OCOPOMO
Open Collaboration in Policy Modelling

D4.2 SYSTEM AND USER DOCUMENTATION

E: USER MANUAL ON SIMULATION OUTPUT VISUALISATION AND TRACEABILITY TOOLS

Document Full Name	**OCOPOMO_D4.2-E_SimOutputTrac-UserManual.doc**
Date	**15/04/2013**
Work Package	**WP4: Integration of components**
Lead Partner	**Intersoft**
Authors	**Peter Smatana, Peter Bednár, Carsten Hartenfels,Karol Furdík**
Document status	**v1.00 FINAL**
Dissemination level	**PUBLIC (PU)**

Document Log

Version	Date	Comment	Author
001	22/01/2013	Documentation describing the installation and use of the first prototype version of the Wiki Annotations	Peter Smatana
002	27/02/2013	Documentation describing the installation and use of the first prototype version of the CCD Model Explorer applet	Carsten Hartenfels
003	06/03/2013	Documentation describing the Charts Management	Peter Bednár
004	12/03/2013	Inputs on a description of the Traceability Annotations Explorer	Peter Smatana
005	21/03/2013	Instructions on setting up the Alfresco environment for traceability scenario evaluation	Karol Furdík
006	27/03/2013	Updates on the traceability mechanism and scenario annotations visualisation	Peter Smatana, Karol Furdík
007	08/04/2013	Updates on the Charts Management	Peter Bednár
100	15/04/2013	Integration of inputs, updates of all chapters. Consolidation, corrections and finalisation	Karol Furdík

TABLE OF CONTENTS

1. INTRODUCTORY NOTES

This user manual describes the usage of *Simulation Output Visualisation and Traceability Tools* and related components of the integrated OCOPOMO toolkit, which support a collaborative evaluation of output model-based scenarios produced in phases of policy analysis and modelling. This suite of tools is implemented as an extension of the Alfresco Share platform (Alfresco Share, 2011), which provides comprehensive usage guidelines and supporting materials, namely:

- Alfresco Share wiki, http://wiki.alfresco.com/wiki/Alfresco_Share;

- Documentation of Alfresco Share, version 3.5 (Alfresco Share Documentation, 2012), http://docs.alfresco.com/3.5/topic/com.alfresco.team.doc/topics/uh-welcome.html;

- General Alfresco site, http://www.alfresco.com.

Moreover, settings of the Alfresco CMS and usage instructions for common collaborative tools were presented in *D4.2-A: User Manual on Collaboration and Scenario Generation Tools*. The tools described in the next chapters of this document are complementary to the Alfresco-based toolkit enabling discussions, opinion exchange, and consequently also the collaborative evaluation of the output model-based scenarios produced as the main outcomes of the policy modelling process.

Furthermore, this document complements the main text of the D4.2 deliverable by providing how-to instructions for use of tools and user interfaces during the sixth phase of the OCOPOMO process, i.e., the validation and collaborative evaluation of produced model-based scenarios, together with the backward traceability and provenance of arguments presented by involved stakeholders in their initial evidence-based scenarios.

Other information related to the installation, maintenance, connection to the whole OCOPOMO platform, and technical details of the here-presented tools can be found in the main text of the D4.2 deliverable.

2. OVERALL DESCRIPTION OF THE TOOLS

This chapter presents a general information on the *Simulation Output Visualisation and Traceability Tools* and related components of the OCOPOMO toolkit, namely an overview of involved user roles, structure of provided user interface and location of particular tools, as well as a set of instructions for the maintenance and customisation of the tools.

2.1. USER ROLES

User roles for the underlying OCOPOMO process, which is supported by the here-presented set of tools, were proposed in the D2.1 deliverable (Mach et al, 2010) as it is presented in Table 1.

Table 1: User roles applied in the OCOPOMO system.

Icon	User Role		Icon	User Role
	Politician			**Analyst**
	Civil servant			Modeller
	Stakeholder			*Administrator*
	Facilitator			

The *Simulation Output Visualisation and Traceability Tools* support the last (i.e., the sixth) phase of the iterative OCOPOMO process by evaluating all the outcomes that were developed during the policy analysis and modelling cycle. The produced outcomes, namely the model-based narrative scenarios together with related conceptual policy modelling structures and various background documents, are prepared, customised, and published by *Analysts* onto the shared web space. The provided scenarios are then analysed, discussed, and collaboratively evaluated by direct participants of the policy development process, namely *Stakeholders* and *Politicians* (optionally supported by *Civil servants*). These user roles are involved in most of operations provided by the tools. Moreover, the *Facilitator* role is dedicated to provide a methodological support, while *Administrator* is responsible for the technical set up and maintenance of the tools. The *Modeller* role does not participate in the process phase of output scenario evaluation, which is supported by here-presented tools[1].

The icons of user roles, presented in Table 1, are referenced and used as labels in "how to" instructions presented below. This labelling indicates the proposed actors/consumers of described operations.

2.2. USER INTERFACE AND STRUCTURE OF TOOLS

The model-based narrative scenarios, developed by policy analysis and modelling experts locally on their Eclipse installations, are published on the Alfresco web space as *wiki pages*. The traceability information is stored inside the wiki HTML content of the scenario and is visualised as highlighted hypertext links - *wiki annotations*. In addition, the underlying *CCD model* is provided for browsing

---

[1] The distribution of user roles into the respective phases of the OCOPOMO process and organisation of the whole community of involved users could be, however, a more complex task that belongs to methodological issues. As such, it is detailed separately in the D8.1 deliverable (Scherer et al, 2013).

