Implementing hybrid clients for Polarion

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Where today meets tomorrow

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Agenda

- Scope
- Why hybrid client
- Polarion-Simulink Connector as an example
- Implementation blueprints
- Implementation tips & tricks

Note: The innovative interaction between remote-API-based application and Polarion UI in Embedded browser is reflected in a patent application, and you’re more than welcome to enjoy it by creating new integrations with Polarion!

Scope

- There are continuous demand to create client applications, which communicate with Polarion Server
- Those clients fulfill different purposes
  - Automation of operations (exporting data in specific format, imports and creation of objects, etc.)
  - Synchronization of the systems (including run-time synchronization, and model mapping)
  - Alternative UIs for Polarion data
  - **Hybrid solutions – data is synchronized, but likely only partially, and the rest might be seen in Polarion directly**

Why hybrid clients

- Hybrid clients offer usually best-of-the-greed experience for the user:
  - Synchronizing of the data allows using native clients for processing of the data
  - Data synchronization could be limited to the extend, required for the client application, and not full-blown data replication
  - Possibility to see all the data in one place and in context of other objects in Polarion
- Such clients may operate on level of APIs to read/write raw data, while integration with an embedded browser can help in interoperability with rendered content of Polarion.

This presentation will concentrate on use-case with Polarion-Simulink integration, which applies the hybrid client approach.

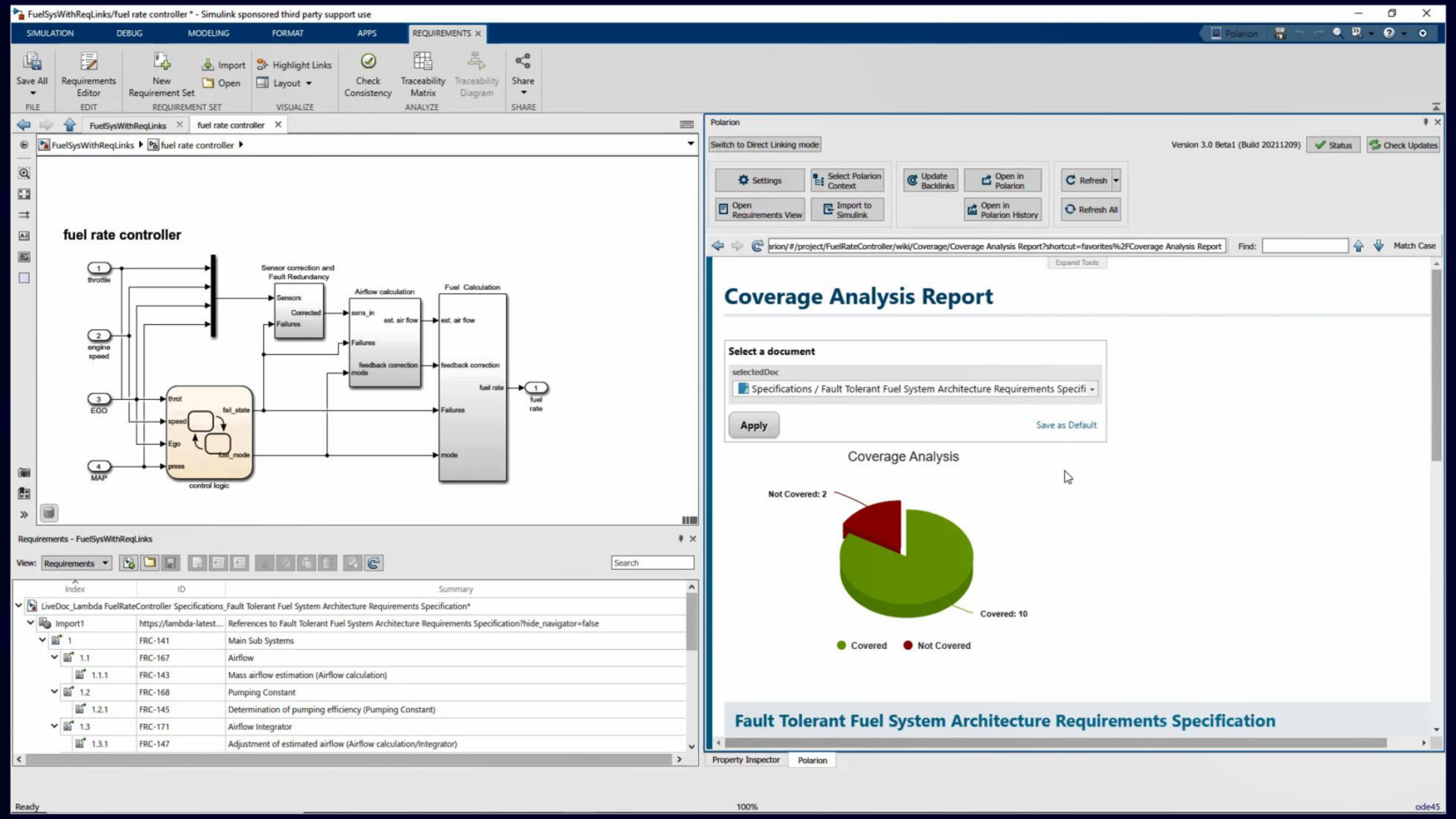
Orchestration Simulink Controls Development with Polarion

