Interregional Innovation Investment in the EU: "De- and Remanufacturing" for Circular Economy Pilot Network

Regions: Lombardy, Scotland, Saxony, Tampere, Flanders, Basque Country, Norte, Emilia Romagna

Technical Coordinator: Marcello Colledani

Presenter: Marcello Colledani, Politecnico di Milano, Lombardy
AFIL: Intelligent Factory Lombardy Region Cluster

Pamplona, September 5th, 2018

What is the Vanguard Initiative?

https://m.youtube.com/watch?v=7h5I6vvrkZY

Network of more than 30 EU regions striving for stronger competitiveness, innovation and internationalisation of European industry

INDUSTRIAL MODERNISATION

What is the Vanguard Initiative?

- **Industrial Innovation Initiative** focusing on **market uptake** of new innovative technologies (KETs)
- **Interregional cooperation** between regional authorities, clusters, business, knowledge institutes
- Exploring and **facilitating public-private investment** and **multi level co-funding** possibilities
- Members with **strong political commitment** and ambition to co-shape **EU policy agenda** (Letter to the Council, Milan Declaration, structured dialogue with the EC and EP)

Pilot Network Concept: De-and Remanufacturing

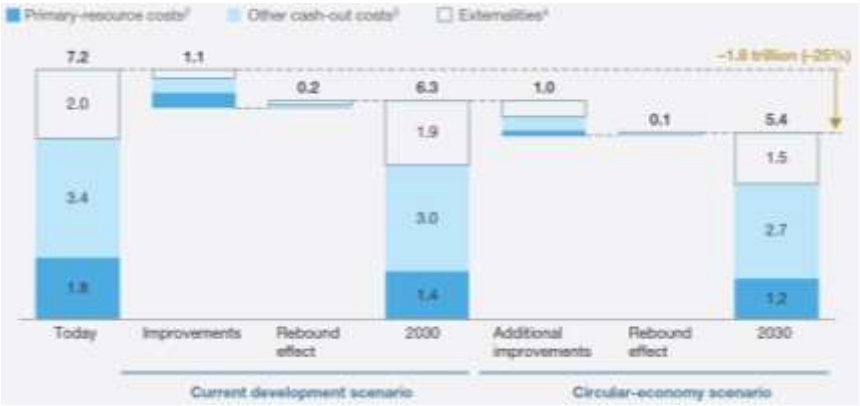
De- and Remanufacturing includes the set of technologies, tools and knowledge-based methods to recover, re-use and upgrade functions and materials from industrial waste and post-consumer high-tech products, under a new producer-centric Circular Economy perspective.

EU – Towards a circular economy, a zero waste programme for Europe, COM (2014) 398 final

De- and Remanufacturing Pilot Network

Economic Benefits of Circular Economy at large scale

Shifting toward a circular economy model would deliver better outcomes for the European economy and yield annual benefits of up to €1.8 trillion by 2030.



Annual total cost of producing and using primary resources, EU-27, euros trillion

Source: Europe's circular-economy opportunity
McKinsey Center for Business and Environment September 2015

Strategy: demonstrating integrated innovative solutions and de-risking private investments in Circular Economy

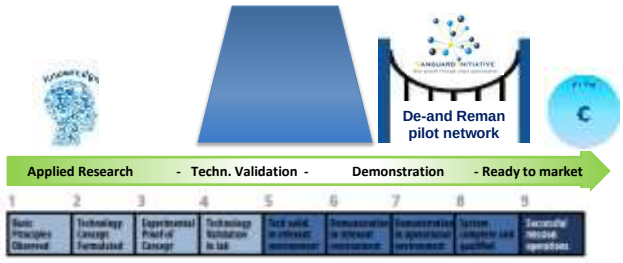
G7 Summit Declaration June 2015: The **G7 Alliance on Resource Efficiency** promotes Circular Economy, Remanufacturing and Recycling as strategic actions.

At European level, the Commission has launched in December 2015 the strategic initiative **"Closing the loop - An EU action plan for the Circular Economy"**.

H2020 R&I projects under the Focus Area "**Industry 2020 in the Circular Economy**", calls CIRC, Spire and FOF, at TRL 6-7.

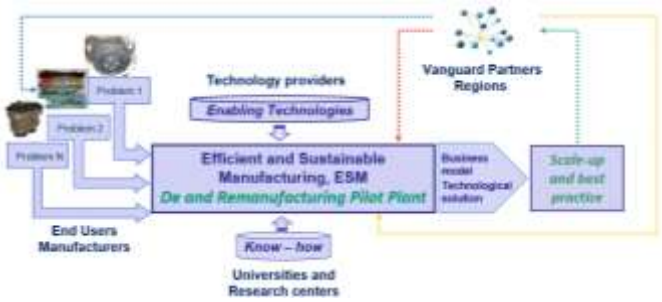
Lack of infrastructures that can demonstrate to industry integrated circular economy solutions and business models, de-risking the private investment.

These Innovation Hubs should act as "**technology gateways**" that any business sector can use.



Pilot Idea: Application Domain

The main objective of the De-and Remanufacturing pilot network is to ***integrate*** a multidisciplinary set of ***advanced and innovative enabling technologies and digital innovations*** (TRL 7-8) and to exploit the ***regional Smart Specializations*** in synergic way to offer services to European end-users, mainly manufacturing companies, to solve specific ***sustainability-oriented problems*** related to their products.