OCOPOMO

D4.2 SYSTEM AND USER DOCUMENTATION
A: USER MANUAL ON SIMULATION OUTPUT
VISUALISATION AND TRACEABILITY TOOLS

v.1.00
15/04/2013

and investigating the conceptual structure of the modelled and simulated policy alternatives, which were initially specified by end users, stakeholders and policy makers, in their evidence-based scenarios. All these information resources are visualised and provided for collaborative discussion by means of the here-presented tools.
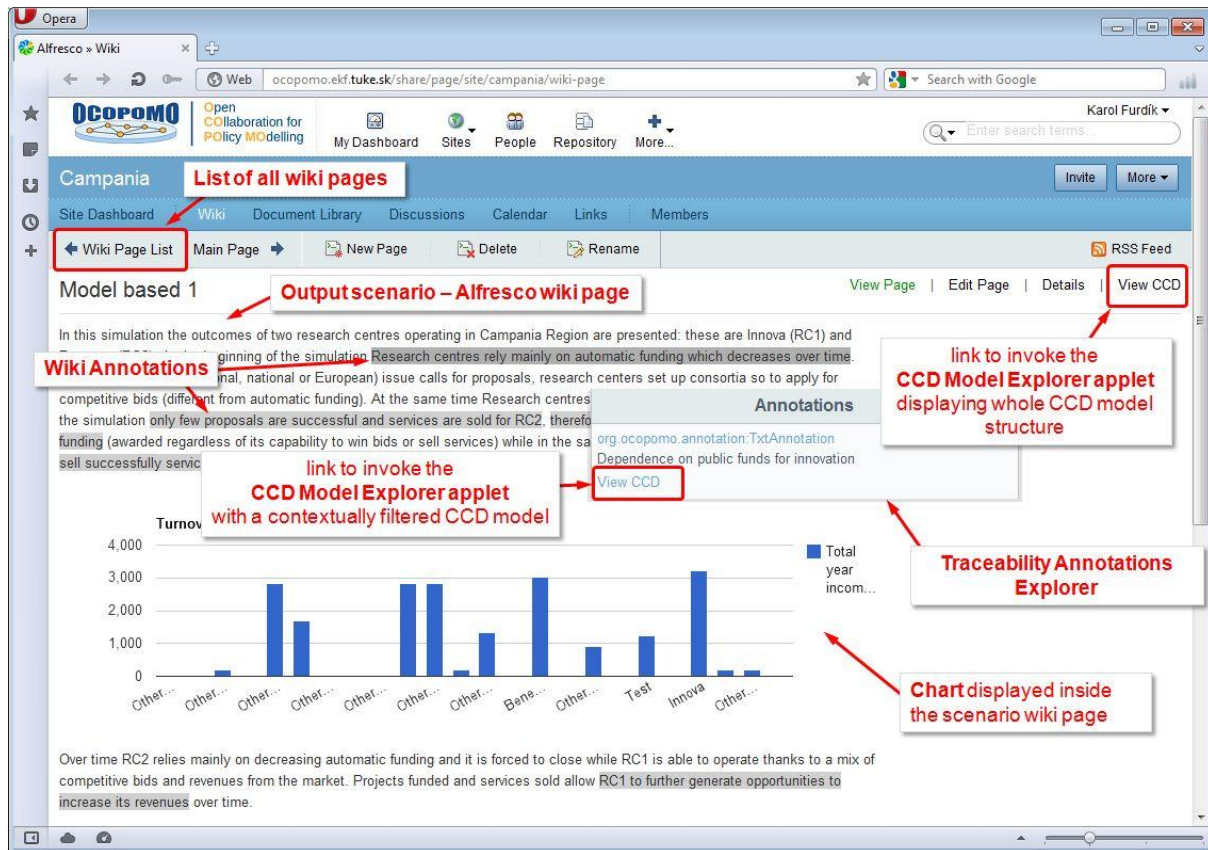

Figure 1: Layout of Simulation Output Visualisation and Traceability Tools in Alfresco.

The default user interface of the *Simulation Output Visualisation and Traceability Tools* in the Alfresco environment is presented in Figure 1. Since these tools are built upon the Alfresco Share framework, the layout of the user interface can be customised both on a global site level as well as individually for each of end users, as it is explained in *D4.2-A: User Manual on Collaboration and Scenario Generation Tools*, section 2.4.

The suite of *Simulation Output Visualisation and Traceability Tools* is structured as follows:

- *Scenario wiki pages*, which are based on standard Alfresco wiki functionality customised for displaying the model-based scenario content together with active elements such as embedded dynamic charts and annotation links that invoke the *Annotations* popup window - an interface of the *Traceability Annotations Explorer* tool (see in Figure 1);

- *Charts Management*, which implements the *Google Visualization API* (Google Visualization API Reference, 2012) and allows an embedding of several types of dynamic charts to the HTML content of *Scenario wiki pages*;

- *CCD Model Explorer applet*, a component implemented as Java applet, which visualises the underlying conceptual model used to construct a particular output scenario (see in Figure 2).
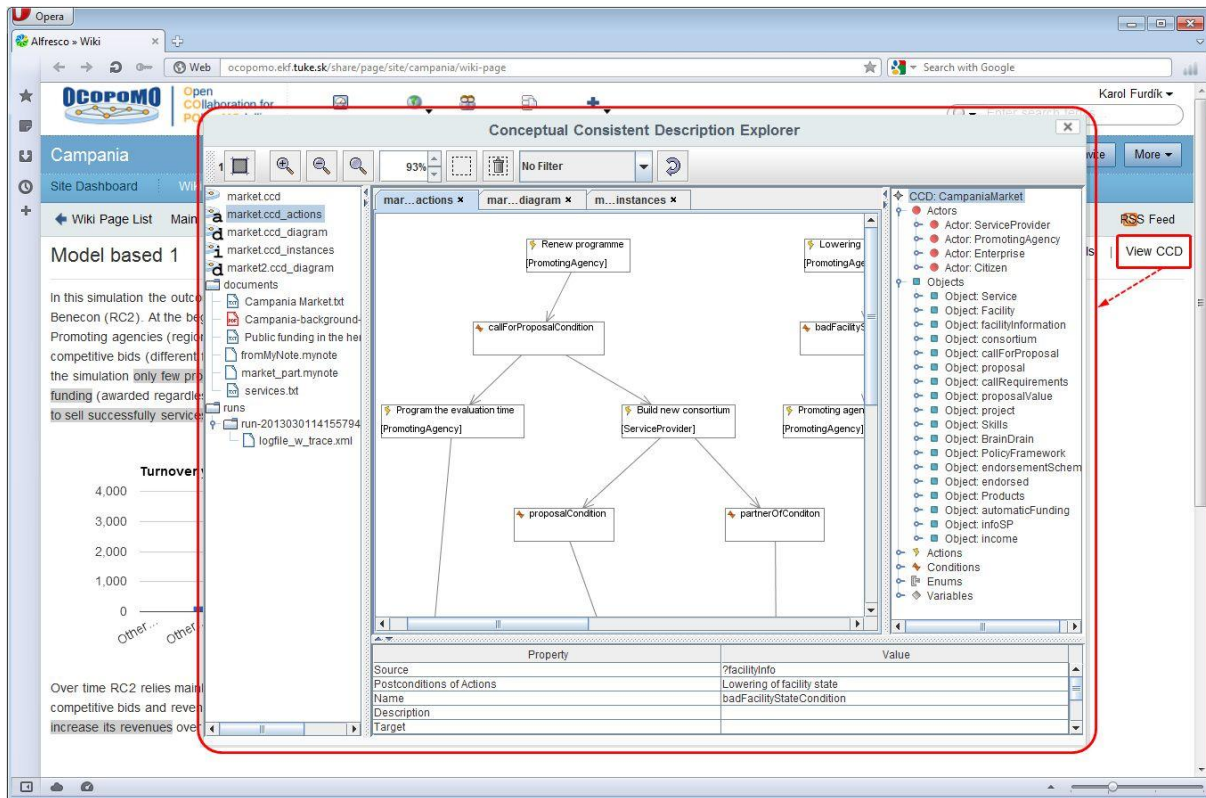
Figure 2: CCD Model Explorer applet invoked from the scenario wiki page.

Usage instructions for particular tools supporting the visualisation of simulation outputs and traceability are provided below in sections 3.1-3. A description of overall settings and prerequisites of the Alfresco platform is presented next in section 2.3.

2.3. SETTING UP THE ALFRESCO WORKSPACE FOR OUTPUT SCENARIOS

This section contains some general instructions on the maintenance and customisation of the Alfresco web site, which is mostly under the responsibility of facilitators and system administrators. The instructions cover the transfer and publishing of model-based scenarios and related files from local Eclipse to remote Alfresco data/content repository, location of the published narrative scenario in the shared collaborative web space, as well as an outline of Alfresco-based tools enabling to discuss and evaluate the provided output scenarios within the community of involved stakeholders.

How to set up the Alfresco CMS for enabling an upload of produced model-based scenarios?