Embedded Polarion

Simplified User Experience

Traceability & Coverage

Improved Collaboration



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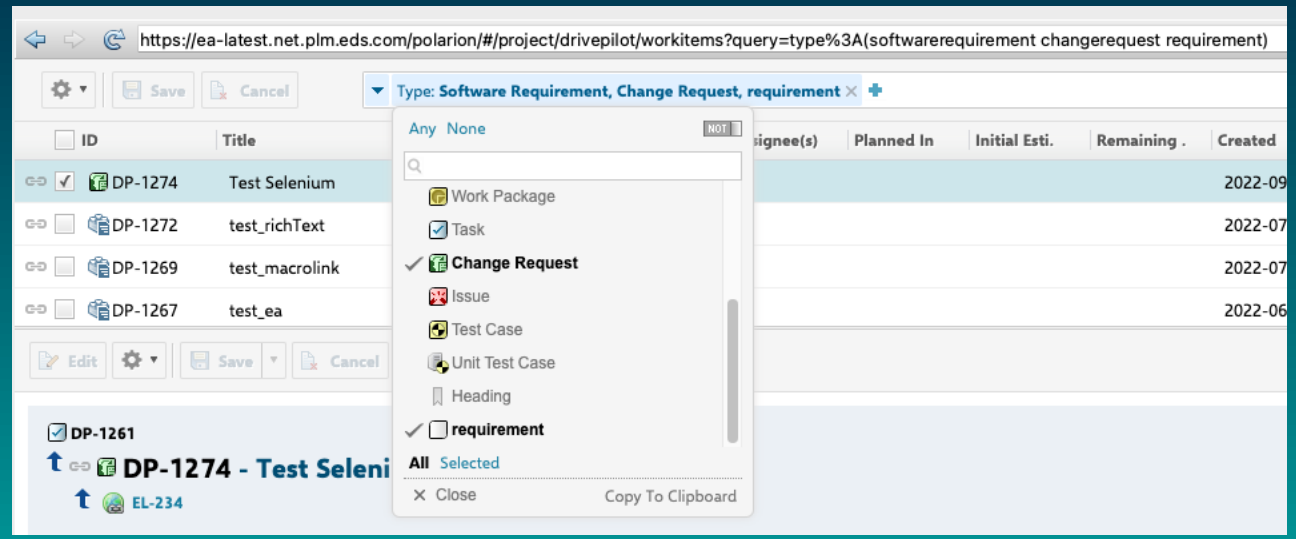
Implementation blueprints

Embedded browser integration

- Allows client application to set the URL (e.g. URL within Polarion)
- Allows client to read current URL in Polarion (even if this URL was updated by Polarion as redirection)

Polarion specifics

- Each view in Polarion has an unique URL
  - E.g. users can send URLs to each-other to recover views on other machine
- The URL incorporates all necessary parameters, characterizing the view



Using query builder – selections
are immediately reflected in the browser's URL

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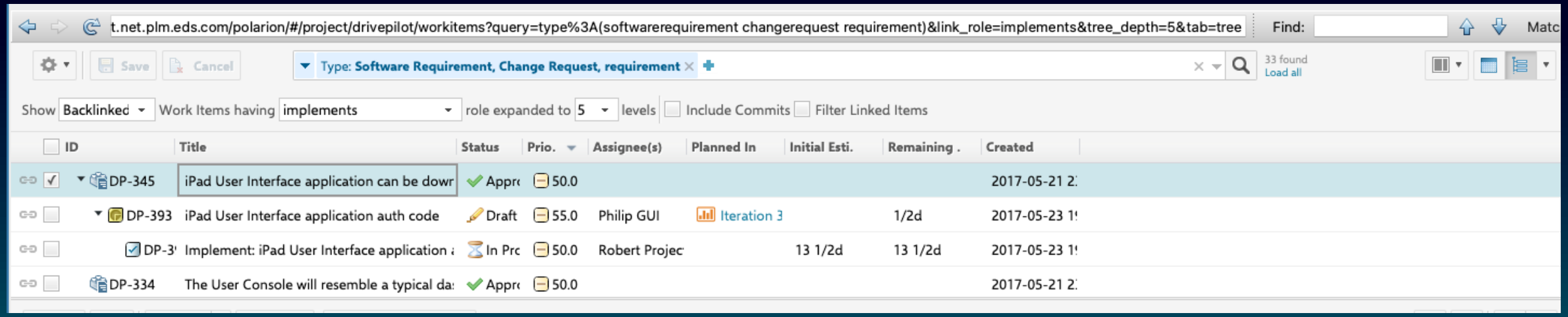
Implementation blueprints (Contd.)

