HORIZON 2020

BBI.VC1.R1-2015-2-1/720707/

D9.2 IP Assessment with Partners and Dissemination Plan Rev1

Project Number: 720707

Project Title: Lignin based Carbon Fibres for Composites (LIBRE)

Contractual Date of Deliverable	January 31, 2017
Workpackage contributing to the deliverable	WP9
Nature of the Deliverable	Report
Dissemination Level of the Deliverable	Public
Editors	Maurice Collins
Reviewers	
Abstract: This is an outline plan, to be updated over the lifetime of the project, covering IP assessment with partners and dissemination plans for the project.	

Table of Contents

Executive Summary

LIBRE will implement a full set of targeted dissemination and exploitation measures to maximise the impact of the project. During the project the task of Dissemination and Exploitation will be handled in work package **WP9**. The strategy for the dissemination of the results generated by the LIBRE consortium is outlined here and this includes matters on scientific and technical know-how, commercial evaluations and IPR.

1. Introduction

The handling of IPR in LIBRE will respect the H2020 IPR rules as outlined in Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020. Background IP is owned by the individual partners. Foreground IP resulting from the project is owned by the participants generating it. When foreground is generated jointly (i.e. where the separate parts of some result cannot be attributed to different participants), it will be jointly owned, unless the participants concerned agree on a different solution. Access rights to background for implementing the project will be granted on a royalty-free basis, unless otherwise agreed by all participants. Access rights to foreground for implementing the project (i.e. not for use) must be granted on a royalty-free basis. It is planned to form a body that will be in charge of detecting and dealing with potential problems related to the generated results, as early as they are identified. Each partner will be represented by an exploitation manager on an IPR committee. This committee will then be responsible for the knowledge management during the course of the project. In the case of conflicts arising between partners, and to avoid high costs and difficulties of judicial proceedings, alternative dispute resolution (ADR) mechanisms will be used. These will involve mediation, arbitration, expert determination or a combination of all these. Should any limitation affect the other partners' access rights, they must be informed. The consortium agreement to be used is based on the DESCA model. The project management is aware that an appropriate use of intellectual property rights is fundamental in the knowledge- based economy, having a strategic importance. IP and innovation management are at the base of the creation of commercial value both in the world of business and public research institutions. The LIBRE project sets the guidelines of a management of knowledge and IP plan, with the following objectives:

- Effectively share the knowledge among partners to produce the advances on the project research objectives
- To promote rapid dissemination of information and inventions for the public good; and
- To promote patenting and licensing when the public good is best served by controlling the activities of those commercializing inventions and/or by providing economic rewards necessary to encourage commercial partners to make the investment required to move an early stage technology to the market.

In order to achieve the mentioned objectives, each Party in the project will make reasonable and good faith efforts to:

- Inform, on a periodic basis, employees, faculty, staff involved in the project of the expectation that the research is to serve the public benefit and the importance of prompt disclosure of developments and potential inventions.
- Identify documents and share the existence of any relevant Background Intellectual Property or any prior contractual agreements that may affect rights in Project Intellectual Property or Background Intellectual Property.
- Expedite disclosure and evaluation of Project Intellectual Property, Background Intellectual Property, Project Research Data and related Background Research Data and facilitate the effective dissemination of the Project Intellectual Property for the greater public good.
- Encourage researchers to disclose to the each partner Principal Investigator the publications, including presentations, website postings, and article submissions, prior to disclosure for publication (submission or presentation), related to the project to ensure timely filing of patent, trademark or copyright applications for Project Intellectual Property.
- Promote and publicize the availability of Project Intellectual Property for licensing.

2. Patents & IPR Tracking

A table as illustrated in **Table 1** will enable all interested parties (scientific community, EU, general public) to monitor and track these activities. The table will is available for updating on the online hub, see section 4.3. This confidential data will be visible only to the project partners and to the Commission. It will contain a list of all the intellectual property rights, patents, trademarks, registered designs, utility models and others applied for (and which are under examination or have been granted) for the entire duration of the project. It will contain a list of foreground that may be exploited (i.e. foreground with commercial or industrial applicability) including its description, sector of application and IP protection. A template of the table that will be used to collect and catalogue this information is shown below in Table 1a (some examples of how the table will be populated have been added).

Table 1a: Example of Table for IP monitoring during LIBRE

Results/Partner	Result 1	Result 2	Result 3	Result 4	Result 5	B= Background info F- Foreground info E= intention to exploit results by making them and selling them L= license to third party O= provide services such as consultancy
Partner 1	B F	EL	BL	ELO	ELO	
Partner 2	L	B	BFL	EL	BL	
Partner 3	F LO	EL	BFLO	B	BFL	
Partner 4	ELO	L	ELO	EL	BFLO	

Table 1b: Public dissemination of foreground

No	Title	Authors	Title	Issue Date	Publisher	Year	Pgs

These templates and others will be incorporated onto the LIBRE online hub (confidential area) to enable partners to continuously update their activities and also, in the case of public templates, will allow external parties see project progress.

