

ACTIVE News June 2010

Editorial

Dear reader,

This issue of ACTIVE News is packed with the latest project results. Our opener is by Vadim Ermolayev on the use of ACTIVE technologies for engineering design at Cadence.

The next three articles document the progress made by the project on tools for empowering knowledge workers.

We hope you enjoy reading this newsletter, and we would appreciate your feedback.

Milon Gupta, Eurescom

Project results & activities

Cadence case study – Use of ACTIVE technologies in engineering design

It is known that there are no two identical engineering design processes, even for similarly designed artefacts. The execution of a process is developed and performed by the team of knowledge workers in a unique fashion.

The team includes design engineers, design support engineers, and project managers. Experienced team members make follow-up decisions and choose productive paths in the process easily because they use their tacit knowledge based on past experience. However, those whose experience is limited have difficulties in arranging their workflow in a productive way. An expert adviser may be very helpful in assisting this decision-making, very similarly to a navigator system for finding an optimal route on a map.

Project Navigator

Cadence is developing such a software system for monitoring, evaluating, and simulating design processes in order to suggest project continuations with better performance – the ProjectNavigator. This software has a multi-agent system at the back-end that simulates the execution of the de-

sign project plans by development teams. At the front-end the tool supports a design project manager in project planning using the incrementally collected Cadence knowledgebase of design projects. Both the knowledgebase and the tool use the Suite of PSI Ontologies.

Complementary ACTIVE technologies

ACTIVE technologies and software components (see figure on next page) are complementary and facilitating to the ProjectNavigator functionality in several important aspects: (i) at the back-end – for solving the problem of design process execution knowledge acquisition and fusion; and (ii) at the front-end – for solving the problem of design-project knowledge articulation and sharing. Acquisition is done by incremental collection of the new knowledge about the executions of design processes using the ACTIVE Process Mining component based on the probabilistic temporal process model.

The ACTIVated Design Framework tools monitor the design systems and the design processes, and collect the data about the low level events in the respective datasets. The datasets are further fed to the Process Mining Service of the ACTIVE Knowledge WorkSpace (AKWS) Server that produces the instances of the chunks of the executed design processes in terms of the PSI Suite of Ontologies. These instances are further stored in the Cadence Knowledgebase.

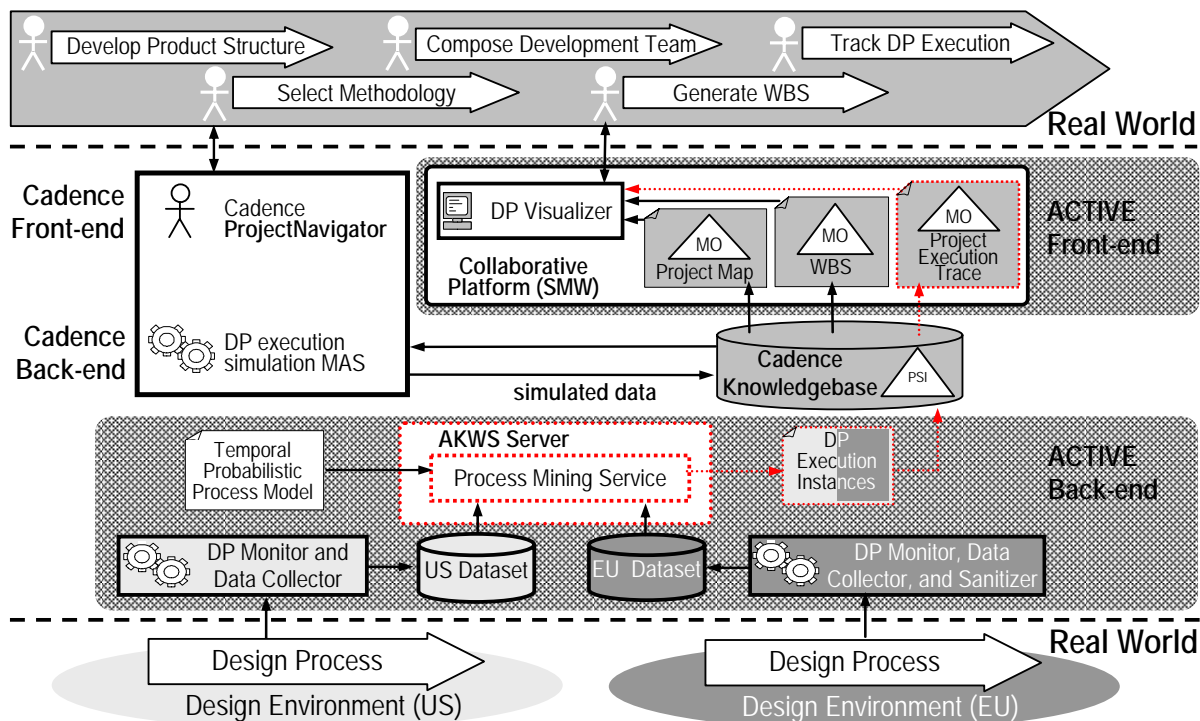
The fusion of the knowledge coming from distributed and heterogeneous datasets is obtained by applying the same process mining model and the same set of ontology namespaces.

