Project co-funded by the European Commission within the FP7 (2007–2013)

Grant agreement no.: 308630

I-PAN

INNOVATIVE POPLAR LOW DENSITY STRUCTURAL PANEL

Project type: Collaborative Project

Start date of project: 1st October 2012 Duration: 36 months

D9.5 - IPR Management and Exploitation plan (Initial)

WP n° and title	WP9 – Impact analyses, dissemination and exploitation
WP leader	CTECH
Responsible Author(s)	CTECH
Contributor(s)	CTECH
Planned delivery date	M12 – September 2013
Actual delivery date	M12 – September 2013
Reporting period	RP1

Dissemination Level		
PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Document information

Abstract

This document describes the definition of the marketable results, background and foreground knowledge, and exploitation of the project results.

Keywords

IPR, results, exploitation, foreground, background

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Document history

Version	Date	Reviewed paragraphs	Short description
0.1	25/09/2013	All	First draft

* Abbreviations of editor/contributor name

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LIST OF ABBREVIATIONS AND DEFINITIONS

CA	Consortium Agreement
DM	Deliverable Manager
DoW	Description of Work
EC	European Commission
EW	Engineered Wood
IPR	Intellectual property Right
LSB	Lightweight Strand Board
OSB	Oriented Strand Board
PM	Project Manager
PMB	Project Management Board
PR	Peer reviewer
QM	Quality Manager
R&D	Research and Demonstration
TMB	Technical Management Board
WP	Work Package

Table 1- List of abbreviations and definitions

INTRODUCTION

The purpose of this deliverable is to produce, update, control and revise the exploitation strategies of the I-PAN consortium. In this document the way in which the I-PAN tools will be used and exploited by project partners are presented. The Exploitation Plan has been created through consultations with the entire consortium in order to develop a strategy that fully accounts for its needs and expected benefits.

In order to reach I-PAN remarkable results, exploitation campaigns have been considered fundamental by the I-PAN consortium. In this context I-PAN partners will be in a favourable position in exploiting the outcomes of the project activities and demonstration and they intend to extend their current partnership to future research activities.

The exploitation plan is an important factor for the success of the project and all Partners will be having a specific role according to their core businesses.

The exploitation strategy of each partner is defined regarding the following main points:

- ✓ How to use and receive commercial benefits by the final I-PAN working product, defining who can sell and use it, etc.
- ✓ How to manage the IPR generated in the project. E.g. how all partners could reuse part of the I-PAN results in new product or RTD projects.

The present document, meant to complement pre-existing instruments such as the Grant Agreement and the Consortium Agreement, shows the plan for exploitation of each single partner, the overall exploitation towards external (to the consortium) organizations, and the exploitation agreement among the partners and the management of the Intellectual Property Right.

1 EXPLOITATION STRATEGY

I-PAN innovative LSB will have a considerable impact on the EW industry and it will allow optimizing wood resources and waste allocated to the EW sector.

In order to reach I-PAN remarkable results, dissemination and exploitation campaigns have been considered fundamental by the I-PAN consortium. In this context I-PAN partners are in a favourable position in exploiting the outcomes of the project activities, dissemination and demonstration.

I-PAN exploitation strategy is based on the following two main pillars:

- ✓ **Exploitation Plan**, which defines how each partner is expecting to generate benefits by the project results (Individual Exploitation Plan), and the agreement among partners on commercial revenues by the selling of the I-PAN solution.
- ✓ **IPR Management**, which addresses the ownership of the IPR, and the management of the access rights to such IPR by the project partners;

These pillars are described in this document. A mid-term assessment on the I-PAN research progress will be held at month 18, in order to identify and define the research progress to date, the exploitation paths and to redefine, if necessary, the research plans for the remaining part of the project. I-PAN industrial partners will exploit the project outcomes in terms of commercial use, while academic partners will exploit such results in terms of know-how in research activities (research project, educational activities, R&D on behalf of future industrial partners, SMEs in particular) and related intellectual properties.

At the end of the project, the final exploitation plan will elaborate the real exploitation, based on the achieved results. This final delivery will also incorporate and elaborate a strategy on how to best exploit the produced results with respect to the partners' practices.

