PROGRAMME DE COOPÉRATION TRANSFRONTALIÈRE
GRENSOVERSCHRIJDEND SAMENWERKINGSPROGRAMMA

Interreg
France-Wallonie-Vlaanderen

UNION EUROPÉENNE
EUROPESE UNIE

GRASS

GRASS

Gazons a**R**tificiels **A**nti-feu **S**ûrs et durable**S**

Artificial Turf, Fire Resistant and Durable

Vlamwerende kunstgrasmatten: veilig en duurzaam

Kick off event GRASS

5th Decembre 2018 , Fedustria Gent

AVEC LE SOUTIEN DU FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL
MET STEUN VAN HET EUROPEES FONDS VOOR REGIONALE ONTWIKKELING

Agenda

- The INTERREG Program in a bird's eye view
  Pieter Lahousse (Interreg)
- Introduction of GRASS
  Geert De Clercq (UGent)
- Partners of the project: overview + short presentation
- Artificial turf
  Stijn Rambour (UGent)
- Fire retardancy of materials
  Mathilde Casetta (ULille)
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  Olivier Talon (Materia Nova)
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GRENSOVERSCHRIJDEND
SAMENWERKINGSPROGRAMMA
PROGRAMME DE COOPÉRATION
TRANSFRONTALIÈRE

LANCERINGSEVENEMENT
EVÉNEMENT DE LANCEMENT

Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE

GRASS

Pieter LAHOUSSE
Technisch team Interreg –Steunpunt Vlaanderen
Equipe Technique Interreg – Antenne Vlaanderen

Gent – 05.12.2018

MET STEUN VAN HET EUROPEES FONDS VOOR REGIONALE ONTWIKKELING
AVEC LE SOUTIEN DU FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL

1. CONTEXT
CONTEXTE

HET INTERREGPROGRAMMA FRANCE-WALLONIE-VLAANDEREN IN BEELD

LE PROGRAMME INTERREG FRANCE-WALLONIE-VLAANDEREN EN IMAGES

COHESIEBELEID 2014-2020
POLITIQUE DE COHÉSION 2014-2020

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France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE

1990 - 1993 | 1994 - 1999 | 2000 - 2006 | 2007 - 2013 | **2014 - 2020**

1

Investering voor groei en werkgelegenheid
Investissement pour la croissance et l'emploi

EFRO ❮
FEDER

Europees sociaal Fonds ❮
Fonds social européen

Cohesiefonds ❮
Fonds de cohésion

2

Europese territoriale samenwerking
Coopération territoriale européenne

❯ **EFRO**
FEDER

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France-Wallonie-Vlaanderen
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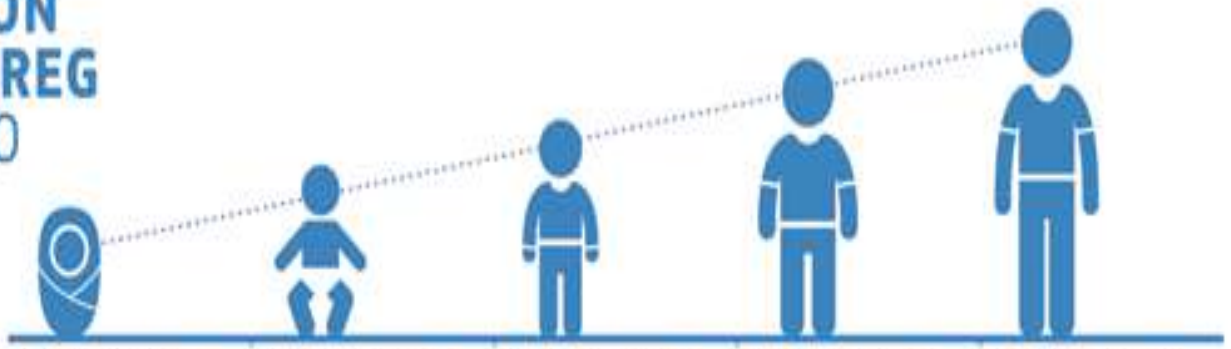
EUROPESE UNIE

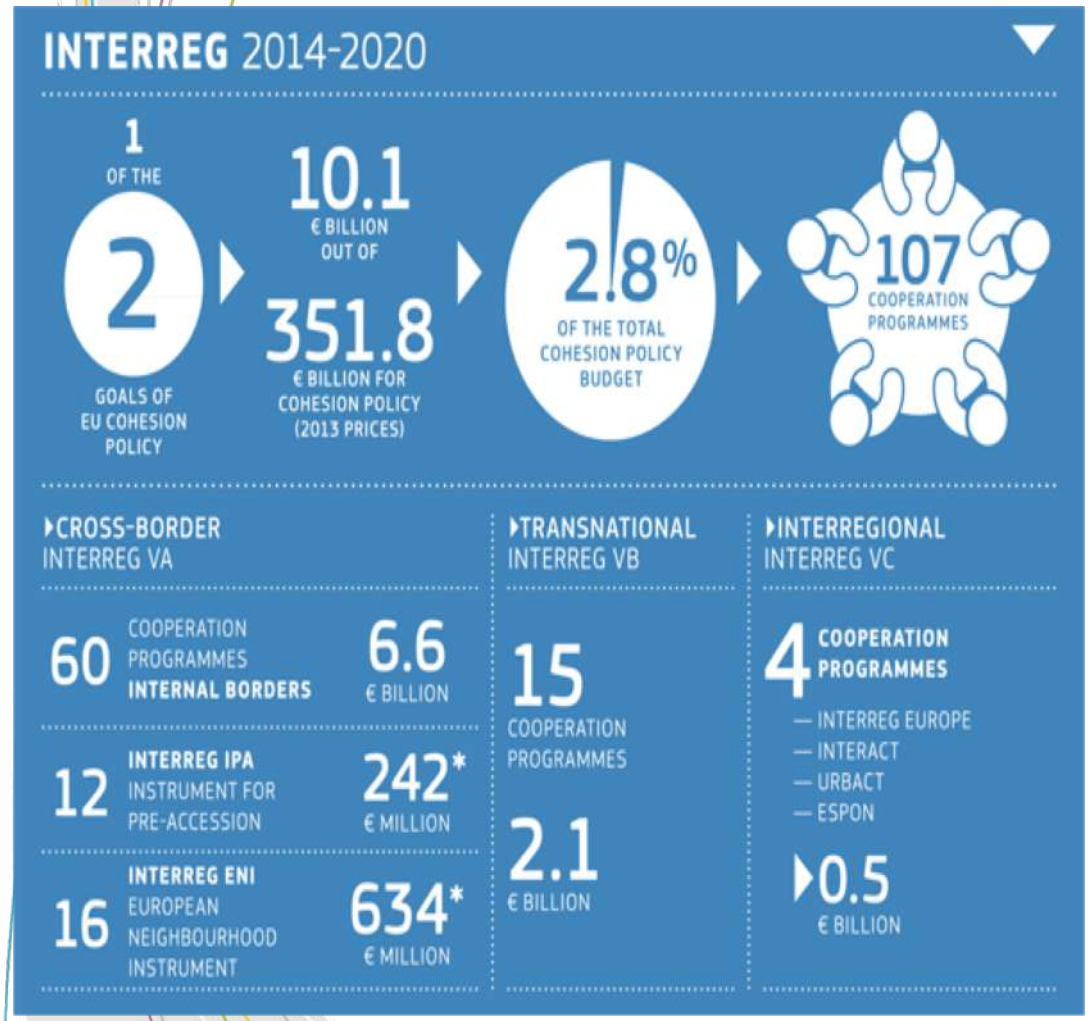
EVOLUTION OF INTERREG 1990-2020

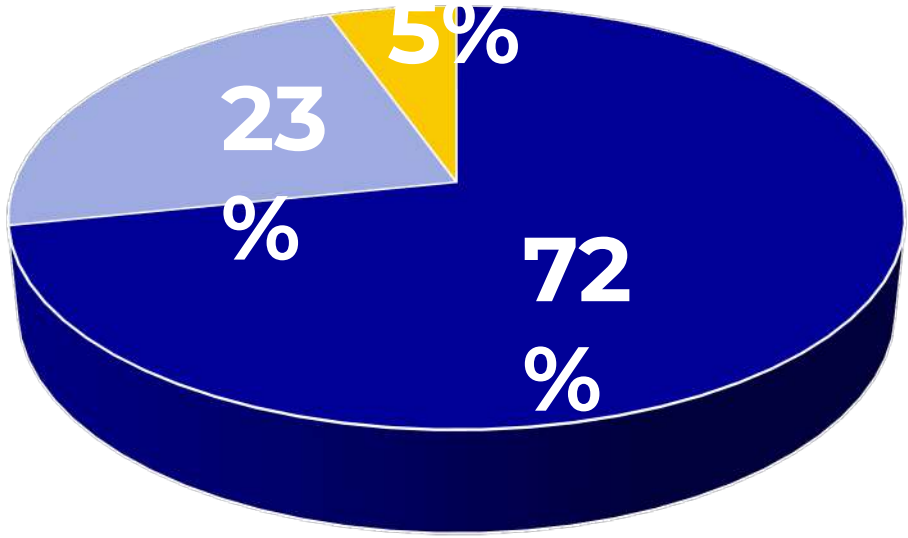


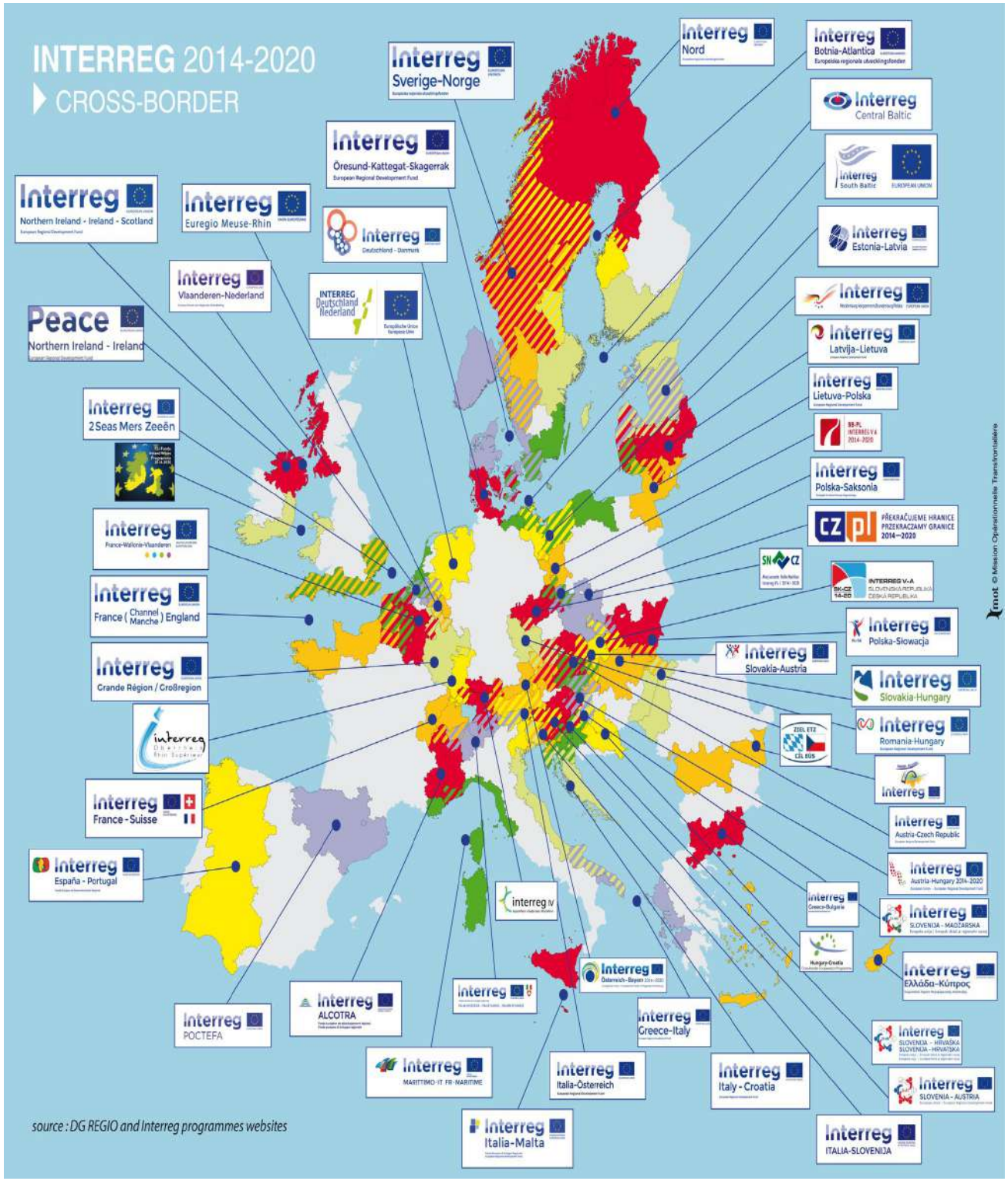
	INTERREG I 1990-1993	INTERREG II 1994-1999	INTERREG III 2000-2006	INTERREG IV 2007-2013	INTERREG V 2014-2020
LEGAL STATUS	COMMUNITY INITIATIVE		INTEGRATED INTO STRUCTURAL FUNDS REGULATION		OWN REGULATION
BENEFITING MEMBER STATES (INTERNAL BORDERS)	11	11 — then — 15	15 — then — 25	27 — then — 28	28
COMMITMENT BUDGET (IN CURRENT PRICES)	ECU 1.1 BN	ECU 3.8 BN	EUR 5.8 BN	EUR 8.7 BN	EUR 10.1 BN

DE EUROPESE TERRITORIALE SAMENWERKING 2014-2020

LA COOPÉRATION TERRITORIALE EUROPÉENNE 2014-2020







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UNION EUROPÉENNE
EUROPESE UNIE

2 DE IDENTITEIT VAN HET PROGRAMMA
L'IDENTITÉ DU PROGRAMME

HET SAMENWERKINGSGEBIED
LE TERRITOIRE DE COOPÉRATION

Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE

62.000 km²
10.800.000 habitants/inwoners

DE STRATEGIE: 4 PRIORITAIRE ASSEN
LA STRATÉGIE : 4 AXES PRIORITAIRES

Interreg France-Wallonie-Vlaanderen

Verbeteren en ondersteunen van de grensoverschrijdende samenwerking op het gebied van onderzoek en innovatie

Améliorer et soutenir la collaboration transfrontalière en recherche et innovation

Vergroten van het grensoverschrijdend concurrentievermogen van de KMO's

Accroître la compétitivité transfrontalière des PME

Beschermen en valoriseren van het milieu door een geïntegreerd beheer van de grensoverschrijdende hulpbronnen

Protéger et valoriser l'environnement par une gestion intégrée des ressources transfr ères

Bevorderen van de cohesie en van de gemeenschappelijke identiteit van de grensoverschrijdende gebieden

Promouvoir la cohésion et l'identité commune des territoires transfrontaliers

ONDERZOEK EN INNOVATIE

RECHERCHE ET INNOVATION

1

Versterken van het onderzoek en de innovatie van de grensoverschrijdende zone in de strategische sectoren en de sectoren met een sterke complementariteit

Accroissement de la recherche et de l'innovation de la zone transfrontalière dans les secteurs stratégiques et les secteurs à forte complémentarité

2

Grotere overdracht en verspreiding van goede praktijken in de strategische sectoren en de sectoren met een sterke complementariteit in de grensoverschrijdende zone

Accroissement du transfert et de la diffusion des bonnes pratiques innovante dans les secteurs stratégiques et à forte complémentarité de la zone transfrontalière