Articulation and sharing are done by visualizing different facets of design project knowledge in the collaborative front-end platform using Semantic MediaWiki (SMW) pages – the ACTIVE Design Project Visualizer. The visualization functionality is structured around the typical tasks that design project managers perform in their everyday business (see upper part of the figure – next page).

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Visualisation pages include those for: product structures; generic methodologies; product-bound methodologies; tools; and actor roles. These primary functionalities are supported by decision making instruments for conducting moderated discussions using the LiquidThreads extension of MediaWiki or, additionally, LiveNetLife .

Vadim Ermolayev, Cadence



Legend: Red dotted lines and arrows represent the components that have not yet been fully implemented or integrated in the Cadence Case Study Demonstrator.

Figure: The configuration of ACTIVE and Cadence technology components for design process knowledge acquisition, articulation and sharing.

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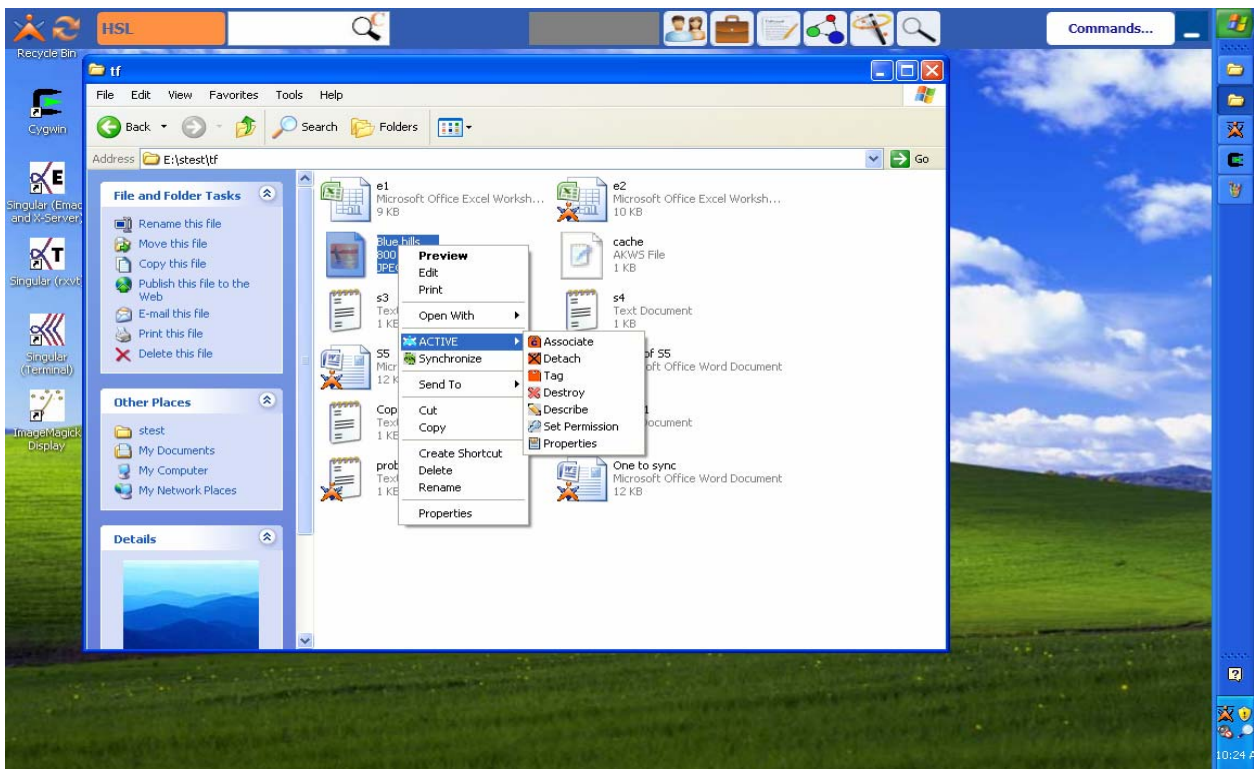
Windows File Explorer now incorporated into ACTIVE

