Deliverable Number D.5.03

Platform for purchasing/invoicing

WP 5 – Forest information system development

Task 5.3 - Online purchasing/invoicing of industrial timber and biomass

Revision: Final

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Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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Acronyms

SOA	Service Oriented Architecture
SLOPE FIS	SLOPE forest inventory module
JSON	JavaScript Object Notation
WUUDIS	Cloud service for forest data management
REST	Representational State Transfer
ANGULARJS	JavaScript-based open-source front-end web application framework

1 Introduction

This deliverable presents the main research and its results within *task 5.3 "Online purchasing/invoicing of industrial timber and biomass"* of the SLOPE project. The objective is to develop a prototype of a platform to support purchasing and invoicing activities of the customer user.

Main deliverable of this task 5.3 is a working prototype of the platform, which allows users to sell or buy timber and biomass and is available at the following link:

https://slopefis.mhgsystems.com/home

This task focus is on platform functions that makes possible to identify material. Enable negotiation between purchasing and selling parties. This document describes the work that has been carried out for this task and acts as description of the prototype.

2 Sales platform architecture

Figure 1 shows the sales platform module place (highlighted) in the overall SLOPE FIS architecture that is described in the task 1.5. The sales platform module is small peace in the overall picture but it is very important for the whole platform.

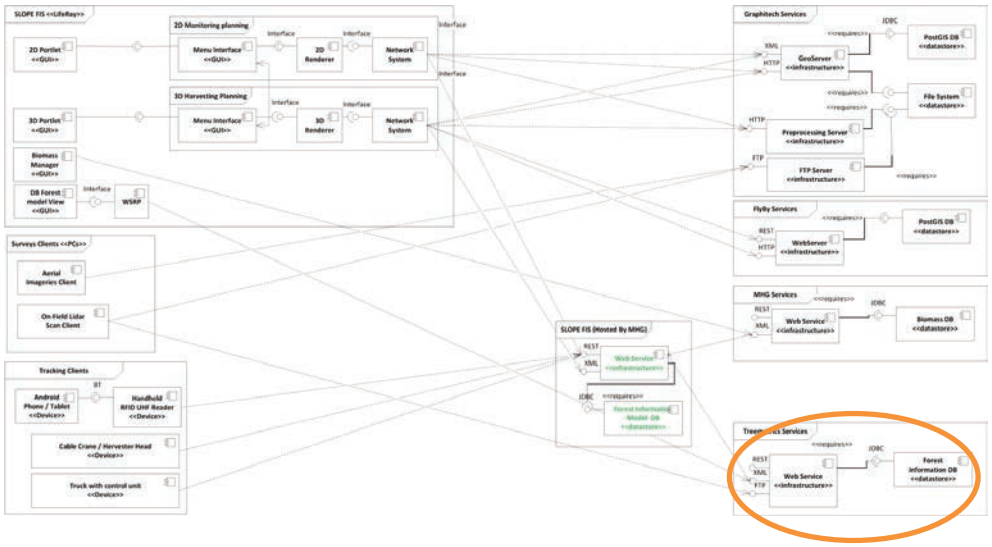

Figure 1: SLOPE FIS Component Diagram

As the component diagram shows, sales platform is one of the web service components in SLOPE FIS. The sales platform component is the place where all the purchasing and invoicing activities are intended to happen. Sales platform is built on the top of Wuudis platform.

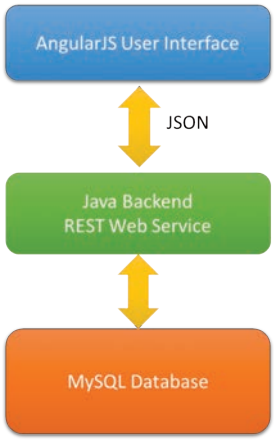

Figure 2: Task 5.3 technical architecture

Wuudis is a commercial platform developed by MHG for forest management and data sharing. The platform is built with modern technologies and is fully SOA based system. User interface is built with AngularJS framework following the Material Design guidelines for usability and communicates with backend via a JSON interface. The backend is implemented with Java EE and every business logic method is published as REST web service resource. A MySQL database engine is used for persist data store. Figure 2 shows the Wuudis platform main technology stack.