CONCURRENTIEVERMOGEN VAN DE KMO'S

COMPÉTITIVITÉ DES PME

3

Gezamenlijk voorzieningen creëren, valoriseren en met elkaar delen om de kmo's te ontwikkelen en te begeleiden bij het zoeken naar toegang tot de markten

Créer, valoriser et mutualiser des dispositifs transfrontaliers de développement et d'accompagnement des PME à l'accès aux marchés

MILIEU ENVIRONNEMENT

4

Op innoverende en duurzame wijze het grensoverschrijdend patrimonium valoriseren en ontwikkelen via toerisme

Valoriser et développer de manière innovante et durable le patrimoine transfrontalier via le tourisme

5

Ontwikkelen van het geïntegreerde en duurzame beheer van de natuurlijke hulpbronnen en van de grensoverschrijdende ecosystemen

Développer la gestion intégrée et durable des ressources naturelles et des écosystèmes transfrontaliers

6

Anticiperen op en beheren van de natuurlijke, technologische en industriële risico's en van de noodsituaties

Anticiper et gérer les risques naturels, technologiques et industriels ainsi que les situations d'urgence

SOCIALE INCLUSIE

INCLUSION SOCIALE

7

Versterken en bestendigen van de grensoverschrijdende netwerking en van het grensoverschrijdend dienstenaanbod voor de bevolking op gezondheidsvlak

Renforcer et pérenniser la mise en réseau et l'offre de services transfrontaliers à la population en matière sanitaire

8

Versterken en bestendigen van de grensoverschrijdende netwerking en van het grensoverschrijdend dienstenaanbod voor de bevolking op sociaal vlak

Renforcer et pérenniser la mise en réseau et l'offre de services transfrontaliers à la population en matière sociale

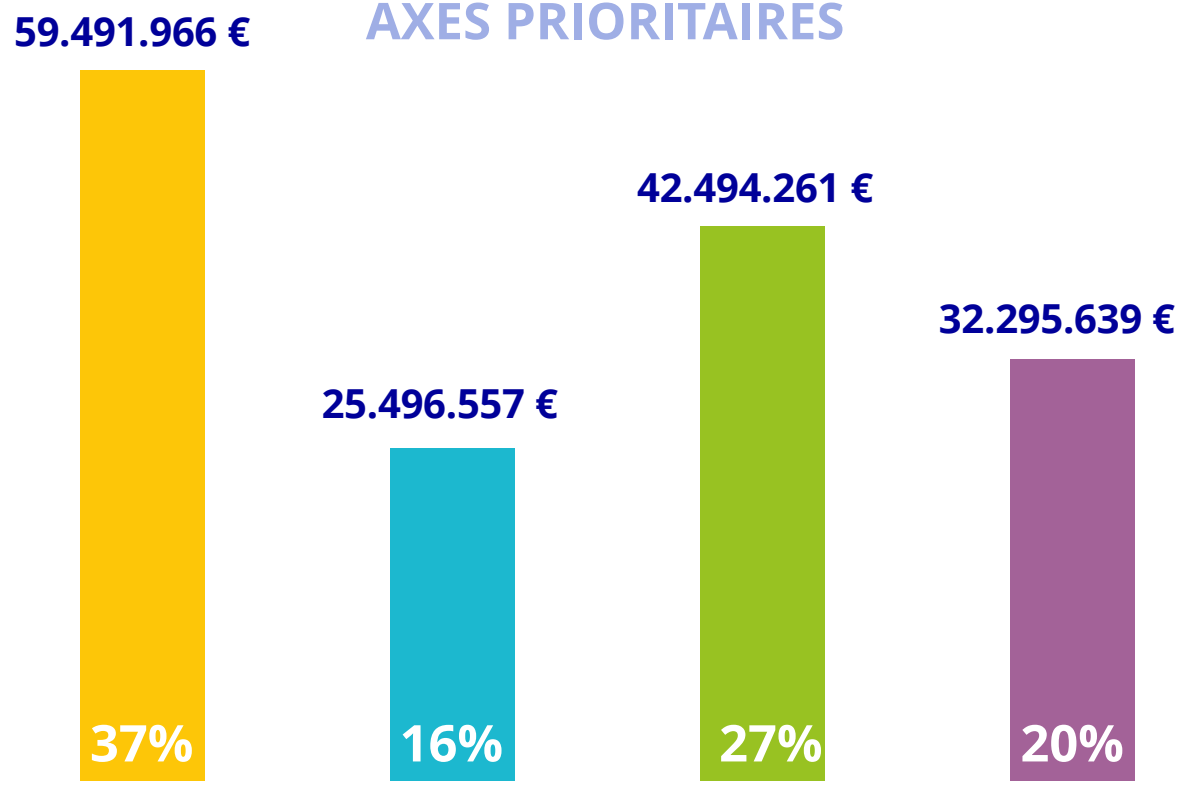
9

Bevorderen van de werkgelegenheid en de grensoverschrijdende arbeidsmobiliteit en integreren van de arbeidsmarkten

Favoriser l'emploi et la mobilité transfrontalière des travailleurs et intégrer les marchés de l'emploi

HET BUDGET
LE BUDGET

PRIORITAIRE ASSEN
AXES PRIORITAIRES



TOTAAL EFRO BUDGET
BUDGET TOTAL FEDER

159.778.423 €

VOOR EEN GESLAAGD GRENSOVERSCHRIJDEND PROJECT
POUR UN BON PROJET TRANSFRONTALIER

Interreg France-Wallonie-Vlaanderen

Een grensoverschrijdende meerwaarde
Une plus-value transfrontalière

- Geoptimaliseerde resultaten
  Résultats optimisés

Een grensoverschrijdende uitvoering
Une mise en œuvre transfrontalière

- Complementariteit van de projectpartners
  Complémentarité des opérateurs

Een grensoverschrijdende impact
Un impact transfrontalier

- Ten voordele van de bevolking en/of de regio
  Bénéfice pour les populations et/ou le territoire

HET BESTUUR
LA GOUVERNANCE

- De Beheersautoriteit
  L'Autorité de Gestion

  Wallonië, vertegenwoordigd door Wallonie-Bruxelles International
  La Wallonie, représentée par Wallonie-Bruxelles International

Wallonie

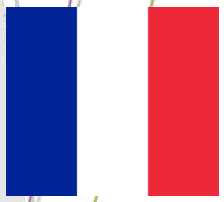
Wallonie - Bruxelles International.be

Bijgestaan in haar taken door:
Assistée dans ses missions par :

- Het Gemeenschappelijk Secretariaat / Le Secrétariat conjoint
- Het Technisch Team / L'Equipe technique

DE PARTNERAUTORITEITEN
LES AUTORITÉS PARTENAIRES

Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE



PRÉFET DE LA RÉGION HAUTS-DE-FRANCE
PRÉFET DE LA RÉGION GRAND EST

Région Hauts-de-France

Grand Est
ALSACE CHAMPAGNE-ARDENNE LORRAINE

Nord le Département

Pas-de-Calais Le Département

L'AISNE CONSEIL DÉPARTEMENTAL

somme

oise LE DÉPARTEMENT

ARDENNES Conseil Départemental

La Marne LE DÉPARTEMENT

Wallonie

FÉDÉRATION WALLONIE-BRUXELLES

AGENTSCHAP INNOVEREN & ONDERNEMEN

west-vlaanderen de gedreven provincie

province Oost-Vlaanderen

TECHNISCHE BIJSTAND
L'ASSISTANCE TECHNIQUE

Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE

TTI/ETI
Lille - Valenciennes

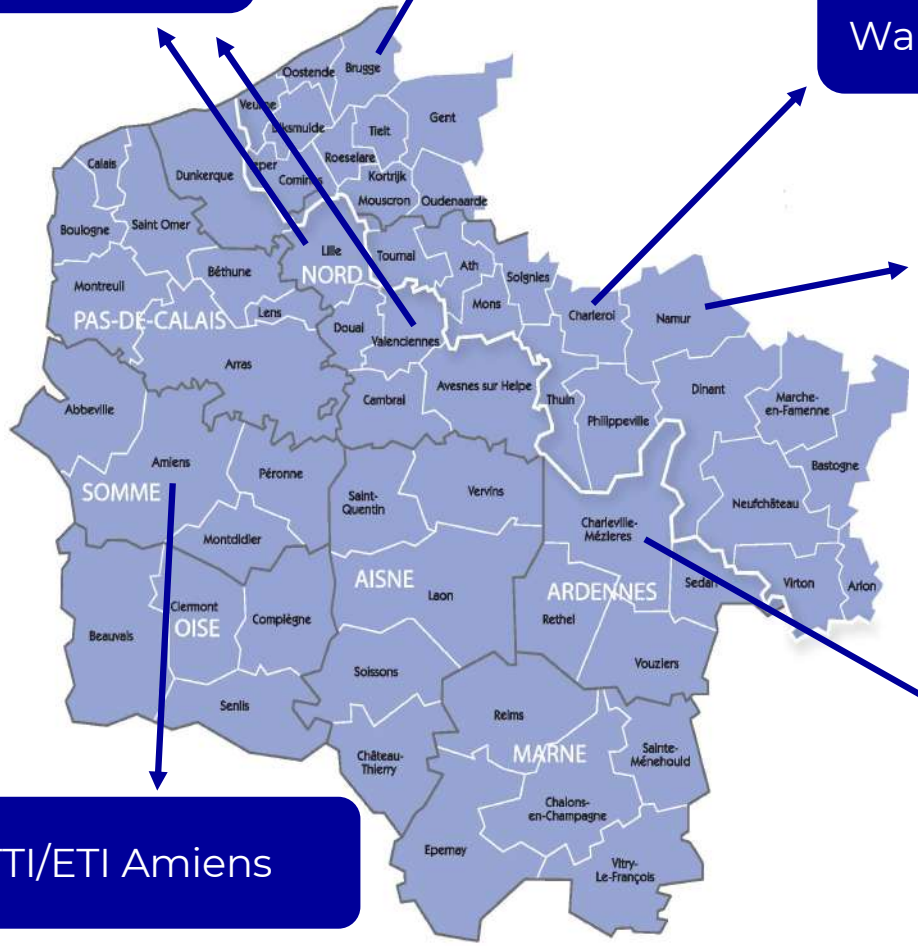
TTI/ETI
Vlaanderen

TTI/ETI
Wallonië/Wallonie

Gemeenschappelijk
Secretariaat /
Secrétariat conjoint

TTI/ETI
Charleville-Mézières

TTI/ETI Amiens




APPLICATION DE GESTION
VOUS ÊTES UN CITOYEN
VOUS ÊTES UN ACTEUR
Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE
PROGRAMME DE COOPÉRATION TRANSFRONTALIÈRE
avec le soutien du Fonds Européen de Développement Régional
ACCUEIL | LE PROGRAMME | ÉVÉNEMENTS | CONTACTS | ESPACE DOCUMENTATION
COMPÉTITIVITÉ DES PME
Créer, valoriser et mutualiser conjointement des dispositifs de développement et d'accompagnement des PME à l'accès aux marchés
En savoir plus
VOLG ONS!
SUIVEZ-NOUS !
www.interreg-fwvl.eu
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Interreg France-Wallonie-Vlaanderen
INTERREG
RECHERCHE ET INNOVATION
GESTION DU TERRITOIRE
INCLUSION SOCIALE

GRENSOVERSCHRIJDEND
SAMENWERKINGSPROGRAMMA
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EUROPESE UNIE

BEDANKT VOOR UW AANDACHT
MERCI DE VOTRE ATTENTION

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MET STEUN VAN HET EUROPEES FONDS VOOR REGIONALE ONTWIKKELING
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GRENSOVERSCHRIJDEND SAMENWERKINGSPROGRAMMA

Interreg
France-Wallonie-Vlaanderen

UNION EUROPÉENNE
EUROPESE UNIE

GRASS

GRASS

A small introduction

ir Geert De Clercq

Kick off event GRASS
5th Decembre 2018 , Fedustria Gent

AVEC LE SOUTIEN DU FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL
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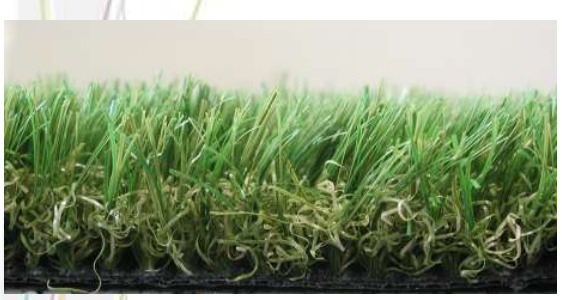
Project Raison (Why do we do it?)

- Actual situation:
  - Wrong idea:
    properties of artificial turf = properties of natural turf
  - Artificial turf has other fireproofing properties
  - Actual solutions not eco-friendly
  - Hence:
    - Public unaware of difference
    - Fields with insufficient FR properties

Which types of artificial turf exist?



Landscaping grass	Hockey grass	Sports grass
Generally no infill, recreational	No infill, use of water	Filled in with sand and rubber
Europe: $10x10^6$ m^2 (+ 10%/year)	Europe: $30x10^6m^2$	

Current RISKS with artificial turf

USE	Outdoor recreational and private: garden, terrace, park,…	Indoor: theme parks, event halls, markets	Sport fields.
Artificial turf system	Carpet without infill materials	Carpet without infill materials	Carpet with sand and rubber.
Risk	BBQ, cigarettes, camp fire, fire works…	Normal indoor risks, such as cigarettes, cooking plates, candles, electrical short-circuit, …	Fire works, use of stadium for other events, grass can't be used as evacuation area
Current Solution	Add sand	Add sand	Use special fire retardant rubber
Reality	Almost always used without sand	Fire report with sand, installed without sand	Over 90% with rubber from recycled tyres.

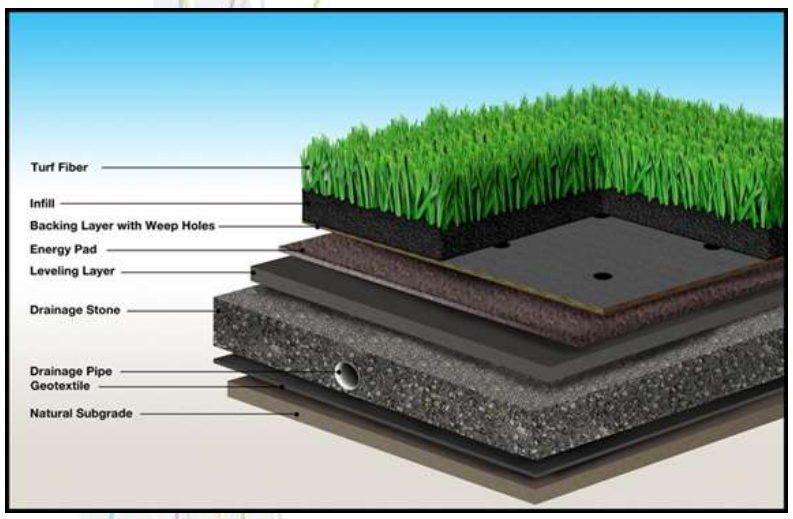
Lack of awareness

Stakeholders	Producers	Owners, Installers, public authorities	Fire brigades, police, law enforcers	End-users
Problem	Price pressure, environmental risks with anti-fire agents	No awareness on importance of sand. No fire legislation for outdoor area's	Lack of information, studies, fire propagation scenario's	Don't realise the difference with natural grass
Risk	*Prevention*: Costs, environment, *Accident*: Collapse of business	Liability in case of accidents Damage to people and infrastructure	Acceptance of unsafe installation Wrong judgement of risk crowd management problems	Personal injuries, burning wounds, inhalation of smoke, or even death
Information need	New Flame retardants, LCA, fire tests,…	Legislation (needs), risks, solutions, environmental aspects,..	Fire propagation, evaluation of risks, interpretation of tests,…	Correct use, Risks, Prevention,…

Project Objectives

- Make the stake holders aware of difference
  - Communications,
  - Workshops,
  - …
- Improve the fireproofing of artificial turf
  - Develop better solutions,
  - Taking into account the durability and ecologic aspects
  - Taking into account the industrial feasibilty

Flame retardancy: technological issues



Artificial turf is a complex and multi-layered material and various problems need to be addressed:

- Where should the fire protection be ?
- How to process each layer containing flame retardants keeping the same specifications?
- How to make a fast screening of the fire performance relevant with the standard of the whole material?
- How to design a fire test (determination of the governing parameters?)

