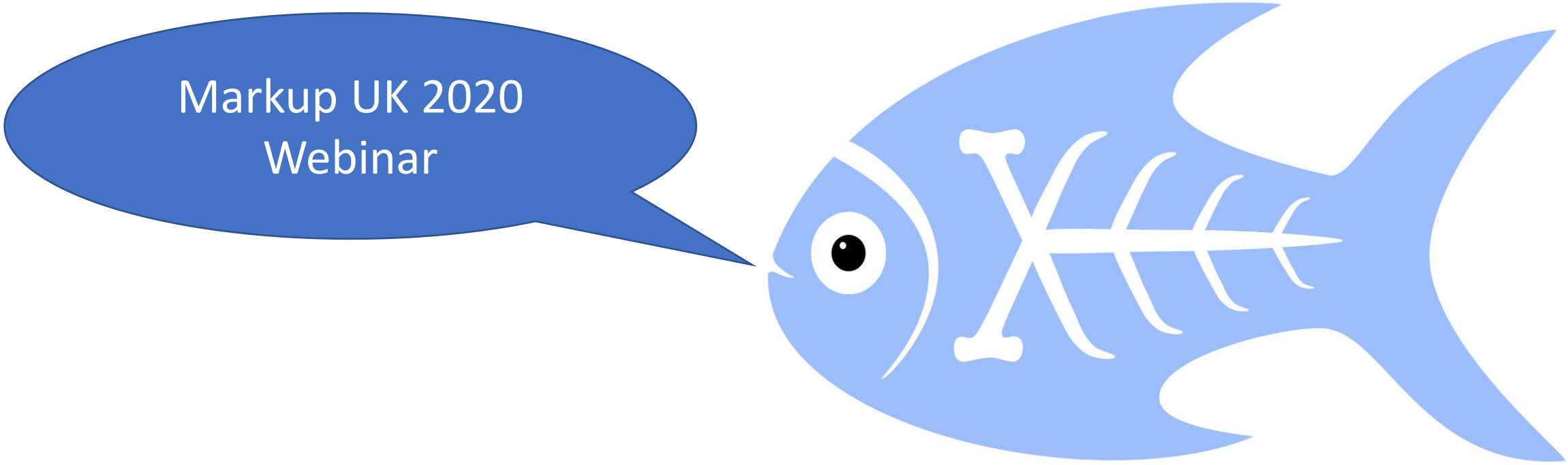
Introduction to XProc 3.0 – Part 2



GIT for this webinar: https://github.com/xatapult/markupuk-2020

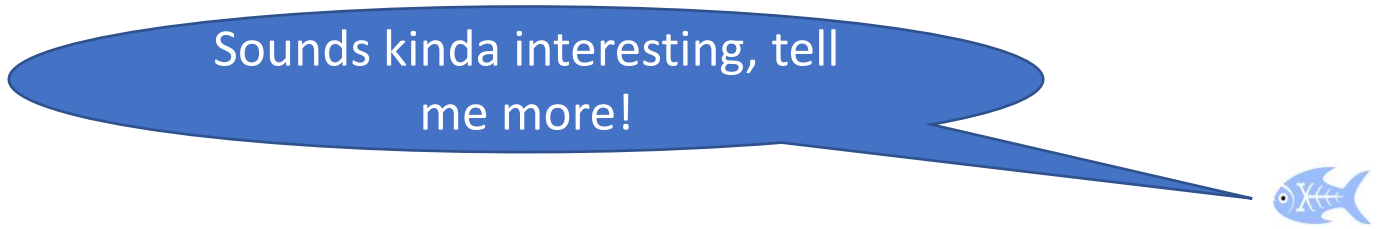
What have we learned in part 1?