Selected within Pilot actions for "Interregional innovation projects" by the DG Regio

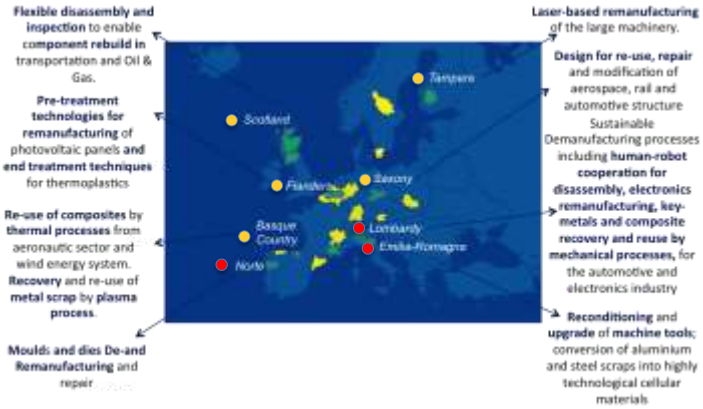
The pilot network nodes will act as ***Innovation Hubs for Circular Economy***, being a network of competence and technology centers and supporting future producer-driven replication at industrial scale (TRL 9).

De-and Remanufacturing Innovation services

The Pilot Network is seen as a ***One-stop-shop*** for delivering innovation services to the industrial end-users with a multi-regional approach.

De-and Remanufacturing Innovation services	
Technical feasibility assessment.	Environmental sustainability assessment and LCA.
De-and Remanufacturing Process-chain design and demonstration.	Patent and technology IPR searches (pre-existing rights, technology monitoring, etc.).
System integration and control.	**Market analysis and business models.**
Product design/re-design for circular economy.	Legislation review and innovation deals.
Prototyping and product testing.	Support to process environmental certification.
Production of pre-series.	Business case validation and scenario analysis.
Process chain optimization, simulation, and analytics.	**Circular economy training.**
Value-chain integration.	Standardization.
Reverse logistics optimization.	Support to Environmental Technology Verification (ETV) applications.

Pilot Geographic Configuration and Regional Specialization



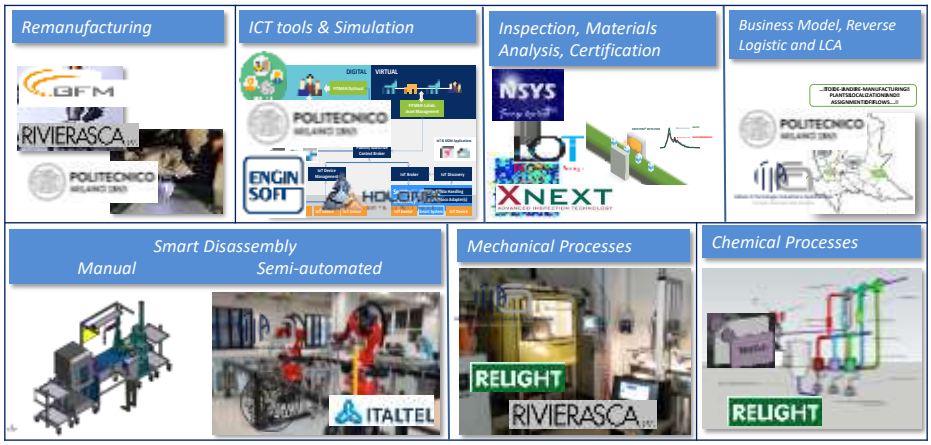
Totally new pilot site
Upgraded existing pilot site

Key Issue: integrated pilot plant solutions, needed by industry to ***validate high-risk investments*** in circular economy businesses before the industrial implementation.

Highlight 1: Example of Lombardy Region infrastructure

Lombardy Infrastructure: new infrastructure: 400m2 ca.; 12,5M€

- Integration of advanced and innovative technologies and digital innovations (***TRL7-8***)
- ***Modular*** and ***reconfigurable*** Pilot Plant for different use-case.
- High degree of ***integration, automation and control.***



Highlight 2: Tampere

De- and Remanufacturing Pilot Network

Industrial Participants and investors.

More than 60 European companies, with a cumulative ***turnover of 32 B€*** and with some ***175,000 employees***, and 69 universities and RTOs distributed among the involved regions are involved.

The stakeholders have signed ***Letters of Intent*** to participate to the definition of this Pilot Network and, in the case of future end-users, to access the pilot network and to carry on industrial take-up, in case of positive evaluation of the developed solution.

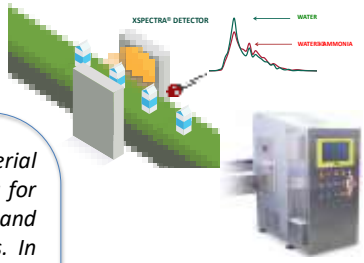
De- and Remanufacturing Pilot Network

Highlight 1: Relight s.r.l., Hydro WEEE.

"The Vanguard De-and Remanufacturing pilot network is a new way to share innovation."

"Relight as a member of this pilot, aims at opening new markets by establishing a sustainable cooperation within the pilot to attract new industrial users of Relight technologies and to pave the way for new recycling services."
Bibiana Ferrari, CEO of Relight s.r.l.

Highlight 2: Xnext – In line X-ray technologies.



"Xnext developed the most advanced real time material scanner that will revolutionize the quality control testing for manufacturing and will make possible to identify and separate the materials in circular economy applications. In perspective, the 30% of Xnext sales 2020 budget will be generated by revenues from circular economy applications".

