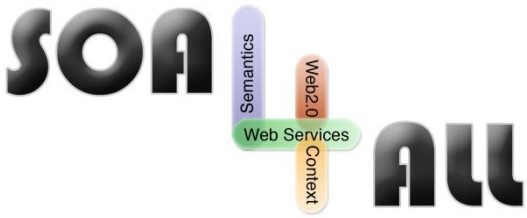

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D9.4.2 Evaluation of Prototypes

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PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group specified by the consortium (including the Commission)	
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Glossary of Acronyms

Acronym	Definition
B2B	Business-to-Business
B2C	Business-to-Consumer
BPM	Business Process Management
C2C	Consumer-to-Consumer
CCBS	Customer Care and Billing System
CRM	Customer Relationship Management
D	Deliverable
DC	Digital Channel
EC	European Commission
QoS	Quality of Service
SOA	Service Oriented Architecture
SWS	Semantic Web Services
WP	Work Package

Executive summary

The work package 9 scenario shows how the SOA4All results can be applied in the e-Commerce domain. The scenario goes clearly beyond a classical use case in a way that it does not only use and apply the results provided by the project. Instead of this, it also adds own ideas and developments to SOA4All, allowing the use case to show the innovation that SOA4All brings to e-Commerce in a future looking and highly flexible web 2.0 environment. The purpose of this scenario is to demonstrate the SOA4All vision by telling a real-world story around the complete set of SOA4All components in a highly practical way so showing the usefulness of the project results.

Based on this scenario the second and final e-Commerce C2C Prototype has been release at month 33. This deliverable reports on the efforts conducted during the last three months in order to evaluate the results. It evaluates not only the WP 9 prototype, but also the overall SOA4All results from the point of view of the actors involved in the scenario.

1. Introduction

The WP 9 scenario was presented in the previous deliverable D9.4.1 [6]. This deliverable further evaluates WP9 results by reporting the outcomes of a role-based evaluation. In the beginning of the project we have developed an eCommerce scenario involving several participants, each playing a different role. This evaluation reiterates through the scenario and identifies which of the requirements initially formulated is fulfilled, based on the different roles played by the actors. As such, we first analyse what are the activities that can be performed by each of the actors, and "how good" or how complete they can be now performed based on the SOA4All technologies. These findings are further used in a detailed analysis of the eCommerce scenario before and after using SOA4All technology.

1.1 Evaluation Methodology

During the last three months of the SOA4All project the main activities conducted were referring to the evaluation of the project results. As opposed to other evaluation efforts, the results reported in this deliverable are focusing on the evaluation of the SOA4All results from the WP9 scenario perspective, i.e., which of the objectives that we proposed at the beginning of the project are now fulfilled. In order to realize this evaluation we reiterate through the WP9 scenario, and analyse what each of the participants (roles) is able to do. As such, the evaluation consists of two main parts:

1. Qualitative evaluation – presents what each of the participants is able to do;
2. Quantitative evaluation – illustrates in percentages how the requirements initially formulated are now fulfilled.

1.2 Structure of the Document

The document is organized as follows:

- Chapter 2 presents the qualitative evaluation, i.e. what can each of the actors perform based on the WP9 technology;
- Chapter 3 brings the evaluation a step forward, performing a quantitative evaluation of the technologies;
- Chapter 4 analyses the state of the art and performs a comparison with other eCommerce technologies;
- Chapter 5 highlights the innovative aspects of the scenario and explains the added value by SOA4All;
- Chapter 6 concludes the document.

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2. Qualitative Evaluation

This section provides an overview of the roles played by different participants in the scenario, and of the actions performed by each of the participants. The section illustrates the WP9 accomplishments in terms on the facilities offered to each of the parties.

2.1 Roles

This section gives a short overview of the WP9 scenario. The scenario involves several people as previously described in the WP9 deliverables. It involves three sellers, one reseller, one buyer and one advertiser. The table below presents the roles, and a summary of what each of them intends to do using the SOA4All technology.