- XProc is a *pipeline* language for documents, it chains *steps*
- Documents flow in and out of steps through *ports*
  - Documents can be XML, HTML, text, JSON oir binary
- One input and one output port can be *primary*: These ports *implicitly* connect (unless *explicitly* connected)
  - Primary ports are called `source` and `result` by convention
- You can connect a port to:
  - Another port (either *implicit* for primary ports or *explicit*: `<p:pipe>` or `@pipe`)
  - To a document stated inline (`<p:inline>`)
  - To a document on disk (`<p:document>` or `@href`)
- *Options* are additional switches for the steps and/or your pipelines

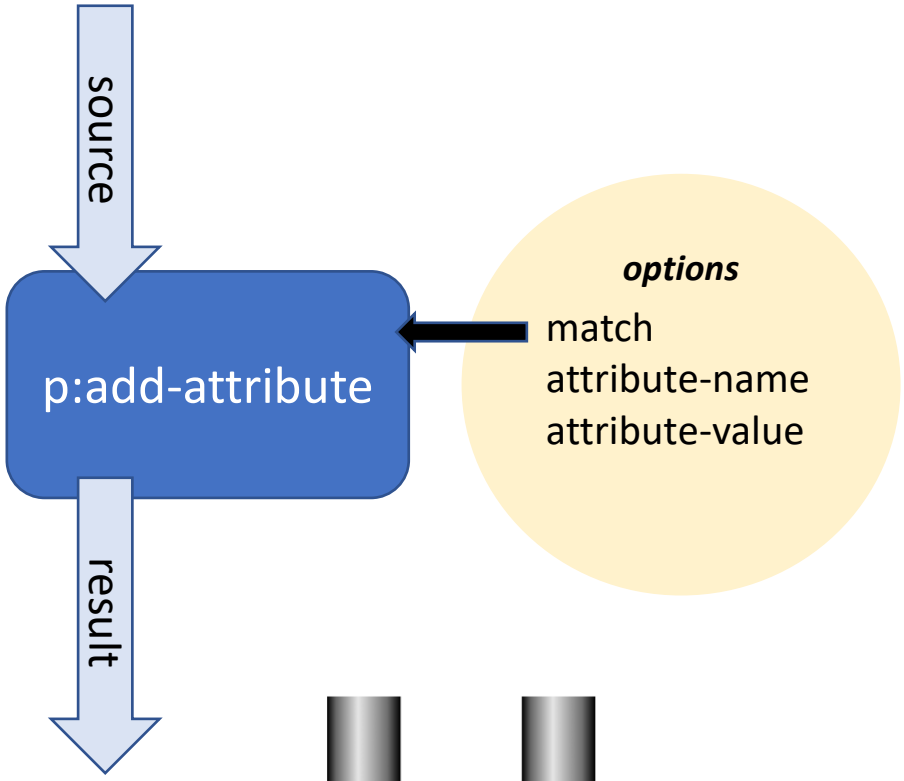
And most important: I'm Kanava, the XProc logo!

What are we going to do today?

- Revisit options
  - Setting option with attributes or **`<p:with-option>`**
- Variables
  - How to create, how to use
- Core (or Compound) steps
  - Show example of multiple document handling using **`<p:for-each>`** and **`<p:viewport>`**



Options revisited

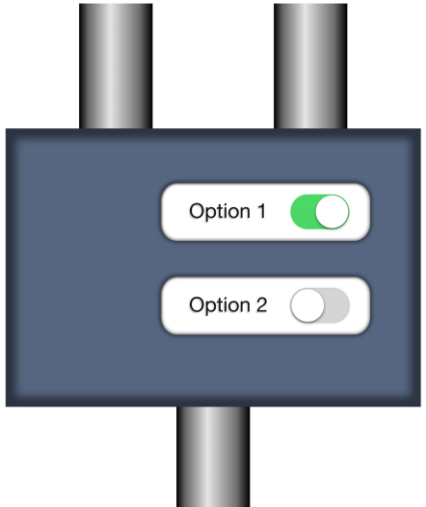


Set an option's value:

```
<p:add-attribute
  match="/*"
  attribute-name="timestamp"
  attribute-value="{current-dateTime()}"/>
```

Declare an option for your own step:

```
<p:option name="author" select="'Erik'"/>
```