"The De-and Remanufacturing pilot will represent a fundamental installation for show-casing the potentiality of our technology in an integrated pre-industrial environment, thus supporting Xnext in gaining market shares in many different sectors"
Bruno Garavelli, Founder of Xnext

XNEXT
ADVANCED INSPECTION TECHNOLOGY

Industry-led use cases and related business cases

A detailed analysis of identified ***sectorial Use Cases***, with industrial partners associated, has been performed, where more regions are involved. For each Use Case, a business case has been detailed including a ***business plan*** for the industrial take-up of the solutions.

Regional/Cross-Regional Use Case	Involved Regions
Composite Recovery from Wind Energy System	**Basque Countries**, Saxony, Lombardy, Tampere, Scotland
Heavy machinery components remanufacturing	**Tampere**, Basque Countries, Lombardy, Saxony
Automotive parts remanufacturing	**Scotland**, Lombardy, Saxony, Norte
High-value TLC systems and Electronics Recovery	**Lombardy**, Tampere
Metal components reprocessing	**Saxony**, Tampere, Lombardy
Remanufacturing of e-motors	**Saxony**, Lombardy, Norte
Plastics recycling from WEEE	**Flanders**, Lombardy
E- mobility batteries remanufacturing for re-use	**Lombardy,** Saxony
Photovoltaic panels de-manufacturing	**Flanders,** Lombardy
Remanufacturing and retrofit of machine tools	**Emilia Romagna**, Lombardy

De- and Remanufacturing Pilot Network

FiberEUse Project

Large scale demonstration of new circular economy value-chains based on the reuse of end-of-life fiber reinforced composites.

Topic: Systemic, eco-innovative approaches for the circular economy: large-scale demonstration projects (CIRC-1-2016)

The FiberEUse project aims at integrating in a holistic approach different innovation actions aimed at enhancing the profitability of *composite recycling and reuse in value-added products.*

FiberEUse

***Duration*:** 48 months, starting on June 2017.

Consortium: 21 partners, from 7 EU countries.

Coordinator partner: Politecnico di Milano

EC Funding: ca. 10 mln €.

Car-E Service Project

Title: Circular Economy oriented services for re-use and remanufacturing of hybrid and electric vehicles components through smart and movable modules
Acronym: CarE-Service
Topic: Systemic, eco-innovative approaches for the circular economy: large-scale demonstration projects (CIRC-1-2017)
Type of Action: Innovation Action
Date of Submission: 05/09/2017
Funding: 6.229.505€

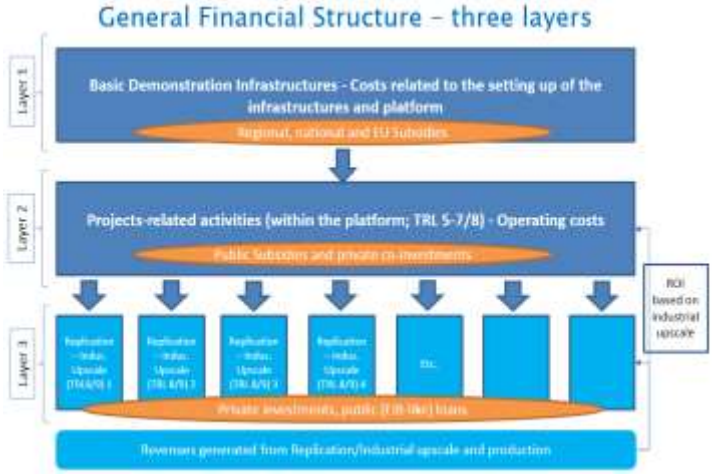
De- and Remanufacturing Pilot Network

Operational and Business Model of the Pilot Network

Regional, national, EU, projects exploitable results and competences.

Industrial users (first group from use-cases)

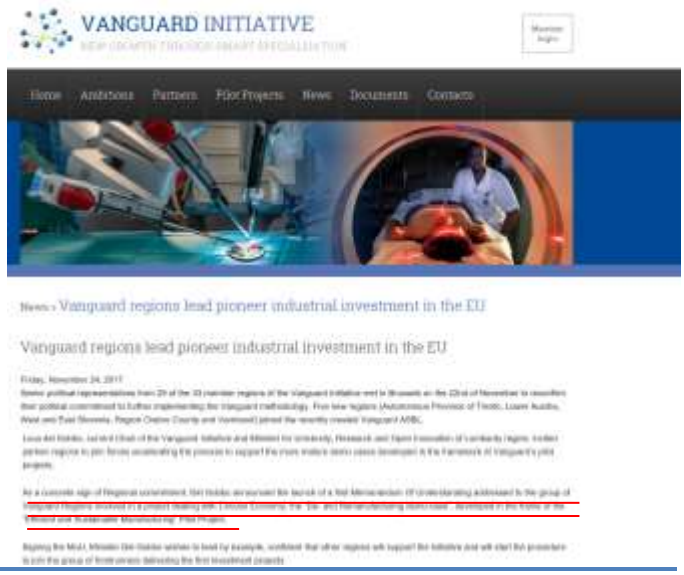
Private investments for industrial take-up



New Circular Economy businesses in EU. New jobs, social and environmental impact.

De- and Remanufacturing Pilot Network

Memorandum of understanding



http://www.s3vanguardinitiative.eu/news/vanguard-regions-lead-pioneer-industrial-investment-eu

Business Model of the Pilot Network

This pilot network is designed to be a "***generator" of new industrial plants*** for European circular economy solutions.