Model-based scenarios are developed locally in the Eclipse environment with the installed respective part of the OCOPOMO toolkit. Settings that enable a communication and data transfer between the local Eclipse and remote Alfresco environments are maintained from the Eclipse side, namely by setting up the parameters of the *Content Repository Client* component. Instructions for these settings are provided in D4.2-B: *User Manual on CCD Tools*, section 2.5.

No specific settings are required in the Alfresco CMS since the CMIS and REST communication channels, which are applied for data/file transfer in the OCOPOMO toolkit, are enabled in the Alfresco installation by default.

How to publish a produced model-based scenario into the Alfresco web space?

The upload of produced model-based scenario and all related documents to a remote Alfresco web space is initiated from the local Eclipse environment. The *Simulation Analysis Tool* plug-in, which serves as the main toolkit for the scenario development, provides all the necessary functionality of text format conversion and data transfer. The publishing of output scenarios includes:

- Conversion of the produced model-based scenario, i.e., its plain text content and annotations, stored locally in Eclipse in the `*.narr` file, to the Alfresco wiki format;

- Uploading of the converted *scenario wiki page* into the list of Alfresco wiki pages;

- Uploading of *DRAMS code* to the `<OCOPOMO_Alfresco_site>/data/drams/` folder;

- Uploading of *CCD model* to the `<OCOPOMO_Alfresco_site>/data/` folder;

- Uploading of simulation logs to the `<OCOPOMO_Alfresco_site>/data/runs/` folder;

- Uploading of all locally created background documents, which were used for annotating input evidence-based scenarios and CCD model development, as well as for annotations of output model-based scenario narrative, from local Eclipse project space to the remote Alfresco CMS, namely to the `<OCOPOMO_Alfresco_site>/data/documents/` folder.

- Finalising the model-based scenario narrative by inserting charts, namely the charts that visualise the numerical data provided in output of simulation runs (see in section 3.2), as well as by other text editing operations such as wiki text formatting, etc.

Further information and usage instructions related to the publishing of output scenarios to Alfresco are provided in D4.2-D: *User Manual on Tools for Simulation Analysis and Output Scenario Generation*, section 3.3.

MBScenarioPublish_Video.zip - see the video containing the second part of usage instructions for *Simulation Analysis Tool*, namely the publishing of produced narrative scenario to the remote Alfresco web space.

How to notify users on an availability of the model-based scenario in the Alfresco web space?

After the model-based scenario narrative was published as a new wiki page on the Alfresco web space, the stakeholders, policy makers, and other involved participants should be notified about this fact and their collaborative evaluation of the output scenario should be properly coordinated. Typically, the notification and coordination tasks belong to the *Facilitator* user role, with a support of *Analyst* who actually publishes the scenario by uploading it from a local Eclipse environment.

Alfresco part of the OCOPOMO toolkit provides several ways of notifying users about changes and updates of published content, namely:

1. Use the *Activities* dashlet, located by default in the personal *Dashboard* (see in Figure 3). Newly uploaded scenario is automatically included into the *Activities* list as an activity of "status updates" type. Stakeholders and other participants may filter the list of activities by parameters as author, type, or date of the activity.

2. Use the RSS feed to subscribe to a particular feed source, for example:
   - the *Activities* feed, using the RSS feed icon located on the title label of the *My Activities* dashlet (see in Figure 3);

- the *Alfresco Wiki Page* feed, using the RSS feed icon/button located in the navigation bar of the Wiki space (e.g. from a web site root, use the *Wiki* and *Wiki Page List* links).

3. Use the *Tasks* dashlet, which is located by default in the personal *Dashboard* as well (see in Figure 3). A workflow of tasks containing notifications, procedural or reviewing actions, etc., can be specified to control the collaborative scenario evaluation in a more formal way.
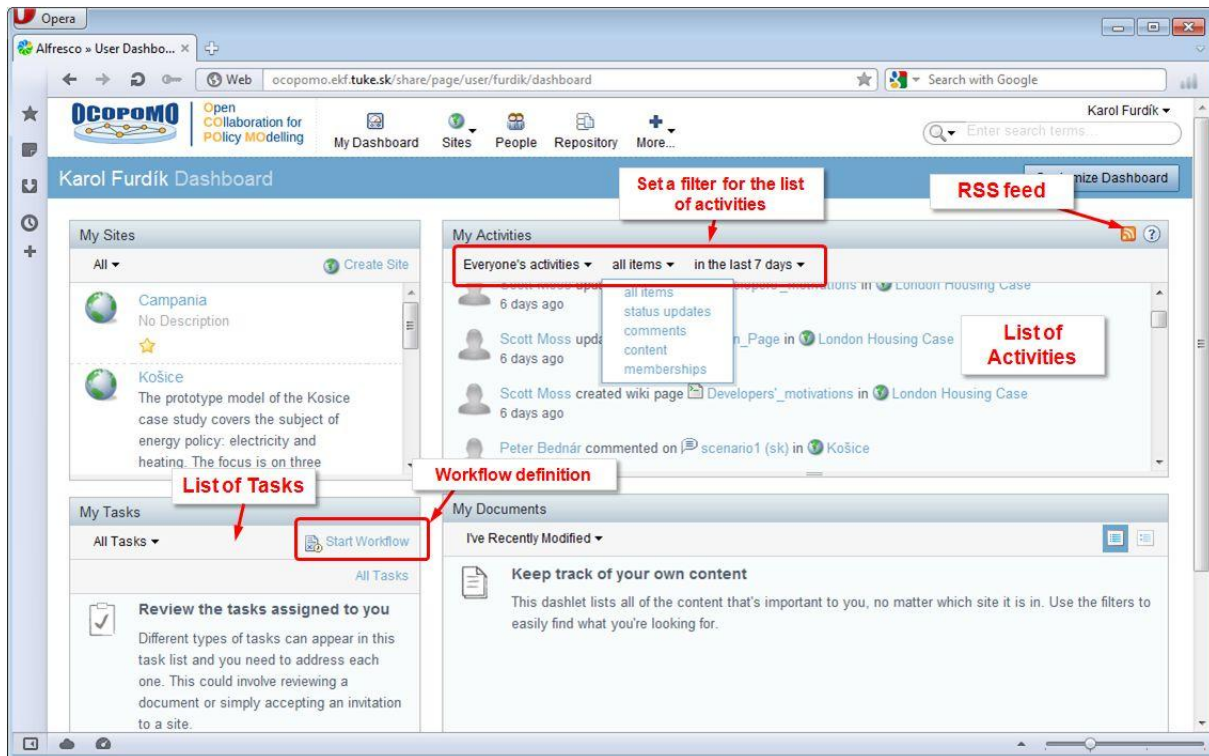

Figure 3: Means of notifying Alfresco users on content updates.

How to locate a particular model-based scenario in Alfresco?

The model-based scenarios are published on Alfresco as wiki pages. To navigate to a particular scenario narrative, please follow these instructions:

1. On the root page of an Alfresco site, click on the *Wiki* link in the navigation bar.

2. In the displayed menu, click on the *Wiki Page List* link (see in Figure 1 above).

3. In the displayed list of wiki pages, locate the scenario wiki page by its name, and/or apply the "Pages" or "Tags" filter, which is available on the left-upper corner of the window.

4. After the scenario wiki page is located, click on its name to display its content.

Hint: It is a good practice to provide a link to the wiki page of the model-based scenario on the main wiki page of the Alfresco site, i.e. at <OCOPOMO_Alfresco_site>/wiki-page. The link can be accompanied with a brief description of the scenario content and/or actions required from participants during the procedure of collaborative evaluation of the scenario.