The ownership of the IP is clearly established in the contract agreement (CA) and will be documented in the exploitation plan, See D9.3).

The potential ownership of IP has been outlined in an Initial Impact Analysis (see Table 2). The BPTEG will actively manage IP on behalf of the consortium to ensure innovations made in the current study are exploited commercially. The overarching principle is to manage IP in the most effective fashion for the exploitation of the project output. Where appropriate, IP which is not commercially critical will be disseminated freely between the partners to promote continued collaboration beyond the project life. All publications will be peer reviewed by relevant partners to ensure that no commercially sensitive results are divulged. Each partner has their own designated IP specialist and established meachnisms to ensure IP is secured and commercialised effectively and in accordance to the consortium agreement (CA).

Table 2: Initial Impact Analysis

Expected Result (Output)	**IP owned by**	**Target end-users**	**Exploitation**	**Dissemination**
Selection and modification of lignin for Carbon Fibre production	ITCF/ TECNARO/UL	Composite industry	Patent – licence after blending lignin with biopolymers. Publication	In collaboration with Tecnaro
Blends of lignin with Biopolymers	ITCF, ICOMP, CBEL, IVW, UBol	Fibre and Composite industry – Transportation, Construction, electronics, Energy, Textile and Chemical	Production and marketing lignin-based materials for (carbon) fibre production Licence in defined fields	In collaboration with Fiat, Eire composites and Dralon.
			Publication	Conferences and trade shows demonstrator parts (JEC)

Precursor Fibre spinning	ITCF, UBol	Composite industry	Licence in defined fields	In collaboration with CF manufacturer
			Publication	Scientific publications, conferences and trade shows demonstrator parts (JEC)
Fibre surface Treatments and susceptors incorporation for RF/MW processing	IFAM, IVW, CTECH, UL (IComp), CBEL	Composite industry	Licence in defined fields	In collaboration with selected industrial partners. This technology would reduce processing energy costs
Incorporation of developed Fibre technology into thermoplastic/thermo set based prototype	All	Transportation and construction industries	Commercialisation of IP	Demonstrator. CRF have expressed an interest in licensing the technology
			Publication	Scientific publications, trade shows demonstrator parts (JEC)

All identified IP **will be recorded centrally by the project management team**, adding further positive outputs and continued commitment by all to identify and monitor long term future benefits resulting from the project. Such IP shall be maintained whilst it retains value and reported beyond the proposed end date of the project through peer reviewed publications as appropriate.

2.1 IP Landscape

The salient patents are summarised in Table 3 Comments on their limitations in the context of the proposed project are included.

Table 3: Relevant patents relating to lignin based carbon fibre materials and highlighting how LIBRE goes beyond the state-of-the-art

Title	Publication number	Publication date	Inventor(s)	Applicant(s)	How LIBRE will be different
Lignin composite polyester material and preparation method thereof	CN101555311 (B); CN101555311 (A)	2009-10-14	Jin Huang Dongkuan Fan	UNIV WUHAN TECH [CN]	LIBRE proposes to modify the lignin with more compatible biopolymers containing RF susceptors which will result in lower temperature processing, lower production costs and enhanced composite performance
Lignin modified high molecular compatible additive and preparation method thereof	CN101649125 (A); CN101649125 (B)	2010-02-17	Xiansu Cheng	UNIV FUZHOU	LIBRE will also modify the surface of the lignin to increase compatibility with polymers. LIBRE intends to use novel chemical and physical surface treatments
Lignin composite material and preparation method thereof	CN101851429 (B); CN101851429 (A)	2010-10-06	Zhengguang Zhang	CHERY AUTOMOBILE CO LTD	LIBRE lignin based fibres will be better tailored for composite processing and to optimise composite performance through incorporation of functional

					groups, novel chemical approaches and novel organic based RF/MW susceptors
Lignin-polysaccharide composite material product and preparation method thereof	CN101851428 (B); CN101851428 (A)	2010-10-06	Gang Chen Jie Zhang	UNIV XIAN SHIYOU	LIBRE fibres will be of higher quality and performance
LIGNIN-CONTAINING COMPOSITE AND METHOD FOR PRODUCING THE SAME	JP2010235872 (A); JP5416454 (B2)	2010-10-21	Yamada Masahiro Miyauchi Shinsuke	OSAKA GAS CO LTD	LIBRE fibres will be reinforced with biopolymers and water absorption issues will be negated
Lignin modified PET (Polyethylene Terephthalate) composite material and preparation method thereof	CN101921387 (A); CN101921387 (B)	2010-12-22	HANBING MA LI YANG XIUYUN LI	UNIV SW SCI & TECH SWUST	LIBRE intends to blend biopolymers with lower melting temperatures with lignin for enhance carbon Fibre production. LIBRE fibres will have all the advantages outlined previously.
Carbon fiber compositions comprising lignin derivatives	PCT/CA2011/000184		Alex Berlin	Lignol Innovations Ltd.	Lignin used in LIBRE will be tailored for matrices through surface chemistries