URL doesn't only reflect query or filter for the content to be displayed, but also shape and form of it



Switching to the Tree view and parameterizing it with link role(s), depth of the tree, etc. is also reflected in the URL

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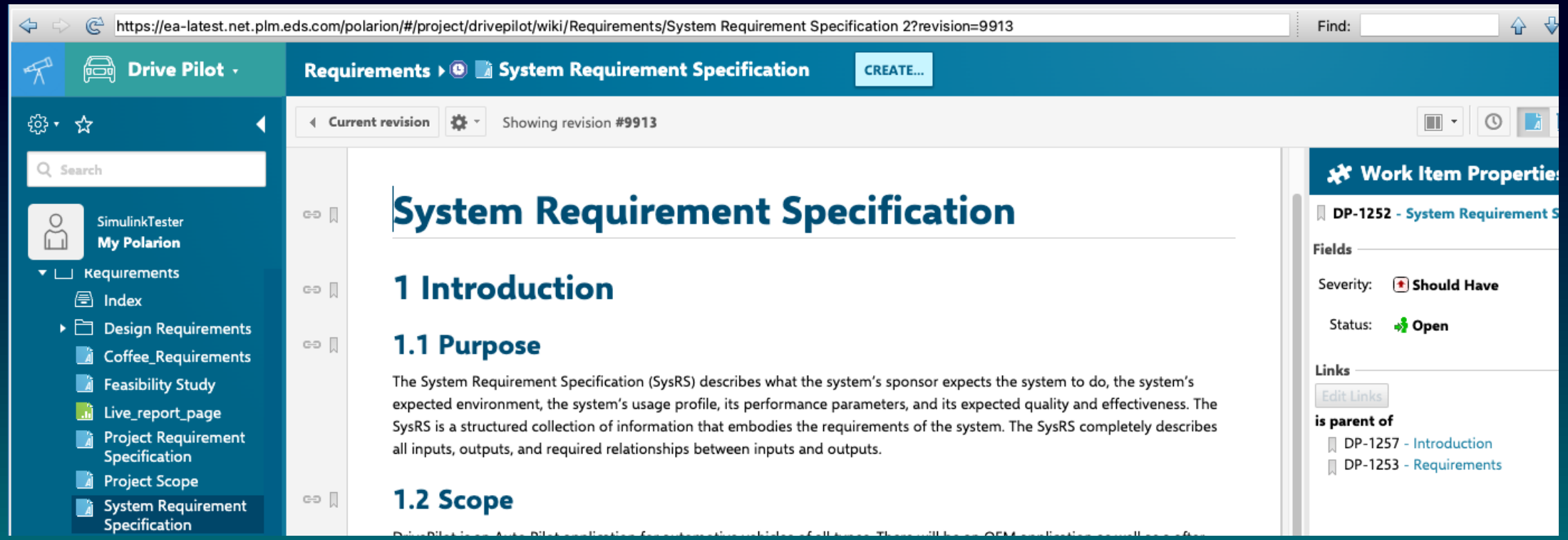
Implementation blueprints (Contd.)

ZF

Even versioning is reflected in URL



Specific version or baseline of the document is reflected in the URL

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Implementation blueprints (Contd.)

Reading the URLs

- For majority of the integration cases, client needs to differentiate access to Work Items and LiveDocs
- You might use following regular expression to parse the URL and get 3 most important tokens:
  - Server URL (if you're using any remote APIs – WebServices or REST, you'd need this anyway)
  - Project ID
  - LiveDoc location (if presented, with its space(s))
    (\S+)/polarion/(\#/|redirect/)?project/(\S[^/?]+)((/collection/.[^/]*/wiki/)|(/wiki/))?(.[^?]*)?.*
  - If you tokenize result of the RegExp, you should see: Server URL as token 1, Project ID as token 3, and LiveDoc location as token 5
- If you need to parse individual Item URL, you can use following RegExp
  (\S+)/polarion/(\#/|redirect/)?project/(\S+)/workitem\?id=(\S[^&]+).*$
  - In this case you'll get: Server URL as token 1, Project ID as token 3, and Work Item ID as token 4

Implementation blueprints (Contd.)