Name	Role	Summary
Arian 	Buyer	Visits Nadas Facebook page, sees some personalized products and decides to buy one of them.
Nada 	Reseller	Wants to generate income on various popular web 2.0 sites. Uses SOA4All to connect services of various partners in order to expose product information to Facebook, Twitter, her own Webshop, etc.
Theodore, Esteban, Claus 	Sellers	Want to increase their sales by offering web services, allowing resellers to retrieve a product list and to order a specific product.
Silvio 	Advertiser	Wants to increase accesses to his web portal using the SOA4All WP9 Social Advertising Services.

Table 1: Roles in WP9 Scenario

2.2 Activities

Each of the participants in the scenario has certain objectives that they want to achieve by using SOA4All. This section further presents the activities that each of them can perform now, due to the improvements brought by the efforts of SOA4All consortium in general and WP9 in particular.

Arian (Buyer)

In an eCommerce scenario, satisfying the needs of the buyer is probably the most important goal. It is important to help buyers to easier find products they are interested in, to collect information about the sellers (or resellers) and to ensure a fast and reliable service delivery.

The activities that can be performed by Arian are the following ones:

- he can visit the reseller's Facebook public account (and as such obtain access to products provided by different sellers);
- he can choose a product and pay (it does not matter which is the seller of the product, Arian can even buy products from three different sellers and pay them in one single payment, the reseller will further deal with the separate payments);
- he can click on collaborative-enabled banners, visiting the advertiser Web site and collecting credits to be spent later in specific shops.

Nada (Reseller)

Nada is the central figure of the WP9 scenario, and the one who fully benefits from using SOA4All technology. She can now perform the following tasks:

- she can easily login using OpenID;
- she can search for Services (service providers);
- she can check ratings and comments for each service, check recommendations and furthermore test each service registered with SOA4All (in this way Nada avoids getting involved with unreliable service providers);
- she can add services to bookmarks, including the Facebook service;
- she can model, adjust and extend her processes using Composition Editor, and she can easily add or merge services to the processes and execute them (including payment services);
- Nada can monitor services usage, being able to rate and recommend them;
- she can improve marketing channels, optimize sales and extend partners, basing on context.

Theodore, Esteban, Claus (Sellers)

The WP 9 activities towards facilitating seller activities were conducted in the following directions:

- register the service in SOA4All using Profile Editor, as well as update it;

- annotate services using Good Relations;
- monitor the usage of the service;
- include a collaborative advertising service into a banner.

Silvio (Advertiser)

For this new player introduced in the WP 9 scenario, the activity overlaps with some of the sellers and reseller activities (as the seller and reseller also want to advertise the products they are offering):

- Silvio can include his banners in other Web pages and applications, in order to increase the number of accesses to his Web portal.

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3. Quantitative evaluation

As previously described in Deliverable 9.4.1 [6] the prototype is divided into four parts based on the people involved in the scenario described earlier in this deliverable. Each part explains the tasks, the date it was accomplished, the types of test that were performed and the status.

3.1 Tests

This section provides an overview of the type of tests performed on the sellers, buyer, advertiser and reseller. Deliverable 9.2.1 [5] distinguished between three types of tests that need to be performed:

- ***Integration tests:*** performed whenever a deep technical integration of different components is necessary.
- ***Functional tests:*** a set of functional tests have to be performed for every participant.
- ***Performance tests:*** these tests allow us to identify possible bottlenecks in SOA4All development.

3.2 Status

The completion column in Table 2 shows the completion of the work in context of the WP9 scenario. In most cases, the scenario relies on the results of the other SOA4All work packages. As such, the following percentage values can be interpreted as follows:

- If an element is marked as 100% then it means that it has been implemented and also fully integrated into the scenario in a perfect and final way.
- Any other values mean that an element is already part of the WP9 scenario implementation but it might be only partly realized. For example, some services might still be hard-wired in the first prototype version.

The tasks that need to be completed by the participants in the WP9 scenario as well as the rational for these tasks were introduced in Deliverable 9.2.1 [5].

3.3 Service Providers

The following table shows the status of each task related to service providers who want to increase the sales of their company by providing services.