Preparation method of modified lignin and starch composite material for phenolic resin adhesive	CN102675570 (A)	2012-09-19	Lei Zhang Cheng Zhong	SUZHOU XINBANG GREEN NEW MATERIAL TECHNOLOGY CO LTD	LIBRE will also modify the lignin but will use a combination of physical and chemical methods in order to reduce associated production costs and increase fibre performance in composites
Method for modifying Lignin/PP (Propene Polymer) wood-plastic composite material by flexible-chain-contained reactive solubilizer	CN102719013 (B); CN102719013 (A)	2012-10-10	Xu Xu Shanrong Li	UNIV GUILIN TECH GUT	LIBRE will also modify the lignin but will use a combination of physical and chemical methods in order to reduce associated production costs and increase fibre performance in composites
Lignin modified layered double hydroxide and preparation method thereof and rubber composite	CN102718986 (B); CN102718986 (A)	2012-10-10	Shengpei Su Suo Xiao	SHENZHEN BOFULONG NEW MATERIAL TECHNOLOGY CO LTD	LIBRE intends to employ different chemical methods in order to reduce associated production costs and increase fibre performance in composites
Lignin/polyacrylonitrile-containing dopes, fibers, and methods of making same	CN103080390 (A)	2013-05-01	Bissett Paul J Herriot Carole W	WEYERHAEUSER NR CO	LIBRE fibres will include biopolymers blends with associated advantages

High value lignin derivatives, polymers, and copolymers and use thereof in thermoplastic, thermoset, composite, and carbon fiber applications	US2013255216 (A1)	2013-10-03	Argyropoulos Dimitriss	UNIV NORTH CAROLINA STATE	LIBRE lignin fibres for carbon fibre applications will contain biopolymer blends, organic susceptors, novel surface treatments, novel chemical approach and staged crosslinking to aid processing reduce cost and improve performance levels
Water-soluble conductive polyaniline nano-fiber/lignin composite material and preparation method thereof	CN103408932 (A)	2013-11-27	Zhang Zhenjiu Liu Chuang	CHANGCHUN SANHUA INDUSTRY CO LTD	LIBRE fibres are not intended to be water soluble. All other associated advantages to LIBRE fibres apply
Nano-silver/lignin composite antibacterial material and preparation method thereof	CN103749535 (A)	2014-04-30	Zhong Jinfeng Tan Xiaoli Xu Li	UNIV SOUTHWEST	LIBRE fibres are not aiming to be antibacterial although it is achievable. It is not considered desirable to add metal nanoparticles to LIBRE fibres
Lignin composite material	WO2014070036 (A1)	2014-05-08	Gridnev Alexi Alexeevich	GRIDNEV ALEXEI ALEXEEVICH [RU]	LIBRE would make a ground breaking advance on the interfacial adhesion achieved in these fibres

Method of obtaining composite fiber based on hydrolytic lignin with polyacrylonitrile	RU2526380 (C2); RU2012153414 (A)	2014-06-20	Sazanov Jurij Nikolaevich Dobrovol 'Skaja Irina Petrovna	FEDERAL'NOE GOSUDARSTVENNOE BJUDZHETNOE UCHREZHDENIE NAUKI INSTITUT VYSOKOMOLEKULJARNYKH SOEDINENIJR	LIBRE would go beyond the methods described here to produce fibres at lower cost, with associated lower greenhouse gas emissions and improved performance due to the technological advancements detailed in this proposal
Method for manufacturing lignin for carbon fiber spinning	US 08/114,233		Kenichi Sudo	Forestry And Forest Products Research Institute, Ministry Of Agriculture, Forestry And Fisheries	LIBRE uses novel crosslinking strategies to optimise spinning and carbonisation of the lignin based precursor

Table 4: - Relevant Partner Background IP related to LIBRE Project

Application Number	Application Title
DE 101 51 386 A 1	Zusammensetzung für die thermoplastische Verarbeitung zu Formkörpern und Verfahren zur Herstellung einer solchen Zusammensetzung English translation: A composition for thermoplastic processing into shaped bodies and a process for the production of such a composition
WO2016/170046A1 (UL, patent published)	Heating of polymeric materials

2.2 Patentability of the LIBRE exploitation paths

Table 5: Sumarises patentability of the exploitation paths being developed by partners in the LIBRE consortium