Piece of cake, you've seen this last time…

Setting option's values 1: Use attributes

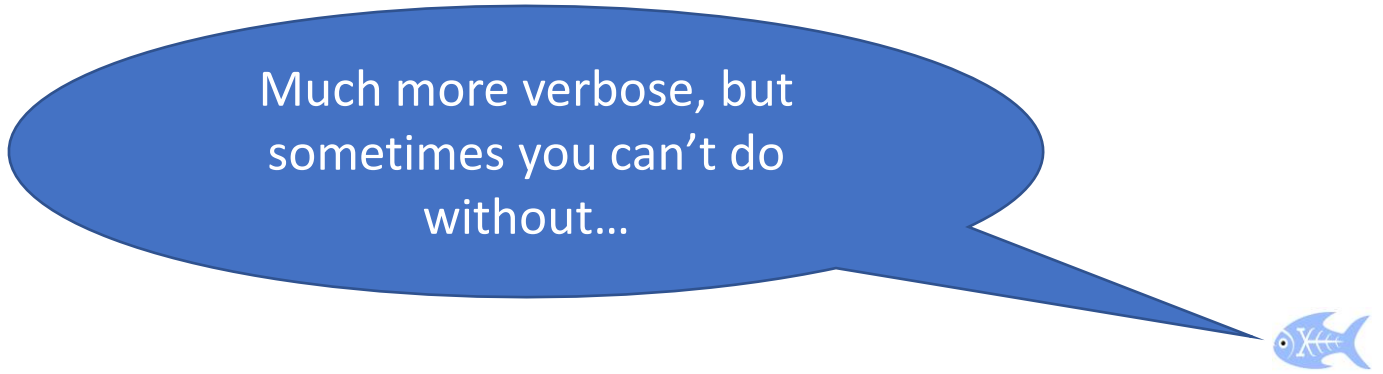
```
<p:add-attribute  match="/*"  attribute-name="timestamp"
  attribute-value="{current-dateTime()}"/>
```

- Use AVTs (Attribute-Value Templates) **{…}** to insert XPath expressions
- Works only for:
  - Simple atomic values (strings, integers, booleans, etc.)
  - Single values (so no sequences!)
  - Map and array typed values, for instance:
    <p:xslt parameters="map{ 'myparam' : 'myvalue' }" …

Setting option values 2: Use <p:with-option>

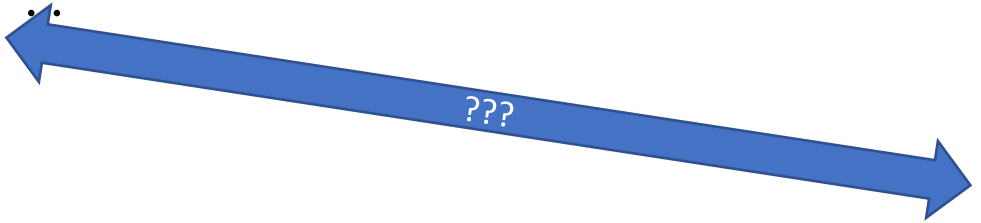
See: **markupuk-2020/101-B/example-1/example-1a.xpl**

```
<p:add-attribute>
  <p:with-option name="match" select="'/*'"/>
  <p:with-option name="attribute-name" select="'timestamp'"/>
  <p:with-option name="attribute-value" select="current-dateTime()"/>
</p:add-attribute>
```



To quote or not to quote…

```
<p:add-attribute  match="/*" ..
```




```
<p:with-option name="match" select="'/*'"/>
```

- The **`match`** option needs an XPath expression
  - Passed to **`p:add-attribute`** as a string
  - Processed *by the step itself*, not by the surrounding pipeline

- An attribute's value is just an atomic value (with the AVTs expanded)
- Any **`select`** attribute in a pipeline contains an XPath expression
  - This will be processed *by the pipeline*
  - The resulting *value* will be passed to the step

Don’t try this at home

See: **markupuk-2020/101-B/example-1/example-1b.xpl**

No more quotes…

```
<p:add-attribute>
  <p:with-option name="match" select="/*"/>
  <p:with-option name="attribute-name" select="'timestamp'"/>
  <p:with-option name="attribute-value" select="current-dateTime()"/>
</p:add-attribute>
```

