



Recent developments in ASCE plugins, including DOORS and PDF plugins

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Overview

- Recap on plugins
- New plugins
 - Linking to PDF
 - DOORS
 - Find/replace
 - Status field editor

Plugins – a recap

- Are a key enabling technology for adding value to the core product
- Used by:
 - Adelard - to deliver added value outside of the core application cycle
 - Improves ASCE team responsiveness to customer needs
 - Some customers develop their own, e.g:
 - confidence propagation, node “cloning” from QinetiQ
- Availability:
 - A key set delivered with product
 - Others available to customers on support
 - Download from <http://www.adelard.com>
 - Some sold separately



Plugin – technical facilities

- Implemented as XML files, using VBScript as scripting language, HTML as user interface
- Key capabilities:
 - Crawl over the network and “do something interesting”
 - Implement one or more DNRs (Dynamic Narrative Regions)
- Writing your own
 - Full documentation available on website
 - Similar skills needed to writing macros in MS Office
 - Only a text editor is needed

Plugins – external integration

- ASCE plugin engine can talk to any available COM libraries
- Many COM libraries exist for:
 - Windows itself – files, folders, registry etc
 - Databases – via ADO/ODBC
 - MS Office – Word, Excel etc
 - XML
 - Custom applications that expose a COM interface
- If you can script it over COM, it can play a role in an ASCE plugin

New plugins

- Recent plugins discussed here:
 - Linking to PDF
 - DOORS plugin
 - Find/replace
 - SchemaHelper / Generic status field editor

Linking to PDF

- Ability to link to any file already exists
- But users want to link to a specific page in PDF
- Technical challenges:
 - Only Full Acrobat (not Acrobat Reader) has useful COM interface – not widely deployed
 - Various versions of Acrobat Reader are deployed
 - V5 ... V8
 - All slightly different
 - Only latest ones have the ability to start with a specific page

PDF – Solution

- Approach – automate the user interface layer
 - Start Acrobat and send it keystrokes to navigate
 - Essentially we find the text control [Page “1 of 25”]
 - Send it the number of the page to navigate to
 - An intriguing, yet elegant Hack. It works!
- How?
 - AutoIt – a library for SysAdmin scripting on Win32
 - Useful for scripting applications that don't have an API
- Will be made available to supported customers

Challenges solved

- Finding where Acrobat Reader is installed to
 - So we can start it if its not running
 - Ask the registry
- Find the text control [Page "1 of 25"] and send it the number of the page to navigate to
- Reactivating Acrobat when it is already loaded
 - As larger PDFs can take some time to load
- Future proof - Acrobat 9, 10 etc?
 - A generic solution implemented (Ctrl-Alt-F)
 - Only time will tell

Demo

Generic DOORS Plugin

- Telelogic DOORS – a commercial Requirements Management Application
- Mature and quite widely used
- Has its own scripting language DXL
 - Predates modern scripting environments
- A bit like a spreadsheet for text
 - Modules (tables) contain ordered objects (records)
 - Custom attributes/columns
 - Strong traceability features – who changed what, when?

Formal module '/Project1/canWrite' current 0.0 - DOORS

File Edit View Insert Link Analysis Table Tools User Help

Standard view All levels

canWrite

- 1 Item 1 in canWrite: here is some new
- 2 Item by Plain user: Item inserted by PL
 - gfhjd sghjs kdghjsfd gfdsgfds
 - 2.1

ID	
1	<p>1 Item 1 in canWrite</p> <p>here is some new text And here is the object text with new lines</p> <p>and markup characters: <foo>fake tag</foo></p> <p>here is some new text</p> <p>gfksd gfkjsld jkgflsd fhsjdk fdlkjas</p> <p>gfdsgfdsg</p> <p>A & B & C</p>
2	<p>2 Item by Plain user</p> <p>Item inserted by Plain user</p>
3	<p>gfhjd sghjs kdghjsfd gfdsgfds</p>
4	<p>2.1</p>

Username: a Exclusive edit mode

ASCE DOORS plugin requirements

- Users want to link to specific items
 - Specific objects (e.g. key safety requirements)
 - Modules as a whole
 - DNR content
 - Show this content within your assurance or safety case
 - Detect changes in the underlying content
 - Navigation/activation from ASCE into DOORS

DOORS programming interface – some challenges

- DOORS itself
 - Esoteric object model
 - Elaborate permissions model
 - DXL can be frustrating
- One keyhole method exposed to the outside world:
 - RunStr(DXL As string) as string
 - This is somewhat... limited... ☺
- Solution:
 - Bootstrap an interface by feeding it functions through this keyhole
 - Talk to these functions and parse the result
- Building dynamic parameterised script at runtime is a challenge
 - Somewhat akin to dynamic HTML/Javascript generation by web applications

How far did we get?