Table 5 – Summary of exploitation paths with comments on patentability in LIBRE

Expected Result **(Output)**	**Target Market**	**Comment on patentability**
Selection and modification of lignin for Carbon Fibre production	Composite industry	Patent – licence after blending lignin with biopolymers.
Blends of lignin with Biopolymers	Fibre and Composite industry – Transportation, Construction, electronics, Energy, Textile and Chemical	Production and marketing lignin-based materials for (carbon) fibre production Licence in defined fields
Precursor Fibre spinning	Composite industry	Licence in defined fields
Fibre surface Treatments and susceptors incorporation for RF/MW processing	Composite industry	Licence in defined fields
Incorporation of developed Fibre technology into thermoplastic/thermoset based prototype	Transportation and construction industries	Commercialisation of IP

3. Introduction to Dissemination Plan

The strategy for the dissemination of the activities and results generated by the LIBRE consortium includes matters on scientific and technical know-how, commercial evaluations and IPR.

The LIBRE project offers strong potential to act as a communication vehicle for transformative ideas and technological innovations between different academic disciplines, research fields, industries, and countries.

The objective of the dissemination strategy is to identify and organize activities in order to maximise the influence of the project and to promote commercial and other exploitation of the project results.

In more detail, the objectives of the dissemination are:

- To raise public awareness about the project, its expected results and progress within defined target groups using effective communication means and tools;
- To disseminate the fundamental knowledge, the methodologies and technologies developed during the project;
- To pave the way for a successful commercial and non-commercial exploitation of the project outcomes.
- To ensure the ease of information flow between project partners
- To ensure that the industries involved in LIBRE have access to world leading technology that will provide global differentiation;
- To ease the access of companies and vendors to access the research results of the project.
-

3.1 Dissemination Strategy

The **dissemination strategy** uses a cascade approach and the **triple –helix methodology** (i.e. industry, academy and authority), to achieve maximum outreach to the target communities, making extensive use of established networks both within and outside the partnership (Table 6 overview).

Table 6: Overview of planned Dissemination Activities, Measures, Tools and Impacts

Activity	Objective / Target Audience / Impact
Dissemination material Project brochure, poster, and flyers for distribution and display at events such as the planned workshops, and at other local and international events that will be attended by the partners	**Objective**: to catch the attention of a by-passer at specific events **Target audience**: 20% of special events by-passers **Impact:** allow quick and direct access to the project information, website (by QR codes or similar).
Social media active promotion of LIBRE via social networks of professional relevance including LinkedIn, ResearchGate and Twitter and thematic blogs to raise awareness of its activities and share its results	**Objective:** e-news, which adds new material on a monthly basis. **Target audience:** 20 average followers per month in Y1 rising to 200 average followers per month by the end of the project. **Impact:** Generate following of individuals from target sectors across Europe.
Project website: the main interface of the project towards the target groups and stakeholders, hosting the results of the project and providing updates on its activities through relevant social media, and also acting as medium to keep partners in contact (a private - consortium only- section has been incorporated in the web design).	**Objective:** General promotion of the project and notification of activities to potential users across Europe **Target audience:** 20 average visits per month in Y1 rising to 200 average visits per month by the end of the project. **impact**: Generate interest among the potential user community
Formal Project launch was held in November 2016 at the Bernal Institute,	**Objective**: General promotion of the project and

University of Limerick, Ireland.	EU H2020. Focused on potential users, including influencers in local regional agencies. A press release is due to be released in February 2017.
Generate **promotional 'news' activity** in sectoral newsletters, local, regional or national papers	**Objective:** General awareness to readers of newsletters and other media. **Impact:** To create interest in the project and its potential results. **Target:** Each country will generate 3 activities.
Workshops: demonstrating LIBRE technologies, will be held as part of the partnership meeting schedule	These workshops will be held in selected locations chosen from the countries of the partner organisations: **Impact:** Spread the message to potential users **Target**: 25 attendees per workshop
Presentations of papers and awareness briefings at appropriate **regional, national and/or international events: European-cluster-meta-networking**	To broadcast the aims and results of the project. Targeted towards industry and support agencies in partner countries & beyond. **Impact**: Identify to potential companies how they could get involved with new technologies. **Target:** 150 companies, agencies and educational bodies
Case studies reflecting end-user experiences and benefits. These will be available on the web-site	Case study will be developed of each of the end-user partner's experiences. The case studies will be used as part of the final dissemination activities in each country. The case studies will also be published.
Liaise with **Regional and National**	Awareness by RDA executives as to what LIBRE

Development Agencies.	can achieve. **Impact**: Potential integration of the results into national and regional initiatives. **Target:** Each partner country to liaise with 3 RDAs or equivalents.
Submission of papers to relevant conferences + Publication of papers per partner	Papers presented and published. **Impact**: Acceptance of LIBRE model among research community **Target:** Academic and business research community

The plan for dissemination and exploitation of the project's results is split into public and confidential. The public dissemination aims to inform interested parties of publications concerning the foreground as well as the dissemination activities throughout the duration of the project and beyond.