3 Sales platform review

This chapter describes basic seller and buyer processes on the sales platform. Both types of users need to have an active user account registered to the service before they can create new offer requests or make offers. Figure 3 shows the seller process and figure 4 show the buyer process on the marketplace platform.

Figure 3: Timber or biomass seller process

Users can create offer requests with personal user account or with organization account. The selling process starts when a user navigates to the market place and selects *new offer* request. After filling needed information, user can publish the offer request for the buyers.

Sellers can see all trade offers assigned to the offer request. Buyers can see only their own offers. Sellers can accept one or zero trade offers to finalize the deal. If a seller does not accept any of the offers, then the offer request is closed after and expiration time. If seller accepts an offer a deal and trade contracts is created.

Figure 4: Timber or biomass buyer process

Timber or biomass buyers should always have an organization account on the platform. Only users with organization account can browse offer requests and create trade offers.

Timber buyer browses offer requests created by sellers. When a buyer sees an interesting offer request, he can create new trade offer to the seller. A buyer can only see his/her own offers. Buyer can also communicate with the seller (for ex. ask more details) by using sales platform mailbox feature. If buyer trade offer gets selected by the seller, buyer will see the trade contract about the deal. If buyer offer is not accepted it will close automatically when the offer request is closed.

3.1 Register new user account

Every marketplace user should have valid user credentials. The registration page (Figure 5) includes basic information of new user registered to Wuudis platform. Individual account is needed to be able to identify user behind actions done in the platform.

After registration form is filled correctly, platform will send activation email to the new user email address. The email address must be confirmed before user account is activated.

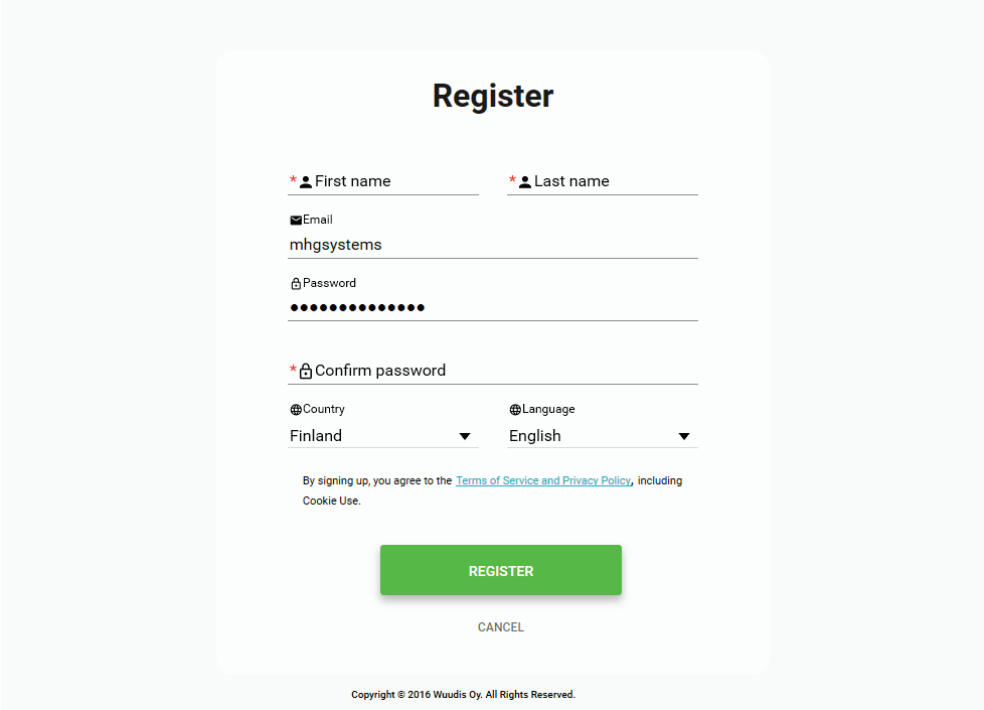

Figure 5: Registration form

3.2 Create new organization

New organization section (Figure 6) allows anyone to create its own organization profile. Bidding is only possible as organization user. Individual forest owners can only make offer request. One of the SLOPE FIS sales platform goals was to be able to make group sales. This is possible with organization. After creating organization, the admin user is able to invite any user of the sales platform to organization. That way it is possible to do joint offer requests.