- `/*` will be executed against the implicit connection
- Result passed as option’s value: **`This is a piece of text to demonstrate`** …
- The **`match`** option expects a valid XPath expression, which this is not…
- Result: Error…

$!$#@!…

Some use-cases for <p:with-option>

- If you need to pass something more complex than a single atomic value:
  See: **markupuk-2020/101-B/example-1/example-1c.xpl**

```
<p:directory-list path=".">
 <p:with-option name="include-filter" select="('\.txt$', '\.xml$')"/>
</p:directory-list>
```

- If you want to process your XPath expression against something floating out of another port:

```
<p:with-option name="attribute-value" select="/*/@status"
   pipe="some-port@some-step"/>
```

It's getting complicated…
Don't worry, most of the times setting options will be really simple!

Variables

See: **markupuk-2020/101-B/example-2/example-2a.xpl**

- Declare a variable:

```
<p:variable name="id" select="…"/>
```

- Use a variable:

```
<p:add-attribute match="/*"
   attribute-name="id" attribute-value="{$id}"/>
```

Variables with values from document

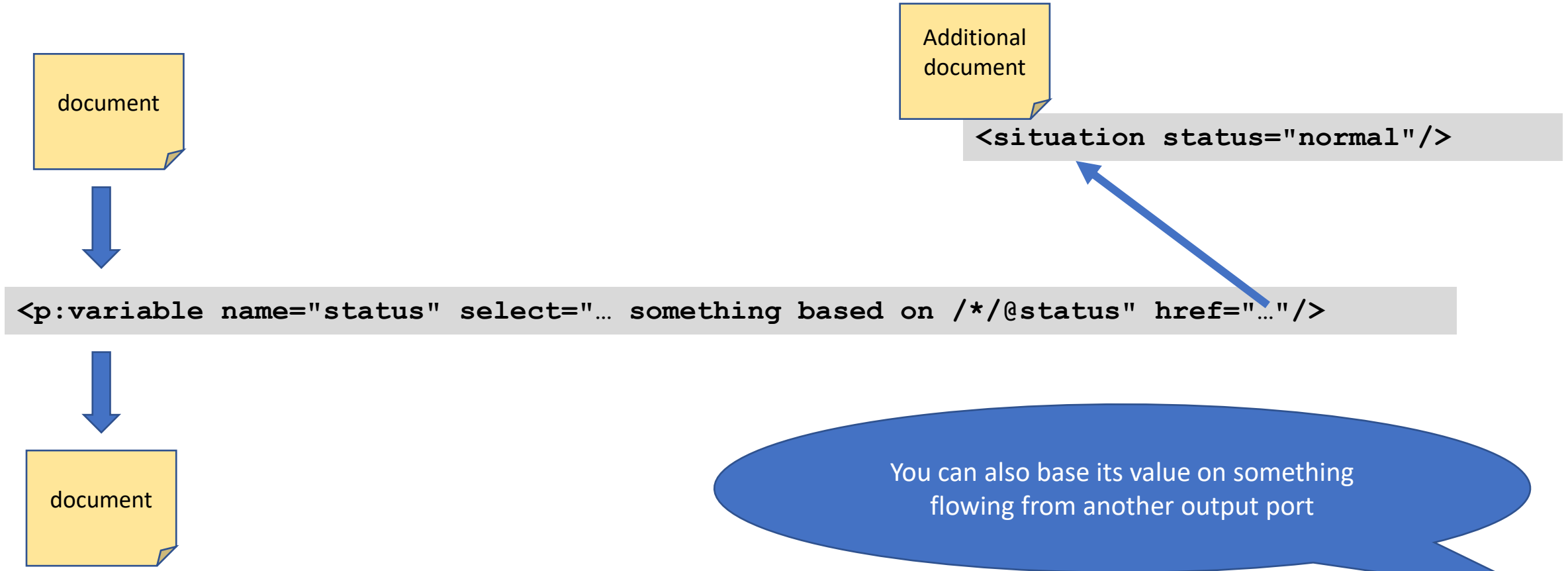
See: **markupuk-2020/101-B/example-2/example-2b.xpl**

```
<input-example user="erik">
  <title>Just some XML...</title>
</input-example>
```

```
<p:variable name="status" select="… something based on /*/@user"/>
```