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ID	Name	Due	Integration testing	Functional testing	Perfor-mance testing	Completion
S1	Register in SOA4All using Profile Editor	M24		Yes		100%
S2	Service annotation using Good Relations[1]	M33		Yes		100%
S3	Store service in SOA4All	M33	Yes	Yes	Yes	100%
S4	Monitor service usage	M33	Yes	Yes		100%
S5	Update sales plan and product definitions	M24		Yes		indirectly[2]
S6	Service annotations using additional ontologies (in comparison to S2)	M24		Yes		100%
S7	Update service in SOA4All	M24	Yes	Yes	Yes	100%
S8	Include a collaborative advertising service into advertiser's banner service	M33	Yes	Yes		100%

Table 2: Tests for the Service provider

3.4 Reseller

The following table shows the status of each task related to Nada, who wants to generate more income by connecting services through SOA4All, in order to expose information to various popular web 2.0 sites such as Facebook, Twitter and eBay.

ID	Name	Due	Integration testing	Functional testing	Perfor-mance testing	Completion
R1	Login using OpenID	M24		Yes		100%

1 http://purl.org/goodrelations

2 To be handled by the webshop connected to SOA4All (e.g. TIE Mambofive)

R2	Search for services	**M24**	Yes	Yes	Yes	100%
R3	Check ratings and comments for each service	**M24**	Yes	Yes		100%
R4	Check recommendations	**M24**	Yes	Yes		100%
R5	Test Theodore's service	**M24**	Yes	Yes		100%
R6	Add services including Facebook service to bookmark	**M33**	Yes	Yes		100%
R7	Check pre-defined templates to Model	**M33**	Yes	Yes		0%
R8	Model process using Composition Editor	**M24**	Yes	Yes		100%
R9	Add or Merge services, parameters based on an automatic approach	**M33**	Yes	Yes		100%
R10	Monitor service usage	**M33**	Yes	Yes	Yes	100%
R11	Rate and recommend services	**M33**	Yes	Yes		100%
R12	Improve marketing channels based on context	**M33**	Yes	Yes	Yes	30%
R13	Adjust and extend the Model process	**M33**	Yes	Yes		100%
R14	Add a syndication service to mediate between Web 2.0 sites and Nada's product data	**M33**		Yes		100%
R15	Add a service to handle payment issues	**M33**		Yes		100% (simulated)
R16	Replace services and add rating	**M33**	Yes	Yes		100%
R17	Execute complex scenario	**M33**		Yes	Yes	100%
R18	Optimize sales and	**M33**		Yes		100%

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	extend partners					
R19	Make use of the collaborative advertising service	**M33**		Yes	Yes	100%
R20	Analyse webshop visitors to update process	**M33**	Yes	Yes	Yes	100%
R21	Automatic process optimization	**M33**	Yes	Yes	Yes	manually

Table 3: Tests for the reseller

3.5 Buyer

The following table shows the status of each task related to the buyer who want to increase the sales of his company by providing services.

ID	Name	Due	Integration testing	Functional testing	Perfor-mance testing	Completion
B1	Visits Nada's Facebook public account	**M24**		Yes		100%
B2	Chooses a product and pay	**M33**		Yes		100%
B3	Clicks on a collaborative-enabled banner	**M33**		Yes		100%

Table 4: Tests for buyer

3.6 Advertiser

The following table shows the status of each task related to Silvio, who wants to advertise his Web page into other Web shops, applications and sites.

ID	Name	Due	Integration testing	Functional testing	Perfor-mance testing	Completion
A1	Checking number of credits of affiliated users from the e-Commerce dashboard	**M33**	Yes	Yes		100%
A2	Checking number of clicks on of affiliated Web-sites from the e-Commerce dashboard	**M33**	Yes	Yes		100%
A3	Annotating his advertising services with SOA4All tools	**M33**		Yes		100%

Table 5: Tests for Advertiser

4. Comparison with other C2C prototypes

To understand the efficiency and the benefits brought by SOA4All Commerce-To-Commerce solution developed in the context of WP9, it is very useful to accomplish a panoramic view of what the market offers nowadays in terms of C2C tools.