Scientific goal and expected results

- Understanding of the burning behaviour of the artificial turf when exposed to standard test (EN ISO 9239)
- Design of fire bench for testing turf-like assembly (simple multi-layered material)
- Propose technical solution to improve the fire retardancy of artificial turf (incorporation of FR additives in the matrix, surface treatment…)
- Demonstrate the sustainability of the developed solutions

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Interreg France-Wallonie-Vlaanderen UNION EUROPÉENNE EUROPESE UNIE

GRASS

Project partners

UNIVERSITEIT GENT

Université de Lille

MateriaNova MATERIALS R&D CENTRE

IJP-TEX

Associated Partners

Fedustria

SPORT. VLAANDEREN

Infrasports Construire pour le sport

UNION SPORT &CYCLE

Resonance group

MatteX Group

Lano SPORTS

EOC

sports & leisure GROUP

FieldTurf A Tarkett Sports Company

THE ULTIMATE SURFACE EXPERIENCE

VANDEWIELE

Fitco grass

devan Chemicals Protecting textiles...

JONCKVANSTEEN | JAVER

Presentation of the partners

Project partners: Universiteit Gent
Johanna Louwagie

Centre for Textile Science and Engineering

Technologiepark 907
9052 Zwijnaarde
(Gent)
Belgium

tel. +32 9 264 57 35
fax +32 9 264 58 46
textiles@ugent.be

GHENT UNIVERSITY

FOUR PROFESSORS

Paul Kiekens :

Physical & chemical textile technology

Lieva Van Langenhove:

Textile mechanics and smart textiles

Karen De Clerck:

Fibre technology and coloration

Dagmar D'hooge:

Polymerisation technology

GHENT UNIVERSITY

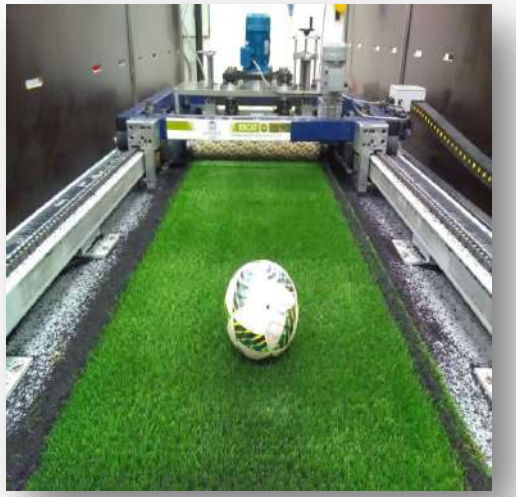
Artificial turf - ERCAT

Development of new grass filaments

- Extrusion
- Multimaterial
- Optimization

Improved performance

- Resilience
- Cooling
- Player/field interaction
- Shock absorption
- Fire resistance



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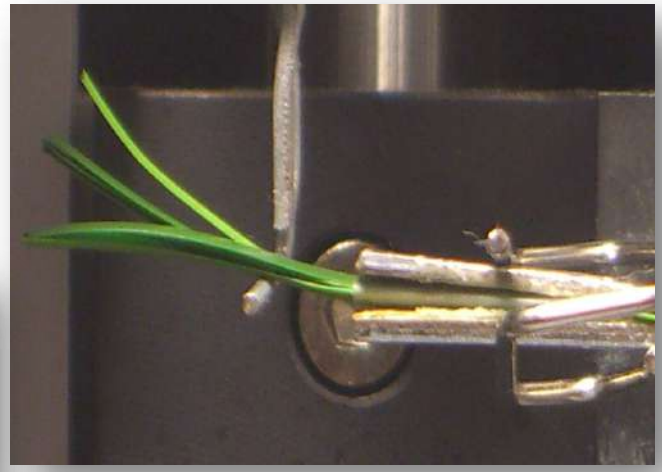
Artificial turf testing

Accreditation for

- FIFA
- Rugby
- Hockey

Specific test methods

- Lisport (wear)
- Taber test
- Fire test
- Thermal analysis
- Filling analysis
- Ball roll and rebound
- Resilience
- UV resistance
- …



GHENT UNIVERSITY

Presentation of the partners

Project partners: Université de Lille
Mathilde Casetta

Université de Lille

cnrs

INRA SCIENCE & IMPACT

Chimie Lille ÉCOLE NATIONALE SUPÉRIEURE DE CHIMIE

UMET Unité Matériaux Et Transformations

UMET laboratory

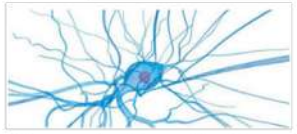
80 researchers

60 PhD - 20 Post-Docs/CDD – 30 DUT,M$_{1,2}$

PhD day 2018

25 technical and administration staff

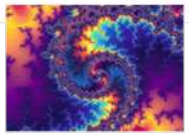
=> materials science laboratory for different applications



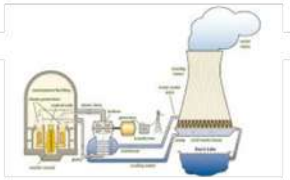
Biomedical applications

Transportation

Building

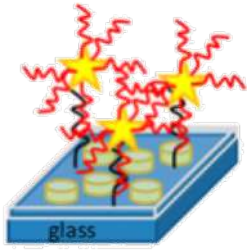


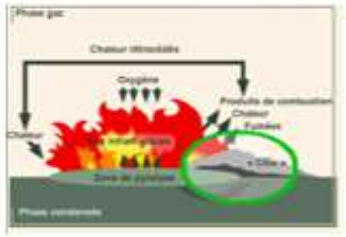
Planets

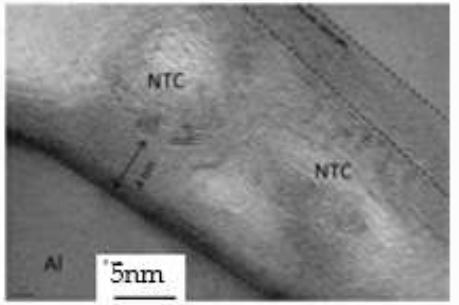


Nuclear Plant

UMET: Structure



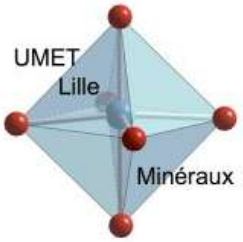




Al + NTC métallurgie des poudres

Polymer Systems Engineering

Physical Metallurgy and Materials Engineering



Earth and Planetary Materials

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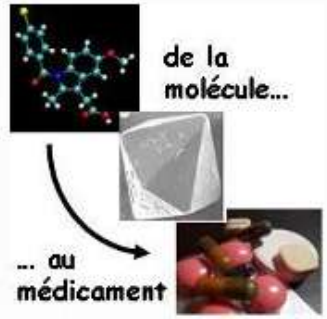
Molecular and Therapeutic Materials



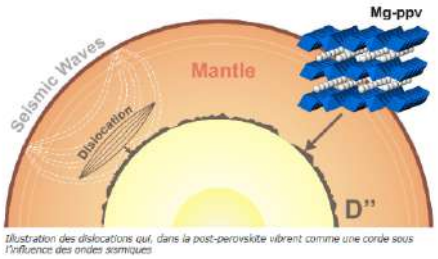
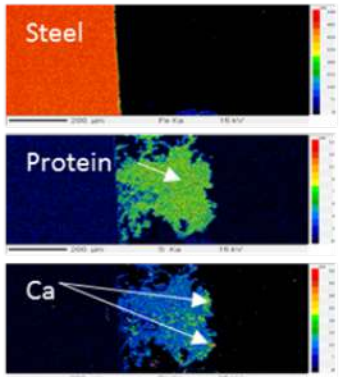


Illustration des dislocations qui, dans la post-perovskite vibrent comme une corde sous l'influence des ondes sismiques

Plasticity

Interface Processes and Hygiene of Materials



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Université de Lille

cnrs

Chimie Lille
ECOLE NATIONALE SUPÉRIEURE DE CHIMIE

Polymer Systems Engineering

Reaction and resistance to fire

Holistic approach

Engineering and processing

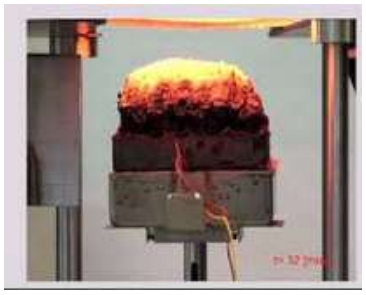
- Filled polymer
- Composites and nanocomposite
- Reactive extrusion
- Surface treatment
- FR synthesis and formulation

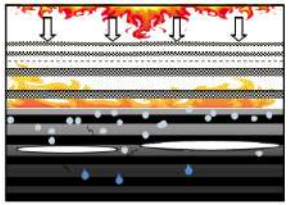
Functional durability

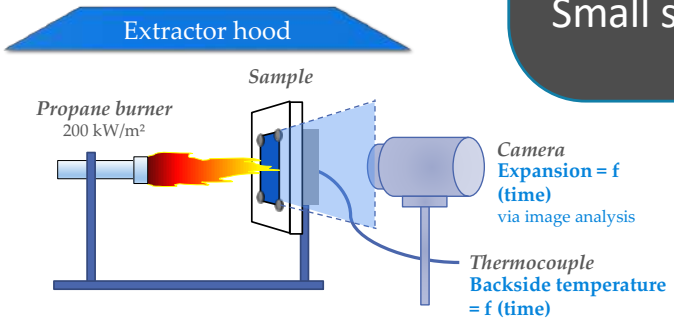
- Recycling
- Aging

Similitude, modelling and simulation

Kinetic analysis
Modelling (intumescent, thermal barrier…)
Small scale protocol







Presentation of the partners

Project partners: Materia Nova
Oliver Talon

MateriaNova
MATERIALS R&D CENTRE

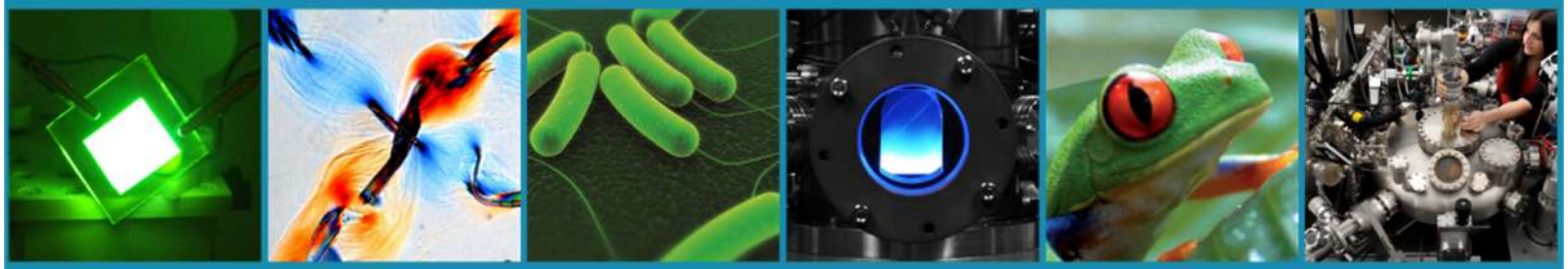
Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
EUROPESE UNIE

GRASS

MateriaNova

MATERIALS R&D CENTRE

FUTURE MATERIALS...



ADVANCED MATERIALS FOR ENERGY APPLICATIONS

INNOVATIVE AND SUSTAINABLE POLYMERIC MATERIALS

CELLS FOR MATERIALS AND MATERIALS FOR CELLS

MULTIFUNCTIONAL SURFACES

LIFE CYCLE THINKING

CHARACTERIZATION PLATFORM

... MADE BY TODAY'S PEOPLE

©MateriaNova

Main role of Materia Nova in the GRASS project

Use Life Cycle Assessment tools (LCA) to

- quantify the environmental benefits of new turf compositions
- identify potential environmental hotspots
- eco-design the new products for optimization of their environmental footprint

AVEC LE SOUTIEN DU FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL
MET STEUN VAN HET EUROPEES FONDS VOOR REGIONALE ONTWIKKELING

Presentation of the partners

Project partners: Up-tex
Nicolas Martin

UP-tex textile cluster
association for innovation in textile sector

More than 170 members

UP-tex & CLUBTEX
131 companies

Turnover
15 Bn €

Staff
31 000

Midsize / SMEs /
Small companies
128 members
(inc 12 large companies subsidiary)

Turnover
4,5 Bn €

Staff
22 700

Our members: Companies

More info on www.innovationstextiles.fr

Our members: Universities and Technology centres

Our members: Clusters, Associations

More info on www.innovationstextiles.fr

Innovation booster: « Pôle de compétitivité »

Projects toward products

- Emergence and brainstorming workshops (from idea to project)
- Partner search / Access to partnerships
- Labeling of projects for fund raising
- Assistance in project proposal in response to calls for tender
- Communication on projects results

Business intelligence

- Technological watch
- Newsletters
- Studies on prospective markets and technologies

Communication

- 3 conference days / year
- 1 business lunch every month
- 2 key account meeting / year
- Futex Convention
- International prospecting missions and exhibitions

Presentation of the partners

Associated partners: Fedustria
Kris Vermoesen

Presentation of the partners

Associated partners:

- **Sport Vlaanderen**
- **Infrasports**
- **Union Sport & Cycle**

SPORT. VLAANDEREN

Infrasports
Construire pour le sport

UNION SPORT &CYCLE

Presentation of the partners

Resonance group

Lano SPORTS

FieldTurf A Tarkett Sports Company | THE ULTIMATE SURFACE EXPERIENCE

sports & leisure GROUP

MatteX Group

Fitco grass

devan Chemicals Protecting textiles...