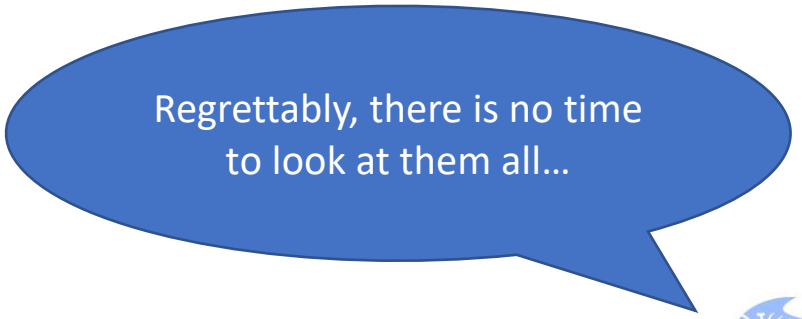
Variables with values from *additional* document

See: **markupuk-2020/101-B/example-2/example-2c.xpl**



The core (or compound) steps

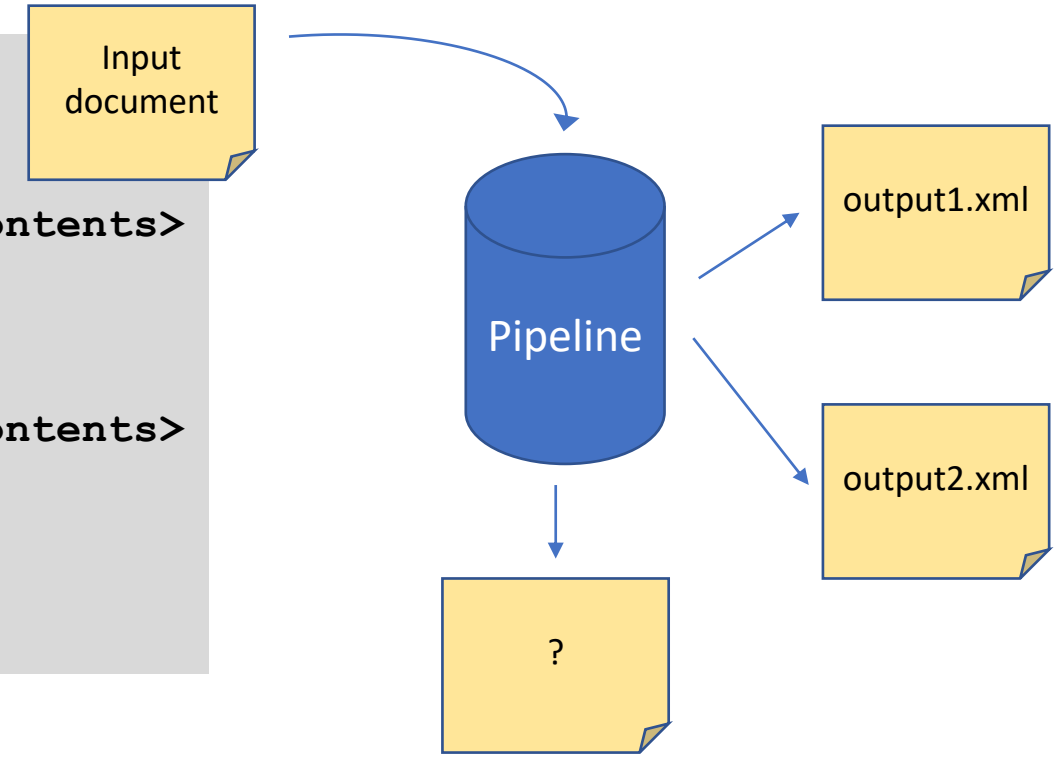
- **`p:for-each`**: loop over multiple documents or parts of a document
- **`p:choose / p:when / p:otherwise`**: Make choices
- **`p:if`**: Make a single choice (there is no else)
- **`p:viewport`**: Work on only a part of a document
- **`p:try / p:catch`**: Error catching and handling
- **`p:group`**: Grouping of instructions