2 OVERALL APPROACH TO CONSORTIUM EXPLOITATION PLAN

2.1 GENERAL APPROACH

Specific commercial and process benefits achievable by I-PAN project results at the level of the Exploitation Plan are regulated by:

- ✓ The definition of the **marketable results** and of the individual exploitation strategy**;**
- ✓ The definition of the **access rights** of the partners to the project background and foreground for the internal usage.
- ✓ How to manage the **IPR generated** in the project; this is mainly the definition on how to treat the foreground generated in the project. In this sense, the classical IPR approach of cooperative project will be applied (namely, the inventor of the IPR remains owner of the IPR generated, when a foreground is result of joint efforts, the partners contributing will be co-owners of the foreground created).

I-PAN partners have different background and core business, being different realities such as one university (UMIL), a research institute (ESCS), industrial manufacturing companies (IMAL, IBL), and SMEs (STELA, IDP, CHIMAR) among which an innovation management consultancy company (CTECH). Thus, the exploitation interests of each partner are different and complementary.

✓ **Industrial partners** will use their significant presence in relevant markets and networks to give weight and exposure to the I-PAN results relevant to exploitation activities, both to generate new customers, collaborations or networks and to reinforce existing links and commercial collaborations.

✓ The **academic partner** is interested in using newly gained foreground knowledge as input to further research, scientific publications and advanced teaching purposes as well as using the project results to initiate further research.

✓ The **research Institute** will also seed to increase its prestige and secure its position within the research community as cutting-edge technological provider. It can use the results to develop partnerships with existing or new contact networks.

✓ The **SME partners** will focus on network building, raising their profile and seeking opportunities for commercial linking and co-exploitation of project results or provision of innovative services in their current area of operation. They will be able to exploit the project activities to leverage company growth through an improved high-tech reputation for the company, new opportunities for collaboration and new service offers that can open new markets.

3 DEFINITION OF THE MARKETABLE RESULTS

In order to assess the exploitation potential of the results of the I-PAN project, it is interesting to outline the results of the project with highest relevance to future exploitation activities. Aside from the main results of the project which have the potential to be converted into products or services for the market, the I-PAN project will produce results that improve the competitive potential of the involved partners. These results are described in the table below.

PARTNER	MARKETABLE RESULTS
IMAL	- The technological choices will already introduced in I.PAN help IMAL now to be able to use this as a showcase pilot plant just to prove the quality of the project in terms of performance and environmental savings and therefore cost. Parts of the plant can be offered to improve existing systems, thus creating a huge flying for business IMAL and partners. The realization of the project and of the innovations introduced in the management strander and the resin allowed to offer similar facilities to I-PAN in the world with a lot of interest from potential customers.
IBL	- Income in a new product market that allows to fit IBL market niches production of light furnishings for caravans and special vehicles, production of component for the marine industry and create potential competition in the plywood. This type of product is not present in the market but the customer will feel the need. This new product shows a lower cost than its competitors, and this implies the same performance techniques, plus a high commercial
CTECH	The IPAN project represents a very valuable twofold opportunity for Ciaotech: - On one side the project will allow Ciaotech and its technicians to gain important and further expertise on LCA on wood processing technologies. - On the other side, the project will provide the opportunity for Ciaotech – during the dissemination activities and networking – to get in touch with interesting organizations to offer them its knowhow and services and stimulate and support innovation all over Europe. Among such services, Ciaotech comprises also support to access to EU public funding (and the timing is promising given the new 2014-2020 EC grant programme) and systematic innovation starting from companies' technological needs in order to identify possible "solutions" that will increase industries' competitive advantages on innovation.
STELA	- The technology of belt drying is not common yet in the OSB industry. The I-PAN project has proved that special designed low temperature belt driers are suitable. This opens an immense market worldwide. - Most panel board and OSB manufacturers have low calorific energy available which is blown unused into the air. This energy is used in the new drying system and reduces not only the production costs immensely but also has the environmental aspect. - Due to the European reach of the project the awareness level is immensely extended for STELA. - Time-to-market for the future osb panels drying segment can be vastly minimized due to more and more streamlined production processes
IDP	- Increase the IDP equipment solutions portfolio and mechanical