Pilot Network Revenues:

- The User will pay a ***daily fee*** for each access.
- The User will share with the pilot network ***a portion*** of the ***revenues*** obtained by ***selling the product/service*** demonstrated by the business case developed by the platform (IPR exploitation).
- The core partners of the pilot (companies, universities and RTOs) will pay a ***yearly fee*** to be part of the pilot network and to access the generated knowledge and best practices.

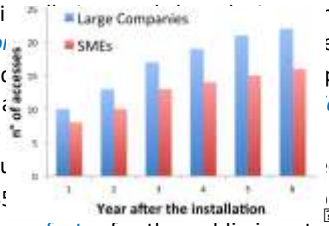
Pilot Network Costs:

- Each demonstration project will have a ***specific duration*** and will requires a group of full-time ***dedicated persons*** (hired and paid by the pilot network).
- ***Maintenance*** and ***upgrade costs*** of the pilot network facilities will be covered yearly by the pilot.
- A cost of ***customization*** of the platform for each new project will be incurred (paid by the pilot).

Business Model of the Pilot Network

	Year after installation				
	1	2	3	4	5
Accesses to the pilot network (n°)	18	23	30	33	36
Pilot total revenues (mln €)	2.281	3.414	4.916	5.963	7.565
Total costs (mln €)	0.88	2.34	2.69	2.86	3.03
Installation & Launch costs co-funding (mln €)	12	/	/	/	/
Installation & Launch costs funding (mln €)	28	/	/	/	/
Annual margin (mln €)	-10.6	1.07	2.23	3.1	4.53
Cumulative margin (mln €)	-10.6	-9.53	-7.3	-4.2	**0.34**

- The i… …ne … *years* if *4 demo*… …er … …nal pilot.
- Consi… …pli… solutions of 25%, a… …*or* …t network in these …
- The cu… …d … *Euros*.
- The 3… …ri… …uros.
- *Leverage factor* for the public investment of about *19* in five years from the pilot network installation.



(b) Users' access profile

(c) Revenue profile

De- and Remanufacturing Pilot Network

Vanguard: Criteria for accepting new Regions

Criteria for the involvement of new Regions were set by the coordinators Board:

- Strong commitment from the region to support the pilot node development through a letter of intent and, later, through the signature of the MoU.
- Show interest from industrial stakeholders through a minimum number of LOIs from technology providers and end-users.
- Show complementarity with the existing Regions.
- Propose the involvement in existing use-cases or propose new use-cases.
- Provide a description of the required investment to upgrade the local pilot.

VANGUARD INITIATIVE
New growth through smart specialisation

Thank you for attention

Business Model doc

63 pages

Pilot Summary

4 pages

Investment Plan

34 pages

"De- and Remanufacturing" Pilot Network

Region	*Technical contact*	*Organization*	*Email*
Lombardy	Marcello Colledani	Politecnico di Milano	marcello.colledani@polimi.it
Tampere	Minna Lanz	Tampere University of Technology	Minna.lanz@tut.fi
Norte	Luis Carneiro	INESC Porto / PRODUTECH Cluster	luis.carneiro@inescporto.pt
Scotland	Winifred Ijomah	Scottish Institute for Remanufacture - Strathclyde	w.l.ijomah@strath.ac.uk
Saxony	Katja Haferburg	Fraunhofer Institute for Machine Tools and Forming Technology	katja.haferburg@iwu.fraunhofer.de
Basque Country	Ane Irazustabarrena	Tecnalia	ane.irazustabarrena@tecnalia.com
Flanders	Joost Duflou	Ku Leuven	joost.duflou@kuleuven.be
Emilia Romagna	Michele Monno	MUSP	Michele.monno@polimi.it

Impacts: supporting re-industrialization of Europe and growth

Demonstrating new De-and Remanufacturing solutions for circular economy businesses will bring social benefits worldwide:

- **New jobs** coupled with technological and automation innovations, due to the increased competitiveness of companies through the ability of delivering products at lower cost (***15000 new jobs*** for the considered access profile);
- **New effective technologies** to be exported also to emerging countries;
- **Environmental**, social and image advantages for global manufacturing enterprises (total savings of emissions of ***60000 KTons CO2/year***, of energy of ***10 TWh/year*** and of materials, that otherwise would go to landfill, of ***200 kTons/year*** for the considered access profile);
- **Political benefits** in terms of independency from fluctuations and turbulence in the primary material market (e.g. for rare earths).

Implementation & Investment Plans

Phase	*1 Concept & Business Plan*	*2 Detailed Design*	*3 Installation & Commissioning*	*4 Marketing & Launch*	*Total*
Funding	0	3.15	24.5	0.35	28
Co-funding	0.5	0.85	10.5	0.15	12
Total	0.5	4	35	0.5	40
Schedule	*Achieved*	*M1-M9*	*M6-M21*	*M18-M24*	

Example of industrial use cases

Example 1:
Gamesa, producer of wind energy systems. By 2034, some 225000 tonnes of rotor blade materials will have to be treated annually worldwide. Wind energy market growth of 5% in EU.

Goal:
- Recover and re-use composites from blades in other industrial sectors (automotive and construction).