Use p:for-each to split a document

See: **markupuk-2020/101-B/example-3/example-3a.xpl** and **example-3b.xpl**

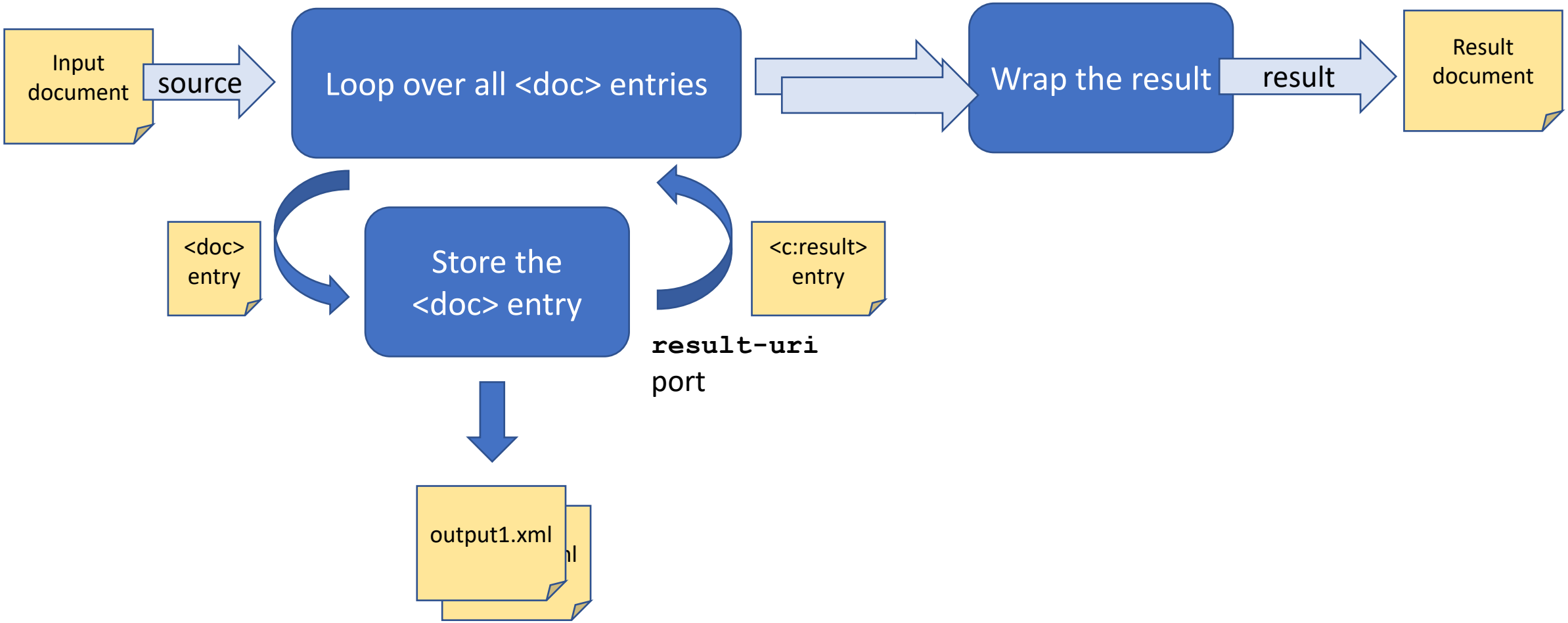
```
<documents>

  <doc filename="output1.xml">
    <contents>This is document number 1</contents>
  </doc>

  <doc filename="output2.xml">
    <contents>This is document number 2</contents>
    <more>It has some more...</more>
  </doc>

</documents>
```