- Beta version of plugin available
 - DNR for summarising an individual object or a module as a whole
 - DNR content validation to detect changes
 - User selectable attributes
 - Display specific columns from the module
 - Navigate from ASCE evidence into DOORS item
- Useful for a range of scenarios
- CD in delegates pack
 - Shows previous version that can pull in an individual object only
 - *Needs autoit library – contact us if you want to try this out*
- Full plugin may be sold as separate software

- Ideas for enhancements – let us know

Demo

Find/replace plugin

- Text find capability exists in ASCE
 - To search node HTML narratives
 - But no text replace exists
- Enter the Find/replace plugin
 - Useful for creating a new safety case based on a previous one, or for when the name of a product changes
- However, please use responsibly and intelligently
 - A safety argument in a new context will likely require adaptation and careful consideration, not just find/replace!

Find and replace in node narratives

Find

Arkle

Find Next

Replace with

NewArkle

Replace

Match whole words Case sensitive

Node 1 of 23: PHA

Preliminary hazard analysis

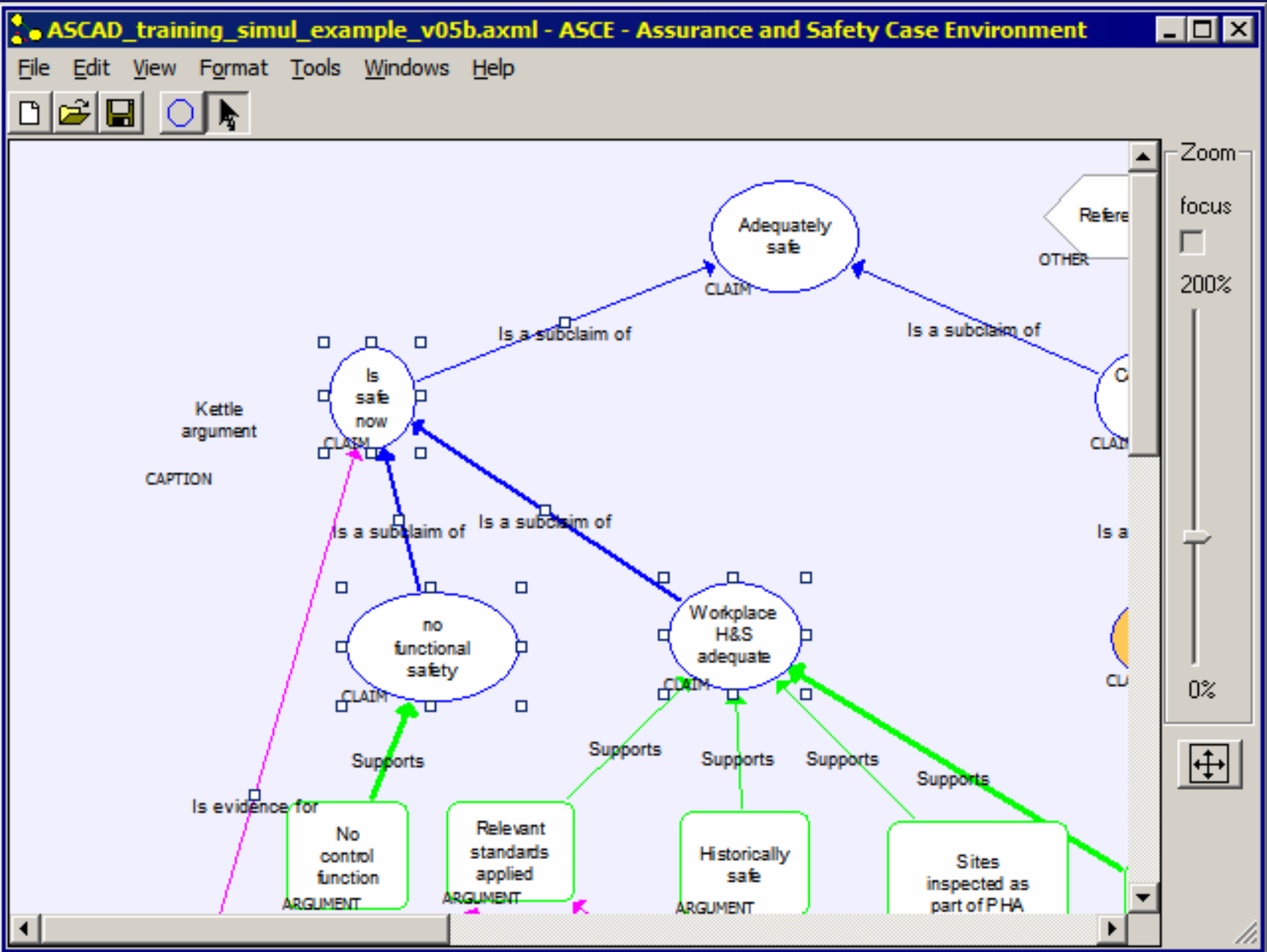
Methodology

Preliminary hazard analysis (PHA) was carried out by means of a visit to each **Arkle** site, at which hazards were assessed using a checklist based on [References, \[IOF 392\] Instructions for Seabed Tethered Equipment Safety Assurance 1994](#). A questionnaire was sent to each contact person ahead of the visit, so that they and their colleagues could consider if any of the