A comparison with state of the art software could be very interesting also in order to understand which aspects of our C2C environment could be improved and where the commercial software has limitations, which could be addressed by our solution.

In the following sections we report shortly which commercial tools have been taken into consideration for the current analysis.

4.1 Freewebstore

Site: http://www.freewebstore.org

Description: free Web-store is a free, easy-to-use system to set up an on-line shop.

Product features:

- availability of a cross-selling tool showing related products. It links products together to show customers other products they may be interested in;
- availability of a product rating system. The higher the rating of a product, the more likely it is that it will perform well on search engines and appeal to e-Shop customers;
- availability of popular products. It highlights which of the products are most popular and tracks visitors' searches.
- allowing access to a range of detailed statistics about the store by integrating Google Analytics;
- every page on the e-Store automatically optimizes itself to help boost the search engine rankings;
- allowing for visitors statistics. It allows accessing a range of statistics about visitors and monitoring their habits, in real time;
- availability of customer information. It allows for viewing a range of details about all previous customers at a glance;
- availability of enhanced store statistics. It allows access to a range of detailed statistics about products, the store and its visitors.

4.2 OsCommerce

Site: http://www.oscommerce.com

Description: osCommerce is an on-line shop e-commerce solution, available as an Open Source software, released under the GNU General Public License.

Product features:

- completely multilingual with English, German and Spanish provided by default;
- automatic Web-browser based installation and upgrade procedure.
- dynamic product attributes relationship;
- control if out of stock products can still be shown and are available for purchase;
- possibility for customers to subscribe to products to receive related emails/newsletters.

4.3 PrestaShop

Site: http://www.prestashop.com

Description: PrestaShop is a modular and technically and graphically customisable solution, equipped with extensions and templates.

Product features:

- availability of statistics about visits, visitors and on-line visitors;
- availability of statistics about catalog, products, orders and sales;
- complete integration with Google Analytics.
- ability to create customers groups;
- possibility of customers follow up;
- availability of a customer loyalty system (points);
- possibility of creating newsletter available for subscriptions;
- possibility of creating shopping carts back up.

4.4 Magento

Site: http://www.magentocommerce.com

Description: Magento is an e-Commerce Platform.

Product Features:

- possibility of mobile commerce (iPhone optimized);
- availability of analytics and reporting;
- availability of search Engine Optimization;
- availability of flexible coupons (pricing rules) with ability to restrict to stores, customer groups, time period, products and categories.

4.5 CS-Cart

Site: http://www.cs-cart.com

Description: CS-Cart is a standalone Web application for building and managing an e-Commerce Web-site of any size with multiple departments and product suppliers.

Product features:

- Web-based installation wizard and store configuration;
- open source code;
- availability of marketing and promotion tools;
- availability of an affiliate e-commerce program;
- availability of bonus system and customer loyalty rewards;
- possibility of multi-channel retailing;
- possibility of multiple product suppliers.

4.6 Microsoft Commerce Server

Site: http://www.microsoft.com/commerceserver

Description: Commerce Server 2009 helps setting a Web-site that allows businesses to get their stores, allowing changing the look and feel of the site in an easy way. Content management is based on Microsoft SharePoint Commerce Services.

Product features:

- multi-channel capabilities. Web-store and mobile usability are included out of the box, with support for expansion to other channels;
- Service-Orientated Architecture (SOA) of Commerce Server, with separation of data, business and user experience;
- availability of marketing management, including advertising and discounts;
- availability of direct mail and multi-brand campaign control;
- possibility of creating personalised experiences;
- availability of promotional codes, to promote and highlight products in a personalized way.

4.7 CityMax.com

Site: http://www.citymax.com

Description: CityMax.com is a Web-site builder, which lets you build your own Web-site without the need of HTML or Web design skills. The main goal is to offer information or sell products on-line directly from the created Web-site.

Product features:

- Web-site design is fully customizable;
- possibility of promoting a service or sell products;
- possibility of tracking usage statistics;
- availability of a product catalog;
- possibility of recommending products;
- possibility of inventory tracking;
- possibility of management of coupons and discount codes;
- availability of online payments and multiple payment types.