	treatment processes particulates etc. - Use this knowledge in other applications related to obtaining products of mining and solid recovered fuels production. - Improve capabilities of differentiation and added value by incorporating cutting-edge technology as a result of collaboration with ECSC and UMIL. - Further use is possible but it is not defined to the date. - Our team specializes in "mechanical treatment" is preparing a paper on the market opportunities which evolve over the coming months.
ECSC	- The main result from the point of view of ECSC is the application of our knowledge in image analysis and pattern recognition, to a real industrial problem. Considering we are a research and education institution, this result will be marketed by different means: - Through our educational activities (e.g., as part of our course "Soft Computing for Computer Vision"). - It will also serve as a success case to be shown to potential clients in our industrial environment. - Finally, scientific publications (an important component of the production of a research center) will be generated. Further use is possible but it is not defined to the date.
UMIL	n.a.
CHIMAR	Technology for the production of new formaldehyde-based resin & resin system suitable for bonding poplar & recycled wood strands to form light weight OSB panels

Table 2- I-PAN Marketable results

4 SPECIFIC INDIVIDUAL EXPLOITATION

This paragraph contains the description of the first draft of the individual exploitation plan of each partner of the consortium.

4.1 IMAL

IMAL priority is the creation of an innovative process supported by cutting edge technologies that will positively impact also the internal R&D projects, aimed at developing new business lines of greener plants and machineries. The collaboration with the SMEs involved in the project will facilitate the exchange of expertise and competencies as well as industrial and commercial opportunities in different EU countries. Major expectations are on proprietary technologies enhancement, such as new technologies on nozzles, new blades characteristics, new managing software for blending and mat forming.

4.2 IBL

IBL will make use of the I-PAN outcomes to promote and extend the domain of use of the poplar wood, the I-214 clone in particular. Moreover it will be play an active role in the constitution of the aforementioned product company start-up, as a joint-venture between IMAL, IBL and other R&D performing SMEs which will be based on the I-PAN results on the LSB product. As producer of OSBs, IBL will exploit the advantages derived from the process improvement in terms of energy consumption reduction, process timing and harmful emissions reduction.

4.3 CTECH

CTECH will make use of the know-how and expertise acquired during the I-PAN project, to establish and expand its network of contacts, in particular regarding SMEs, and in sectors like the wood industry. The activities carried out in LCA and the knowledge resulting by applying it in the EW manufacturing process, will allow CTECH to expand the current offer of environmental consulting services.

4.4 STELA

Due to the European reach of the project the awareness level was immensely extended for STELA.

In the following of the project STELA expects increased market share of biomass drying technology. The project has been visited by now of several large and mid-size manufacturing comapnies. They have been made aware of the potentials of the new technology. Words have spread out and step-by-step the technology is going to be appreciated.

First plans have started to implement the technology in more and more other sites worldwide.

STELA will make use of the project results to innovate driers technology involved in the panels manufacturing process. STELA expect this project will result in the production of still more efficient low-temperature belt driers, especially with regard to the environmental impact of the technology.

4.5 IDP

IDP will benefit from the I-PAN project by employing and proposing I-PAN technology in all sectors in which it is involved.

The main objectives of IDP focus on diversifying its industrial business area, with a clear focus on the research and development projects for a "Circular Economy" competitive through environmentally friendly technologies.
The feedback of knowledge and experience with materials such as wood and background in the world of waste, minerals, aggregates etc. represent a new production of equipment for a strategic sector for the company.

The exchange of experiences with new contacts in the EEC, and the interesting experience of participating in a European project, are of considerable interest for IDP.

4.6 ECSC

ECSC main objectives are the basic and applied research in the Soft Computing area as well as the technology transfer in industrial applications of intelligent systems design for the resolution of real problems. Therefore ECSC will exploit I-PAN solutions by focusing on the new lines of EW research identified in I-PAN and the technology transfer to EU companies. Also, ECSC aims to be a meeting point for worldwide experts.

The main result from the point of view of ECSC is the application of our knowledge in image analysis and pattern recognition, to a real industrial problem. The exploitation of this experience will have several components in the different areas of activity of the center.