Three different target groups have been initially defined for dissemination:

a) General public awareness: It is crucial that products of research that are publicly funded are openly disseminated for societal gain. In order to achieve this, we believe there is much potential to disseminate the research products of LIBRE through a MOOC (Massive Open Online Course). Although such an initiative could potentially reach to thousands of potential end users, it would require investment beyond the scope of LIBRE and involvement by education specialists (the cost of development of a MOOC is generally acknowledge to exceed 50,000€[1]). To this end, we are submitting a proposal for funding under the current Educational call of EIT Raw Materials (https://eitrawmaterials.eu/call-for-projects-2017/).

[1] Hollands, F. M., & Tirthali, D. (2014). *MOOCs: expectations and reality. Full report.* Center for Benefit- Cost Studies of Education, Teachers College, Columbia University, NY. Retrieved from: http://cbcse.org/wordpress/wp-content/uploads/2014/05/MOOCs_Expectations_and_Reality.pdf

b) Related Community awareness:

There is a requirement for dissemination of LIBRE to those that need to have a deeper understanding of its work. These are the scientific community; the education sector, or the related industry that wants to include the developed materials in their portfolio or want to make use of such materials to deliver new products. Within this target, we have identified a set of conferences and professional events where the project will aim to have a significant contribution, increasing the awareness about LIBRE: biocomposite Workshops, Composites, JEC, ICBMC, Biopoco etc. Scientific articles, reviews and other publications written by the project researchers will be published including scientific journals reporting on biopolymers, Carbon Fibre, surface analysis, composites, and sustainability: Angewandte Chemie, ACS Sustainable Chemistry and Engineering, Polymer Composites, Materials and Design, Journal of Applied Polymer Science, RSC Advances, Carbohydrate Polymers (depending on blends)etc. MRS Bulletin and Advance Composite Materials etc.

c) Political Community awareness: This is an important dissemination action, oriented to groups/audiences that are in a position to "influence" and "bring about change" at the political level. For this dissemination, the advisory board members will be key. These are the groups/audiences that will need to be equipped with the right skills, knowledge and understanding of the LIBRE activities in order to propose the use of LIBRE results in high impact decision levels. To enable this, there will be targeted dissemination using specific **science to policy publications.**

Throughout and at key milestones, informed by consortium interactions, dissemination activities will take place to maximise the return from results from LIBRE to society. Established networks for dissemination using **triple –helix methodology** (i.e. industry, academy and authority) where we would invite Industry to an end-user meeting in association with the Irish Composites Center (IComp). Through this activity we aim to disseminate LIBRE results and inspire relevant commercial actors to shift towards circular business models which is needed if our society as whole shall moves in the direction of a sustainable circular economy.

d) Educational purposes: the process and products of this project will be integrated within the curriculum delivered to the many cohorts of undergraduate and postgraduate students that we

teach (many of the partners of this project are also third level educators). This research-led teaching approach has proven in the past to be an effective means to attract students to further study and adds industrial relevance to their education, thus aligning to the report “New Skills for New Jobs - Anticipating and matching labour market and skills needs”

4.Branding & Identity

Central to dissemination strategy is effective communication that is underpinned by a strong project identity, delivered via different media channels as the backdrop of all knowledge and information being created by the consortium.

The LIBRE logo, designed by the Coordinator, illustrates a tree emanating from the letter “I” in LIBRE, symbolising the source of lignin and the focus of LIBRE to use bio-derived materials and energy efficient processes. Along with the logo, a presentation template has been provided to ensure consistency of communication and brand messaging.

Figure 1: The LIBRE logo to be used in all communications

4.1 LIBRE Public Website

Project websites are one of the main communication tools of projects funded under the Horizon 2020 Programme. We have setup a project website using the ‘eu’ domain.

http://www.libre2020.eu

Screenshots from the website are shown opposite. The site's design is focused on the team and collaboration between the partners in industry and academia across the EU. A backdrop to the homepage features a group photograph taken of the team during the kick off meeting in

Limerick in November 2016. The site integrates the project's Twitter account, displaying the latest “Tweets” on the homepage to encourage more direct engagement with site visitors.

All partner organisations are profiled on the site along with information for the public as well as links to various media publications who are writing about the project, and a downloads area where publications are made available to the site's visitors.

The website was developed according to best practice guidelines for consistent viewing across all major browsers and operating systems.

Given the rapidly growing number of users now commonly browsing the web using smart phones, the site was also adapted for optimal viewing on all handheld devices using responsive design techniques, providing maximum audience reach.