Boring contents Erik

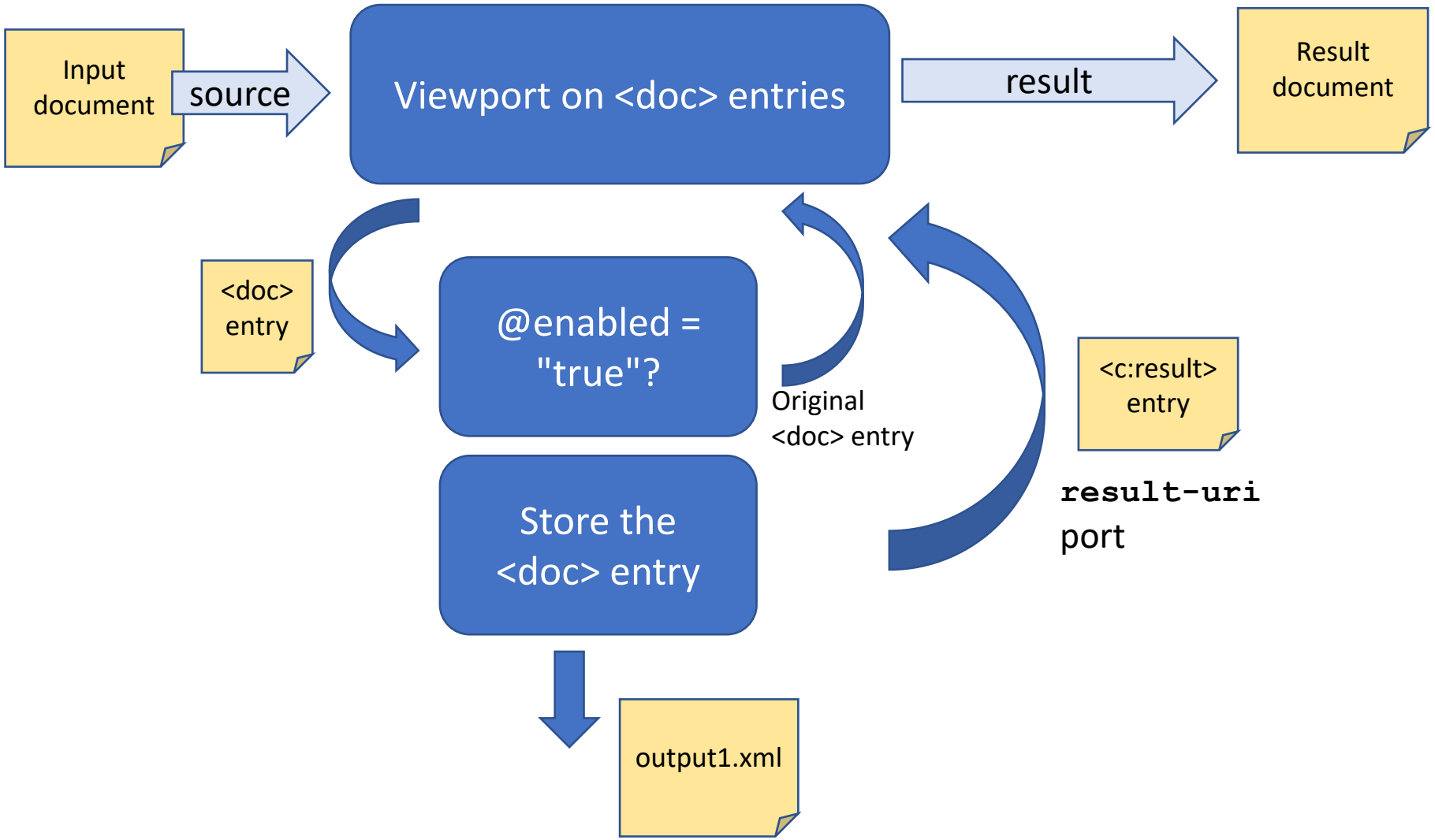
Output the resulting filenames

See: **`markupuk-2020/101-B/example-3/example-3d.xpl`**



Only store files marked enabled

See: **`markupuk-2020/101-B/example-3/example-3f.xpl`**



Wrap up:

- You can set options by attribute or using **`<p:with-option>`**
  - Watch out: Who is going to interpret the XPath expressions?
- You can define and use variables
  - XPath expression do not have to be based on the document flowing through
- There are core steps for looping, decision making, etc.
  We looked at:
  - **`p:for-each`**
  - **`p:viewport`**
  - **`p:if`**

Goodbye and thank the fish, again!