4.8 First comparison based on SOA4All WP9 criteria

The first kind of useful comparison between the C2C framework developed in SOA4All WP9 and current similar products available on the market, is based on SOA4All WP9 criteria. For this goal, we can use the following features:

1) WP9 C2C environment has been thought and developed to be used by common people and not IT or eCommerce experts;
2) thanks to the SOA4All semantic framework, it is possible to find and insert into the e-Commerce environment any number of services deployed by any kind of supplier;
3) SOA4All WP6 editor helps to orchestrate as many heterogeneous services as the user wishes;
4) WP9 provides e-commerce process templates;
5) services used in the e-Shop can be monitored under the availability and performance point of view;
6) e-Commerce shop can be easily integrated in social networks as Facebook or Twitter;
7) adding advertisings to the e-shop or advertise your own e-shop is quick and straightforward;
8) Web 2.0 features are available to tag, comment, rate and suggest services to other users, to have the best user experience possible.

TOOL	Feat. 1	Feat. 2	Feat. 3	Feat. 4	Feat. 5	Feat. 6	Feat. 7	Feat. 8
SOA4All WP9	✔	✔	✔	✔	✔	✔	✔	✔
Freewebstore	✔	✖	✖	✖	✖	✖	✔	✔
osCommerce	✖	✖	✖	✖	✖	✖	✖	✖
Prestashop	✖	✖	✖	✖	✖	✖	✔	✖
Magento	✖	✖	✖	✖	✖	✖	✔	✖
CS-Cart	✔	✔	✖	✖	✖	✖	✔	✔
MS Commerce Server 2009	✖	✔	✖	✖	✖	✖	✔	✖
CityMax	✔	✖	✖	✖	✖	✖	✔	✖

Table 6 - C2C framework comparison following SOA4All WP9 criteria

From this analysis, it is quite clear how SOA4All WP9 concepts are innovative, compared to what is currently available on the market. Web 2.0 concepts seem not to have spread in C2C tools yet, while semantic and service composition are topics, which no analysed C2C framework deals with.

WP9 framework demonstrates to go through a new and innovative way, where semantics should help users in better understanding the world around them and allow them to discover useful new features for their on-line shops, while other frameworks represent a closed world under this perspective.

A last interesting consideration is that none of the examined tools exploits the potentialities of social networks, lousing all the opportunities these new communication media can bring to the selling domain.

4.9 Second comparison based on other C2C frameworks common features

After the comparison analysed in the previous section, it is wise to reverse the roles and examine all the C2C frameworks under the perspective of the features, which are common to the majority of the products available on the market.

To perform such an analysis we will take the following elements in consideration:

1) the availability of discounts and promo codes for e-shop customers;
2) the possibility of subscribing to specific product or feeds;
3) the availability of tools to personalise the graphical aspect of the e-Shop;
4) the support for mobile devices;

5) whether the framework has been developed as a SOA;
6) whether the framework is available as Open Source solution;
7) the presence of some kind of affiliation rewards;
8) the possibility of specify multiple product suppliers;
9) the possibility of stock management;
10) the availability of specific Business Intelligence statistics;
11) the availability of ad-hoc Search Engines Optimisation options;
12) whether the framework supports multi-language.

TOOL	Feat. 1	Feat. 2	Feat. 3	Feat. 4	Feat. 5	Feat. 6	Feat. 7	Feat. 8	Feat. 9	Feat. 10	Feat. 11	Feat. 12
SOA4All WP9	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	✗	✗
Freewebstore	✓	✗	✓	✗	✗	✗	✗	✗	✓	✓	✓	✓
osCommerce	✗	✓	✓	✗	✗	✓	✗	✗	✗	✓	✗	✓
Prestashop	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✓
Magento	✓	✗	✓	✓	✓	✓	✗	✗	✗	✓	✓	✓
CS-Cart	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
MS Commerce Server 2009	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✗
CityMax	✓	✗	✓	✗	✗	✗	✗	✗	✓	✓	✓	✓

Table 7 - C2C framework comparison following Market C2C frameworks common features

Based on the table above, the framework developed in SOA4All WP9 misses some features common to almost all of the examined market products. The most used features not satisfied by our solution are: the possibility of choosing the graphical layout and contents of the e-shop pages, to provide some discounts or promotion codes for some specific customers, to provide some detailed and heterogeneous statistics dealing with the business intelligence of the Web shop, to optimise the Web site for specific search engines and, lastly, provide a support for multilingualism.