From the point of view of educational activities, the application will serve as a practical industrial example for courses as “Soft Computing for Computer Vision”, being one of the courses of our Master in Soft Computing and Intelligent Data Analysis.

From a marketing point of view, the projects represents an example of computer vision in a complex industrial environment, representing a show case of our capabilities, and helping us to convince potential clients and enter into new markets.

Obviously, scientific publications are part of the production of any research institution, and are considered in the evaluation of our activity. So, the results will also be exploited through the production of conference and journal articles.

4.7 UMIL

UMIL will exploit I-PAN outcomes to strengthen its research by publishing scientific papers, by pursuing research gaps identified during the project and by training new graduates and undergraduates. UMIL will present outcomes as case studies in BA, MS and PhD programs at UMIL and summer schools and theoretical advancements in PhD courses. UMIL will also publish achievements in international scientific journals and conference proceedings, especially in signal/image processing, vision, pattern analysis, computational intelligence, and industrial informatics, and adaptive systems. In this context, UMIL has already published scientific results in conference proceedings: R. Donida Labati, A. Genovese, V. Piuri, and F. Scotti, "A Virtual Environment for the Simulation of 3D Wood Strands in Multiple View Systems for the Particle Size Measurements", in *2013 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2013),* Milan, Italy, July 15 - 17, 2013.

Other dissemination activities will consist in the organization of tutorials in scientific conferences. Moreover UMIL will organize special sessions in conferences, workshops, and special issues in journals. UMIL will also organize the final workshop of the project.

4.8 CHIMAR

The participation of CHIMAR in I-PAN is in line with its R&D activities and objectives to develop new technology and products for the resin and wood-panel industries field.

It is expected that the new knowledge to be created through I-PAN activities will enhance CHIMAR's technology portfolio and level of services and it will strengthen and improve the company's market position and competitiveness.

CHIMAR will strive to license the innovative technology developed in the framework of I-PAN to interested resin and panel producers all around the world either by extending the existing CHIMAR licensing agreements or by concluding new ones and on the basis of principles laid in the project Consortium Agreement.

5 IPR EVALUATION

During the project, specific actions have been and will be undertaken for properly addressing the issues related to ownership, protection and guarantee of knowledge inside the I-PAN Consortium. The management of Intellectual Property Rights has been regulated in detail by the Consortium Agreement (CA) which has been focused on the following main points:

- licensing of pre-existing know-how and refinements thereof (Background);
- ownership of the knowledge gained within the project (Foreground);
- confidentiality for dissemination of project results.

According to the Article 9.3 of the CA access Rights to Foreground and Background Needed for the performance of the own work of a Party under the Project shall be granted on a royalty-free basis, unless otherwise agreed for Background excluded.

5.1 BACKGROUND:

To enable a trustful and reliable cooperation (i.e avoid disputes on the property of a specific information) the partners of I-PAN consortium defined their project background at the beginning of the project. Pre-existing know-how remains the property of the partner that brings it into the project but pre-existing know-how needed for carrying out the activities of I-PAN project shall be granted on a "royalty-free" basis, unless it is agreed otherwise by the concerned partners before signature of the Contract (especially in the case where the "exchanges" are unbalanced).

According to the Article 9.1.3 of the CA all Background not listed in Attachment 1 shall be explicitly excluded from Access Rights.

This section provides an overview of the background ownership and access rights included and excluded defined in I-PAN Consortium Agreement and updated by each partner.

5.1.1 BACKGROUND INCLUDED

Party short name	Background included
IMAL	All IMAL Patents and their application on I-PAN project for example but not limited : BUGNION 60 2004 030068.3-08 13/01/2011 12.DE.7E Dispositivo D'iniezione BUGNION 05075983.6 25/04/2005 12.EP.8 Distribuzione Colla Su Flakes BUGNION PCT/IB2012/051397 23/03/2012 12.WO.12 Iniezione Interna Al Flusso
I.B.L.	n.a.
CTECH	All background is included.
STELA	General documentation: Advance risk assessment according to DIN EN ISO 12100, Belt drier for sawdust, lubrication chart, sparepartlist, EC Declaration of Confirmation. Materials of the dryer components: product feeding and –discharge