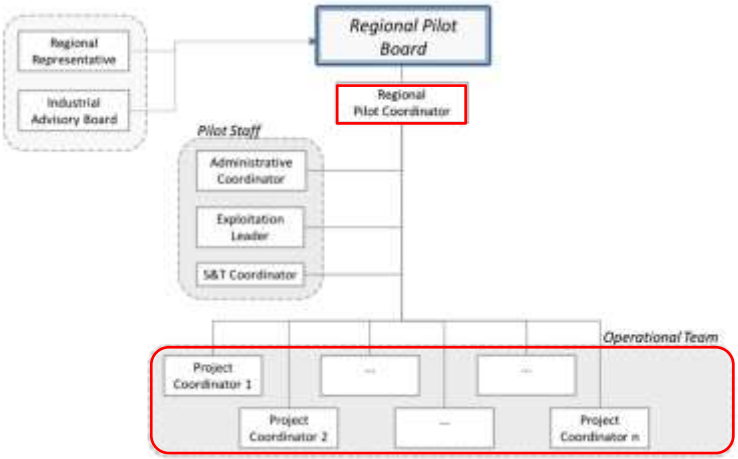
Impact:
- ***20M€ increase in revenues per year for the company***.

Example 2:
Italtel, producer of products and solutions for Next-Generation Networks services (8 millions of hardware units, 24 millions of telephone lines installed worldwide).

Goal:
- Re-use components.
- Recover high-value materials.

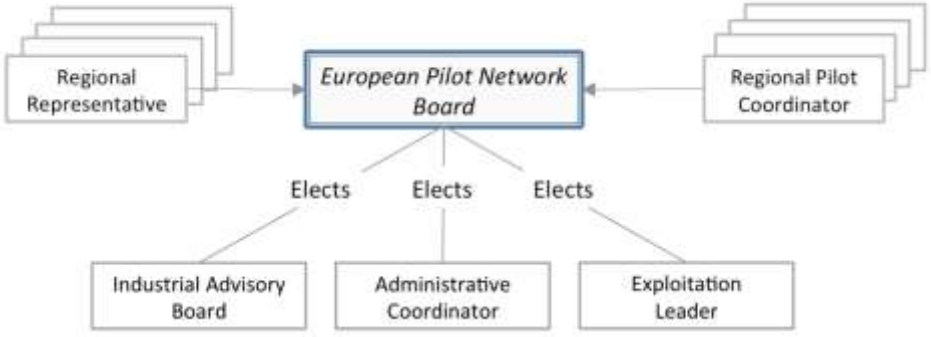
Impact:
- ***8M€ increase in revenues per year for the company***.
- Pay back time of the investment is 2 years.

Governance Structure – Local Regional level

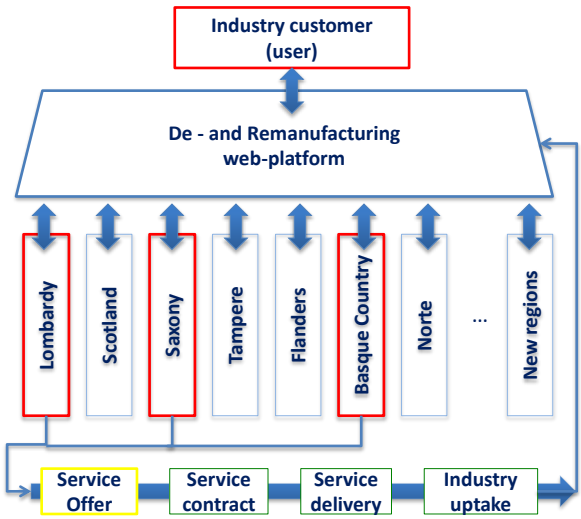


Full time personnel.

Governance Structure – European level



Pilot Network operational framework



- Technological capabilities inventory.
- Service portfolio.
- Best practices repository.

- Regional Infrastructures.

De- and Remanufacturing Pilot Network

Pilot Network operational framework

- Technological Capabilities inventory.
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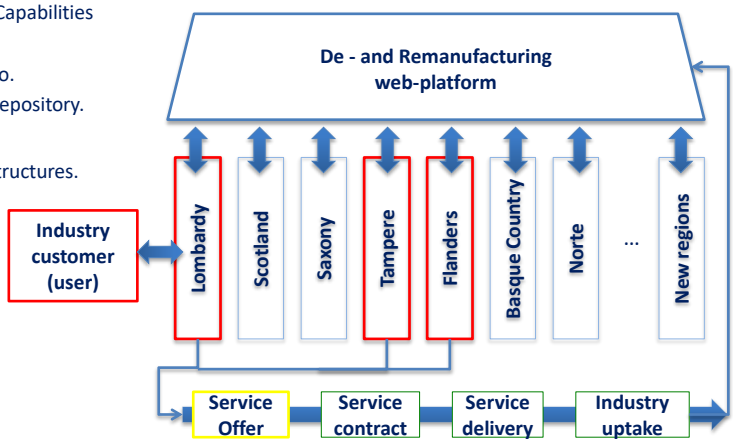
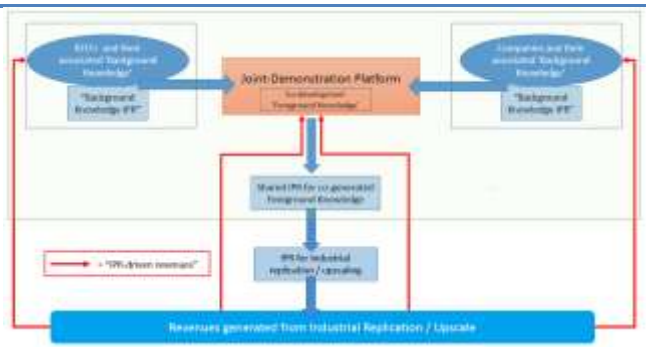


De- and Remanufacturing Pilot Network

IPR Management Guidelines



IPR claim is justified when the activities made possible by the platform have led to de-risking private investment in industrial upscale and new market access.