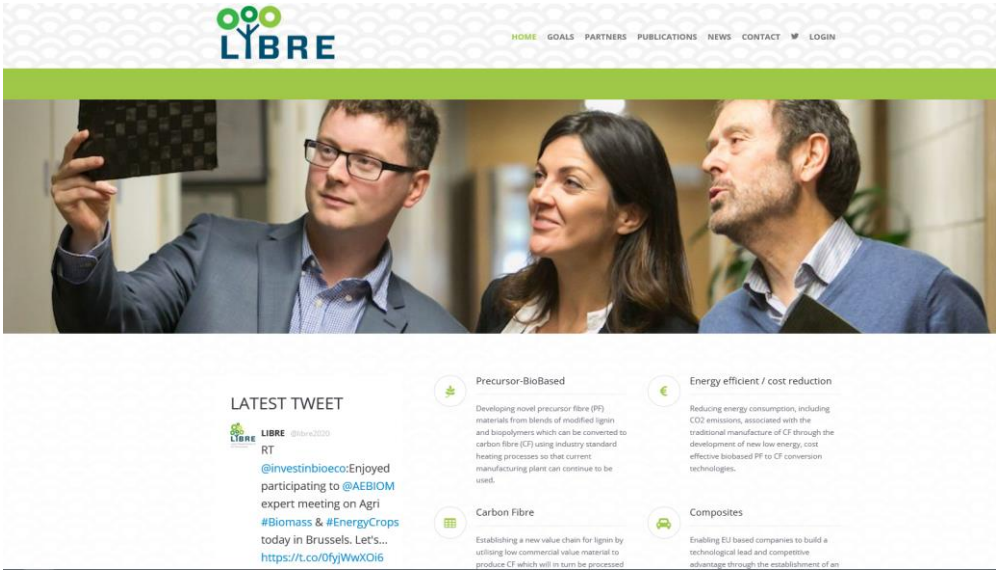

Figure 2: The LIBRE homepage

4.2 Social Media Channels – Twitter, LinkedIn & YouTube

Profiles have been created on the Twitter and LinkedIn social media platforms and on the YouTube social video channel for the project. The web continues to evolve, and as it does, people's means of interfacing with it do also. The Twitter channel in particular, in terms of reach dissemination, is a means of going where the audience is, and bringing the public into the conversation and the dissemination process of the project. Through an integrated website and social media, our information can be shared, the public can be notified about it, and they can share that information or draw other user's attention to it.

The viewership potential of Twitter is very high with over 100 followers in the first 5 days. Through use of selected subject has tags such as: #**lignin** #**composites** etc, our message is conveyed to the correct people, even if they are not direct followers of the LIBRE Project twitter profile (twitter.com/LIBRE2020). In addition to this, certain messages we transmit via Twitter have been "*retweeted*" and this expands their reach exponentially.

Social media channels, along with the website also offer the advantage of providing measurable results for digital dissemination activities through Google analytics, and these will be presented regularly to the consortium during partner meetings as part of the dissemination & exploitation session, encouraging and informing partner contributions to the dissemination process.

Figure 3: LIBRE twitter feed.

A LinkedIn profile has also been activated. Although use of this profile has been limited to date, the strategy envisages this channel to be a strong vehicle for exploitation of project results. Being by definition a platform for business, industry and commercial networking, this channel gets us close to an industry audience, where we can engage with the leadership of organisations operating in the fibre technology and composite materials spaces.

4.3 Online Dissemination Strategy

The overall online dissemination strategy is outlined below in Figure 4. The aim is to share content from a single source, and limited audience outwards via social networks of the project and consortium partners.