Close

SchemaHelper library

- Limitation of plugin engine has been that a plugin cannot tell much about the notation being used
 - Node type 1, 2, 3 etc
- SchemaHelper library has been developed to aid plugin developers
- Adds more details awareness of schema elements
 - Node type names, status field names etc.
- Example plugin to show this
 - Status fields editor plugin
 - To be made available to supported customers



Status Field Editor

Modify status fields for all selected nodes

Annotation

Activate

Apply

Audited

Apply

Completed

Has External Reference

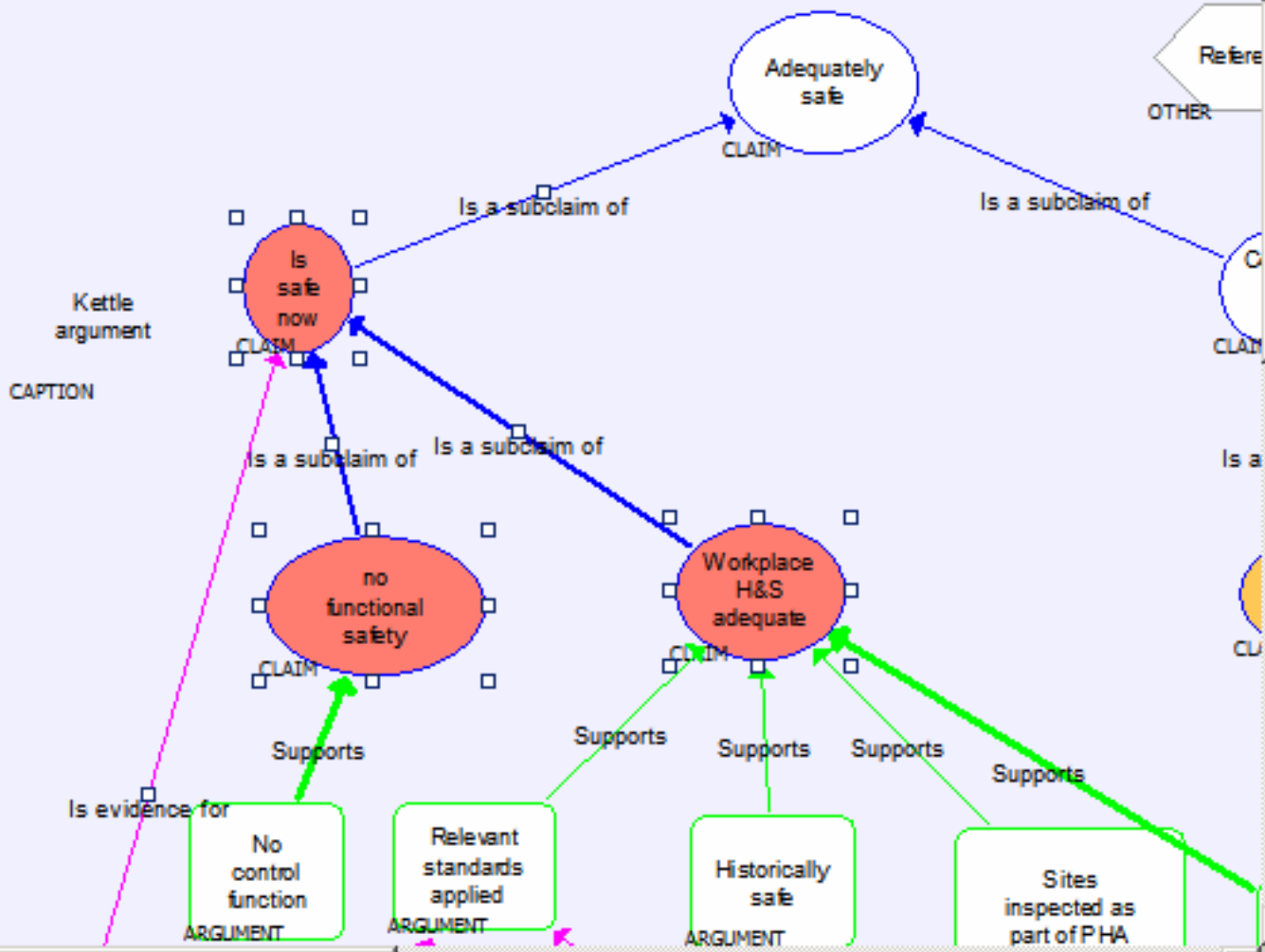
Confidence

Apply

Tip: use cancel to undo all your changes

Ok

Cancel



Zoom
focus

200%
0%
Navigation icons



