"

[http://example.com{{echo|&amp;#58;443}}]

How does this render?

[1]

(This is actually correct!)
So, you’re saying that we should always use entities for escapes?
I want to make a table.

<table>
<thead>
<tr>
<th>Hello</th>
<th>world!</th>
</tr>
</thead>
</table>

*How do I write this in wikitext?*

```wikitext
{| | Hello || world
|}
```

Hello world!
But I want to use a template!

How do I generate the contents with a template?

```{|{{echo|| Hello || world}}|}
```}

RIGHT?

No, silly, this produces:

<nothing>
But I want to use a template! “nowiki”

| Hello          | world! |

How do I generate the contents with a template?

```{|
{{echo|<nowiki>| Hello || world</nowiki>}}
|}
```

RIGHT?

No, this produces:

| Hello || world |
But I want to use a template! “entities”

How do I generate the contents with a template?

```
{| {{echo|&amp;#124; Hello &amp;#124;&amp;#124; world}} |
```

RIGHT?

No, this produces:

```
| Hello || world
```
But I want to use a template! “braces”

Hello | world!

How do I generate the contents with a template?

```
{{echo|{{||}} Hello {{|}}{{|}} world}}
```

RIGHT?

No, this produces:

```
{{||}} Hello {{||}}{{||}} world
```
But I want to use a template! “braces”

<table>
<thead>
<tr>
<th>Hello</th>
<th>world!</th>
</tr>
</thead>
</table>

How do I generate the contents with a template?

```
{| {{echo|{{!}}} Hello {{!}}{{!}}} world}} |
```

RIGHT?

Yes, finally.
Congratulations!

You are a wikitext expert.
Don’t get me started...

Not included in this talk:

- Whitespace stripping of parser function arguments (vs template args, not stripped)
- Interaction of templates and extension tags (eg, nested refs)
- Parser functions/magic words
  - For example: {{urlencode}}
- Lua / Scribunto (it’s own argument/result escape mechanisms)
- Wikitext issues unrelated to templates
  - Entity inconsistencies, category whitespace, etc.

(There are some bonus slides at the end if you’re interested!)
So, it’s hard to properly escape content, and escaped content is hard to read. Is that all?
The perils of string concatenation

```html
<table>
  <tr>
    <td class="foo"> Hello </td>
    <td> world </td>
  </tr>
</table>
```
The perils of string concatenation

```html
<table>
<tr>
<td class="foo">Hello </td>
<td>world </td>
</tr>
</table>
```
There be monsters

- Escaping and sanitization
- Efficient transclusion
- Visual editing
- Mangle separation of code/data/layout

And language converter makes things worse!
- Conversion rules take effect from point of insertion, no matter how deeply nested the transclusion (RFC)
Save me!
The road ahead.

Steps towards improving templated markup:

- Enforcing well-structured templates
- Alternative argument passing mechanisms
- Separating code, data, and presentation

- First-class infoboxes from wikidata
  - Wikia, WMF, and Wikidata implementations
- Content widgets
- Semantic image styling
Let’s add a marker to well-behaved templates.

- Encourage authoring of templates that are editable in Visual Editor *(example in next slide)*.
- Run tidy to enforce hygiene.
- Sales pitch: parse/render performance.
- Templates without the marker will render correctly, just more slowly.
- Bikeshed color:
  - XMLish tag, or magic word
  - Name of tag or word

“Hygienic templates”
Hygienic templates. What they might look like:

Now:

T51400
[[File:Foo.jpg|{{largethumb}}|caption]]

T46498
{| class="wikitable"
| {{Yes}} (with caveats)
|}

Becomes:

{{Largethumb|Foo.jpg|caption}}

{{| class="wikitable"
| {{Yes|Yes (with caveats)}}
|}}
A fly in the ointment

But what about that example:

\{\{Largethumb|Foo.jpg|caption\}\}

Didn’t we just agree that the escaping rules for template contents were baroque and painful?

Why are you making me escape the caption?
Save me!
A better way to escape arguments.

Now:

```
{{Largethumb|Foo.jpg|caption}}
```

Becomes:

```
{{>Largethumb|Foo.jpg}}
caption
{{<Largethumb}}
```
A better way to escape arguments.

Now:

```template
{| Hello | world |
```

Becomes:

```template
| Hello | world |
```
First person plural pronouns in Isthmus-Mecayapan Nahuat:

:`'nejamēn'` ({{IPA|[nehameːn]}}) "We, but not you" (= me & them)
:`'tejamēn'` ({{IPA|[tehameːn]}}) "We along with you" (= me & you & them)
Do we need more arguments?