Parsing Parameters

- Reading of the parameters is easier, just extract part of the URL after ‘?’ delimiter, and split by the ‘&’.
- You might need to decode HTML codes for encrypted characters to the ASCII ones. There are different approaches, in MATLAB language it might look… mathematically :-)

```
function str = DecodeURL(s)
    str = '';
    k = 1;
    while k<=length(s)
        if s(k) == '%' && k+2 <= length(s)
            str = sprintf('%s%c', str, char(hex2dec(s((k+1):(k+2)))));
            k = k + 3;
        else
            str = sprintf('%s%c', str, s(k));
            k = k + 1;
        end
    end
end
```

* Example from internet

Implementation blueprints (Contd.)

Composing the URLs

- When you need to open a browser for specific item, document or query, you can compose the URL simply by concatenating those pieces:
  - Project root: [serverURL '/polarion/#/project/' projectID]
  - Individual Work Item: [serverURL '/polarion/#/project/' projectID '/workitem?id=' wiID]
  - LiveDoc: [serverURL '/polarion/#/project/' projectID '/wiki/' liveDocLocation]
  - Work Items in table: [serverURL '/polarion/#/project/' projectID '/workitems']

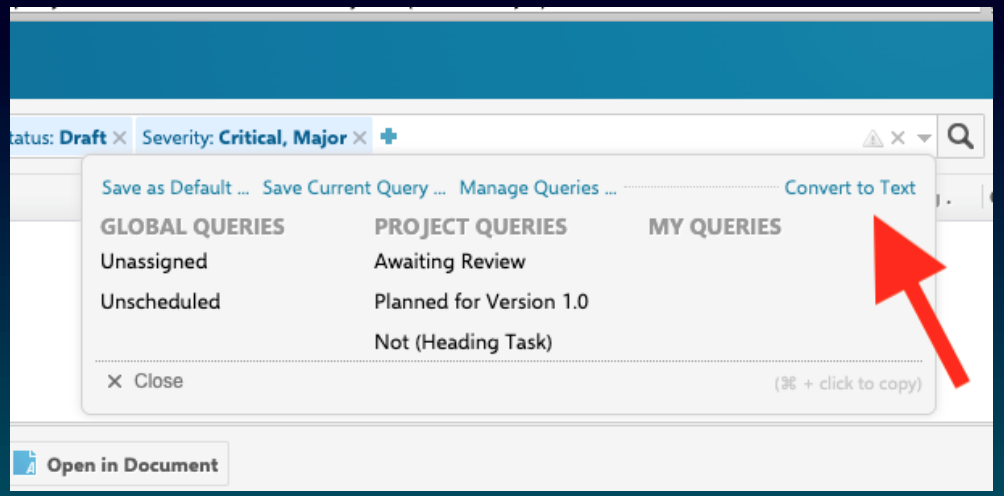
Parameterizing the URLs

- You can pass parameters in same form, as you read the URLs or simply copying those from the URL of the browser, where you've configured desired output, e.g.:
  - '?query=something' for filtering Work Item table according to the 'something'.
  - '?revision=123' allows to open particular revision of the LiveDoc

Implementation Tips & Tricks

Queries

- You can use Query Builder in Polarion, and then “Convert to Text” to create queries for the client



Special Parameters:

- You can pass parameter: ‘hide_navigator=true’ to tell Polarion to completely hide left-side navigation
- You can pass parameter: ‘selection=workitemID’ to navigate within LiveDoc
- You can use parameter: ’track_url=false’ if you want to tell Polarion not to remember this URL as last visited