VANDEWIELE

EOC

JONCKVANSTEEN WEVERIJ nv. WOVEN TEXTILES | SPINNERIJ nv. SYNTHETIC YARNS | JAVER PROTECTIVE TEXTILES
www.jonckvansteen.be www.javer.be

Raisons to have a resonance group

- Membres of the resonance group:
  - Industry,
  - Stakeholders (government, sport federations, …),
  - …
- Objectives
  - Helping the partner with info on,
    - Industrial feasibility
    - Needs of the public / stake holders
    - Communication

Presentation of the partners

Resonance group: Michel Van de Wiele N.V.
Dominique Maes

VANDEWIELE

VANDEWIELE

GRASS Kick-Off 05-12-2018

Some numbers…2017

Founded in 1880

- Activities
  - Machinery Building (50%):
  - Technology & components (50%)
- VANDEWIELE Group
  - 560 million EUR turnover
  - 3000 + FTE
- VANDEWIELE Marke
  - 260 million EUR turnover
  - 760 FTE

Complete carpet cycle from 1 supplier

Extrusion

Heat Setting

Tufting

Finishing

Weaving

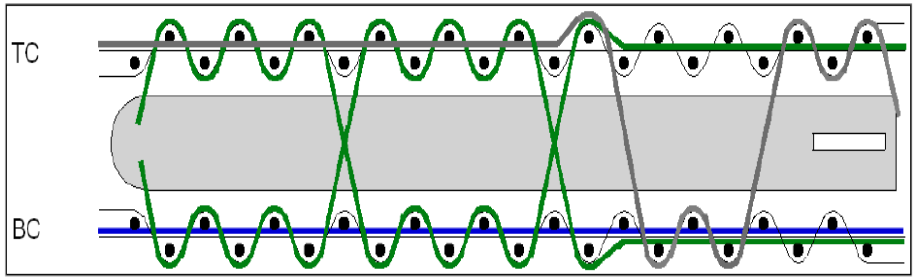
Including artificial grass solutions

Tufting

Cobble : Super Grass Tufter

Weaving

Van de Wiele : SRe02



Presentation of the partners

Resonance group: LANO Sports
Chris Vandenborre

Lano Group

One of the largest, family owned, European tufting & weaving companies

- > 100m € turnover
- 10m m^2 tufted & 1m m^2 woven carpet
- 500 employees
- 2 production sites - Belgium & France
- ISO 9001 certified

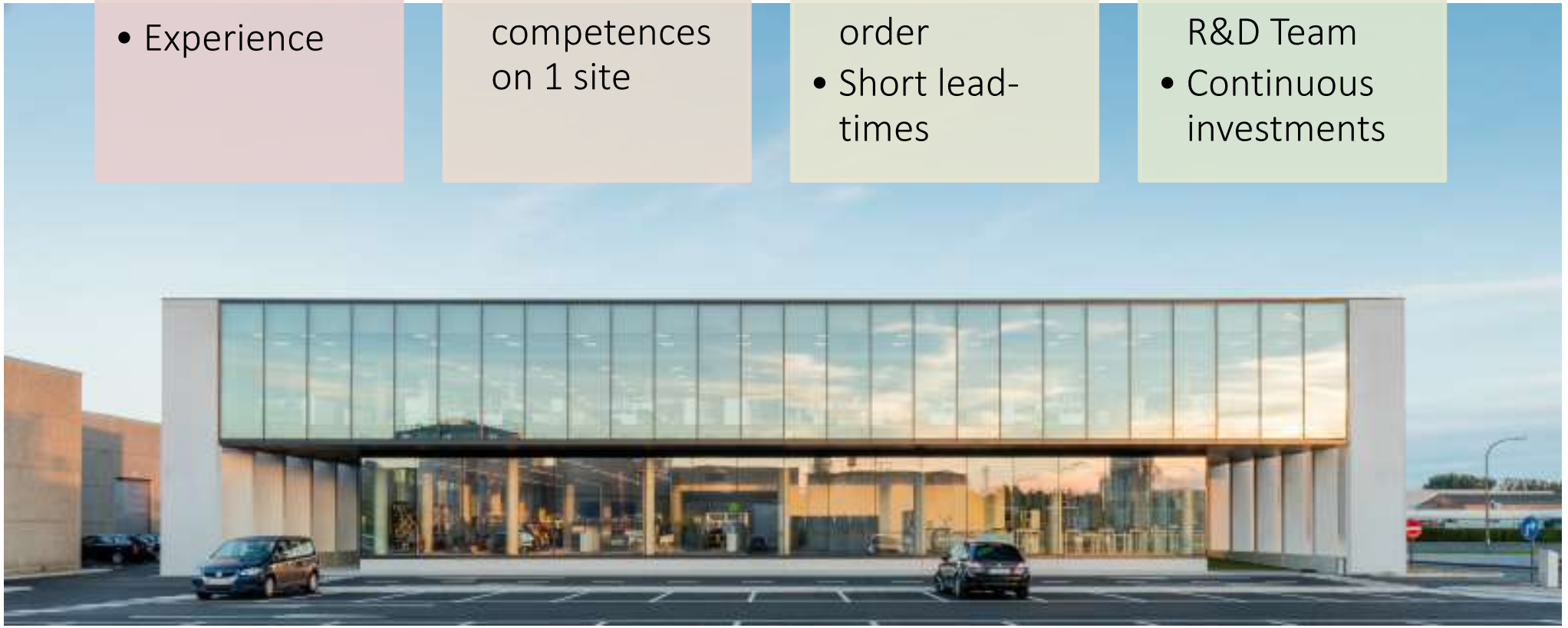
Lano Carpet Solutions

Lano Landscaping

Lano SPORTS

Lano Group stands for

Quality	Integration	Flexibility	Technology & Innovation
• Control • Experience	• All core competences on 1 site	• Make-to-order • Short lead-times	• Extended R&D Team • Continuous investments



Lano‘s Sustainability Statement

Lano strives to achieve a minimum impact on the environment by undertaking the following activities:

- Source recycled material
- Reduce emissions
- Conserve energy
- Recycle waste water
- Minimise carbon emissions
- Improve product life cycle

By ensuring the use or implementation of:

- Recycled materials in new developments
- Solar driven energy of our own installation
- Wastewater treatment facility

artificial grass solutions

Producer of Artificial Turf since 1984 !

>30 Years of Experience

Durability in Quality and Performance

Sports & Landscaping applications

Business Unit within Lano Group

Turnover : 13m €

Dedicated production facility - Harelbeke (B)

Internationally accredited

...

Presentation of the partners

Resonance group: Sports & Leisure Group
Jordi Vercauteren

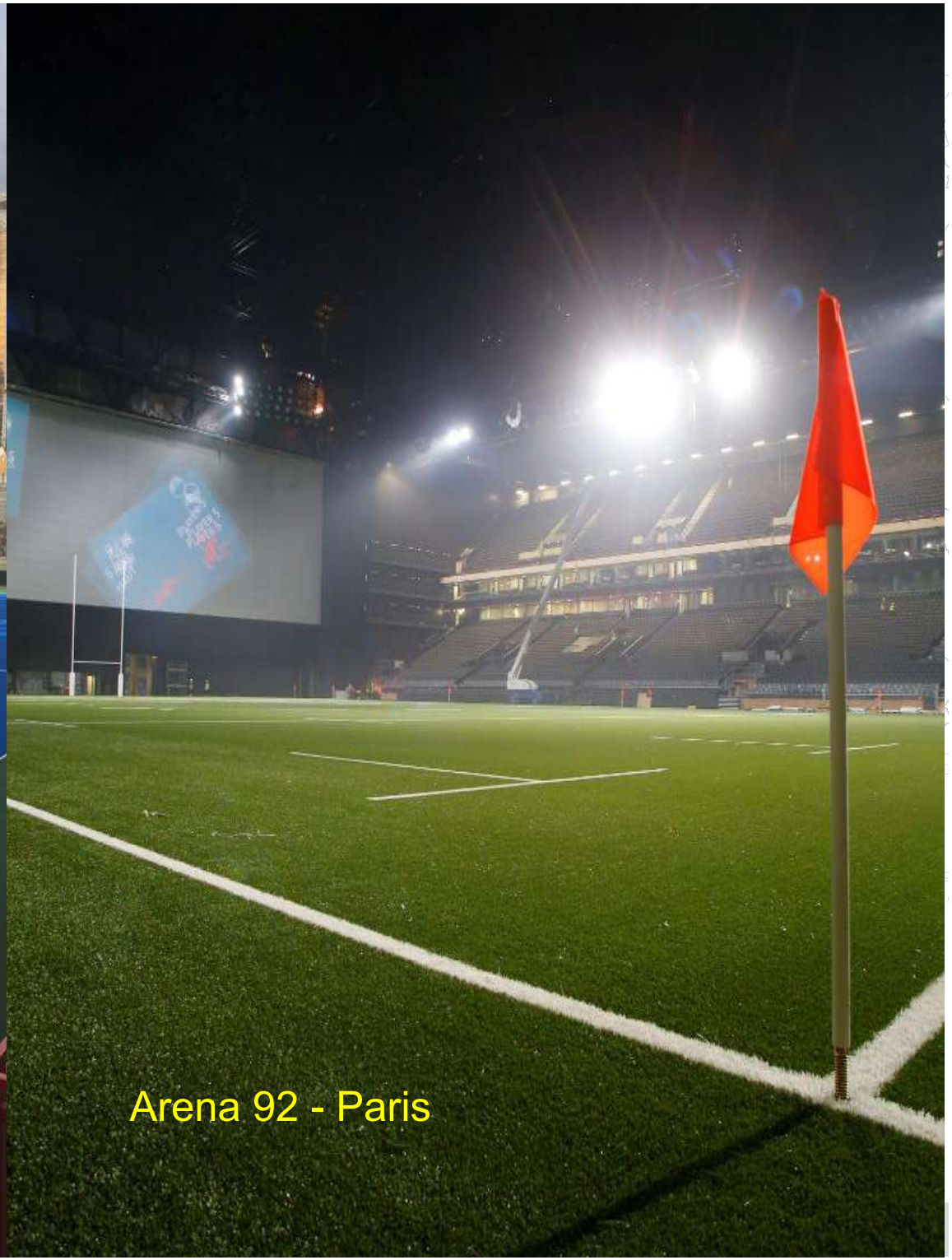
Presentation of the partners

Resonance group: Tarkett
Vincent Menec

FieldTurf®
A Tarkett Sports Company

THE ULTIMATE
SURFACE EXPERIENCE


Macao - Chine


Arena 92 - Paris

Presentation of the partners

Resonance group: Mattex
Davida Decorte

Company Overview: Our Business

Your preferred partner

At a glance

- **Sales : >300 Million USD**
- **Employees: 1,065**
- **Established in 1996 by Al Rajhi Holding & Al Sorayai Group**

Plants

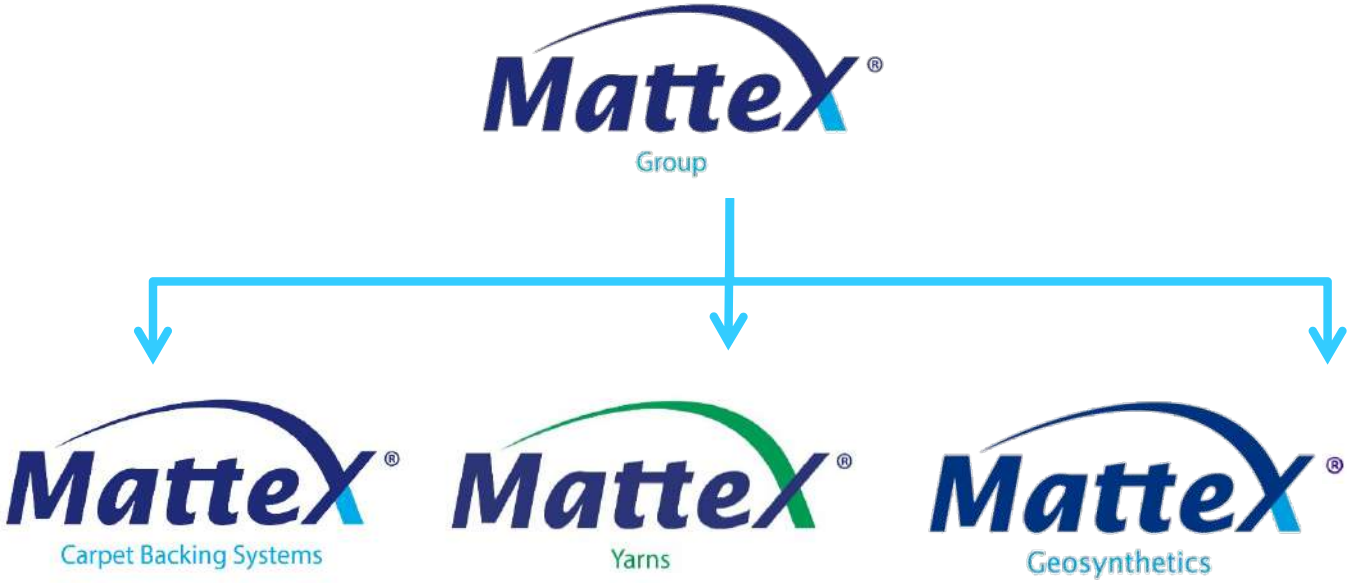
- Jeddah, KSA - Fabrics
- Jeddah, KSA - Grass Yarn & Grass Carpet
- Dubai, UAE - Fabrics
- Eton, USA – Fabrics & Grass Yarn
- Jubail, KSA – Staple Fiber & Geo Synthetics
- Abu Dhabi, UAE – Grass Yarn

Sales Offices

- Belgium, Europe
- Luxembourg, Europe
- Paarl, South Africa
- Shanghai, China
- Auckland, New Zealand

Company Overview: Where are we located

Your preferred partner



❖Dubai, UAE

❖Jeddah , Saudi Arabia

❖Eton, GA, USA

❖Jeddah , Saudi Arabia

❖Eton GA, USA

❖Abu Dhabi , UAE

❖Al Jubail, Saudi Arabia

Three Strategic Business Units

Company Overview: Our Specialities

Your preferred partner

Presentation of the partners

Resonance group: EOC
Piet Tytgat & Quintin Keil

Who is EOC?

- Manufacturer of high-quality chemical products
- For a wide range of industries
- For a great variety of applications
- Family owned, medium-sized
- Active on a worldwide scale
- Provide toll manufacturing

Business Units

- Compounds
- Latex
- Polyurethanes
- Emulsions
- Adhesives
- Surfactants
- Textile Chemicals
- Thermoplastic Elastomers


EXOLAST
THERMOPLASTIC ELASTOMERS
EXOTEX
CARPET LATEX
EXOFOAM
FOAM COMPOUND
EXOPUR®
HIGH-PERFORMANCE POLYURETHANES
EXOTURF
GRASS BACKING
EXOTILE
TILE PRECOAT
EXOFLAM
FLAME RETARDANT
EXOCARPET
CARPET COMPOUND
EXOMOTIVE
AUTOMOTIVE
EXOPROTECT
WATER & OIL REPELLENCY
EXODISP
EMULSIONS FOR COATING
EXOCRUMB
RUBBERCRUMB COMPOUND

Presentation of the partners

Resonance group: Fitco Grass
Luc Decraemer

- Fitco Grass is an independent producer of yarns for artificial turf.
- Production of pile yarns for landscaping as well as for sports.
- Yarns types:
  - Fibrilated yarns
  - Monifilament yarns : twist, wrapped or texturized.

- Production facility situated in Ostend.