The ACTIVE knowledge workspace has now been extended to include the Windows File Explorer. This means that the File Explorer menu has been enhanced with a number of ACTIVE-related options. Specifically, from within File Explorer, files can be

- moved to and removed from the ACTIVE workspace
- associated with the user's current context
- tagged
- described with arbitrary text strings

For files in the workspace, the icon representing the file type (e.g. Word, Excel etc) is marked with a small ACTIVE logo in the lower left corner. A synchronisation action enables the user to put files on a particular directory, e.g. on his PC, in sync with the current files in the Workspace. For example, when a Word file is inserted into the workspace directly from the Word user interface, then the respective file in File Explorer is not marked as being part of the workspace until the synchronization is explicitly invoked. The figure shows a directory with some files which are also part of the Workspace, and with the ACTIVE menu.

Igor Dolinsek, Hermes Softlab



The Context Visualizer – Visualizing complex relationships

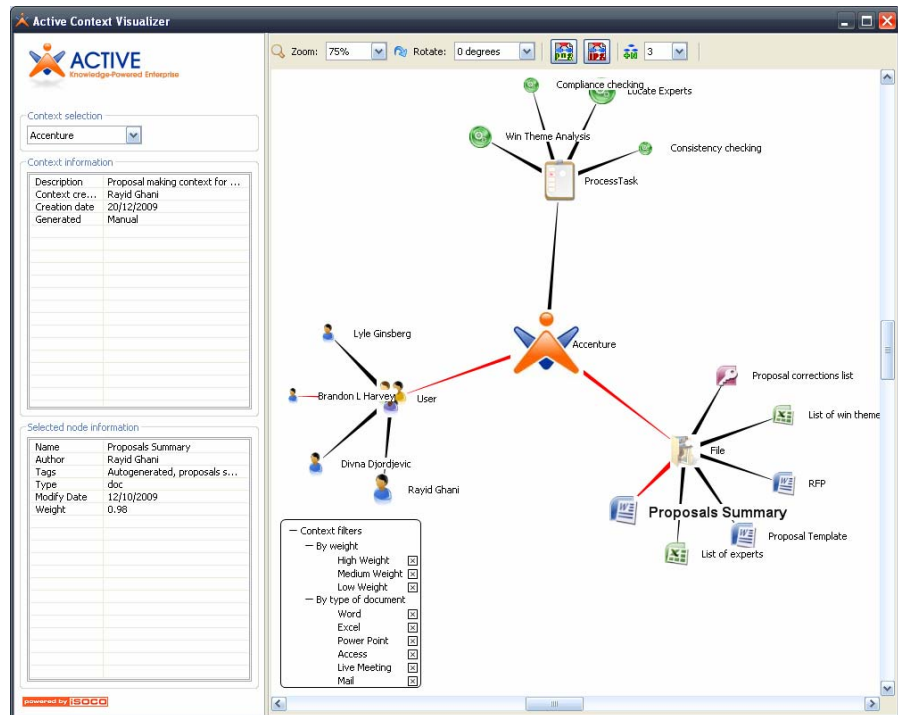
ACTIVE aims to increase the productivity of knowledge workers. The project integrates new concepts and methods which will empower enterprises to make knowledge technology effective for a much larger number of knowledge workers.