Which tools can be particularly used for exchanging ideas and opinions on published scenarios?

The collaborative evaluation of scenarios and discussion on possible updates, enhancements, or even on policy alternatives is supported in Alfresco by a variety of tools, namely:

1. *Wiki*, as a shared space for formulating scenarios, enables concurrent scenario development. Each version of a wiki page (including the wiki pages of model-based scenarios) is stored automatically and is accessible for further revisions.

2. Commenting of scenarios, using the *Add Comments* button located under the wiki content.

3. Discussion space, available under the *Discussions* link on the navigation bar.

4. Opinion polling, available under the *Pollings* link on the navigation bar.

5. *Chat* dashlet, which enables a real-time online communication between the site members.

6. Calendar functionality, available under the *Calendar* link on the navigation bar, which enables to organise the collaborative work on scenarios according to a defined time schedule.

Usage instructions for all these tools are provided in Chapter 3 of D4.2-A: *User Manual on Collaboration and Scenario Generation Tools*.

3. USE OF THE SCENARIO VISUALISATION AND TRACEABILITY TOOLS

The following sections contain descriptions and usage instructions on how to perform the most common operations with the *Simulation Output Visualisation and Traceability* toolkit. Operations are grouped to sub-sections in accordance with the toolkit structure (cf. section 2.2).

3.1. SCENARIO WIKI PAGES AND ANNOTATIONS

The goal of the OCOPOMO platform as whole is to build formal policy models, which can be used to simulate various future scenarios for the modelled policy case. The formal agent-based policy models are developed locally by experts, taking the evidence-based scenarios published by collaborating stakeholders and participants as the most fundamental input for the policy modelling process.

Both input evidence-based scenarios and output model-based scenarios are published in Alfresco as wiki pages. A significant distinction is that the output scenarios contain the annotation links that connect the scenario text fragments (i.e., statements, paragraphs, sequences of words, etc.) with the related simulation results. In other words, the annotated text fragments in the output scenario were formulated in accordance with the results obtained from executing a particular simulation of the underlying formal policy model. Furthermore, the parts (i.e., rules, clauses, etc.) of the agent-based policy model are linked with respective concepts of the CCD model - a conceptual representation of the analysed policy case. And finally, the CCD model is linked with text portions (again - statements, paragraphs, etc.) of input evidence-based scenarios, which were provided by stakeholders as policy alternatives. To summarise, the annotation links in the output model-based scenario enable to trace the origin of presented statements back to initial evidence scenarios. This backward traceability can be seen as one of key features of the OCOPOMO platform.

How to display traceability annotations and navigate to the relevant evidence-based scenarios?

The output model-based scenarios that present the simulation results are annotated with links to the evidence statements published in stakeholders' input scenarios. If you like to display the traceability annotations and navigate from the model-based scenario back to the input scenarios formulated by stakeholders, please follow these steps:

1. Navigate to the wiki page of the model-based scenario. To navigate to the selected page, please follow the instructions provided above in section 2.3.

2. Text of the model-based scenario is annotated, i.e. some text fragments are highlighted, as it is depicted in Figure 4. Click on the annotated text to invoke the *Annotations* window provided by the *Traceability Annotations Explorer* component.

3. In the displayed *Annotations* window, you can see a list of links to resources - related evidence-based scenarios and background documents that are relevant to the highlighted annotated text.

4. The resources in the displayed list contain a hypertext link to the particular resource, as well as a description - an excerpt from the relevant part of related evidence-based scenario or background document. You can click to the links to navigate to the relevant scenario's wiki page or background document, which is then displayed in the browser window.

5. At the bottom of the *Annotations* window, there is a *View CCD* link that enables to display and browse the underlying CCD model, which is contextually adapted to a given annotation. This functionality is explained in more details in section 3.3 below.
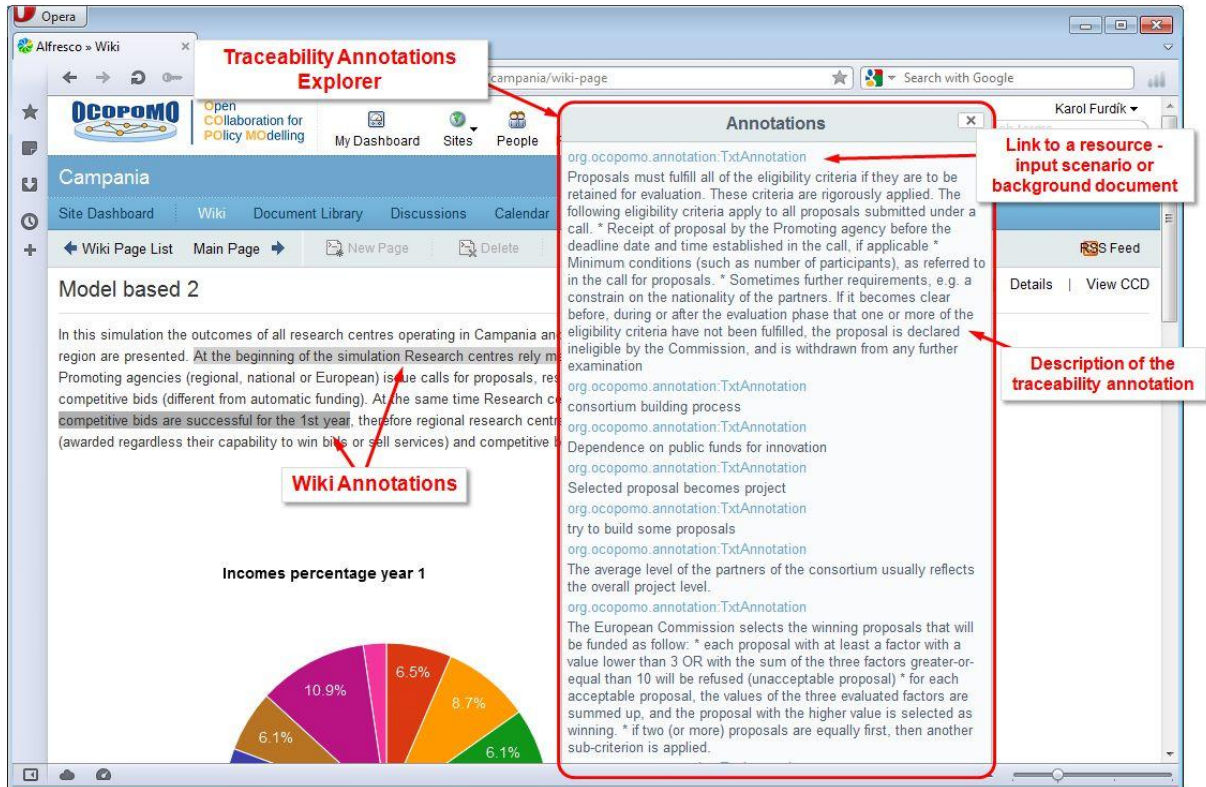
Figure 4: Annotations and traceability information in output model-based scenarios.
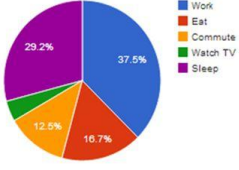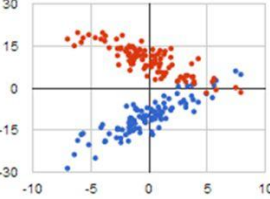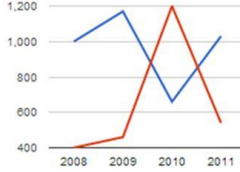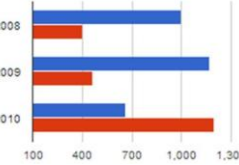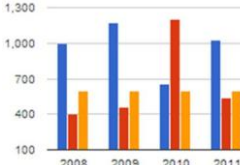
3.2. CHARTS MANAGEMENT