	stations, drying tunnel , turning device, roof and fresh air cap, hot air generation, fans, wet cleaning device for the drier belt, dry cleaning device for the drier belt, exhaust air silencers (if required). General description of the process: Stela Laxhuber Drying System for Low-Temperature Belt Drying of Saw Dust. General drawings. Sensor list: Electronic parts - 9 Stk. PT 100 temperature sensors, moisture measurement, difference pressure control device dryer, speed control/limit switch, Electronic Vibration monitoring unit for exhaust air fans, Photoelectric sensors, inductive slot sensor .
IDP	Knowledge of the state of art in dust conveying and mat forming. General principles of dust mat forming. Basic models and drawings of dust conveying for mat forming.
ECSC	All background is included.
UMIL	All background is included.
CHIMAR	Methods of application of resins and additives in the production of oriented strand boards.

Table 3- Background included

5.1.2 BACKGROUND EXCLUDED

Party short name	Background excluded
IMAL	Innovative wood flake silo extraction system for blender feed Built-in former to optimize the production process by bunker extraction system Innovative system for covering light OSB panels with a thin layer of sawdust by dynasteam Production of specific thickness flake so as to improve the wood panel performance
I.B.L.	n.a.
CTECH	None.
STELA	All information which is not included in the Attachment 1 “Background included” list.
IDP	Systems for dosage wood dust. All the improvement on materials and mechanical configurations in dust forming system. Automation and control in the regulations of dosage in dust forming system.

ECSC	Knowledge on state of the art and ECSC's code for soft computing and computer vision, particularly image segmentation and registration methods, and qualitative image description methods, will be made available without royalties to the consortium when needed and only for use in the I-PAN project (IP will remain at ECSC).
UMIL	Knowledge on state of the art and UMIL's module design for computational intelligence components and artificial vision will be made available without royalties to the consortium only for use in the I-PAN project (IP will remain at UMIL).
CHIMAR	Methods of preparation/synthesis of resins, syrups and additives dedicated for use in the production of wood-based panels, composite wood panels/products, engineered wood products/panels and impregnated papers. All patents/patent applications/know-how/trade-secrets owned by CHIMAR.

Table 4- Background excluded

5.2 FOREGROUND:

Knowledge arising from work carried out under I-PAN project shall be the property of the participant carrying out the work leading to that. If, during the activities required by I-PAN project, two or more participants have jointly carried out work generating invention, design or knowledge, and if the features of such joint work are such that their respective share of the work cannot be ascertained, the concerned participants agree that they may jointly apply to obtain and/or maintain the relevant rights and shall strive to set up amongst themselves appropriate agreements in order to do so. As long as any such rights are in force, such participants shall be entitled to use, without owing any financial compensation to or requiring the consent of the other participants, and to license such rights in accordance with the set up agreements.

All Foregrounds developed before the accession of the new Party shall be considered to be Background with regard to said new Party.

Access Rights granted to a Defaulting partner and such Party's right to request Access Rights shall cease immediately upon receipt by the Defaulting Party of the formal notice of the decision of the PMB to terminate its participation in the Consortium. A non-defaulting Party leaving voluntarily and with the other Parties' consent shall have Access Rights to the Foreground developed until the date of the termination of its participation. Any Party leaving the Project shall continue to grant Access Rights pursuant to the EC-GA and this Consortium Agreement as if it had remained a Party for the whole duration of the Project.

Where no joint ownership agreement has yet been concluded:

- ✓ each of the joint owners shall be entitled to Use their jointly owned Foreground on a royalty-free basis, and without requiring the prior consent of the other joint owner(s), and
- ✓ each of the joint owners shall be entitled to grant non-exclusive licenses to third parties, without any right to sub-license, subject to the following conditions:
  - at least 45 days prior notice must be given to the other joint owner(s); and
  - fair and Reasonable compensation must be provided to the other joint owner(s).