On the other side, as seen in the previous comparison, the solution developed by WP9 implements some features offered by few other tools, as the possibility of merging several different product suppliers (made possible in SOA4All by WP6 process editor) and the functionality of giving rewards to some kind of affiliate users (which is done in WP9 scenario by Collaborative Advertising). Moreover the choice of using a Service Oriented Architecture seems to be quite infrequent, as it is mentioned by only two other software solutions.

5. Before and After SOA4All

This section highlights the innovative aspects of the scenario and explains the added value by SOA4All in this context. For this purpose, the scenario is described in two ways: The first subsection describes how the scenario looked like three years ago using eCommerce software. The second subsection then describes the scenario as it is today with the help of SOA4All.

5.1 The Scenario three years ago (i.e. without SOA4All)

Coming exactly from this domain, the WP9 partners have a very good insight on how most people would have tried to realize the process three years ago. So let us imagine how the process for Nada looked like without SOA4All, or more precisely, how the process looked like three years ago in most real world installations.

5.1.1 Theodore, Esteban and Claus

As described in the WP9 scenario, Theodore, Esteban and Claus want to sell products that they are manufacturing. They have a website, which they use to offer their products and they offer resellers to exchange data via CSV files, sometimes XML and often EDI.

Because neither of them is expert in semantic technologies, they have no easy possibility to add semantic descriptions to their services. However, even if they would be able to semantically annotate their services, they would have no idea what to do with them.

So at the end of the day, they use plain old Search Engine Marketing to find business partners and they therefore have to spend about 20% of their yearly turnover in e.g. Google Adwords or Yahoo Search Marketing. They consequently have to increase the prices for their customers in order to pay for the partner-finding advertisement.

5.1.2 Nada

We assume the same situation for Nada where she wants to sell products and we assume that she has already installed a webshop that she found somewhere on the web. As a matter of fact, Nada has to deal with many things in parallel, as further described.

Finding Partners - Finding suitable and reliable business partners is a tough job. Nada will use Google to find business partners. After 2 days of searching she has found 50 entries and decides to send an email to them asking for the possibility to act as a reseller. She gets a reply of 25 companies with 15 companies giving her some positive feedback. However, along the way she later notices that only 10 of them are reliable and honest partners, but as there is no rating facility she did not discover this beforehand. The other 5 partners turn our to be unreliable and will later even lead to some customer losses.

Integrating Product Data - Nada now wants to integrate the products into her webshop. Her webshop offers an XML import interface. However it is not in the same XML format as for all of her business partners. Some business partners offer EDI but her new webshop does not support this. Her new shop even has a web service interface but unfortunately, it is not configurable enough to connect it with the service interfaces of the business partners.

She finally finds a CSV interface that allows her to import the data of some business partners and she has to accept that she has to type in the product data of the other business partners manually, which turns out to be a long lasting and ineffective task.

Keeping Product Data up-to-date - What turns out to be even more problematic is the process of keeping her data up-to-date. For those partners that offer CSV files, she can import and update data by manually uploading a new catalogue file, which she receives via email once a week – in case that it is not filtered by her spam filter. This import does not remove old data, it only imports new data and adds it to the existing catalogue. For business partners that do not provide a suitable format, she has to update all products manually by visiting the website of her sellers. She does this each Monday for 2 months and then she gives up as it takes too much time.

Connecting to Web 2.0 platforms - Nada is very active in Web 2.0 communities. She would really like to add her product information to her Facebook profile or to the new Google Wave, which she is trying out. Nada is very skilled but she is not a developer. She can see that there is an API for many Web 2.0 platforms and she sees that some people also have created different examples and services that she could use. However, none of them integrated with her proprietary webshop. Nada gives up but 2 months later she 'solves' this problem by manually adding a link to her profile page that brings people to her webshop including product pictures of 5 hard coded products.