A key factor for attaining this goal is to help knowledge workers manage and understand the context of their daily collaborative processes. Therefore, the articulation of such a context by visualization tools will help in understanding the underlying relationships within collaborative processes.

Context visualization implies several things. Firstly, it means explicitly articulating knowledge structures and their relationships for a particular given context. In ACTIVE, context is a term for grouping information resources needed to be used together. These resources include any type of file, people, and tasks.

Secondly, in order to deal with size and complexity, it means providing visualization features for reducing the inherent complexity, and facilitating the understanding of complex relationships within a context. These features include combining multiple modalities (e.g. graphs or text) and filter options, showing different information with different relevance.

Thus, ACTIVE provides new visualization tools helping knowledge workers to understand the complex relationships within a context and improving the structure of collaboration to make



improving the structure of collaboration to make processes more efficient.

In particular, the Context Visualizer is a graphical visualization tool that explicitly articulates the knowledge structures and their relationships for a particular given context, allowing the user to explore and browse the context and, for example, see what resources it contains and how these resources are related and influenced by each other. Moreover, the Context Visualizer offers other utility features, such as zoom and diverse types of filtering. See a screenshot of the tool in the figure.

The Context Visualizer contains two main parts: the principal part of the tool containing the graphical representation of the context, which we call the Diagram Pane; and on the left side the Information Pane which shows information about the selected context being browsed; and detailed information on the file, user or task selected in the context graph.

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The Diagram Pane shows the context graph and has three levels: the first level is the actual context; the second level comprises group processes, users, and files involved in the context; the third and final level includes the particular instances for processes, users, and files.

Each node is labelled with its name to allow easier exploration, and each node image is resized using a weight attribute depending on its importance within the context so the user can more easily locate the most relevant content. Besides being related to the overall context, particular resources can be directly interrelated with other resources to highlight their related use in a specific context. This relationship is shown in red in the figure.

The Diagram Pane also contains the Filter Pane, which is used to filter files by type or nodes by their weight. In contexts with several hundred nodes, the filter helps the user to focus on the most important information by filtering by weight. As we expect the real-life contexts to have a large number of files, it will also be relevant to be able to filter these by their type, furthermore reducing the complexity of the visualized context and facilitating easier browsing and location of interesting information.

The left side part of the tool contains the Information Pane. This pane is comprised of a combo box "Context selection" to select the context to browse and two information grids: "Context information" and "Selected node information".

Carlos Ruiz, iSOCO

The Process Wizard – Helping users to manage their knowledge processes

Knowledge workers struggle to manage their daily activities. Creating, manipulating and sharing knowledge process templates and instances requires a considerable effort. Using a wizard mechanism within the ACTIVE framework will help

to alleviate this issue, thereby ensuring the global success of the framework. As part of the ACTIVE platform we have developed and integrated the Process Wizard to guide users through a set of predefined steps.

In general, a wizard is a user interface element where the user is presented with a sequence of dialog boxes with regard to a particular final intent. Through these dialogue boxes, the user is led through a series of steps, performing tasks in a specific sequence. Sometimes it may be possible to reach the same result without using the wizard.

Thus, it is likely to be easier to perform knowledge process tasks using the wizard, especially for complex or infrequently performed tasks where the user is unfamiliar with the steps involved. Therefore, the usage of a wizard is threefold (see figure 1 – next page):

1. The wizard guides knowledge workers to select a process template or instance based on keywords, tag cloud, or according to some sort of recommendation and ranking.
2. It guides knowledge workers to create a process template or instance from a previous one. In the case of users creating a template or instance from scratch, the wizard might guide with suggestions like task balance or related tasks.
3. It guides knowledge workers to share process templates and instances via local and community repositories, e.g. storing templates in a Semantic Media Wiki.

The Task Wizard is implemented as a wizard engine supporting the aforementioned steps as part of the ACTIVE Task Bar integrating the different services provided by the ACTIVE Knowledge Workspace (figure 2 – next page).