Presentation of the partners

Resonance group: Devan Chemicals

Presentation of the partners

Resonance group: Jonckvansteen

JONCKVANSTEEN | JAVER™
WEVERIJ nv. WOVEN TEXTILES
SPINNERIJ nv. SYNTHETIC YARNS
PROTECTIVE TEXTILES
www.jonckvansteen.be
www.javer.be

Agenda

- The INTERREG Program in a bird's eye view
  Pieter Lahousse (Interreg)
- Introduction of GRASS
  Geert De Clercq (UGent)
- Partners of the project: overview + short presentation
- **Artificial turf**
  Stijn Rambour (UGent)
- Fire retardancy of materials
  Mathilde Casetta (ULille)
- Use of LCA for eco designing GRASS innovation
  Olivier Talon (Materia Nova)
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PROGRAMME DE COOPÉRATION TRANSFRONTALIÈRE
GRENSOVERSCHRIJDEND SAMENWERKINGSPROGRAMMA

Interreg
France-Wallonie-Vlaanderen

UNION EUROPÉENNE
EUROPESE UNIE

GRASS

GRASS

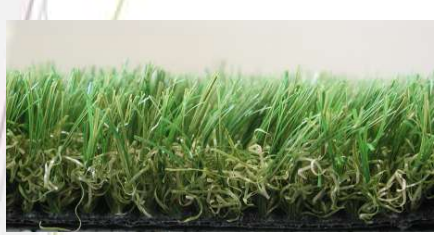
Overview of systems

M. Sc Stijn Rambour

Kick off event GRASS
5th Decembre 2018 , Fedustria Gent

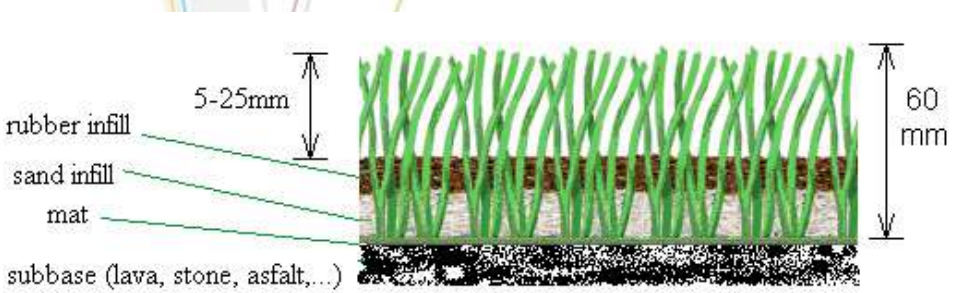
AVEC LE SOUTIEN DU FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL
MET STEUN VAN HET EUROPEES FONDS VOOR REGIONALE ONTWIKKELING

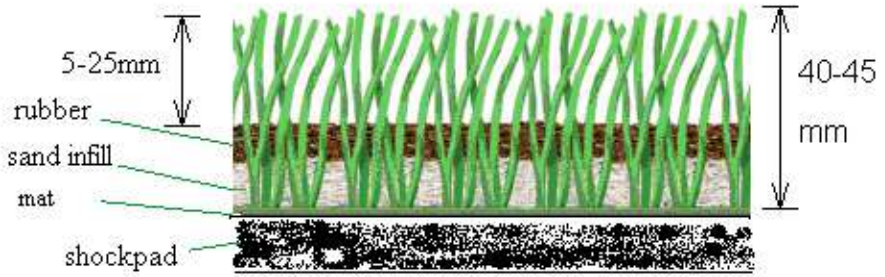
Which types of artificial turf exist?



Landscaping grass	Hockey grass	Sports grass
Generally no infill, recreational	No infill, use of water	Filled in with sand and rubber

Sports grass





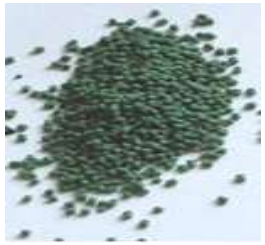
60 mm grass	40 mm grass
High quantity of performance infill (+/- 30mm)	Lower quantity of performance infill (10-20mm)

Stabilsing infill material

Silica sand

beige
Round shape
No fine material, generally 0.4mm as finest grade

Performance infill materials

SBR	EPDM	TPE	cork
			
Black	All colours possible	All colours possible	brown
Made from recycled tyres	New man made material	New man made material	Natural material from tree
No additives possible	Additives possible	Additives possible	No additives possible
Heat by sun	Surface temperature a little bit lower	Surface temperature a little bit lower	Lower surface temperature
Very UV resistant	UV resistant by adding UV stabilisators	UV resistant by adding UV stabilisators	Good resistance to sun light
Smell when hot	Can have the same smell as SBR	No smell, nor heavy metals	No smell

Landscaping grass

Straight topyarn

tatch yarn: curled or texturised

Interreg France-Wallonie-Vlaanderen
GRASS

Thank you for your attention

www.interreg-fwvl.eu
@InterregFWVL

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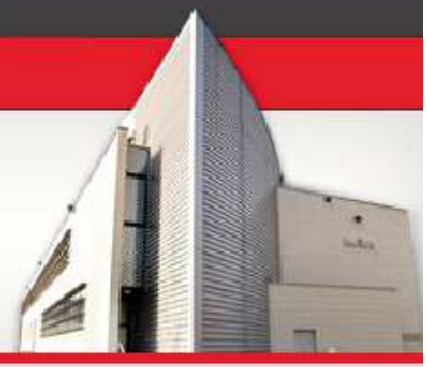


GRASS

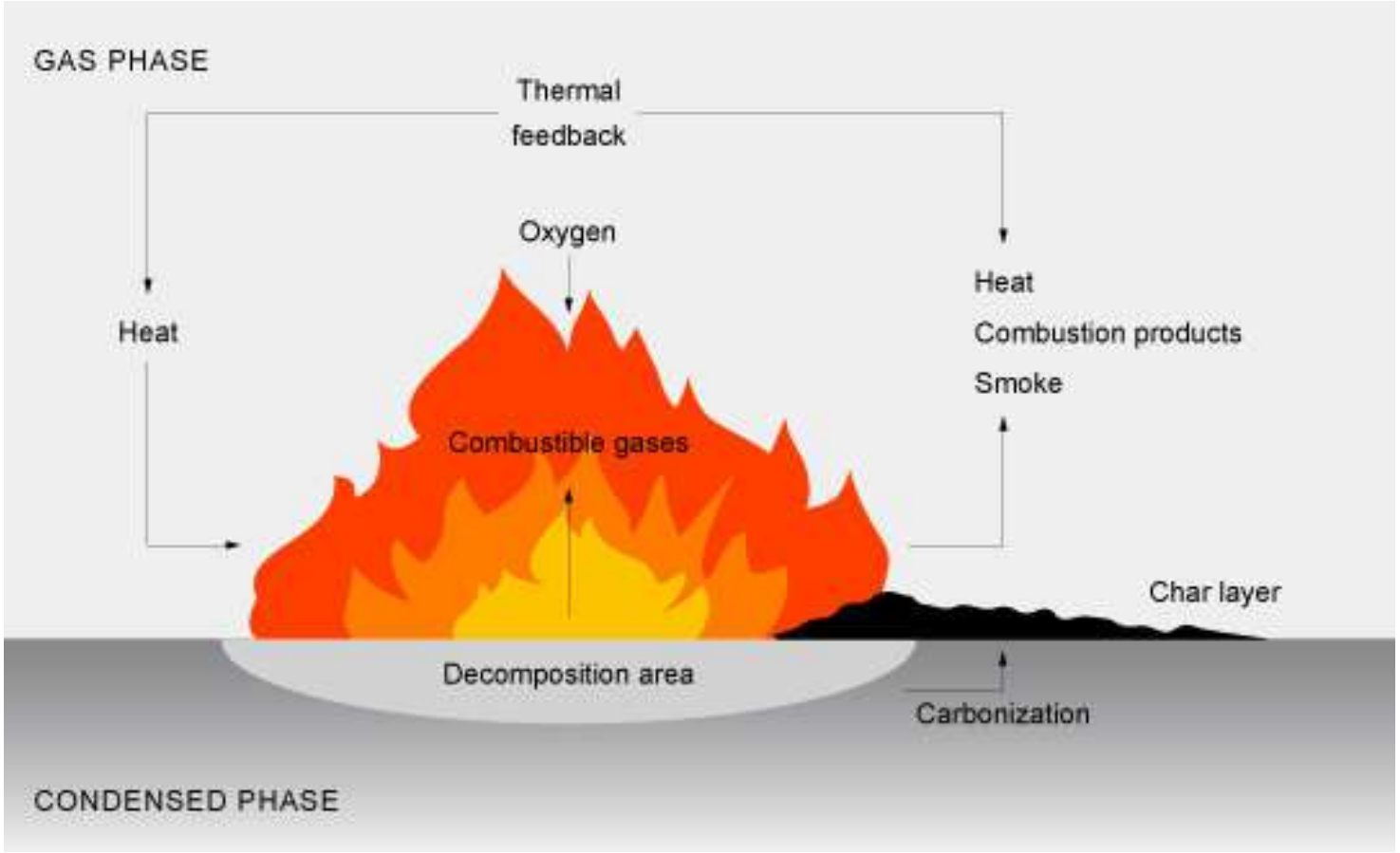
FIRE RETARDANCY OF MATERIALS

Mathilde CASETTA

Unité Matériaux et Transformations (UMET) - CNRS UMR 8207
Equipe Ingénierie des Systèmes Polymères
Ecole Nationale Supérieure de Chimie de Lille (ENSCL) – France

*mathilde.casetta@univ-lille.fr

Combustion process

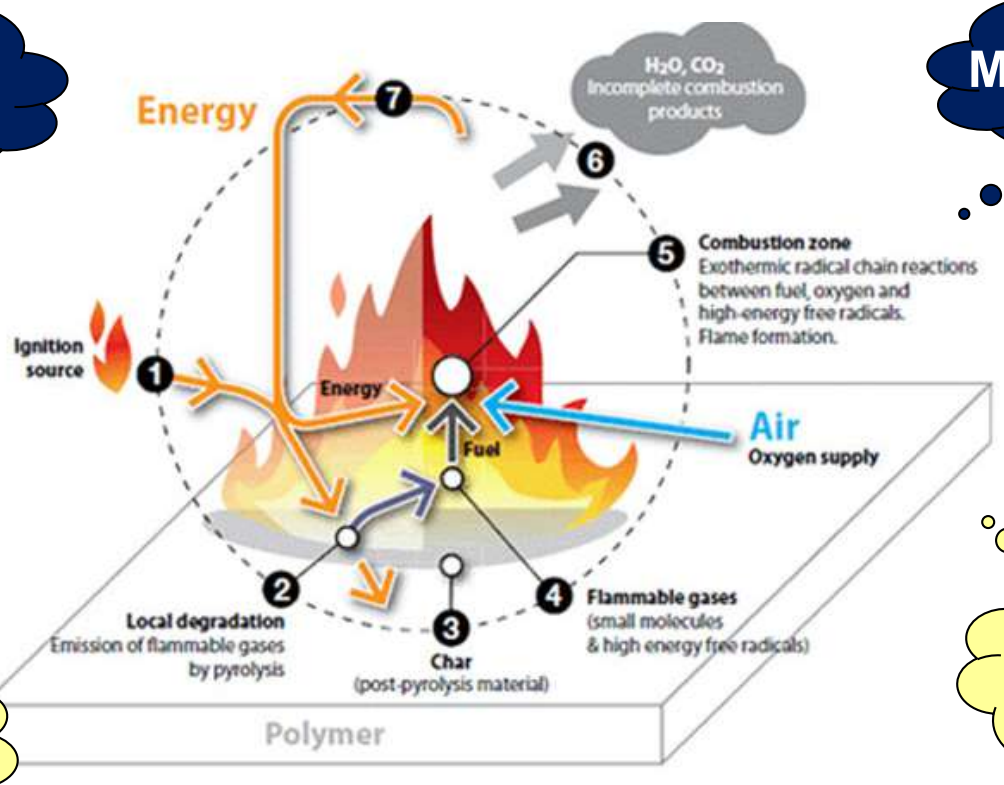


FR mode of action

GAS PHASE

Halogenated compounds

Metal Hydroxides



Intumescent Systems

Metal Hydroxides

CONDENSED PHASE

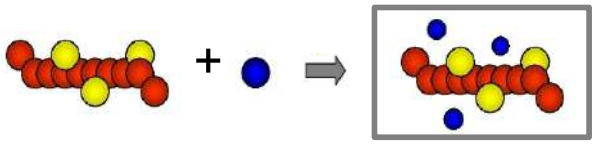
How to fire retard polymeric materials?

Ignition resistance of polymers

Flame spread
Heat release
Smoke generation

● FR

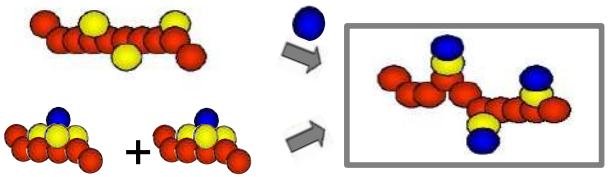
Bulk



Incorporation of FR into the matrix during processing

Low cost & fast
BUT
High loading (up to 65 wt-%)
Decrease of intrinsic properties

Reactive



Chemical modification of polymer backbone

Efficient
BUT
Expensive
Change in morphology / physical properties

Surface

Surface modification, coatings

FR concentrated at the surface
No bulk modification
BUT
Problem of adhesion
Ageing

Example: Tarkett project

Tarkett DESSO A Tarkett Company

From  Highweight

To  Lightweight

AIRBUS specification ABD0031

Vertical burning test

AITM2-0002

Smoke chamber test

Smoke toxicity
AITM3-0005

Smoke density
AITM2-0007

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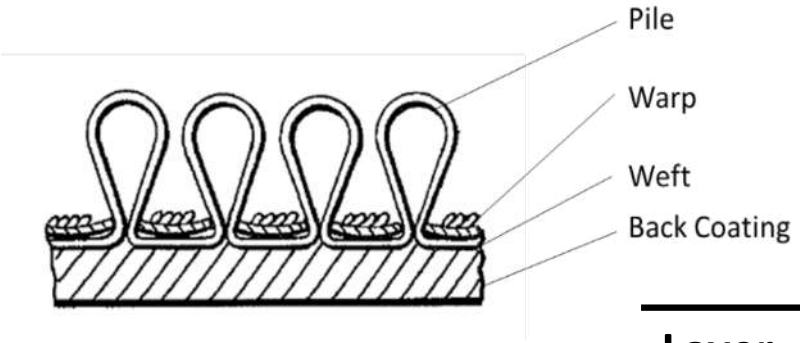
Université de Lille

Interreg France-Wallonie-Vlaanderen

GRASS

Carpets composition

Comparison Highweight / Lightweight




Highweight

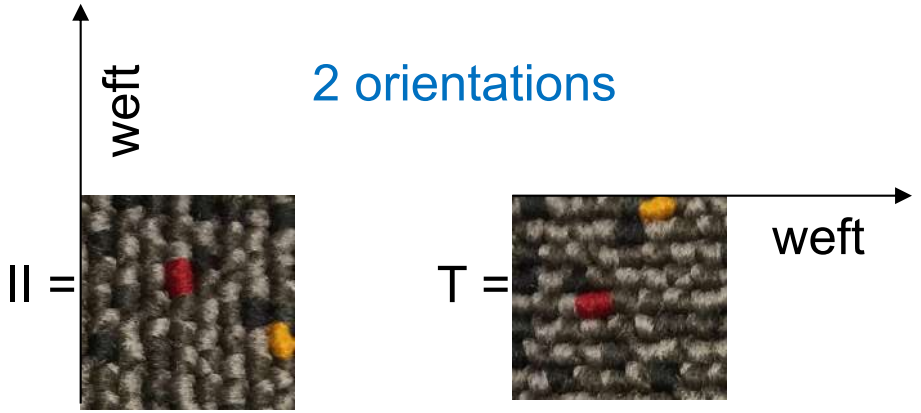

Lightweight

Layer	Nature	Weight
Pile	Different	~ 50% lighter
Warp1	=	=
Warp2	=	=
Weft	=	=
Backcoating	=	~ 20% lighter
Total		~ 30% lighter

Development of smoke chamber

Heat flux: 25kW/m²

Sample in vertical position



2 modes: flaming mode (Fmode)
non flaming mode (NFmode)

Test duration: 240s

Determination of the smoke density and smoke toxicity

Validation of the smoke chamber

Smoke toxicity (AITM0005)

Smoke density (AITM2-0007)