Synchronization - Nada notices that synchronization takes a lot of time. For example, after six weeks the 5 hard coded products in Facebook are already outdated. Even her webshop contains products that are not available any more as she only gets updated once a week (see bullet "Keeping webshop up-to-date"). Synchronizing between the partners and between the platforms seems to be an unsolvable task at the moment.

Process Changes - As everything is done manually, she has to do each step on her own, which often leads to errors and mistakes and overall does not make her happy as she feels that she could automate the full process, if she would have the right platform.

Monitoring - Nada received some complaints of her visitors that her webshop is sometimes down. However, as she is not capable of monitoring it, she has no idea if this is true or where it might come from.

Sales Optimization - Nada does have a lot of possibilities to optimize the sales process. However, she has no tool support for this and hence is bound to a long lasting and laborious try-and-error approach. In addition, she cannot easily discover new business opportunities because she cannot rely on a Recommender System.

Execution - If a service becomes unavailable or fails, it may cause the failure of the whole process. If a new service becomes available for use, Nada should develop a proper adapter in order to use it inside her process.

5.1.3 Arian

Arian cannot directly notice any differences to the scenario with SOA4All technology support, as everything is happening in the background. However, Arian notices that many products

are out of date, since Nada has to synchronize all data manually.

He can also see non-personalized products meaning that he might see a winter jacket for women instead of some summer clothes for men.

Moreover, the payment and shopping processes is not optimized, forcing him to use much more of his time than he actually wants.

Another problem is that Arian does not see any offer of Nada at all when visiting her Facebook profile unless Nada solves her Facebook integration problem. Afterwards he can see her products but when clicking on them he is only redirected to Nadas webshop start page and has to search the product manually. After 5 minutes he gives up and turns to good old Amazon not thinking about Nadas webshop anymore.

5.2 Benefits, Innovations and Added value because of SOA4All

With the help of SOA4All, all actors can benefit from the SOA4All infrastructure and the SOA4All Studio.

5.2.1 Theodore, Esteban and Claus

Theodore, Esteban and Claus can use the SOA4All Studio directly without any installation. Doing so will provide them some very important advantages:

Preparation

They can add their services directly to SOA4All using the SOA4All Studio and they can easily annotate them using the annotation tools of the SOA4All Studio, which can be launched with a single mouse click from the SOA4All Studio. This will provide them with an easy way to make their product catalogue semantically annotated without having to know anything about ontologies.

Getting Business Partners

Theodore, Esteban and Claus strongly benefit from the SOA4All discovery functionalities. Thanks to their semantic annotations, they will be found easily if someone is searching for an eCommerce service.

Moreover, they even automatically benefit from the SOA4All recommendation system where their services will be recommended to their resellers – without spending a single €/$ to search engine marketing.

Integration with Partners

Of course Theodore, Esteban and Claus can still do business in the ‘old’ way but with SOA4All they benefit from additional sales possibilities and from zero integration effort as SOA4All will care about the integration. Theodore, Esteban and Claus never have to worry again on how to integrate their product data with the system of their resellers.

5.2.2 Nada

Nada benefits from all parts of SOA4All in her process. Some of them are even hidden and fully automatic so that she does not even know the technical details but only benefits from the results:

Finding Partners

Finding suitable business partners is easy now. SOA4All provides a very simple search and unlike Google, Yahoo and Bing the search results do not point to webpages that might have nothing to do with what Nada wants: The SOA4All discovery functionality lists precisely those services that are matching her goals, thanks to the semantic annotations.

Reliability (Social)

Nada can have a look at the rating and commenting facilities of SOA4All, allowing her to benefit from the SOA4All social network. This feature will allow her to easily detect services that are bad or not reliable.

Reliability (Technical)

Apart from the rating facilities, Nada can also have a look at the technical reliability meaning the average response time or the availability of a service. Thanks to the SOA4All monitoring facilities, this information is only one click away and is presented to her graphically.

Live Testing

Nada does not need to request example data and wait for the delivery in order to test if the product data exchange really works. She can simply launch the service (consuming functionality) in the SOA4All Studio and watch the results as soon as they come in.