Your guide today: Erik Siegel – erik@xatapult.nl

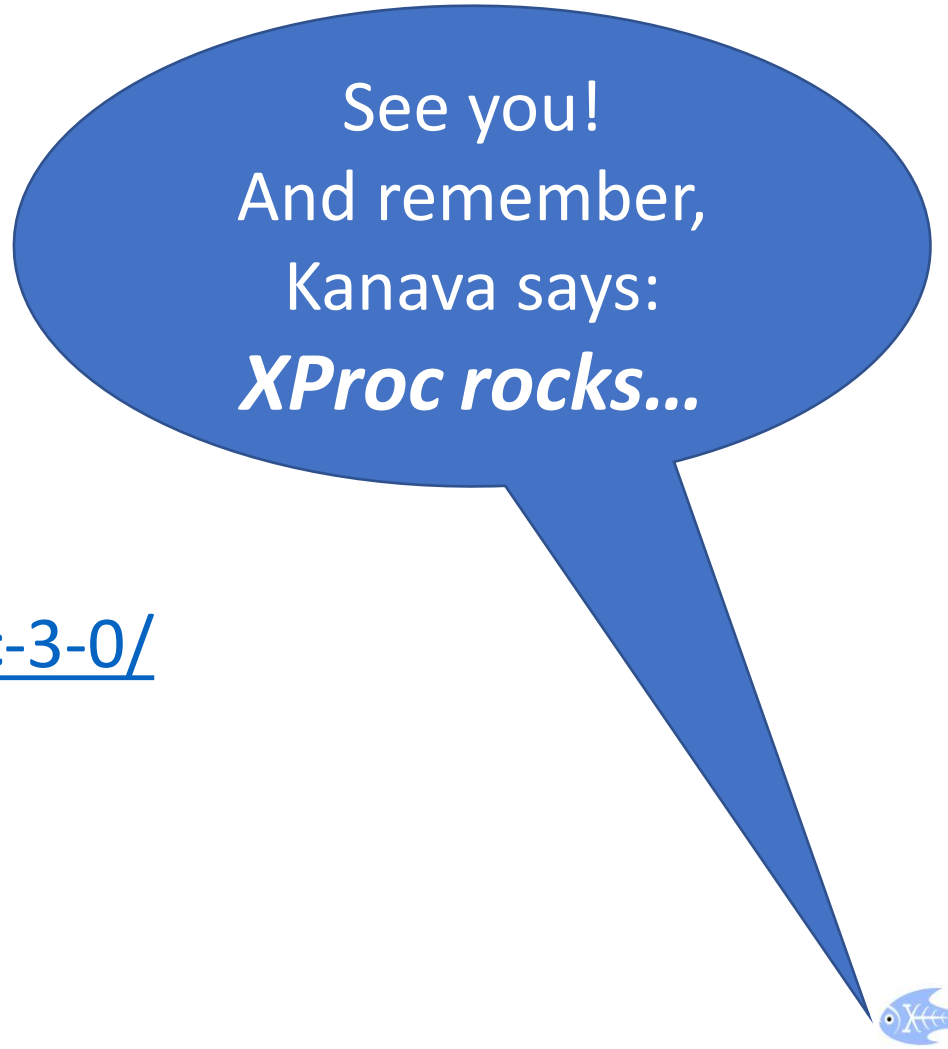
Specification: https://spec.xproc.org/

Processors:

- Morgana: https://www.xml-project.com/
- Calabash: https://xmlcalabash.com/

Articles on XProc: https://www.xml.com

Book: https://xmlpress.net/publications/xproc-3-0/



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