Determination of the optical density D_m at maximum time of test

- Flaming mode (Fmode)
  Dm ≤ 250

- Non-flaming mode (NFmode)
  Dm ≤ 150

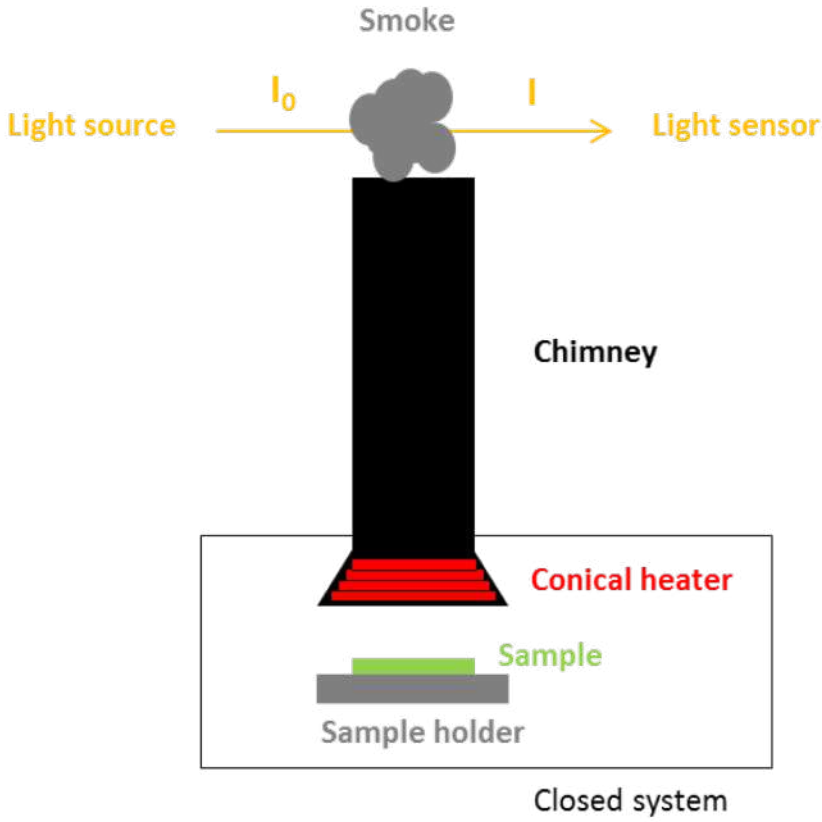
- **Comparison of Ds = f(t) curves with standardized test: SIMILAR RESULTS**
- **BUT: saturation phenomenon at high Ds values (275-300)**
- **LW fails the test**

- **Test correlated with the standardized test**
- **LW fails the smoke density test**

Role of the components – MLC smoke

Mass Loss Calorimeter coupled with smoke density analyzer (MLC-smoke)

Sample 10x10cm²
25kW/m², 25mm



Role of the components – MLC smoke

Smoke density simulation of LW and its components

- Strong contribution of the backcoating and the weft
- Non negligeable contribution of the pile

But potential interactions between carpet components not considered

Comparison of pile and pileless samples

Strong contribution of the pile on the smoke density with the LW carpet

Comparison of backing and backingless samples

- Shift of the smoke density towards shorter times with the backing
- Interaction between pile and backing for the LW carpet?

Development of new backing formulations

	F1	F2	F3
Polymer matrix	100	100	100
Water	40	40	40
FR1	120	80	100
FR2	-	40	-
FR3	-	-	20
Total	260	260	260

Smoke chamber test

Smoke density AITM2-0007

New backing formulations

F1 formulation

Dm ≤ 150 for all samples

Dm ≤ 250 for all samples

F2 formulation

Dm ≥ 150 for LW samples

Dm ≥ 250 for all samples

F3 formulation

Dm ≤ 150 for all samples

WORKPLAN FOR GRASS

WORKPLAN FOR GRASS

1. Characterization of the different artificial grass structures using fire tests complementary to the ISO 9239 standard test
2. Identification of the components having the most important contribution to the fire behavior
3. Development of a small scale ISO 9239 test + validation of the test
4. Selection of the most relevant FR additives and of the fire retardant strategy
5. Elaboration of fire retarded formulations and evaluation of the fire properties with the small scale test
6. Determination of the mechanism of action of FR additives
7. Selection of the FR structures for testing at the ISO 9239 standard test

THANKS FOR YOUR ATTENTION

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UNION EUROPÉENNE
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GRASS

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France-Wallonie-Vlaanderen

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KICK-OFF EVENT
GHENT, 05/12/2018

GRASS

USE OF LCA FOR ECODESIGNING GRASS INNOVATION

OLIVIER TALON
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What is LCA?

(Life Cycle Assessment)

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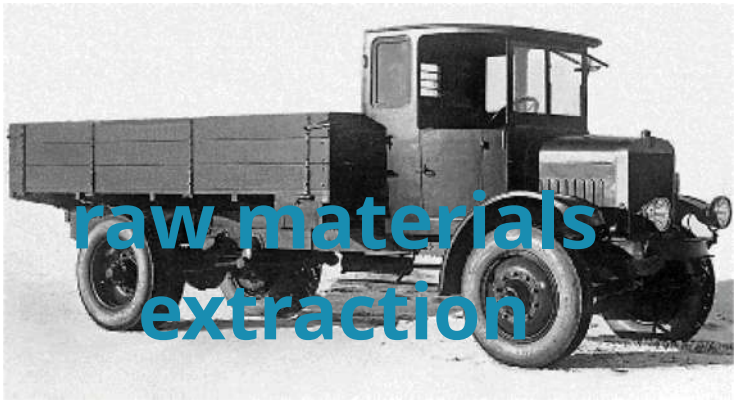
LCA identifies all steps of the life cycle of the studied system

end of life treatment

manufacture of the product

transports



raw materials extraction

use phase

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LCA quantifies exchanges between the system and the environment

raw materials

primary energy

land

air emissions

soil emissions

water emissions

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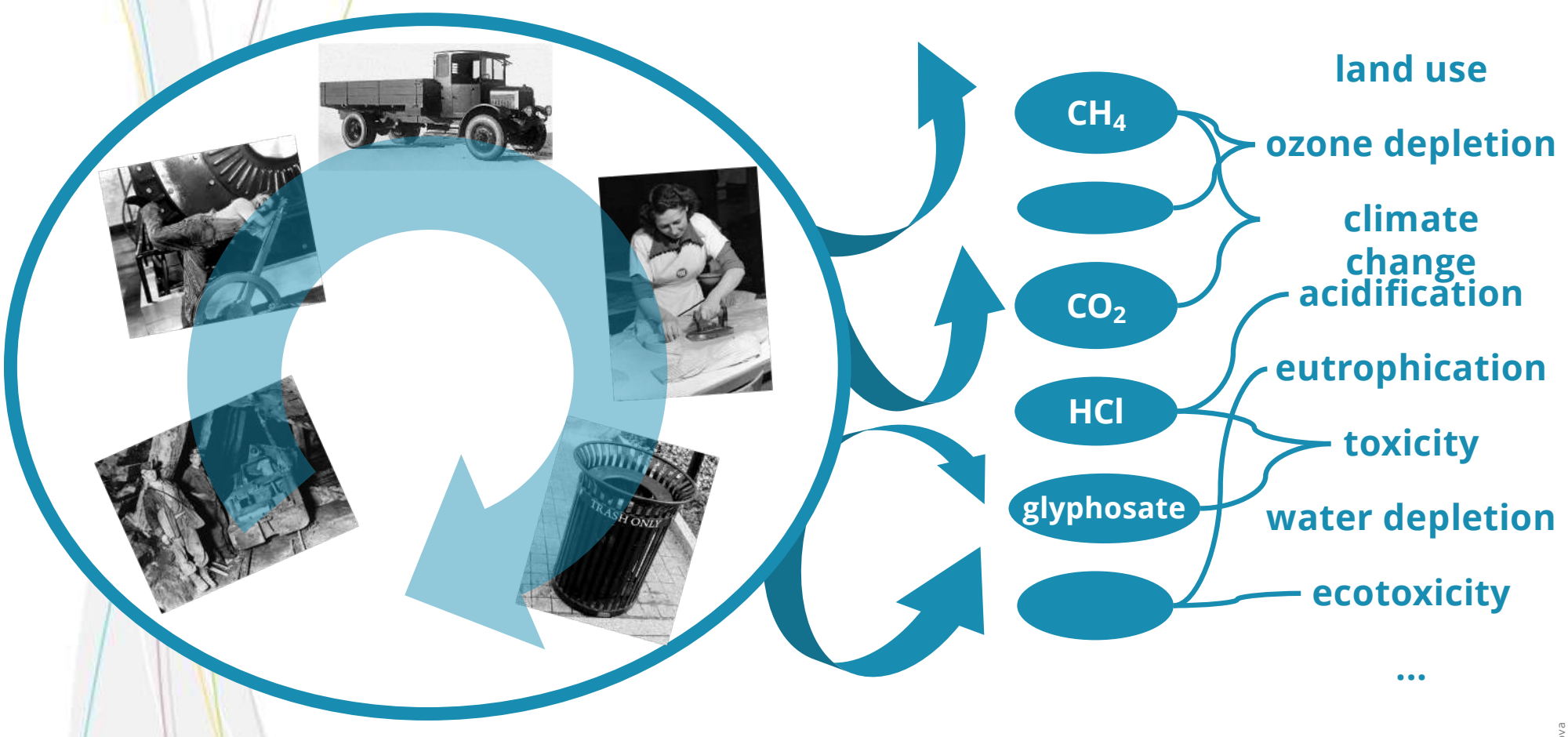
LCA makes links between these exchanges and multiple environmental impact categories



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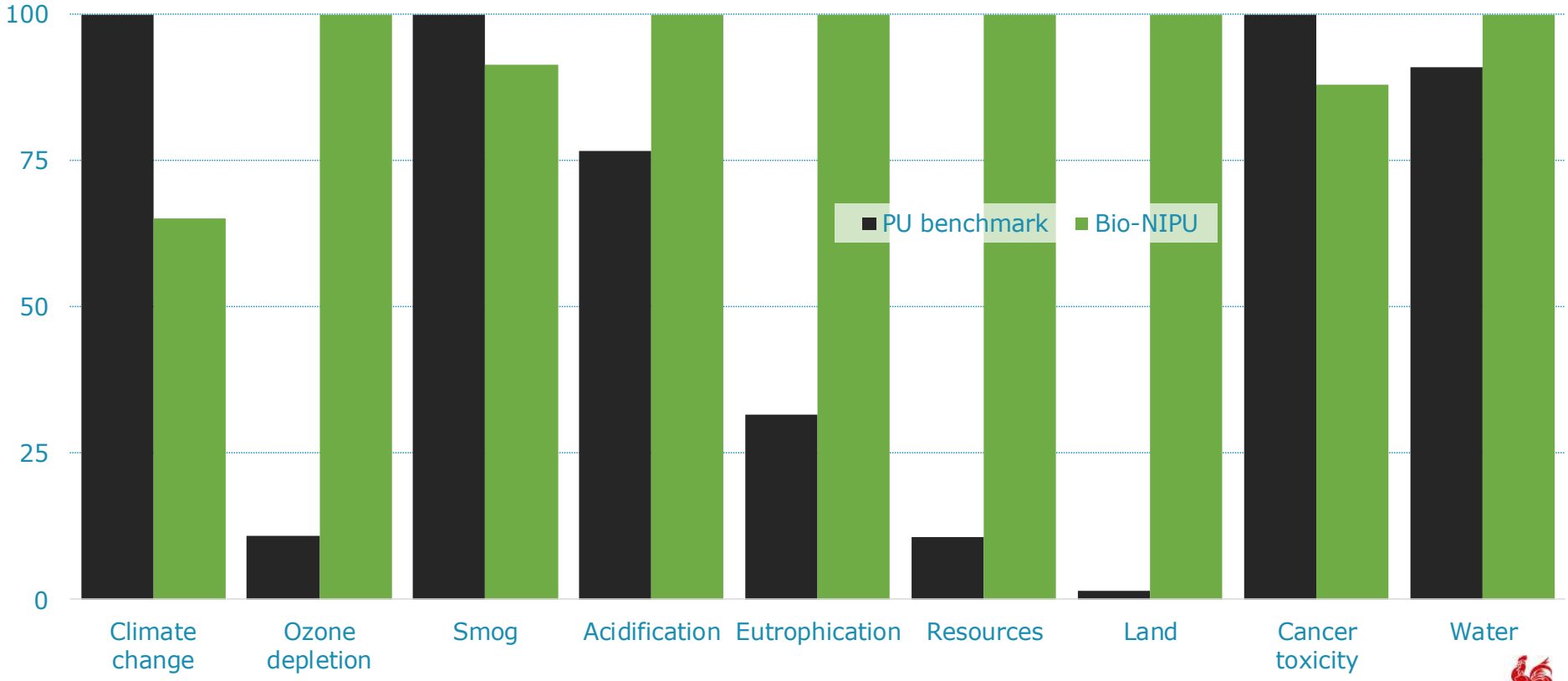
LCA translates these flows into environmental impacts



Results of the CO2Green project financed by Région Wallonne
Wallonie

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What is the link between LCA and ecodesign?

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Ecodesign is a process / mindset where environmental issues are taken into account while developing a product.

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LCA is a tool that enables verification / quantification of the expected benefits of the ecodesign process from a life cycle perspective.

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Sometimes, LCA may reveal that the ecodesign effort does not result in 100% greener products, and that further optimization is needed…

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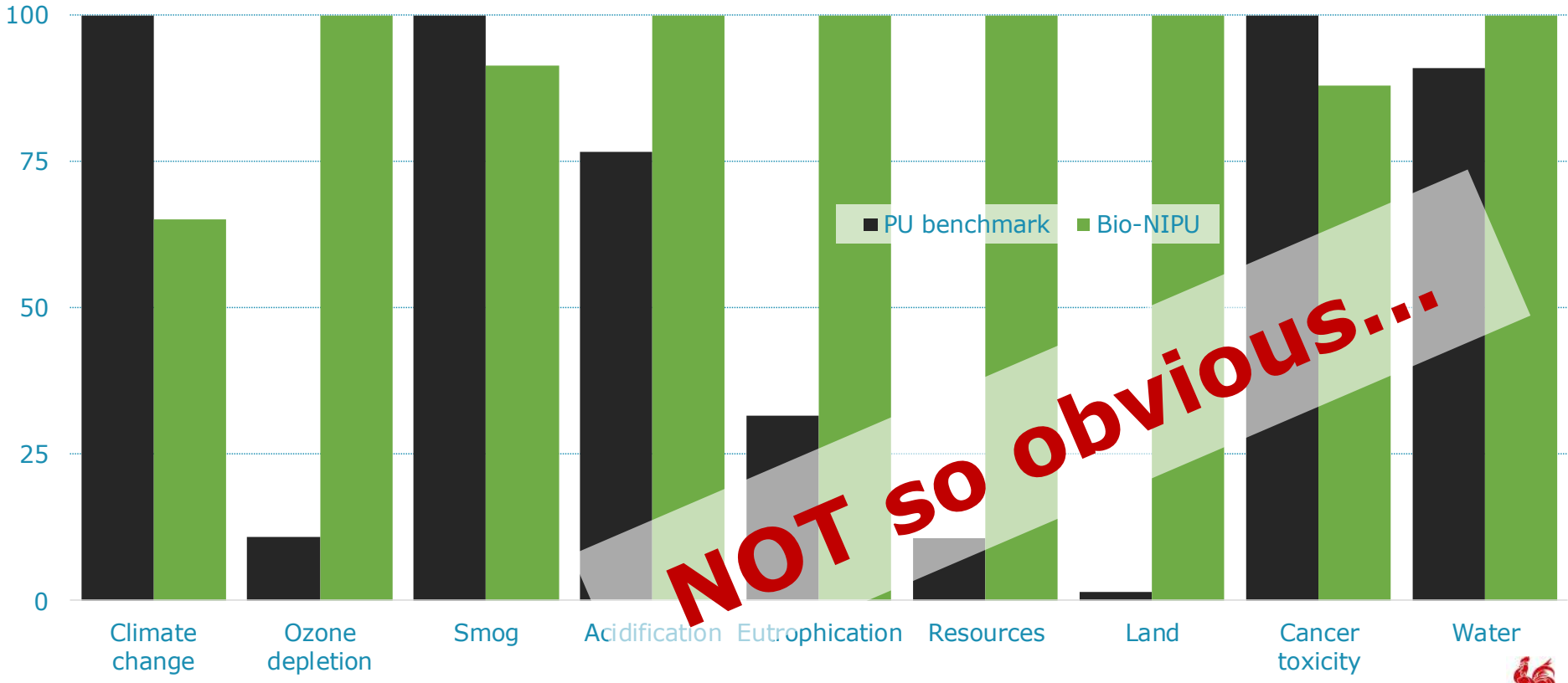
Example: We make it bio-based. It should be GREEN!