Integrating Product Data

Integrating data from Theodore, Esteban and Claus into her web shop or even into other platforms is an easy task now: she can launch the SOA4All process composer and drag and drop the services to a process desktop. Afterwards she can simply connect the services. Thanks to the semantics, SOA4All will automatically connect many input and output parameters of the services. For others, she can use a graphical editor to connect services. No need to know any details about process modelling, no need to know anything about WSDL and no need to deal with obscure formats such as CSV, EDI, etc.

Keeping web shop data up-to-date

As everything is based on services, all product data will always be up-to-date. Product data is directly fed from the services of Theodore, Esteban and Claus into her web shop and into other platforms. No need for manual updates or for manually deleting old products.

Connecting to web 2.0 platforms

Nada is very active in web 2.0 communities. With SOA4All this is much easier. She can reuse the existing SOA4All connectivity to add her data to many well-known web 2.0 communities including Facebook, Twitter, eBay and even the new Google Wave. She can

simply create a new process that routes her data from her web shop or even directly from the services of Theodore, Esteban and Claus to her favourite web 2.0 platforms.

Synchronization

No need to care about synchronization of the different platforms. With SOA4All this all happens in the background as all product data is coming from the cloud. In this sense, SOA4All essentially acts as a master data management for her.

Process Changes

Again, Nada's process is very 'flexible' now – but this time because she uses SOA4All. Every process that she has defined can be changed and extended within minutes using the SOA4All process editor. Adding new service providers or new process steps can be done by everyone without needing training in processes modelling.

Monitoring

Nada received some complaints from her visitors that her web shop is sometimes down. She can handle this easily by using the SOA4All monitoring functionality. This shows her that one of the product sellers does not offer a stable process. She can either contact him or simply modify her process to get rid of the problematic service.

Sales Optimization

Nada does have a lot of possibilities to optimize the sales process. SOA4All gives her the right tools to do so. For example, the recommendation system gives her direct links to other interesting services such as a collaborative online advertising service. A second example is the template generator, which will analyse her process and give her concrete tips on how to improve her process. A third example is the composition optimizer that will optimize her process (by maximizing and minimizing some constraints given by Nada) and, in cooperation with the execution engine, will increase her profits by using the most appropriate services in real time.

5.2.3 Arian

Although Arian does not realize that SOA4All is used under the hood; he still benefits a lot from the new functionalities of SOA4All.

Context Awareness

Arian will see products that are 'made for him' or more precisely are matching his profile. He will not see any winter dresses for women in the summer time.

Always up-to-date

There is nothing worse than ordering a product, paying and then getting a notification that the product is not available any more. With SOA4All, Arian can be sure that all product data is up-to-date and available.

Process Optimization

Arian indirectly benefits from the SOA4All template generator, which optimizes the order process over time to match the requirements of the users. This shortens the time needed to buy products.

Reliability and Trust

As Nada used the rating facilities of SOA4All, she only added product sellers that are reliable. Furthermore, in case the services fail for some reasons, the Execution Engine is able to substitute them to complete the execution. Arian therefore directly benefits from this increased reliability.

6. Conclusions

The WP9 scenario defined at the beginning of the project has as scope to illustrate how the SOA4All technologies, in general, and the WP9 in particular, can bring important improvements in the eCommerce area.

This deliverable presents the evaluation of the final WP9 prototype, from a role-based perspective (i.e., what can each of the actor do). The evaluation consists of two main parts, namely qualitative and quantitative evaluation as presented in Sections 2 and 3 of this deliverable. The evaluation clearly illustrates that 95% of the tasks proposed by WP9 scenario were successfully fulfilled. Furthermore, the deliverable presents a comparison between the state of the word before and after SOA4All, which underlines the advantages of using SOA4All technology.

A second main part of the deliverable presents a comparison between the state of the art software and SOA4All technology. The results of this comparison are presented in two tables (Table 6 and 7) and allow for a better understanding of which aspects of our C2C environment could be improved and where the commercial software has limitations which could be solved by our solution.

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