The following table provides an overview of the expected foreground to be generated in the project, the ownership and access rights:

Party short name	Foreground
IMAL	Expexted foreground Ability to perform field tests on a medium-sized facility and to use this information to develop machines suitable for various types of production of panels (OSB, MDF and TRC). Ownership The realization of machines resulting from the project i-IPAN modified in relation to the type of product to manage allow IMAL promote innovative machine on the market of its design and then to operate directly in the channel distributive B2B Access right In relation to the technical choices and the results obtained to manage these issues by enabling European patents and disseminate the knowledge gained between partners
I.B.L.	Expexted foreground Marketing a product of market niches currently no accommodation Ownership Creation of a unique product in Italy and in the world Access right no one
CTECH	The 2 main foregroung results for Ciaotech will be: - deeper insights about LCA related to wood processing technologies - wider network in Europe in the IPAN domain While for the latter no particular access rights can be foreseen, for the former it is worth saying that after the project end and related to the technologies developed during the I-PAN project, Ciaotech will have priority to be consulted by the project partners: Ciaotech will have the priority right to deliver LCA analyses services to any contractor with regards to the I-PAN project technologies. In case Ciaotech decides to not exercise such right, any other organization will be entitled to perform LCA analyses.
STELA	Due to the European reach of the project the awareness level was immensely extended for STELA. In the following of the project STELA expects increased market share of biomass drying technology. The project has been visited by

	now of several large and mid-size manufacturing comapnies. They have been made aware of the potentials of the new technology. Words have spread out and step-by-step the technology is going to be appreciated. First plans have started to implement the technology in more and more other sites worldwide.
IDP	Yields and behavioral capabilities of the materials on equipment designed, remain the property settings, detail engineering construction, materials used and all those levels of efficiency achieved involving the key competitive final product.
ECSC	ECSC will work on innovative image analysis systems based on computational intelligence techniques. These systems will be latter tailored to adapt for other industrial applications once I-PAN project was completed. Results obtained by ECSC on innovative techniques in the field of image analysis will be made available without royalties to the consortium only for use in the I-PAN project (IPR will remain at ECSC).
UMIL	UMIL will study and design innovative computer vision systems based on computational intelligence techniques, two-dimensional and three-dimensional data. These systems should permits to monitor and perform better quality control in the production of wood panels. In particular, the main focus will be on the blending and mat forming steps of the productive process. Results obtained by UMIL on innovative techniques in the fields of computational intelligence and artificial vision will be made available without royalties to the consortium only for use in the I-PAN project (IP will remain at UMIL).
CHIMAR	Technology for the production of new formaldehyde-based resin & resin system suitable for bonding poplar & recycled wood strands to form light weight OSB panels, to be owned by CHIMAR. According to the I-PAN Consortium Agreement Access Rights to Foreground if Needed for Use of a Party's own Foreground shall be granted on Fair and Reasonable conditions.

Table 5- Foreground

5.3 CONFIDENTIALITY FOR DISSEMINATION OF PROJECT RESULTS

Specific Non-Disclosure Agreement has been undertaken at the beginning of the project among partners (including University) on the confidentiality of the results. This particularly concerns the dissemination phase from the viewpoint of publication (see the section 8 of the Consortium Agreement): specific agreement guarantee on the one hand the right scientific dissemination (and visibility acquisition), in particular for the academic partner; on the other hand that sensitive information are maintained confidential within the consortium.

The rules explained in the above paragraphs shall not apply for disclosure or use of Confidential Information, if and in so far as the Recipient can show that:

- ✓ the Confidential Information becomes publicly available by means other than a breach of the Recipient's confidentiality obligations;
- ✓ the Disclosing Party subsequently informs the Recipient that the Confidential Information is no longer confidential;
- ✓ the Confidential Information is communicated to the Recipient without any obligation of confidence by a third party who is in lawful possession thereof and under no obligation of confidence to the Disclosing Party;
- ✓ the disclosure or communication of the Confidential Information is foreseen by provisions of the EC-GA;
- ✓ the Confidential Information, at any time, was developed by the Recipient completely independently of any such disclosure by the Disclosing Party; or
- ✓ the Confidential Information was already known to the Recipient prior to disclosure or
- ✓ the Recipient is required to disclose the Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order.

6 FUTURE COMMERCIAL EXPLOITATION OF IPR

A future commercial exploitation plan of IPR will be drafted by asking partners to provide feedback about their foreseen exploitation activities. An individual questionnaire will be prepared and attached in the middle version of this document (D9.6). Finally, it will be distributed among partners and its results will be published in the final exploitation plan (D9.7).