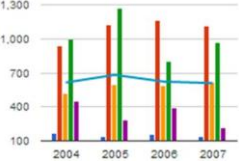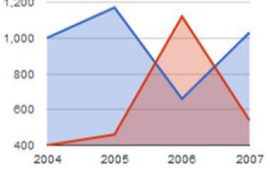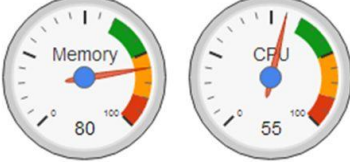The output model-based scenario may contain several types of charts that graphically visualise various data sequences. The *Wiki* module, included into the Alfresco part of the OCOPOMO ICT toolkit (see in D4.2-A: *User Manual on Collaboration and Scenario Generation Tools*, section 3.1), implements the *Google Visualization API* (Google Visualization API Reference, 2012) and enables to include into the wiki page content the chart types listed in Table 2.

Data sources for charts presented in output scenario can be independent, selected solely by scenario developers and editors, usually represented by *Analyst* user role. However, the feature of traceability can be emphasised in the output model-based scenario by inserting charts that visualise the numerical data produced as outputs of simulation experiments.

The numerical outputs produced by simulation runs are provided by the *Output Writer* module of DRAMS in CSV format, as it is detailed in D4.2-C: *User Manual on Policy Modelling and Simulation Tools*, sections 3.2.3 and 6.2.1. These data, stored locally on Eclipse Java project in respective `*.csv` or `*.xml` files, are uploaded to Alfresco as accompanying documents of the model-based scenario during the scenario publishing procedure (see in section 2.3 above, as well as in in D4.2-D: *User Manual on Tools for Simulation Analysis and Output Scenario Generation*, section 3.3). After the output scenario upload, the data files containing numerical outputs of particular simulation runs are available in the Alfresco Data Repository, namely in respective sub-folders of the `<OCOPOMO_Alfresco_site>/data/runs/` folder.

Table 2: Chart types supported by the Wiki page editor.

Use pie chart to visualize numerical proportions. Displays tooltips when hovering over slices.	Table that can be sorted and paged. Users can sort rows by clicking on column headers.
Scatter chart is used to map correlation between sets of numbers. Displays tooltips when hovering over points.	Geochart is a map of a country or a region with two modes: • The region mode colorizes whole regions, such as countries, provinces, or states. • The marker mode marks regions using bubbles that are scaled according to a specified value.
A chart that lets you render each series as a different marker type from the following list: line, area, bars, candlesticks and stepped area. Displays tips when hovering over points.	Line chart displays information as a series of data points connected by straight line segments. Displays tooltips when hovering over points.
A bar chart displays horizontal rectangular bars with lengths proportional to the visualized values. Displays tips when hovering over bars.	Column chart is a vertical version of bar chart. Displays tips when hovering over bars.
Area chart extends line chart. It displays coloured area between axis and the lines of data series. Displays tips when hovering over points.	Candlestick chart is used to show an opening and closing value overlaid on top of a total variance, a stock value behaviour, etc. In this chart, items where the opening value is less than the closing value (i.e., a gain) are drawn as filled boxes;, items with opening values greater than closing value (a loss) are drawn as hollow boxes.
Displays one or more gauges.	A visual representation of a data tree, where each node can have zero or more children, and one parent (except for the root, which has no parents). Each node is displayed as a rectangle of custom size and colour.

How to insert charts visualising numerical data obtained from simulations?

You can visualize the numerical data of simulation results with charts inserted into the wiki page content of the model-based scenario. If you like to insert a new chart, please follow these steps:

1. Navigate to the scenario wiki page you like to edit. To navigate to the selected page, please follow the instructions in section 2.3 above.

2. Click on the *Edit page* link. The scenario content will be displayed in the *Wiki page editor*, as it is depicted in Figure 5.
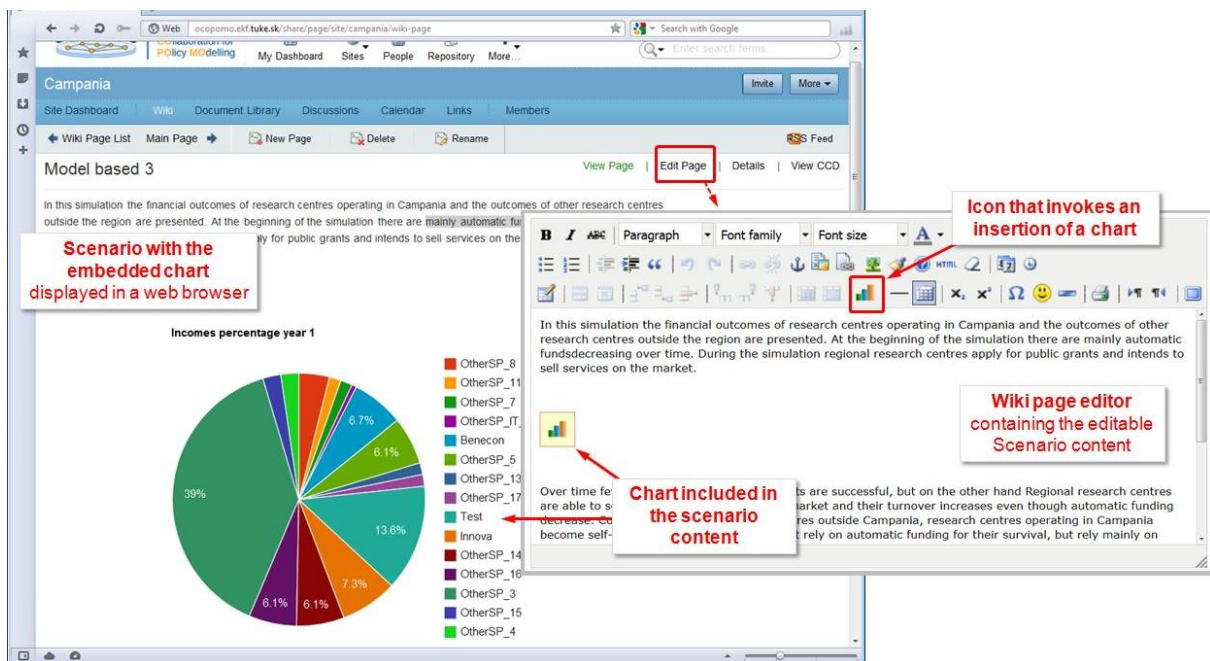

Figure 5: Inserting charts into the wiki page content of an output scenario.