Guidelines for management of IPR:

- The signature of a IPR Agreement between the user and the node of the network delivering the service is required **before starting** each project delivery.
- If a user intends to keep the full rights on the foreground knowledge, a **specific fee** shall be negotiated.
- If the pilot keeps the IPR on the foreground knowledge, it will constitute the **"best practices"** knowledge base, at disposal of the whole network.

Governance: Two-level Structure

Proposed Business Entity: Association (EU-level), Clusters or RTOs (Regional level).

Two-level governance:

- **European Pilot Network Board.**

Main Role: to coordinate the interregional cooperation activities with decision-making power at operational, monitoring and strategic levels.

- To monitor the pilot network operations and the coherence of the projects with the pilot network mission;
- To monitor the industrial accesses to the infrastructure;
- To evaluate and approve any change in the pilot network architecture;
- To provide standard IPR agreement forms to the Regional Boards for industrial accesses;
- To market and promote the Pilot Network;
- To exploit the best practices generated within the network at European level.

- **Regional Pilot Board, lead by the Regional Pilot Coordinator (RPC).**

Main Role: to effectively deliver the services to customers.

- Effectively delivers of the services to the users in line with the Pilot network quality standards;
- Attracts new local customers;
- Reports the technical developments and best practices.

Support instruments for industrial end-users

Successful example of Vouchers for Industry: *Bando Innodriver – S3 – edizione 2017* - 11MEuro to finance the following technological innovation measures:

- Measure A – vouchers in support of cooperation among SMEs and RTOs;
- Measure B – vouchers for the Lombardy companies that have obtained the "Seal of Excellence" in the "SME Instruments" phase 1 of Horizon 2020, but they are not financed by the EU due to limited resources;
- Measure C – vouchers in support of patenting for industrial uptake.

The vouchers of the Lombardy Region come from the ESIF-ERDF Funds and they are already compliant with the Art. 70 of the ESIF Regulation

Regione Lombardia

http://www.fesr.regione.lombardia.it/wps/portal/PROUE/FESR/Bandi/DettaglioBando/Agevolazioni/bando-innodriver-2017

Support for industry uptake of de-risked solutions

The AlpGIP, Alpine Growth Investment Platform, is a "Fund of Funds" for the Alpine Regions, introduced in cooperation between Alpine regions (macro-regio) and EIF.

An equity investment platform for the Alpine Regions

- The Alpine Growth Investment Platform will be managed by the European Investment Fund (EIF);
- Initially 70 Million € will be allocated to support companies in the scale-up, coming from public funds and from private investors.

Interactions with EIB, DG ECFIN for supporting uptake

AGENDA MONDAY 20 NOVEMBER 2017

Location: Berlaymont, 200 rue de la Loi, Brussels

AGENDA MONDAY 20 NOVEMBER 2017

Panel: Views from NPBIs and private investors

Speakers: **Maria Teresa Zoppia**, Chief Investment Officer, Blue Orchard Finance, **Yves Jacob**, Head of Public Sector Coverage, Société Générale CIB, Ocean Energy Europe, **Peder Hasslev**, CEO at Sunrinvest, **Antonio Bandres Cajal**, Head of International Relations, ICO

Moderator: **Roger Haworth**, Deputy CEO, European Investment Fund

Followed by Q&A and Discussion

Lunch break

Knowledge Café on potential opportunities of JPs

1. EAFRD Investment Platforms under EFSI (hosted by DG AGRI)
2. Urban Development Investment Platforms (hosted by EIB Advisory)
5. IP for Social Infrastructure and Services (hosted by DG ECFIN)
4. EU Public-private Fund for SMEs listing (hosted by DG FISMA)
7. Vanguard Initiative: De and Re-manufacturing Pilot (hosted by DG GROW)
8. Outermost Regions investment initiative (hosted by DG REGIO)
7. Europe Rail Traffic Management System ERTMS Platform (DG MOVE)
8. Payment-by-result Schemes for Social Investment (hosted by DG ECFIN)
9. Investment Platform for Ocean Energy (hosted by DG MARE)
10. Water Saving Technology for the Hotel Industry (hosted by NWP)
11. Intellectual IP for Circular Bio Economy (hosted by DG RTD)

Coffee break

Panel: Progress on Third Pillar of the Investment Plan

Speakers: **Gunnar Hökmark**, Member of the European Parliament, **Miguel Gil Tortos**, Head of Unit, Europe 2020, European Semester, Economic Governance, Secretariat General, **Dominique Simonis**, Head of Sector Surveillance of Structural Reforms, DG ECFIN, **Kaspar Richter**, Head of Unit Growth & Business Environment, Structural Reform Support Service

Moderator: **Pawel Świeboda**, Deputy Head of the European Political Strategy Centre