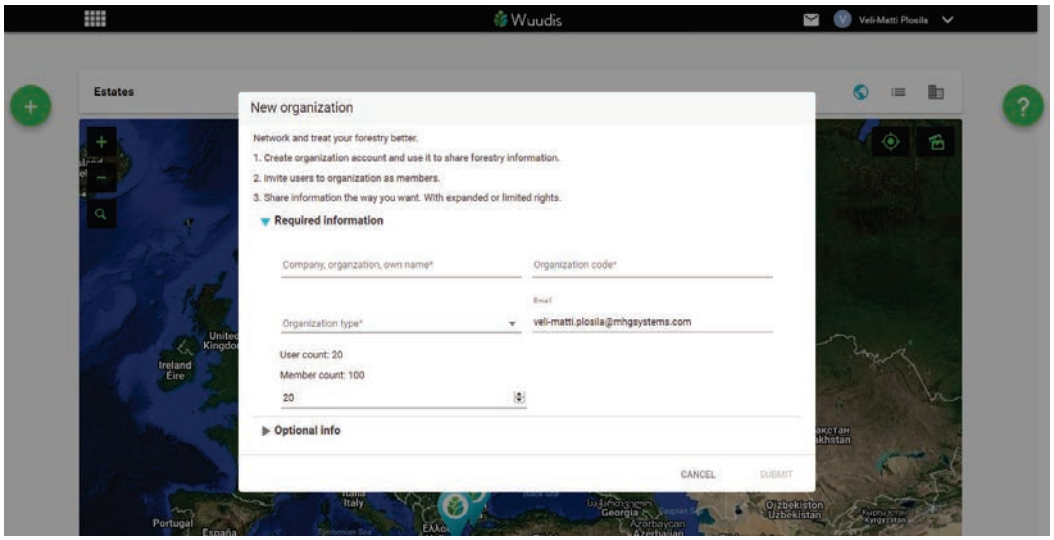

Figure 6: New organization form

3.3 Offer request

Offer request section (Figure 7) is for creating new offer requests. These can be made by individual forest owner or organization. Organization can be company or multiple forest owners forming one group and selling as a group. One of the goals in SLOPE FIS was for the forest owners to be able to sell forests as one sales lot.

Offer requests consist of type of the purchase e.g. standing sale or delivery sale. A creator can choose if he uses real estate uploaded to Wuudis which automatically fetches location of the forestry. Optionally, it is possible to click on a map to pin the location of the product. Offer request also consist of exact road address, property identifier and description text to describe different materials, quantity and condition of material. It is possible to add multiple files in an offer request to give more detailed information (e.g. PDF-file). Files are stored to the secure Amazon S3 object storage. Figure 7 shows an offer request form.