3. To add a new chart, click on ![icon] button in the editor menu.

4. In the displayed dialog (see in Figure 6), you can specify the chart parameters, namely:

   - *Title* - as it will be displayed on the wiki page, on the top of the chart;

   - *Dimensions* of the chart area - height and width (in pixels);

   - *Chart type* - see the list of supported chart types presented above in Table 2;

   - *Source data* , which are specified by:
     - *Columns* - list of column labels for a given data set;
     - *Data table* - a data set corresponding to the selected chart type, specified in accordance with the data table format required by the *Google Visualization API* (Google Visualization API Reference, 2012). An array of numerical values can be inserted as a simple comma-separated list.

Note: Current version of the OCOPOMO ICT toolkit does not support a direct data connection between the numerical outputs of simulation runs and the corresponding charts that visualise these data. It implies that the data values for a chart have to be inserted manually - e.g. by opening a source

simulation log report from `<OCOPOMO_Alfresco_site>/data/runs/` folder, copying a data sequence (which is provided in the CSV format, so no further data conversion is needed) and pasting this data set manually to the Data table field in the dialog for inserting new charts into the wiki page content.
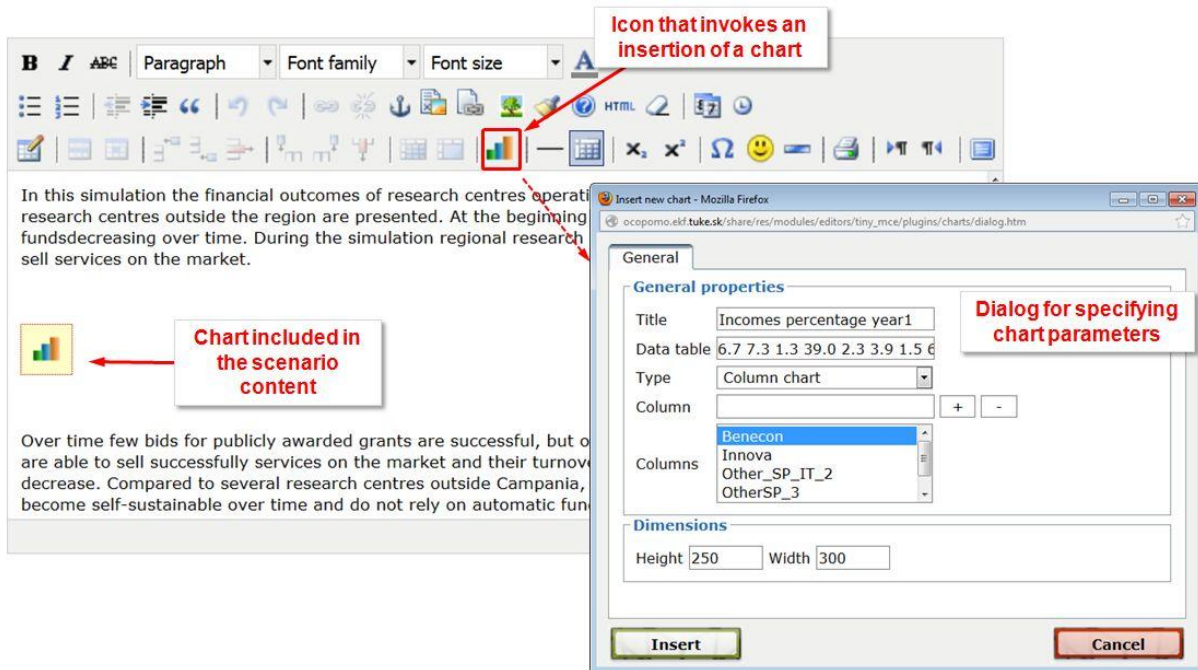

Figure 6: Specifying a data source and other parameters for a new chart.

5. Confirm the operation by clicking on *Insert* button in the dialog. The chart will be included into the scenario wiki page text, represented by the icon in the "edit" mode.

6. Click *Save* to confirm changes made in the *Wiki page editor*. The updated scenario wiki page, which is displayed afterwards, contain the specified chart visualised in a web browser.

Note: It is highly recommended to insert the charts presenting the simulation data, and possibly to perform other editing operations on the scenario content, after the output scenario was uploaded from Eclipse to Alfresco and before the end users - stakeholders, policy makers, and other involved participants were notified about the availability of the model-based scenario for evaluation (cf. instructions for publishing a produced model-based scenario into the Alfresco web space, provided in section 2.2).

How to modify or update a chart already included in the scenario wiki text?

Unfortunately, this functionality is not supported in the current version of OCOPOMO ICT toolkit (see also D4.2-A: *User Manual on Collaboration and Scenario Generation Tools*). To modify an existing chart, you need to remove it from the wiki content. To do so, use the *Edit page* link (see in Figure 5), and then remove the icon which represents the chart in the wiki text editor. After this removal operation, insert a new chart according to the instructions presented above in this section.

3.3. CCD MODEL EXPLORER APPLET

In addition to the annotation links and charts presented in the previous sections, the backward traceability of output model-based scenario narratives is supported by a possibility to browse the underlying conceptual structures of the modelled policy case. This feature is provided by the *CCD Model Explorer applet*, which visualises the *CCD Model* for end users - stakeholders, policy makers, and other involved participants of collaborative scenario evaluation.

How to display and browse the CCD Model attached to a given scenario narrative?

In addition to the traceability links - wiki annotations presented above in *section 3.1*, it is possible to browse an inner structure of simulation models by investigating the related CCD Model visualised in a form of so-called Consistent Conceptual Description diagrams. To browse the CCD structures for a given model-based scenario narrative, please follow these steps:

1. Navigate to the wiki page of the model-based scenario. To navigate to a particular wiki page, please follow the instructions provided above in section 2.3.

2. The *CCD Model Explorer applet* can be invoked in two modes (see in Figure 7), namely:

   a. *Complete* CCD Model structure is displayed if the applet is invoked by the *View CCD* link located on the scenario wiki page - on the right-top corner, next to *Details* link;

   b. *Filtered* CCD Model is displayed if the applet is invoked from the *Annotations* window - using the *View CCD* link located on the left-bottom corner of the window. In this case, a filtered view of CCD diagrams is displayed for a *Wiki Annotation* - i.e., for the highlighted text portion of the scenario, from which the *Annotations* window was originally invoked.
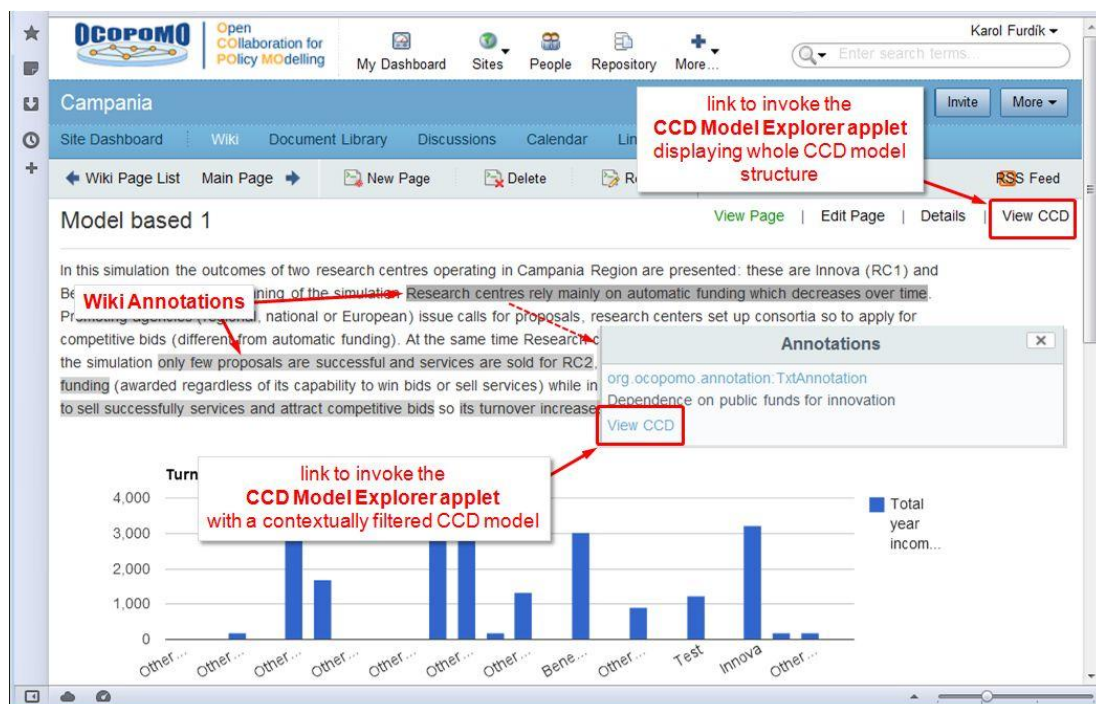