Followed by Q&A and Discussion

Closing remarks by **Ambroise Fayolle**, Vice President of the EIB

De- and Remanufacturing Pilot Network

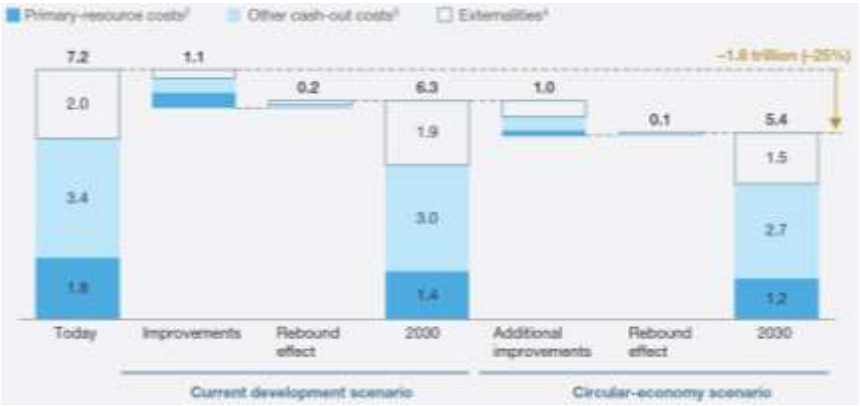
DG REGIO Interregional Partnership

ID	Specific actions
1	**Financial issues:** • Define the financial synergies for infrastructure upscale. • Investigate feasible mechanisms to support cross-regional delivery of services to end- users at network level, such as multi-regional voucher systems - SCREEN project. • Define a route to support industrial uptake, once solutions are de-risked by the pilot.
2	**Network operational issues:** • Finalize the definition of the governance and plan the legal steps towards the implementation. • Finalize the service portfolio offer, ensure links with CE standardization and legislation bodies, prepare material and modules for users training in Circular Economy and skill development. • Finalize the formats for IPR agreements for regulating users accesses to the infrastructure. • Prepare service delivery contracts and description of legal obligations towards users.
3	**Communication & Awareness issues:** • Involve more potential users and technology providers from emerging European regions through the organization of match-making events in these regions. • Prepare specific material to further promote Dissemination, Communication and Awareness. • Design and develop a digital platform for connecting the existing facilities and be ready for the pilot network service delivery. The inventory of technical capabilities and formalization of the services is not visible to the large community.

De- and Remanufacturing Pilot Network

Economic Benefits of Circular Economy at large scale

Shifting toward a circular economy model would deliver better outcomes for the European economy and yield annual benefits of up to €1.8 trillion by 2030.



Annual total cost of producing and using primary resources, EU-27, euros trillion

Source: Europe's circular-economy opportunity
McKinsey Center for Business and Environment September 2015

De- and Remanufacturing Pilot Network

ESM demo-cases

De- & Re-Manufacturing	Smart and Adaptive Assembly & Manufacturing	Advanced and sustainable materials and coating	Energy-flexible and resource-efficient factory operations	Digital and Virtual Factory
Lombardy	**Lombardy**	**Lombardy**	**Saxony**	**Lombardy**
Saxony	**South Netherlands**	**Catalonia**	**Norte**	**South Netherlands**
Tampere	Basque Country			**Tampere**
Navarra	East Netherlands	Auv.Rhone Alps,	Lombardy	Catalonia
Basque Country	Emilia Romagna	East Netherlands	Navarra	Norte
Emilia Romagna	Norte	Navarra	Catalonia	Saxony
Scotland	Slovenia	Pays de la Loire	Basque Country	Galicia
Norte	Ranstad	Slovenia	East Netherlands	East Netherlands
Flanders	Tampere	Tampere	Pays de la Loire	Navarra
Wallonia			Baden-Württemberg	Pays de la Loire

FiberEUse Motivation

Glass and carbon fiber reinforced polymer composites (GFRP and CFRP) are increasingly used as structural materials in many manufacturing sectors like transport, constructions and energy due to their better lightweight and corrosion resistance compared to metals. However, their price is a barrier for wider applications.

Comparison among different materials in the automotive industry

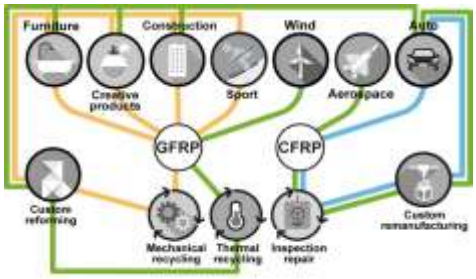
Composite re-use would support price reduction. However, barriers are found:

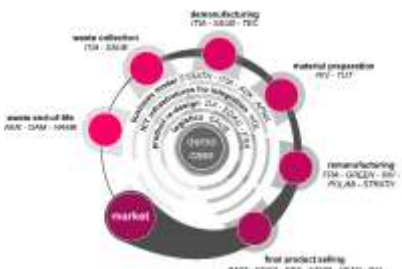
- Lack of a systematic value-chain integration approach for re-use of composites.
- Poor customer acceptance for remanufactured products.
- Lack of circular business models for boosting profitability.
- Unstable and unpredictable EoL products flows.

FiberEUse cross-sectorial use-cases

The FiberEUse proposal aims to develop and demonstrate at a large scale:

- The integration of ***innovative remanufacturing technologies*** addressed to develop profitable reuse options for mechanically or thermally recycled EoL GFRP and CFRP composites.
- The development of ***an innovation strategy for mobilization and networking of stakeholders*** from all the sectors related to composites.





Use case 1: GFRP parts mechanical recycling and re-use

Mechanical recycling of short GFRP and re-use in added-value customized applications, including furniture, sport and creative products. Emerging manufacturing technologies like UV-assisted 3D-printing and metallization by Physical Vapor Deposition will be used.

- **Demo-case 1.1:** Use of a fraction (at least 40% w/w) of GFRP recyclate in open mould spray applications of GFRP for *sanitary products* (bath tubs, shower trays).
- **Demo-case 1.2:** Use of a fraction (at least 30% w/w) of GFRP recyclate for prototyping *personalized and creative products* (i.e. creative packaging etc).
- **Demo-case 1.3:** Use of a fraction (at least 10% w/w) of GFRP recyclate to strengthen PU compounds for the realization of *sport equipment* (e.g. skis).