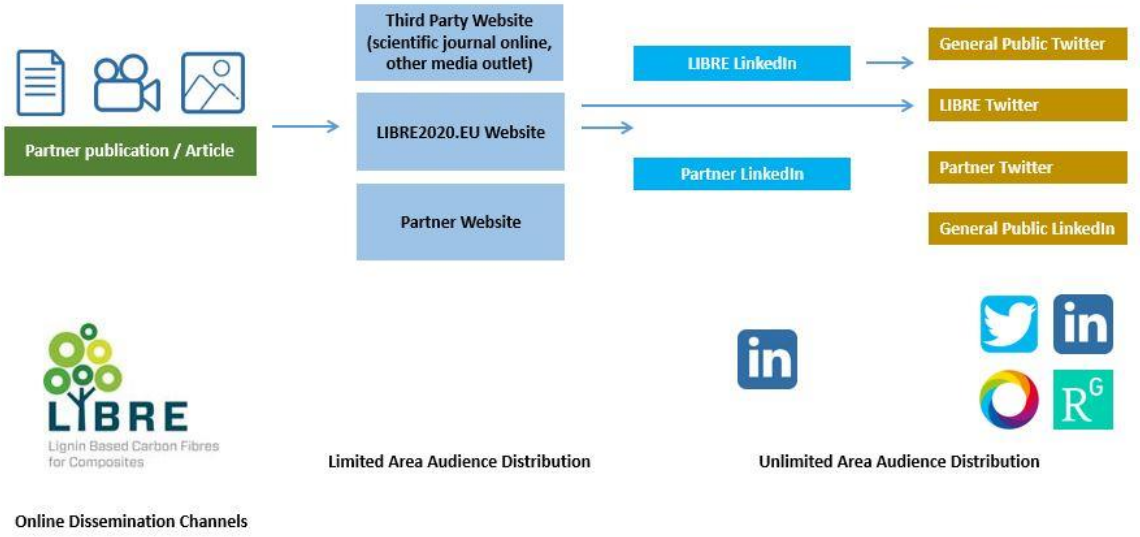

Figure 4: Online dissemination strategy

4.4 LIBRE Project – Digital Productivity Tools – Online Collaboration Hub

The primary object of this task is the design, development, set up and deployment of a secure, online "hub" for the project consortium. The functionality was deployed in response to specific requirements of the project team. Maintenance, enhancement and upgrades of the system will span the duration of the project. The system allows users to share and distribute files, create, distribute and complete questionnaires, discuss online issues relating to the project as well as providing ancillary functionality to further facilitate communications. To date, this includes. • Secure, private file repository for sharing files and other digital project assets among the team. • Facility for online interaction and dialogue on open issues or areas of research within each Work Package. • Custom Dynamic data collection tables – members can create custom tables for their questionnaires and other data collection requirements, and either view online, download completed tables or archive for continuous reference. • Contact

Directory • Notifications

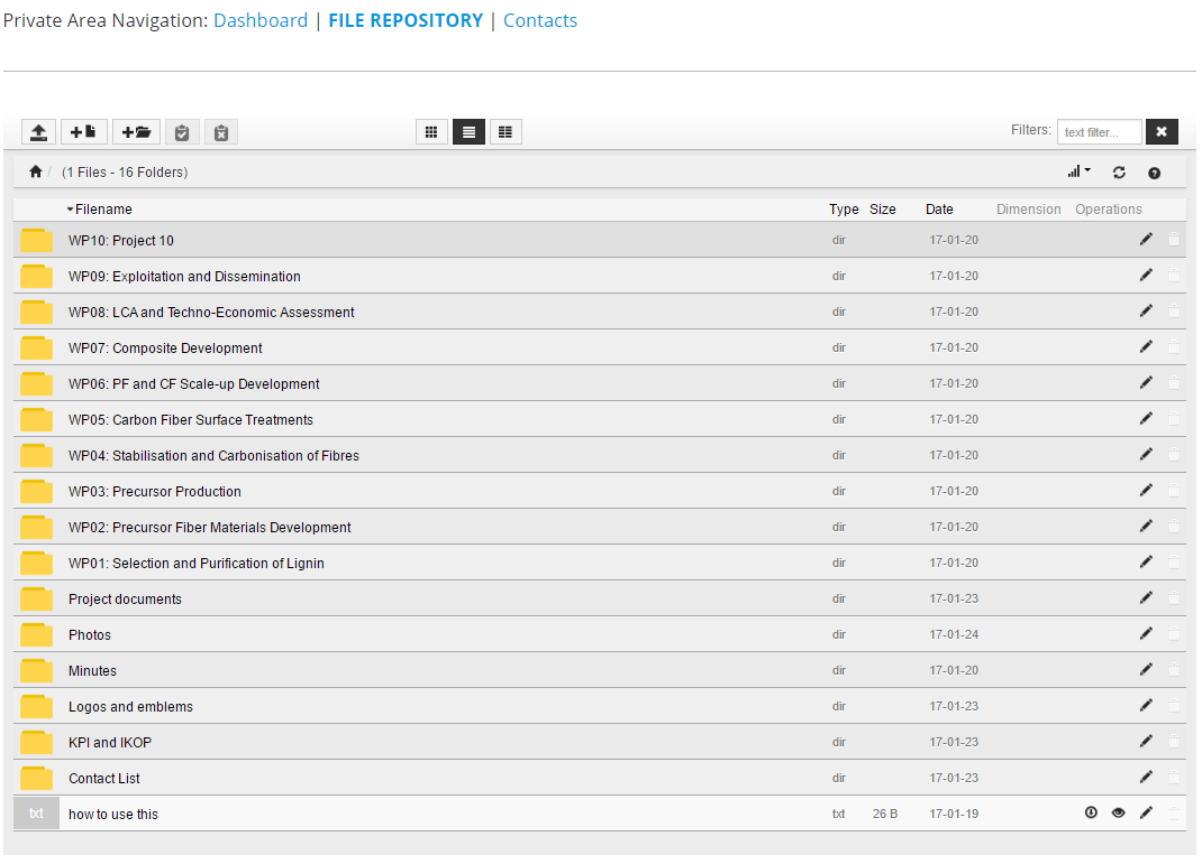

Figure 5: LIBRE online hub

4.5 Measurement: Web Analytics

In order to gauge the effectiveness of online dissemination the coordinator has set up and integrated a Google Analytics system for the website. This makes it is possible to continuously measure activity on the website, rendering information on what the key areas of interest are. This way, a certain business intelligence can be gained relating to the project and the site's visitors. Items for public dissemination can start out as a tweeted link to an article on our website, or a publication in a scientific journal or online publication, or a video demonstrating the technology. This can all direct more traffic to our website, and its impact can be measured via Twitter and as well as the site's own analytics system.