{{>If| {{1}} }}
option 1
{{else}}
option 2
{{<If}}

{{>Largethumb}}
{{>file}} Foo.jpg {{<}}
{{>caption}} yeah {{<}}
{{<}}

Let’s paint that bikeshed, folks!

Just give me a way to pass an unescaped argument.

“Hygienic arguments”
I love you, but we need to break up.

Presentation != Code != Data

- Code should manipulate data or structured DOM (not wikitext strings)
- String data is automatically escaped
  - Your function can return “<a>” or “[[Foo]]” and it will appear literally
  - Return $(‘<a>’) or something similar if you want to emit a link
- Data is JSON or a wikidata query, not a wikitext string
- Presentation is editable with VisualEditor
  - Minimal markup, eg Spacebars variant of Handlebars
  - Structured semantics, not string concatenation
<table>
<thead>
<tr>
<th>event</th>
<th>gold</th>
<th>silver</th>
<th>bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shotput</td>
<td>USA</td>
<td>GER</td>
<td>MEX</td>
</tr>
<tr>
<td>Discus</td>
<td>MEX</td>
<td>USA</td>
<td>GER</td>
</tr>
<tr>
<td>Javelin</td>
<td>GER</td>
<td>MEX</td>
<td>USA</td>
</tr>
</tbody>
</table>
Scribunto/JS (ES6 module syntax) is Code

JavaScript reduces barriers to entry
<table>
<thead>
<tr>
<th>Country</th>
<th>Gold</th>
<th>Silver</th>
<th>Bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td>{{country}}</td>
<td>{{gold}}</td>
<td>{{silver}}</td>
<td>{{bronze}}</td>
</tr>
</tbody>
</table>

"row" is from data context

Block helper invocation

Visual Editor with placeholders (Handlebars syntax) is Presentation
Alternatives to Templates
A talk at Wikimania this year:

- **Making Infoboxes easier to edit and maintain with the help of Wikidata** (Sun 9am)

Also:

- An alpha feature from the mobile team
- In production at Wikia
Jon Robson’s implementation for mobile

Code at: ../mobile.infobox/Infobox.js

Live demo:
https://en.m.wikipedia.org/wiki/Albert_Einstein?mobileaction=alpha
Albert Einstein

German-American physicist and founder of the theory of relativity

"Einstein" redirects here. For other uses, see Albert Einstein (disambiguation) and Einstein (disambiguation).
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Physicist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>philosopher of science</td>
</tr>
<tr>
<td></td>
<td>inventor</td>
</tr>
<tr>
<td></td>
<td>non-fiction writer</td>
</tr>
<tr>
<td></td>
<td>Astronomer</td>
</tr>
<tr>
<td></td>
<td>educationist</td>
</tr>
<tr>
<td>Employer</td>
<td>Swiss Federal Institute of Intellectual Property</td>
</tr>
<tr>
<td></td>
<td>Charles University in Prague</td>
</tr>
<tr>
<td>Religion</td>
<td>Agnosticism</td>
</tr>
<tr>
<td>Signature</td>
<td>[Albert Einstein signature]</td>
</tr>
</tbody>
</table>

View on Commons    View on Wikidata

Edit this information
Educated at
ETH Zurich
Alte Kantonsschule Aarau
Luitpold-Gymnasium

Mexico City
capital city of Mexico

Mexico City

Mexico City

Mexico City

1968 Summer Olympics

games of the XIX Olympiad, celebrated in

Mexico City Metro
“Infobox templates are among the most-used on Wikia. They’re nearly ubiquitous, and for good reason: they're easy to understand and pack a lot of information into a small area. [...] The problem? They translate very poorly to mobile experiences. [...] That's why we're releasing this new early beta markup for infoboxes. [...] I've uploaded several examples of the new markup to communitytest.wikia.com [...]”

- [Infoboxes are evolving - can you help guide their progress?](May 21, 2015)
Infobox preview tool built by Inez Korczyński:
http://infoboxpreview.appspot.com/
<table>
<thead>
<tr>
<th>Label</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full name</td>
<td>Bill</td>
</tr>
<tr>
<td>Alias</td>
<td>Snake Charmer</td>
</tr>
<tr>
<td>Age</td>
<td>63</td>
</tr>
<tr>
<td>Born</td>
<td>1941</td>
</tr>
<tr>
<td>Death</td>
<td>2004</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Affiliation</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td></td>
</tr>
</tbody>
</table>
Content widgets

Rough ideas at https://www.mediawiki.org/wiki/Parsoid/Content_widgets

Syntax strawman:
<datatable src="wikidata:query-383190" options="..."/>

With inline data:
<datatable options="...">{ .. inline JSON data .. }</datatable>
Alternative displays of article content would like to restyle images, but images don’t have enough semantic information.