Carlos Ruiz, iSOCO

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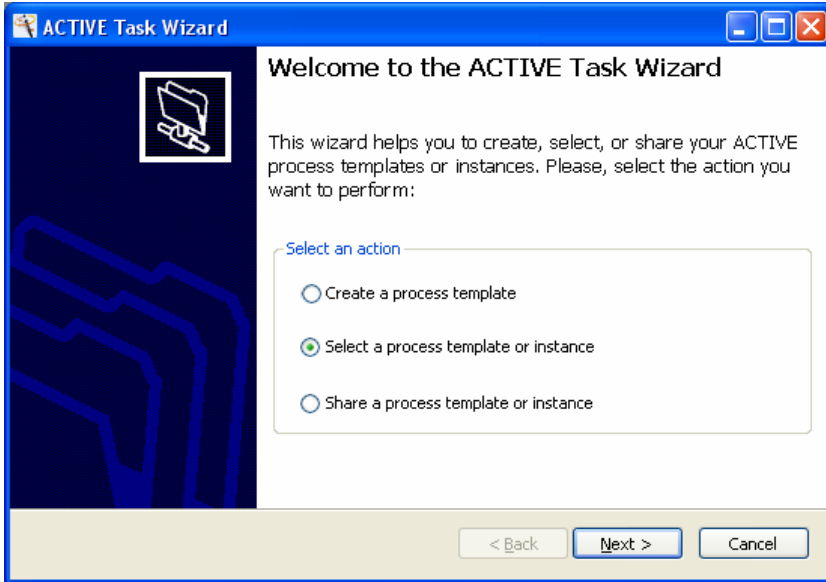


Figure 1 – Starting step in the ACTIVE Process Wizard

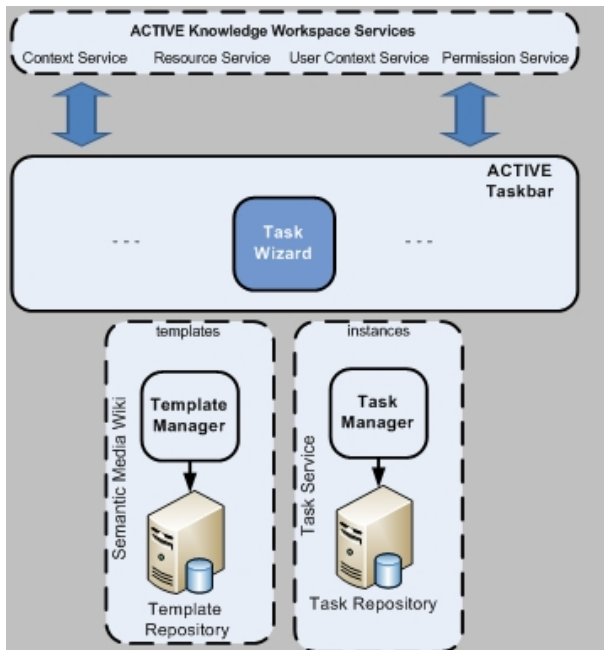


Figure 2 – Task Wizard integration into the ACTIVE Knowledge Workspace

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Upcoming events

17th International Conference on Knowledge Engineering and Knowledge Management (EKAW2010)

Lisbon, Portugal, 11 - 15 October 2010

Event website: <http://ekaw2010.inesc-id.pt>

The focus of the 17th edition of EKAW will be on "Knowledge Management and Engineering by the Masses".

ACTIVE is a Gold Sponsor of the event.

CIAO2010

(co-located with EKAW2010)

Lisbon, Portugal, 11 October 2010

Event website:

<http://semanticweb.org/wiki/CIAO2010>

CIAO2010 is a workshop on Context, Information and Ontologies. The goal of the event is to discuss the relationship between these three, including how context can be used to manage the distribution and prioritisation of information. Papers should be submitted before June 30th.

ACTIVE researchers are helping to organise the workshop, which will be co-located with EKAW.



About ACTIVE

ACTIVE is a consortium of twelve partner organisations from seven different European countries, co-ordinated by BT. ACTIVE aims to increase the productivity of knowledge workers:

- by tailoring information delivery according to task context – prioritising the information needed now;
- through powerful but easy-to-use knowledge sharing tools;
- by enabling the reuse and sharing of the informal processes used by knowledge workers.

Project website: www.active-project.eu