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When can this tool be used in an innovation process?

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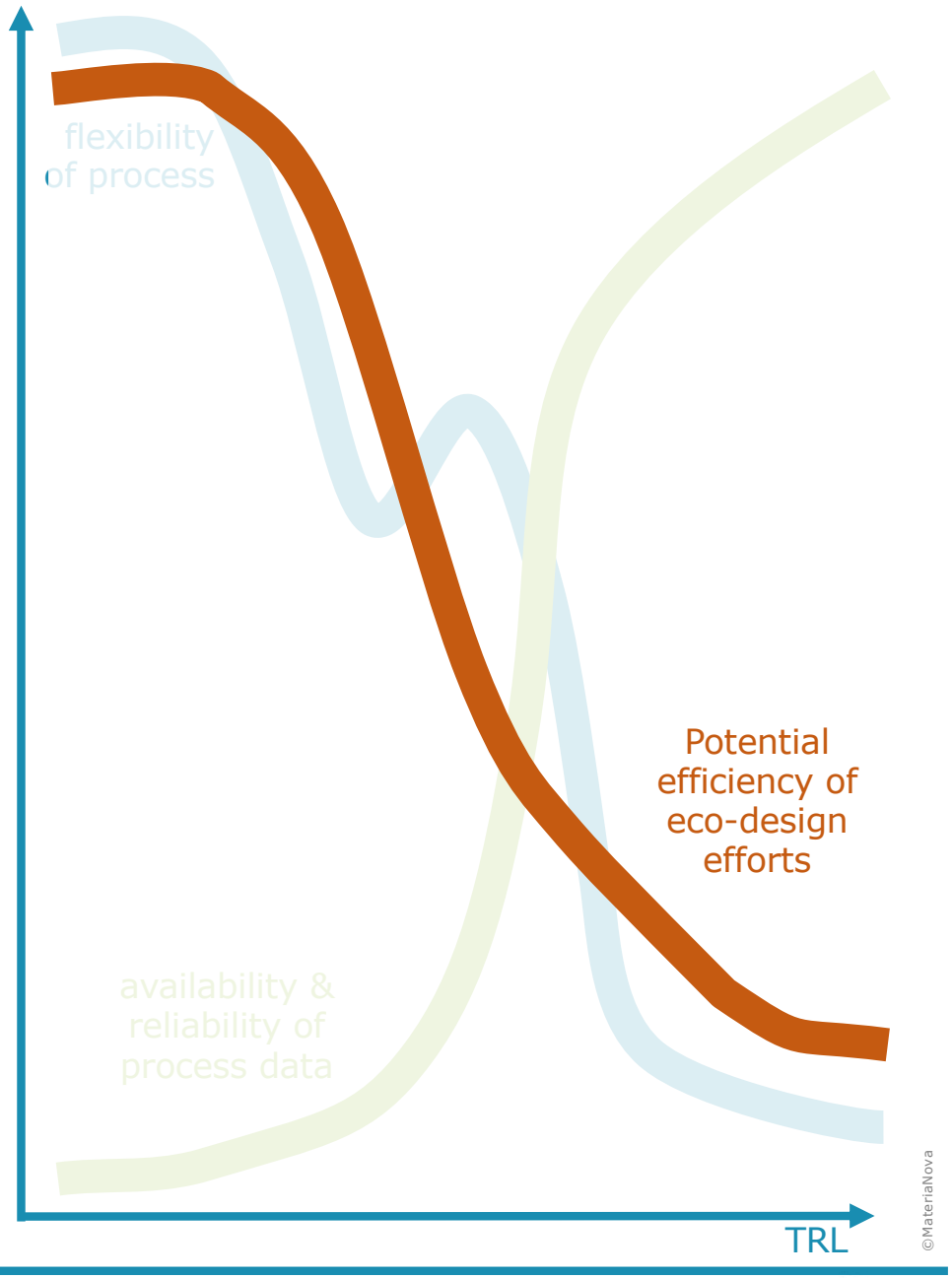
The earlier the better…



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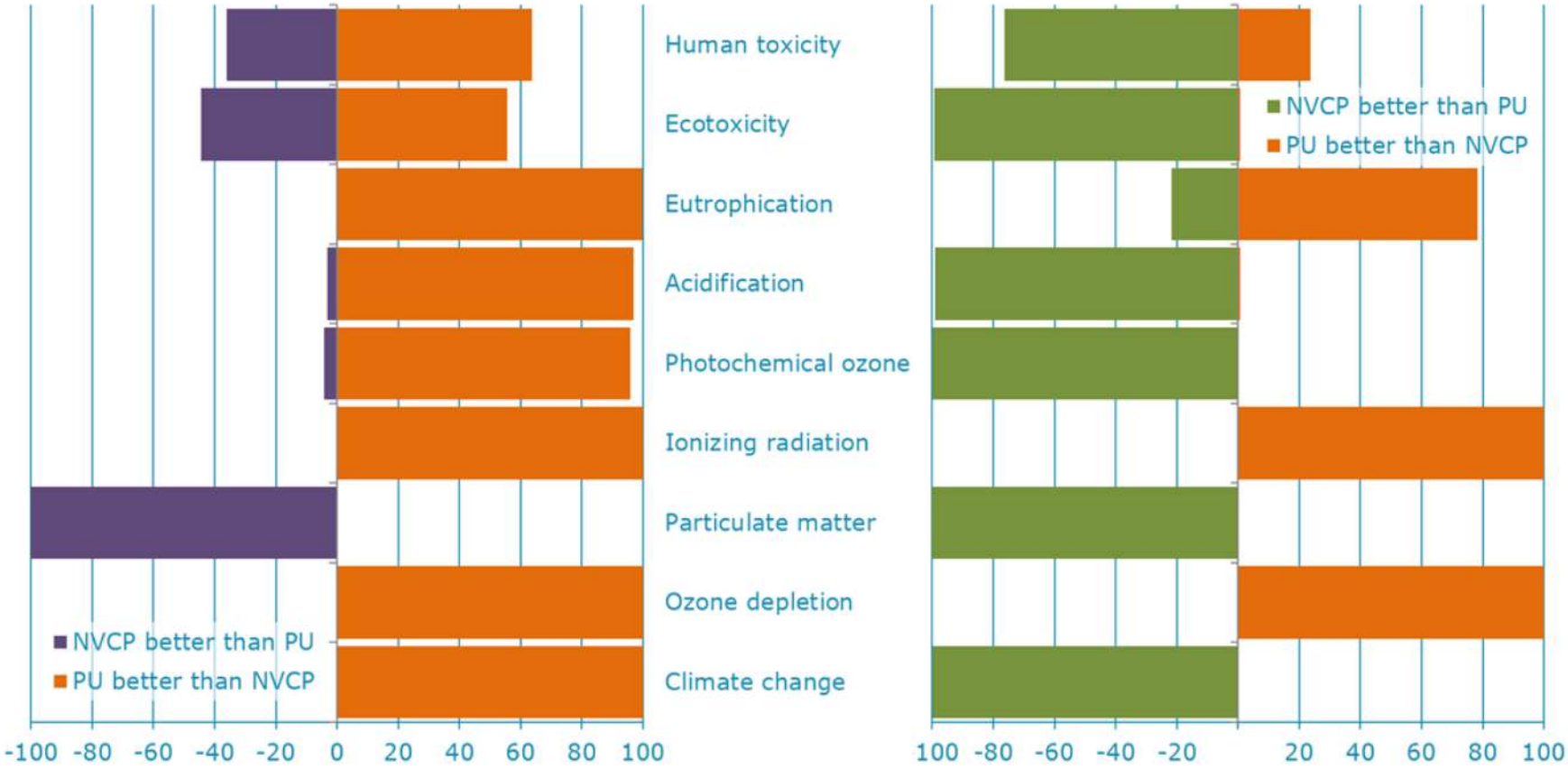
Early LCA can help reducing environmental footprint



First prototype

After LCA induced optimizations

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ECODESIGNING GRASS INNOVATION WITH THE USE OF LCA TOOLS

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Specific issues of LCA for fire-retarded systems

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LCA is based on (very) simple mathematics

$$EI(A+B) = EI(A) + EI(B)$$

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$EI(Life\ Cycle) = \sum(EI_{steps})$

LC step 1

emission of 1 kg X

→ $IC_1(X) = x_1$

→ $IC_2(X) = x_2$

→ $IC_3(X) = 0$

LC step 2

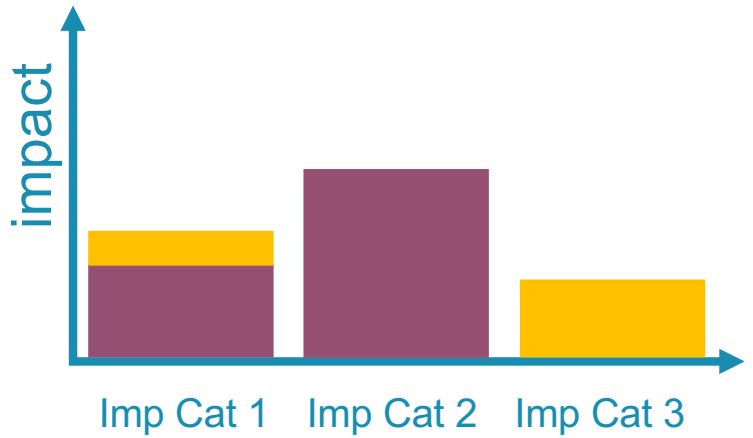
emission of 1 kg Y

→ $IC_1(Y) = y_1$

→ $IC_2(Y) = 0$

→ $IC_3(Y) = y_3$

Overall Life Cycle Impacts



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Impact of a system

Any system

$$EI(system) = EI(production) + EI(use) + EI(end\ of\ life)$$

Non-fire retarded system

$$EI(\overline{FR}) = EI(prod_{\overline{FR}}) + EI(use_{\overline{FR}}) + EI(eol_{\overline{FR}})$$

Fire retarded system

$$EI(FR) = EI(prod_{FR}) + EI(use_{FR}) + EI(eol_{FR})$$

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FR vs. $\overline{FR}$
What do we compare?

In LCA, everything is related to the function of the system

What is the common function of FR and $\overline{FR}$?

Not to burn? No.
To be used.

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FR vs. $\overline{FR}$

Therefore, if $FR = \overline{FR} + fr$

$$EI(FR) = EI(\overline{FR}) + EI(fr)$$

$$EI(FR) > EI(\overline{FR})$$

because, obviously: $EI(prod_{fr}) + EI(use_{fr}) + EI(eol_{fr}) > 0$

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But…

Such systems should not be considered by LCA as if they would never burn. Because they may burn. Each of them.

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How can we do that?

By including fire statistics and environmental consequences of fire events in the comparative LCA study

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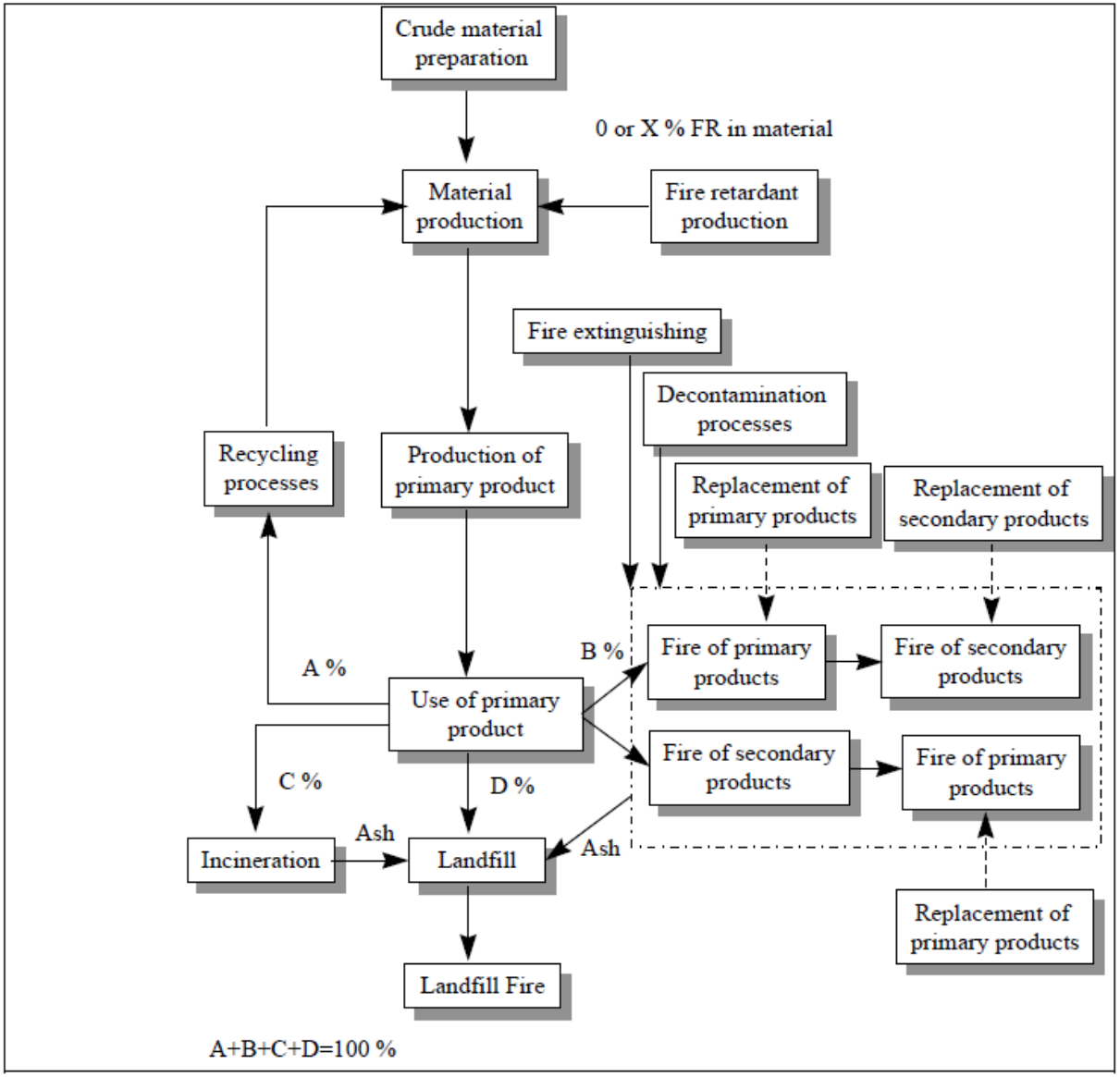

Figure 1: Schematic representation of the Fire-LCA model.