Figure 7: Invoking the CCD Model Explorer applet from a scenario wiki page.

3. You can browse and investigate the presented CCD diagrams. The *CCD Model Explorer applet* allows a read-only access to CCD structures, so no changes in CCD diagrams are allowed.

4. To close the dialog window and return to the scenario wiki page, simply click on the "X" button on the right-top corner of the applet dialog.

How to understand and interpret the information presented on the CCD diagrams?

The CCD Model, which is visualised by a set of diagrams in the *CCD Model Explorer* applet, was developed as an intermediate information structure between the initial evidence-based scenarios and the formal declarative agent-based model of the analysed policy case. The agent-based model was then deployed to a simulation environment, where a set of simulation runs was accomplished. Based on outcomes of these simulations, the output model-based scenario narrative was produced and published on the Alfresco web for evaluation by involved participants.

From this perspective, the CCD Model should help to understand the reasons (i.e., why?) and means (how?) of statements, facts, positions, and perspectives of the information provided by the output scenario narrative. In particular, the visualised CCD diagrams present:

1. Actors and objects involved in the agent-based model simulation, together with their relationships, characteristics, and behaviour;

2. Behaviour of actors, presented as a diagram of actions that can be performed by some actor in a given context, preconditions of an action, etc.

3. Instances of actors and objects, together with their relationships and attributes.

The inner structure of CCD models and related diagrams is rather complex and requires some skills and knowledge in the area of formal conceptual modelling. However, rather detailed explanation of entities and rules applied in CCD models is provided in D4.2-B: *User Manual on CCD Tools*, section 3.1, as well as in the OCOPOMO deliverable D5.1 (Moss et al, 2011).

Which particular information is presented in the CCD Model Explorer applet?

The user interface of the *CCD Model Explorer* applet is presented in Figure 8. The user interface layout, which basically corresponds to the Eclipse-based *CCD Model Editor* (see in D4.2-B: *User Manual on CCD Tools*, section 3.1), consists of the following areas - components of information resources:

- *Toolbar*, the strip at the top of the interface is the toolbar. It displays tools relevant to the currently opened information viewer in the workspace.
  The toolbar will always show the "full view" or "normal view" button at the very left. By clicking it, the viewer that is currently opened in the workspace will be enlarged to the size of the entire application window. By clicking the button again, the viewer will be returned to its previous size.

- *File Browser*, located on the left of the interface, contains all available resource files and folders for a given CCD model.
  To open a folder and see its containing files, double-click on it. It can be closed by double-clicking on it again.

To open a file, double-click on it. It may take a moment to retrieve all necessary data. After the loading cursor disappears, the viewer for the file will open it in the workspace. If the file is already opened, it will not be opened twice; its tab will merely become selected.
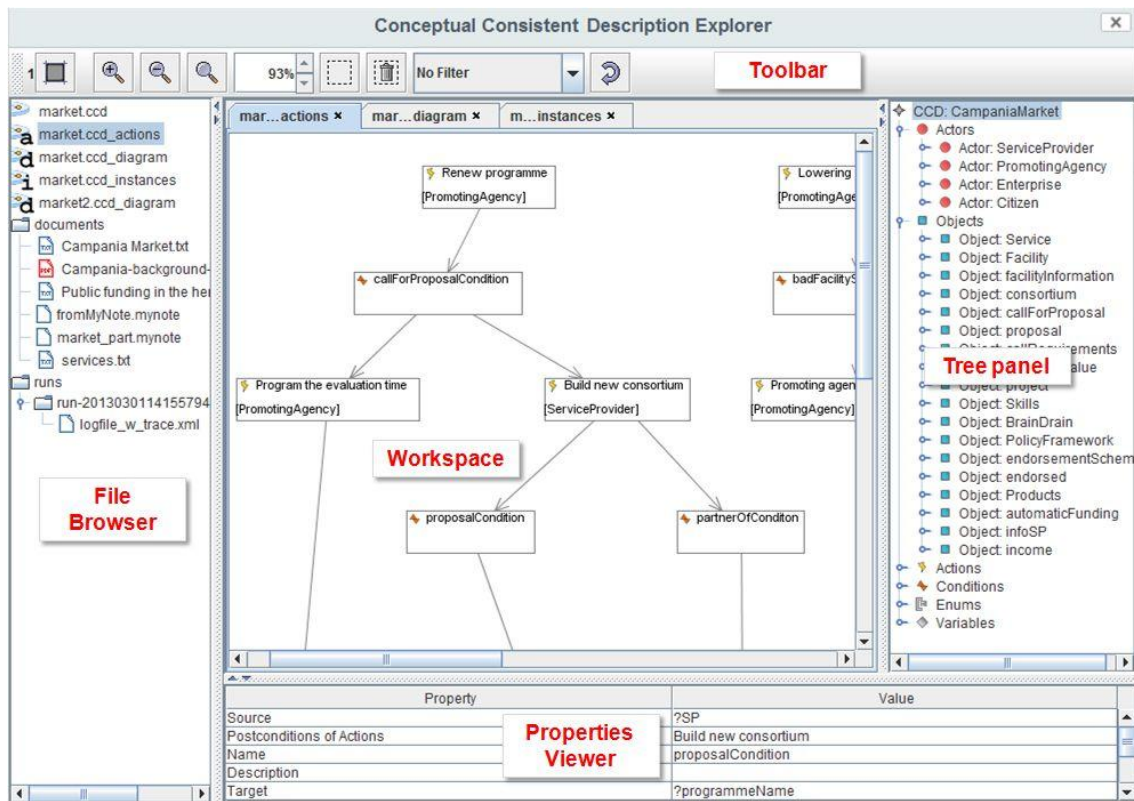

Figure 8: User interface components of the CCD Model Explorer applet.

- *Workspace*, the main area presentation of the user interface. It displays the viewers for all the CCD and document files.

  Whenever you open a file, a tab will be opened in this area, containing the viewer. You can select a viewer by clicking on its respective tab. To close it, simply click on the "X" next to the tab/file name.