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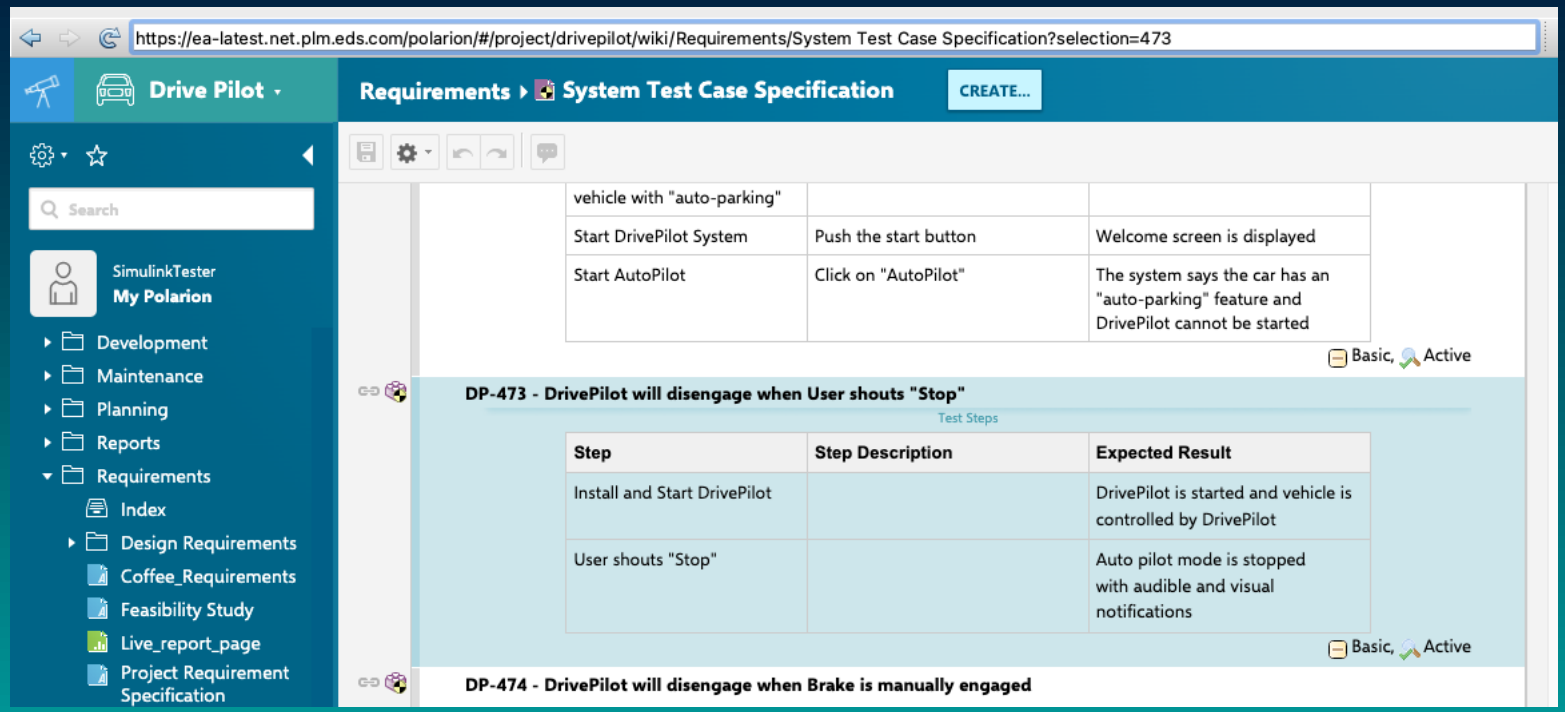
Implementation Tips & Tricks (Contd.)

Redirects

- Very likely you've noticed that majority of Polarion URLs have a '#' symbol inside. This is a pointer to the server to load whatever it is there on the right of this symbol however it decides – e.g. to load from the cache, etc. In most of the cases, it improves UX impression from Polarion, because it doesn't reload all the panels and views, but can decide which one is affected.
  For example, if you had this document already opened, and now add '?selection=DP-473', the document will be simply scrolled, and target element highlighted:



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Implementation Tips & Tricks (Contd.)

Redirects

- However, it might not work, if a second before you've created a new item in the document via API, and server didn't yet re-indexed this save. Using such URL may fail, then.
  To avoid this case, you can replace '#' symbol by 'redirect' to tell Polarion completely reload specified content:
  https://ea-latest.net.plm.eds.com/polarion/redirect/project/drivepilot/wiki/Requirements/System Test Case Specification?selection=DP-473
  instead of
  https://ea-latest.net.plm.eds.com/polarion/#/project/drivepilot/wiki/Requirements/System Test Case Specification?selection=DP-473

Additional Information

Thank You

Website	https://polarion.plm.automation.siemens.com/
Extensions	http://extensions.polarion.com
Tutorials	https://polarion.plm.automation.siemens.com/tutorials
Documentation	https://polarion.plm.automation.siemens.com/guides-and-manuals
Templates	http://extensions.polarion.com/searches?category=1-templates
Blog	https://community.plm.automation.siemens.com/t5/Polarion-Blog/bg-p/Polarion_blog
YouTube Channels	https://www.youtube.com/user/PolarionSoftware https://www.youtube.com/playlist?list=PLYGbB3CefExR30eGlmwx6M-ECMXYHlAJm

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