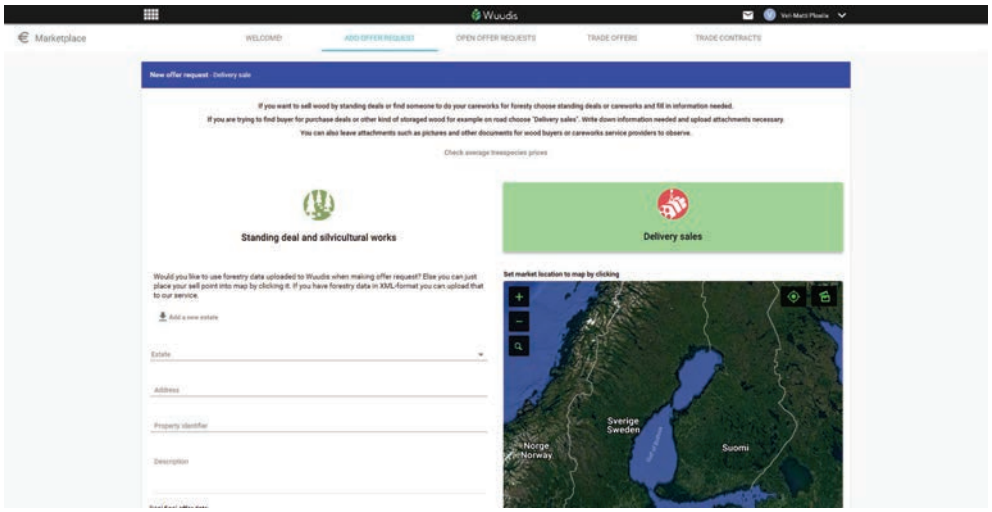

Figure 7: New offer request form

When creating the offer request, seller can also look at market prices as Figure 8 shows. For the SLOPE project Italian and Austrian prices are integrated. Sales platform uses Finnish prices as default.

Tree species prices

Tree species	Saw log price	Small diameter log price	Pulp wood
Spruce	€94.00 / m³	€70.50 / m³	€32.22 / m³
Siberian fir	€85.50 / m³	€62.00 / m³	€32.22 / m³
Larch	€134.40 / m³	€112.00 / m³	€33.50 / m³
Softwood	€87.50 / m³	-	€46.10 / m³
Pine	€66.50 / m³	€47.50 / m³	€32.22 / m³

Figure 8: Market prices

3.4 Trade offer

The trade offer section is for placing offers to offer request creators. It includes price, description and deadline for the time that trade offer is valid. It is possible to include attachments files in trade offer to ensure all needed information in bid.

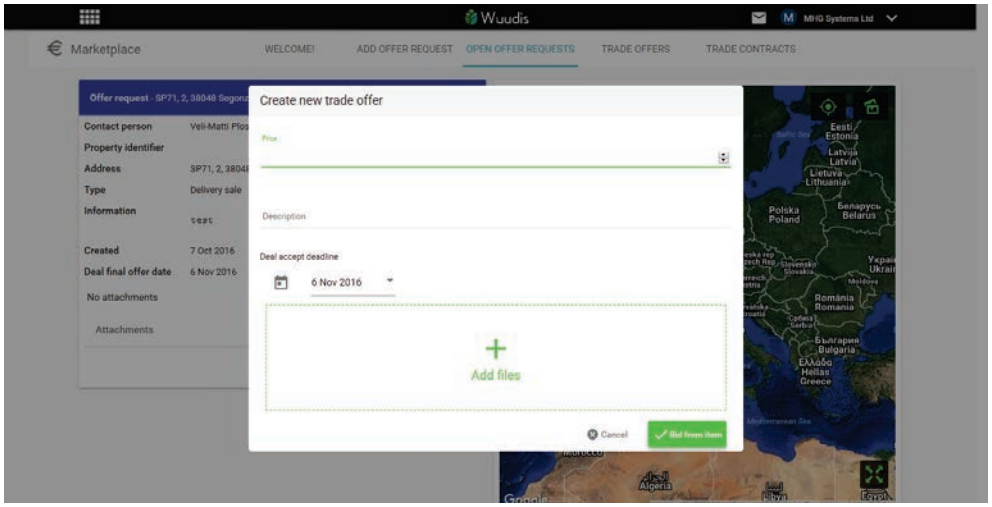

Figure 9: Timber of biomass buyer process

3.5 Negotiation and communication

Negotiation can be done by either buyer or seller. An organization that is interested in an offer request can contact an offer request creator via contact button on the offer request page. Seller can contact everyone who bids on their product by choosing interesting bid and using the contact button. Negotiation happens inside the sales platform mailbox that basically allows real time chatting between seller and a potential buyer.