Examples of output products

HEAD

Use case 2: CFRP-GFRP parts thermal recycling and re-use

Thermal recycling of long fibers (glass and carbon) and re-use in high-tech, high-resistance applications. The input product will be EoL wind turbine and aerospace components the re-use of composites in automotive (aesthetical and structural components) and building will be demonstrated by applying controlled pyrolysis and custom remanufacturing.

- **Demo-case 2.1** use of a fraction (at least 20%) of thermally recycled *GF for structural components in automotive*.
- **Demo-case 2.2** use of a fraction (at least 20%) of thermally recycled *CF for structural components in automotive*.
- **Demo-case 2.3** use of a fraction (at least 30%) of thermally recycled *GFRP for the building industry* (roofs).

Examples of output products

MAIER BATZ RIVERSCA...

Use case 3: CFRP parts remanufacturing

Inspection, repair and remanufacturing for EoL CFRP products in high-tech applications. Adaptive design and manufacturing criteria will be implemented to allow for a complete **circular economy demonstration in the automotive sector**.

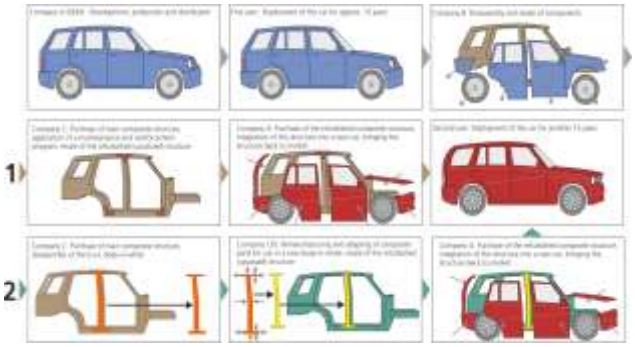
- **Demo-case 3.1:** design and remanufacturing of a CFRP *chassis component*.

INVENT

- **Demo-case 3.2:** design and remanufacturing of CFRP *body car structure*.

EDAG

Examples of output products



Innovative Processes and Technologies

BATZ – In-line compound technologies.

POLIMI - 3D printing of clay-based compounds, LDM, UV-assisted LDM.

TUT - Advanced thermal spray technologies

ITIA-CNR: Disassembly and Recycling Cells.

SCREEN Synergic Circular Economy Across European Regions

SCREEN H2020 aims at the **definition** of a **replicable and scalable approach,** to support **European Regions** in the transition to new **Circular Economy cross-regional value-chains.** This will be done through the identification and implementation of **operative synergies** between R&I investments of H2020 program and EU structural funds.

The methodology developed within the project will be replicable in all the European Union, thus creating an interregional framework for financing Circular Economy value chains.

Action plan 2018

ID	Specific actions
1	Definition of the financial sources combining regional, national and European support. Continue the interaction with EIB and regional financial stakeholders.
2	Formalize the participation of interested regions (Wallonia, South Netherlands, Catalunya, Pays de la Loire, East Netherlands).
3	Involve more potential users and technology providers from emerging European regions (Organization of match-making events in emerging regions)
4	Promote proposals in H2020 and regional programs to bring new enabling technologies into the pilot plants (Large Equipment Remanufacturing, ICT Platform for Circular Economy, Plastics recycling and re-use).
5	Prepare specific material to further promote Dissemination, Communication and Awareness.
6	Start designing the platform collecting the capability inventory portfolio and be ready for the pilot network service delivery.

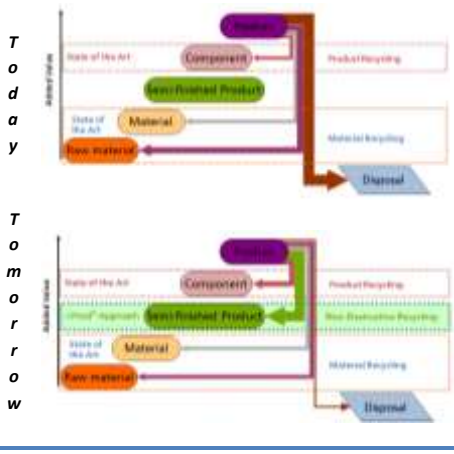
Some of the identified barriers will be tackled through the support of the Pilot actions for "Interregional innovation projects" by the DG Regio and through the Commission Services that will be delivered.

Highlight 2: reProd® - Fraunhofer

Fraunhofer IWU

reProd®

Multiple usage of metal
Parts without the 'detour of scrap'



De- and Remanufacturing Pilot Network

Vanguard Pilots and Demo-cases

Pilot

- Broad strategic scope
- Interface between industry and policy
- Methodological support

i.e. Efficient and Sustainable Manufacturing, …

Demo case

- Focus on defined technology areas or manufacturing goals
- Operational project level

i.e. De-and Remanufacturing for circular economy, Digital&Virtual Manufacturing, …

Use case 1 | Use case 2 | Use case n

- Focus on specific industrial problems
- Focus on technologies
- Concrete implementation intent for the benefit of companies

i.e. energy efficiency in automotive manufacturing processes

Vanguard methodology tested in 5 Thematic Pilots





Advanced Manufacturing for Energy applications

3D Printing

Efficient & Sustainable Manufacturing

1st generation

2nd generation

Bioeconomy

Nano Enabled Products

Challenge driven or Technology Driven pilots