  By double-clicking on a tab, you can also enable full view of the workspace content.

- *Tree Panel*, located on the right edge of the interface, always shows a hierarchical view of the CCD model structure for a given CCD file. If there are multiple CCD files available, you can select the one you want to view from the list at the bottom.

- *Properties Viewer*, located at the bottom of the interface, shows properties of the item that you last selected in a CCD tree or in a diagram displayed in the workspace.

How to browse annotations in the CCD Model Explorer applet?

The *CCD Model Explorer* applet provides a means of exploring annotations included into the text of output scenario and background documents. This functionality is somehow complementary to the

Traceability Annotations Explorer component, which was presented above in section 3.1. In the *CCD Model Explorer* applet, the annotations can be investigated in the output scenario narrative and text-based background documents in their native formats, i.e., in plain text and PDF. Moreover, annotation links are presented in the context of the CCD Model, as it is depicted in Figure 9. To browse the text annotations in the *CCD Model Explorer* applet, please follow these steps:

1. In the File Browser, under the `/documents` folder, locate a file corresponding to the scenario narrative or to a background document. The files should have *.txt or *.pdf extension.

2. Double-click on the file to open it in the Workspace. If the file text contains some annotations, you should see a similar view as it is presented in Figure 9.

3. Annotations are marked by coloured background, where each colour corresponds to a particular type of the CCD Model entity - red for Actors, blue for Objects, etc. Use the buttons with the entity marks in the Toolbar to show or hide annotations of respective entity type.

4. Click on an annotation inside the text to see the related (i.e., linked, annotated) entity of the CCD Model structure in the Tree Panel. The CCD Model hierarchy scrolls automatically to the position of the CCD Model entity that is linked with the annotated text portion.
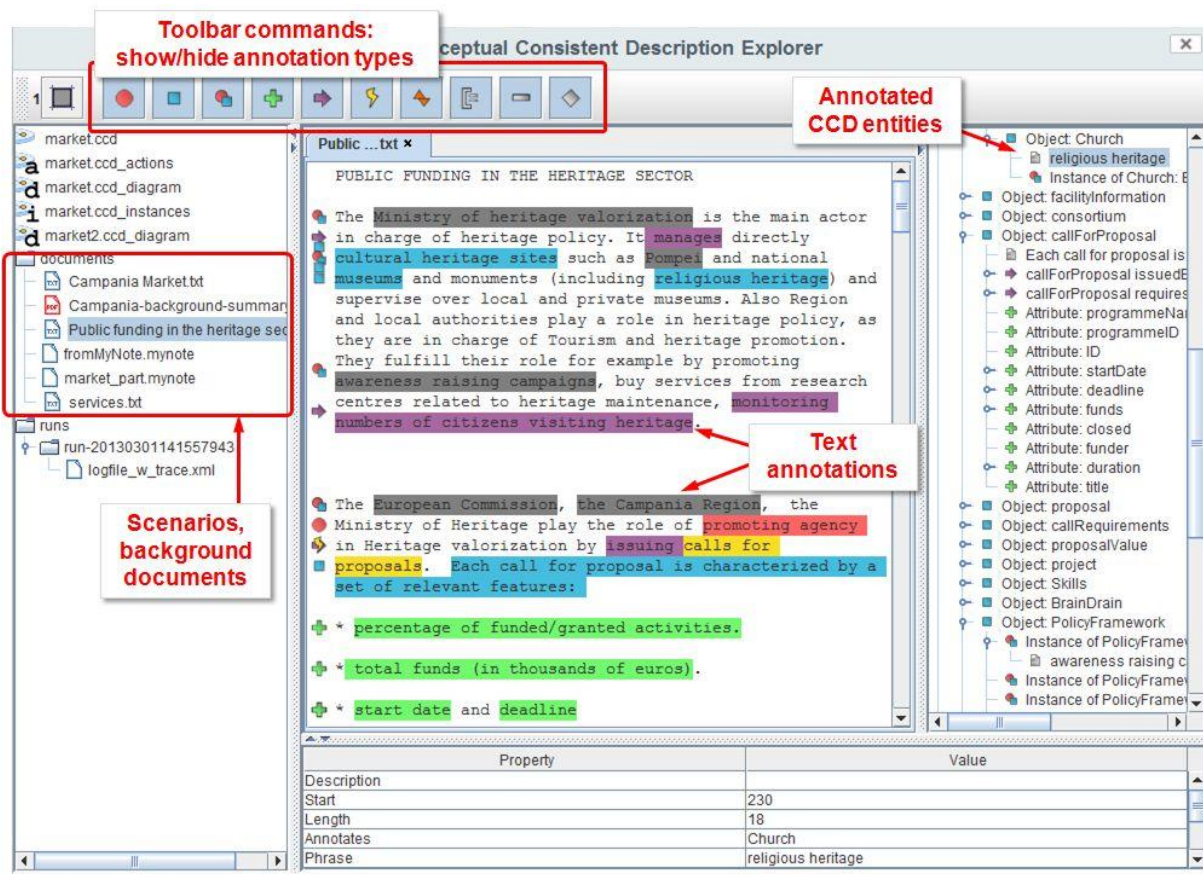

Figure 9: Exploring text annotations in the context of the CCD Model.

Similar functionality is provided for PDF documents, which can be selected in the File Browser and displayed in the Workspace together with highlighted annotations.

4. CONCLUSION

This manual presents usage instructions for *Simulation Output Visualisation and Traceability Tools* and related components. It describes common tasks for involved users - policy decision makers, stakeholders, as well as facilitators and analysts, to enable an investigation, collaborative discussion and evaluation of produced model-based scenarios.

The above-presented toolkit is implemented as an extension of the Alfresco Share platform; therefore, more information on the use of this platform can be found in (Alfresco Share Documentation, 2012) as well as on the Discussion Forum space of the community of Alfresco users and developers, located at https://forums.alfresco.com.

Further information resources:

- Methodology guidelines, OCOPOMO deliverable D8.1 (Scherer et al, 2013);
- Architecture and functionality description, OCOPOMO deliverable D2.1 (Mach et al, 2010);
- other public deliverables of the OCOPOMO project, available at http://www.ocopomo.eu.

Technical support on the presented tools can be provided upon request. To obtain such a support, please contact the coordinator of the OCOPOMO project (see contacts at http://www.ocopomo.eu).

REFERENCES

Alfresco Share Documentation, Using Alfresco Share. Alfresco Team 3.5 Documentation, http://docs.alfresco.com/3.5/topic/com.alfresco.team.doc/topics/uh-welcome.html. Alfresco Software Inc., 2012.

Alfresco Share web client, http://wiki.alfresco.com/wiki/Alfresco_Share. Alfresco Software, Inc., 23 March 2011.

Google Visualization API Reference, Google Developers, Google Inc., https://developers.google.com/chart/interactive/docs/reference, 9 July 2012.

Mach, M., et al: *D2.1 Platform Architecture and Functional Description of Components*. Deliverable 2.1, OCOPOMO consortium, 2010.

Moss, M. et al: *D5.1 Scenario, Policy Model and Rule-based Agent Design*. Deliverable 5.1, OCOPOMO consortium, 2011.

Scherer, S., et al: *D8.1 Manual of the Methodology for Process Development and Guide to Policy Modelling Toolbox*. Deliverable 8.1, OCOPOMO consortium, 2013.