For example:

- “Lead image” on mobile
- “Feature image” in PDF output, gets own page
- “Full width” images, eg timelines, Earth/moon
- “Large thumb” (used on nlwiki)
- “Smart crop” (focus data, from wikidata)
- Consistency! (discourage px-level manipulation)
Semantic image styling (T90914)

Strawman syntax:

```
[[File:Foo.jpg|style=thumb]]
```

replaces the existing 'thumb' option

```
[[File:Foo.jpg|style=largethumb]]
```

used by nlwiki to apply a second "larger" thumbnail size

```
[[File:Foo.jpg|style=fullwidth]]
```

appropriate for wide figures, timelines, etc

How do we define these styles?
If they are templates, can we make them hygienic?
Recap
To recap.

Lots of ideas about improving templated markup.

Some general:
- Hygienic templates
- Hygienic arguments
- Code/data/presentation splits

Some specific to particular uses:
- Infoboxes
- Content widgets
- Semantic images
Thank you!

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More WAT
Don’t get me started...

Not included in this talk:

- Inconsistent behavior of %xx and &...; escapes
- Inconsistent behavior of various kinds of whitespace (& stripping it in parser functions)
- Strings of single quotes
- Extension tags (eg, nested refs)
- Parser functions/magic words
  - For example: {{urlencode}}
- Lua / Scribunto

(But there are some bonus slides at the end if you want!)
I want to make a reference.

foo[^1]

[^1] bar

How do I write this in wikitext?

foo<ref>bar</ref>
I want to make a reference.

foo[1]
[2] bat

How do I write this in wikitext?

foo<ref>bar<ref>bat</ref></ref>

RIGHT?

No, this produces:

foo</ref>
I want to make a reference.

foo\[[1]\]

[1] bar\[[2]\]

[2] bat

*How do I write this in wikitext?*

```wikitext
foo<ref>bar<ref>bat</ref></ref>
```

**RIGHT?**

No, this produces:

```wikitext
foo</ref>
```
I want to make a reference.

foo[1]
[2] bat

_How do I write this in wikitext?_

foo<ref>bar{{#tag:ref|bat}}</ref>

**RIGHT?**

No, this produces:

foo[1]
[1] bar
I want to make a reference.

foo\[1\]
[1] bar\[2\]
[2] bat

*How do I write this in wikitext?*

foo\{\#tag:ref|bar<ref>bat</ref>\}

**RIGHT?**

**No, this produces:**

foo\[1\]
[1] bar

(But Parsoid gets this version right.)
I want to make a reference.

foo
[1] bar
[2] bat

How do I write this in wikitext?

foo{{#tag:ref|bar<ref group=“b”>bat</ref>}}

RIGHT?

SORT OF.

Turns out you can’t quite do this in PHP.
I want to make a reference.

foo[^1^]
[^1^] bar[^1^]
[^1^] bat

*How do I write this in wikitext?*

```
foo{{#tag:ref|bar<ref group=“b”>bat</ref>}}
```

**RIGHT?**

**SORT OF.**

Turns out you can’t quite do this in PHP. The second group isn’t numbered consecutively.
I want to color my text.

|2+2| = 4

How do I write this in wikitext?

{{Font color|black|yellow||2 + 2| = 4}}

RIGHT?

No, this produces:

Unexpected use of template {{4}} - see Template:4 for details.
I want to color my text.

$|2+2| = 4$

*How do I write this in wikitext?*

```wikipedia
{{Font color|black|yellow||2 + 2| {{=}} 4}}
```

*RIGHT?*

*No, this produces:*

yellow
I want to color my text.

|2+2| = 4

*How do I write this in wikitext?*

{{Font color|black|yellow|{{||}}2 + 2{{||}} {{=} 4}}}

RIGHT?

No, this produces:

{{||}}2 + 2{{||}} = 4
I want to color my text.

2 + 2 = 4

How do I write this in wikitext?

```
{{Font color|black|yellow|{{!}}2 + 2{{!}} {{=}} 4}}
```

RIGHT?

Yes, finally:

2 + 2 = 4
Wikitext pop quiz! (5)

{{urlencode:a<b>c}}

How does this render?

a%3Cb%3Ec
Wikitext pop quiz! (6)

```{urlencode:a<pre>c}
```

How does this render?

ac

WAT

[T105242](http://example.com) (behavior changed on July 9, 2015)
How does this render?

I have **Foo bananas and Bar** apples

WAT
A partial list of strange wikitext corners

- SOL context
- Newline before/after
- Attributes
- Inline/block
- `{{FOO}} = # foo`
- `{{FOO}} {{FOO}}`
Save me from the puns

This plethora of escape mechanisms

- Is an overgrowth of wiki-weed-ia
- Impairs wiki-read-ia