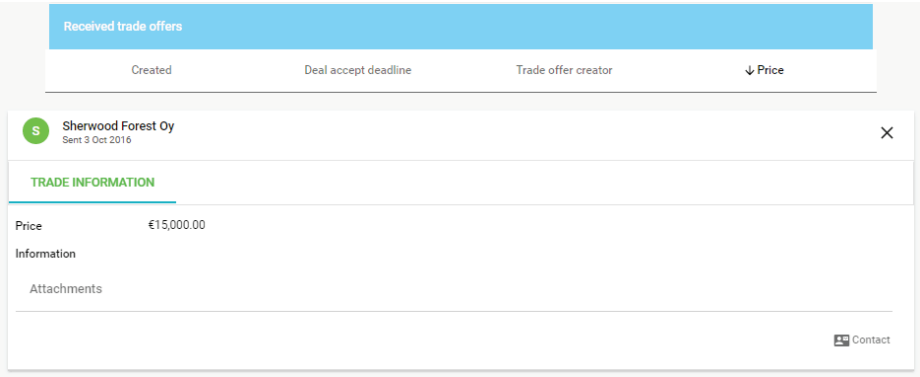

Figure 10: Contacting bidder organization

3.6 Trade contract / invoicing

Trade contract or invoicing section includes both parties more detailed information such as phone and email. Trade contract is automatically created in the platform after accepting one of the trade offers. Trade contract also includes details of offer request, trade offer and contract period which is the time period where the contract should be concluded. It is possible to include attachments such as invoices and other material. It is also possible to observe attachments added in offer request and trade offer. Figure 11 shows the trade contract information.

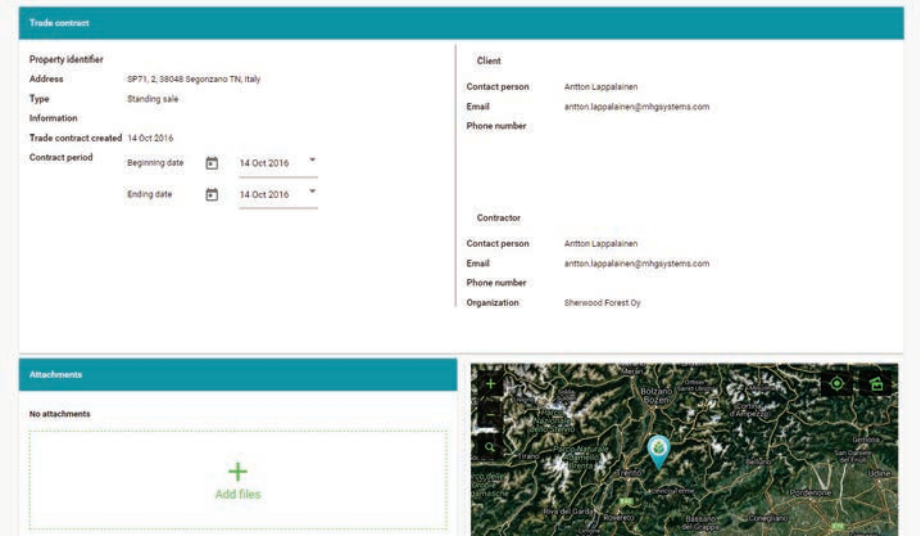

Figure 11: Trade contract between buyer and seller

4 Conclusions

This document describes the work process and deliverable of the task 5.3 - *Platform for purchasing/invoicing*. The task main deliverable is the working prototype of the timber and biomass sales platform that fulfils the SLOPE requirements and is going to be integrated together with other components in the final Slope prototype. These goals have been successfully achieved. This document works also as short user manual and feature description of the sales platform.

Commercial product called Wuudis was used as base of the SLOPE sales platform. Wuudis brings basic account management (authentication and authorization), real estate management and communication features to the sales platform. Some SLOPE specific customizations were needed to harmonize the communication with the Wuudis platform standards. The SLOPE version of Wuudis is deployed to the dedicated server just for SLOPE usage.