Source: Simonson, 2000

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What if $\overline{FR}$ burns?

Consequences of the fire event

System has to be replaced. Even partly.
People may have to be healed.
Room may have to be cleaned.
Walls may have to be painted.
Building may have to be rebuilt.
Burnt system has to be discarded / treated.
CO_2, particles, dioxins etc. are emitted.
…

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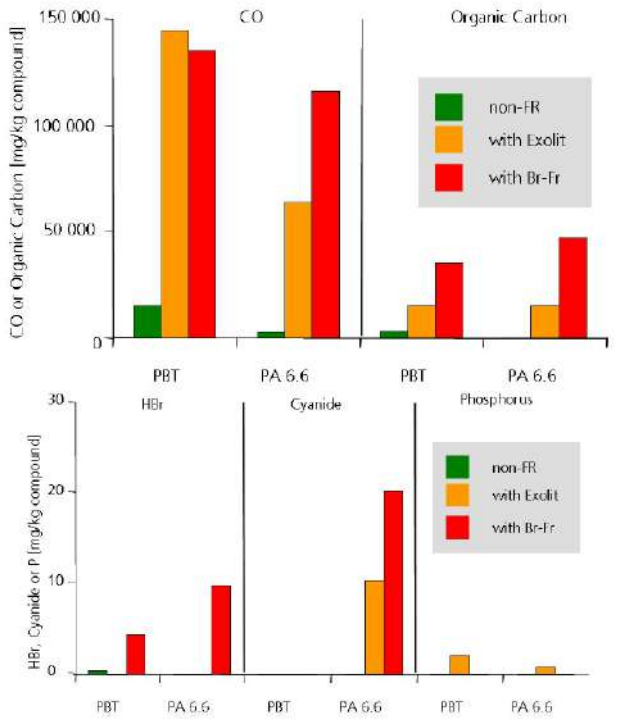
What if FR burns?

Consequences of the fire event

Similar consequences.
Maybe even worse consequences
in terms of emissions.

Figure 5: Combustion products with acute toxicity as measured with the DIN oven.



Marzi, 2006
Toxic combustion products
green: FR; orange & red: FR

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Impacts of the two systems

$\overline{FR}$	FR
p(fire)*EI(consequences) + (1-p(fire))*normal EI($\overline{FR}$)	p'(fire)*EI'(consequences) + (1-p'(fire))*normal EI(FR)

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Data are therefore needed about:

- impacts of fr production
- impacts of FR system production
- impacts of “normal” use phase
- impacts of disposal / treatment after “normal” use
- probability of fire events
- emissions directly linked to fr in case of fire
- other fire consequences
- impacts of disposal / treatment of burnt system

…

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WORKPLAN FOR GRASS

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1. Definition of normal use scenario

2. Life cycle inventory for reference turf

3. Model for FR turf production

4. Collection of emission data for both turfs

5. Definition of normal / post-fire end-of-life treatments

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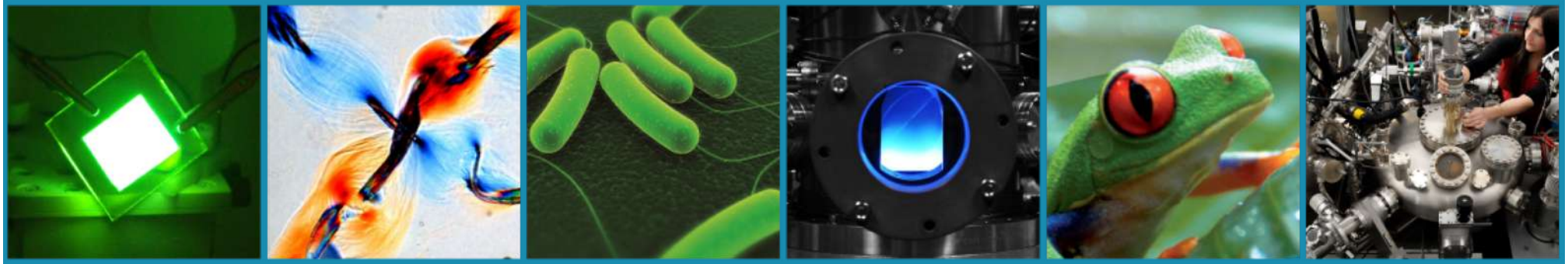

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Agenda

- The INTERREG Program in a bird's eye view
  Pieter Lahousse (Interreg)
- Introduction of GRASS
  Geert De Clercq (UGent)
- Partners of the project: overview + short presentation
- Artificial turf
  Stijn Rambour (UGent)
- Fire retardancy of materials
  Mathilde Casetta (ULille)
- Use of LCA for eco designing GRASS innovation
  Olivier Talon (Materia Nova)
- **Structure of project and resonance group**
  Geert De Clercq (UGent)
- GRASS communication strategy
  Nicolas Martin (Up-tex)
- Call for membres for resonance group
- Discussion
- Networking

Scientific Structure GRASS

1. Understanding of the material behaviour when exposed to EN ISO 9239

- contribution to the fire of each layer
- behaviour of the different artificial turf
- optimum design

2. Development of a bench scale test to allow a fast screening of the materials

- Evaluation of the properties of each layer
- Kinetics and degradation mechanism
- Development of a bench scale test

3. Evaluation of the different solution to improve the FR properties of the artificial turf

- Surface treatment
- Development of FR fibres
- Study of the interaction between UV stabilizer and FR additives
- Development and synthesis of green flame retardant

4. Sustainability of the proposed approach

- Recycling of the developed artificial turf
- Life Cycle Analysis

5. Validation at large scale test

Communication GRASS

- Make the stake holders aware of difference
  - Communications (website, newsletters,…)
  - Workshops,
  - …
- Strong co-operation with associated partners and their networks towards
  - Industry
  - Sport federations
  - Governments, public organsations…..
  - Public

Resonance group

- Actually 9 membres
- All industrial companies
- Still looking for extra members
- Governments, sport organisations, ….
- No fee to be paid !!!

QUESTIONS ?

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Thank you for your attention

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PROGRAMME DE COOPÉRATION TRANSFRONTALIÈRE
GRENSOVERSCHRIJDEND SAMENWERKINGSPROGRAMMA

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Communication strategy

UP-tex
Nicolas MARTIN, Project manager

UP-TEX

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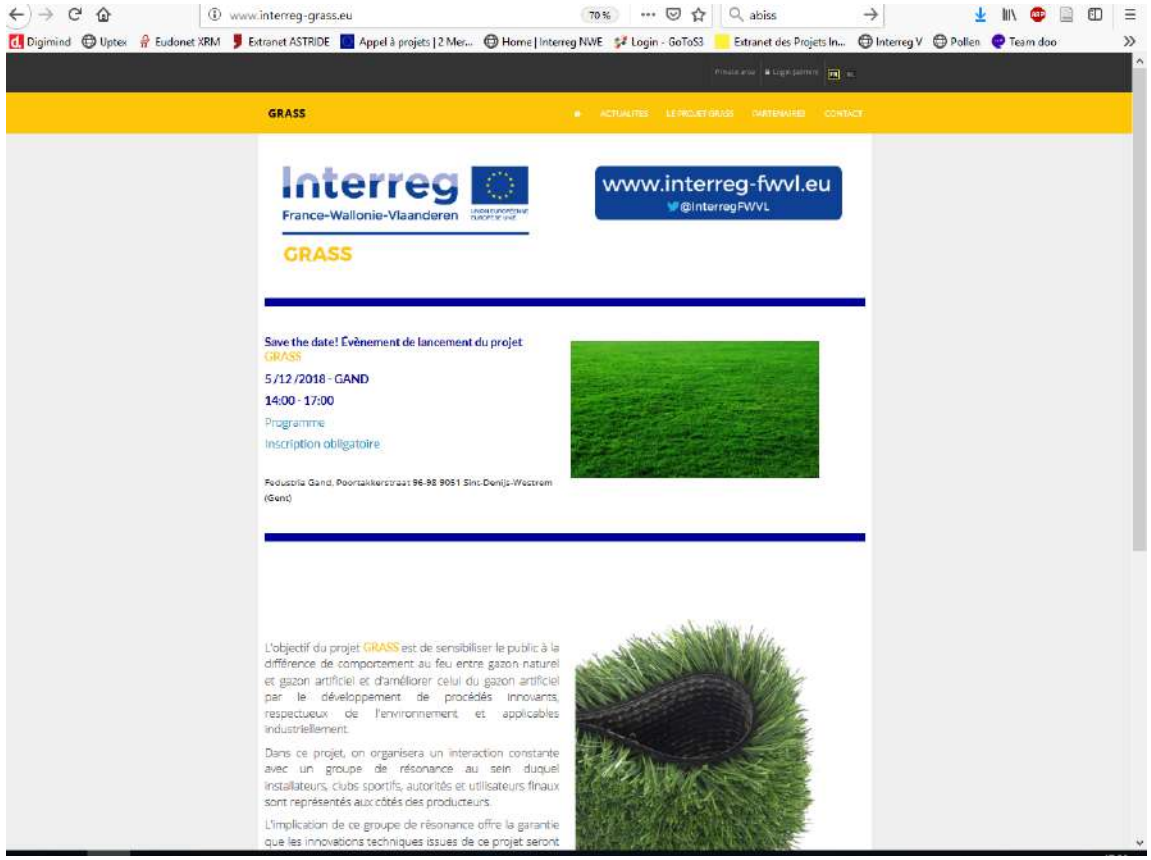
Communication and dissemination

- Website
- Newsletter
- Linkedin
- Printed communication (brochure)
- Press article
  (professional and scientific magazines, press release)
- Events
- Resonance group

Website: www.interreg-grass.eu



Starting point to follow the project
-news
-events
-documents

Newsletter

Newsletter n°1 Project Interreg GRASS Click to view it in your online browser

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GRASS Gazons aRtificiels Anti-feu Sûrs et durableS

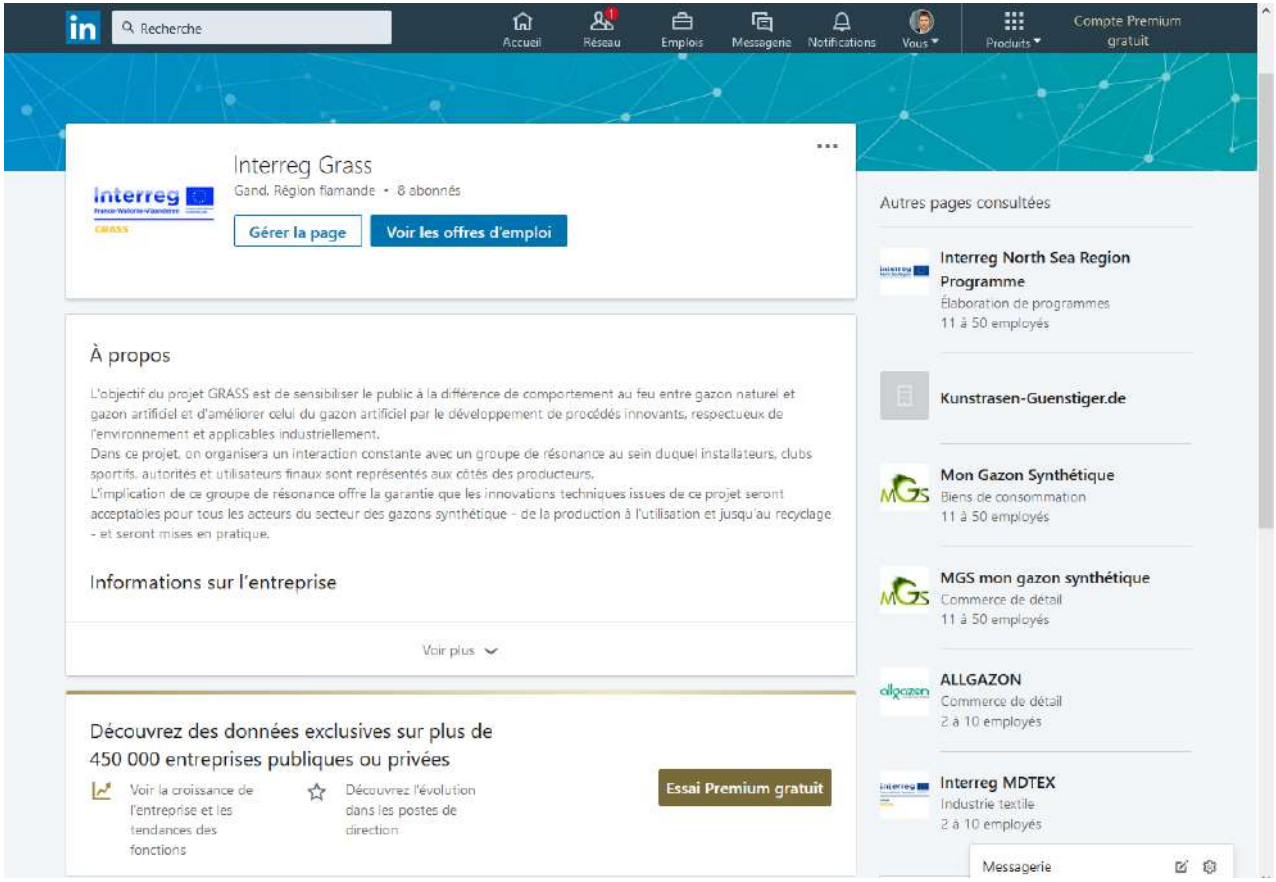
GRASS Vlamwerende kunstgrasmatten: veilig en duurzaam

Chers lecteurs, cet e-mail est la première newsletter du projet Interreg FWVL GRASS (Gazons aRtificiels Anti-feu Sûrs et durableS). Le projet GRASS a officiellement démarré le 01/04/2018, pour une durée de 4 ans.

Beste lezer, deze e-mail is de eerste nieuwsbrief van het Interreg-project GRASS (Gazons aRtificiels Anti-feu Sûrs et durableS, vrij vertaald als "Vlamwerende kunstgrasmatten: veilig en duurzaam) is officieel gestart op 01/04/2018 en loopt over 4 jaar.

Every 6 months:
-Events
-Project progress and results

Linkedin: Interreg-grass



You can follow us on linkedin!!
www.linkedin.com/company/interreg-grass/

Events

- Resonance group meetings
- Workshops
- Press conference: M18
- Final project conference: M45-M48

Dissemination

- Scientific and professional journals
- Press release for general public
- Conferences
- Brochures

Associated partners

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Infrasports
Construire pour le sport

Support project communication by spreading the word to their members

Thank you

UP-tex
Nicolas MARTIN, Project manager
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- Networking

Resonance group call for membres

- Actually 9 membres
- **Still looking for extra members**
- Governments, sport organisations, ….
- No fee to be paid !!!

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FieldTurf A Tarkett Sports Company | THE ULTIMATE SURFACE EXPERIENCE

sports & leisure GROUP

MatteX Group

Fitco grass

devan Chemicals Protecting textiles…

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- The INTERREG Program in a bird's eye view
  Pieter Lahousse (Interreg)
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  Geert De Clercq (UGent)
- Partners of the project: overview + short presentation
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  Stijn Rambour (UGent)
- Fire retardancy of materials
  Mathilde Casetta (ULille)
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Interreg
France-Wallonie-Vlaanderen
UNION EUROPÉENNE
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GRASS

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