It is possible to determine the location of the visitors allowing potential targeting of dissemination. The analytics system, while robust and highly functional, can occasionally be

targeted by what is known as “referral spam”, which skews analytics. For this reason the system needs maintenance periodically to detect and filter out this misguiding data. Following a series of website updates, the analytics will be reviewed and presented to consortium partners during consortium meetings.

Altmetrics will be used to provide better evidence of the broader reach of LIBRE beyond standard academic metrics for example it can demonstrate who is commenting online on LIBRE outputs, its geographical impact and policy references. The Altmetric data will be incorporated into reporting to give an accurate indication of the broader societal impacts of LIBRE.

5 Dissemination Activities by Target Group

5.1 Dissemination within the Consortium

The coordinator has installed an internal web-based sharing platform which partners may use for information sharing, data collection and general online collaboration during the project. This platform has been designed to the specific requirements of European research collaboration projects. This facility will double as the archiving plan/facility for LIBRE, aiding information and publication tracking.

5.2 Dissemination Outside The Consortium

The target audience for external dissemination can be divided up into a number of different groups. The explanation of these groups is summarized in the table below.

Target Audience	Explanation
Research Community	This target audience comprises of researchers and academics who are interested in the results and innovations developed during the LIBRE project. This includes experts in fibre technology, biopolymer science and composite materials development. This group is being targeted via: Public Website & Social Media Channels; Public Project Deliverables; Scientific & Technical Publications (online and offline), Scientific Workshop; Posters. As discussed relevant scientific conferences and trade

	shows will be attended. There will also be opportunities to hold Stakeholder Forums/workshops for example with the Irish Composite Centre and presentation/poster sessions at for example the Bernal Institute.
Industry and professional Associations / Advisory Groups	One of the aims of LIBRE is to stimulate innovation in European industry by well-targeted take-up actions. By structuring the project based on its applications (led by industry) the project is focused to exploit the developed materials applications as soon as possible after the end of the project. This group is being targeted via: Public Website & Social Media Channels; Public Project Deliverables; Scientific & Technical Publications (online and offline), Scientific Workshop; Trade Shows; Technical Fairs (for example K Fair) ; Stakeholder Forums and indirectly through the press.
Policy Makers	European, national and regional administrations are targeted here. The LIBRE project encompasses strategic key enabling technologies identified to make the shift to a low carbon, sustainable, biobased based knowledge economy.
Other EU projects	The participation of project partners in other relevant projects offers the opportunity to establish links between projects. For example, it is possible to add links to other consortia on the LIBRE website. We also follow accounts of such projects on social channels and share information on these channels that might be of use to other projects, and encourage collaboration.
International Standardization Bodies	As we approach the end of the project it is hoped that the consortium will coordinate activities towards possible contributions to standardization bodies
EU technology Platforms	In response to the Lisbon strategy and to the 2002 Barcelona Council's call to boost research and technological development in Europe, Technology platforms have been identified as an effective tool to address major economic, technological or societal challenges and to stimulate more effective and efficient RTD, especially in the private sector. By disseminating to relevant technology platforms LIBRE can inject knowledge and experience into them.

Media and general public	The idea here is to inform the public on how public funds are spent for the benefit of the wider EU community. The idea of using biobased materials as opposed to petroleum based materials is of general interest to the public. The media campaign reflects this and we plan to place articles in newspapers and online publications. For example, a press release is due for February 2017. Digital dissemination is also essential to this target audience, utilizing Twitter and YouTube in particular for maximizing reach. This group is being targeted via: Website, Social Media, Printed & Online Press and, potentially, a MOOC platform

6 Summary of Dissemination Activities to Date

As we are just 3 months into the project there has been no conferences attended or papers published yet. However, the website has gone live on January 27th 2017 and the twitter feed went live January 18th. The twitter feed already has more than 100 followers.

7 Dissemination Management & Policy

The University of Limerick, as coordinator, is the central contact point for all LIBRE related communication, both internal and external. The coordinator also manages and maintains the digital tools utilised by the consortium in dissemination and shares published information via website updates and social media posts.

7.1 Dissemination Policy

Dissemination activities including but not restricted to publications and presentations shall be governed by the procedures outlined in GA and CA.