Skywin

Aerospace cluster of Wallonia

TAKING ON A **NEW DIMENSION**

2017 ACTIVITY REPORT

skywin.be

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CHAIRMAN'S MESSAGE

From left to right: Pierre-Jean FONDU, David PRAET, Claudine BON, Pierre SONVEAUX, Jean-Jacques WESTHOF, Michel STASSART, Laurence MORTIER, Etienne POURBAIX.

Pictures taken at the Hergé Museum in Louvain-La-Neuve
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The trends observed in previous years in the civil aviation and space market were confirmed during the 2017 financial year. The order books from the main stakeholders have generally been further enhanced and emphasis is more than ever applied to the supply chain's ability to monitor rate increases within a permanent price competition context.

In the defence sector, approaches are being substantially revisited due to existing park renewal programmes, present with stronger international tensions and more volatile geo-strategic balances.

The consequences of this situation are manifold for industrial stakeholders who, more than ever, need to be attentive to their competitiveness, their ability to offer innovative solutions to current programmes, to imagine more breakthrough projects and to play a part in defence programmes, all within a Belgian context which, at the federal level, is not marked by a very proactive approach in relation to the Belgian and Walloon industries in particular.

Within this framework, Skywin multiplied its actions and initiatives in 2017 to promote the emergence of projects to account for these developments, while also adjusting its strategy in the space and drones field in order to ensure permanent support and pro-active associations, defending at the federal level the interests of the sector in the fields of defence and space, and solidifying a stronger presence in the European bodies.

Skywin has not only thus reaped visible results but also others that are often less directly measurable but equally important in the long term. In doing so the transversal dimension of some Skywin actions or projects has also been highlighted and appears to contribute to a renewed cluster dynamic.

Pierre Sonveaux
Chairman

01

SECTORS

Aeronautical
Spatial
Defence
Drones
Engineering

AERO

The Walloon sector dedicated to Civil Aviation is a historical sector stemming from the metallurgical and mechanical skills acquired in the 20th century, which is still growing in Wallonia.

It brings together more than 70% of the Belgian activity and alone supplies 5% of the Airbus range's equipment, while also being present in Bombardier and Embraer.

The Walloon aeronautics industry employs over 5,500 people (direct employment) with a turnover of over 1,350 million euros.

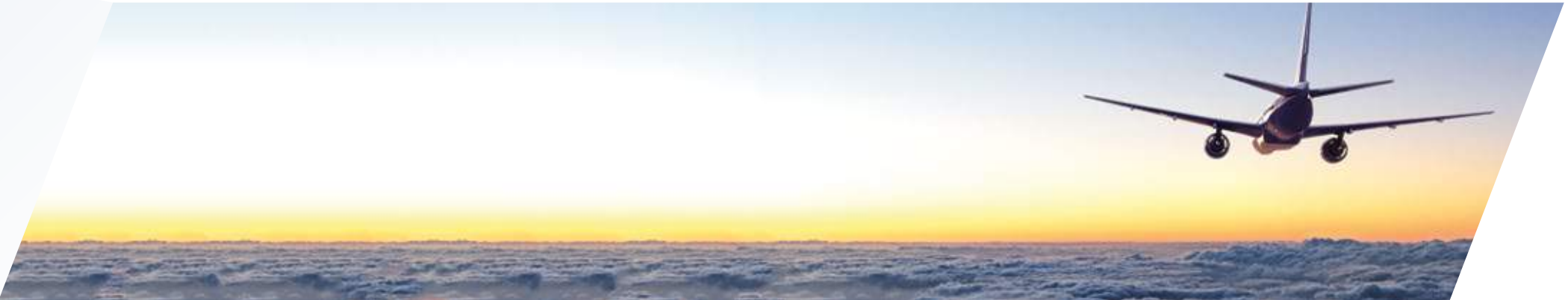
Skywin's activity is focused in the following areas:

- Structures (metal and composite)
- Aircraft engines
- Engine test benches
- Embedded systems
- Maintenance, repair and overhaul (MRO)
- Numerical simulation and computer-assisted design
- Airport services
- R&D
- Training

This sector brings together large and globally recognised companies such as:

- **Sonaca**, world leader for fixed and moveable wing leading edges;
- **Safran Aero Boosters**, world leader in low pressure compressors;
- **Sabca**, for structures and maintenance.

It also includes an extremely dynamic network of SMEs integrated into the global supply chain, sometimes under Tier1.



SPACE

Over the last 20 years, the Walloon space sector has more than tripled its turnover (350 million euros) and its number of stakeholders: 44 companies, research centres and academies from the sector are now members of Skywin. It is an important part of the Belgian sector, which occupies fifth place in terms of investments in space research in Europe.

Members' activities cover the 7 main segments of the space sector: the ground segment, launchers and spacecraft, satellites, Earth observation instruments, space equipment testing, ground satellite applications and space science .

3 major projects of the cluster for 2025:

- Support industrial, scientific and innovation research;
- Ensure the transition to Space 4.0;
- Promote the creation of a New Space sector in Wallonia.

DEFENCE

The Walloon sector dedicated to Defence and Security is a historical sector stemming from the metallurgical and mechanical skills acquired in the 20th century which is still a growing sector in Wallonia. It brings together several large companies (Belgian and International) as well as a dynamic network of SMEs that are constantly developing new skills.

Main areas of activity:

- Structures (metal and composite, armour) for military aviation and ground armour;
- Military aircraft engines (production and MRO);
- Maintenance for military aviation (airplanes and helicopters);
- Light and heavy armament;
- Air carrier (POD) or ground (turret) weapon boarding system;
- Secure communication system for mission aircraft (Awacs, maritime patrol...);
- Electronic embedded system following military and civilian qualification;
- Military drone system (sensors, secured operating system, remote control, etc.).

DRONE

The drone sector is growing rapidly in Wallonia. This is based on the following activities:

- Development of sensors and embedded applications which may be closely linked to embedded applications used in space;
- Development of all types of services for industry and the public sector;
- Design of machines;
- Design of embedded electronics;
- Training of pilots.

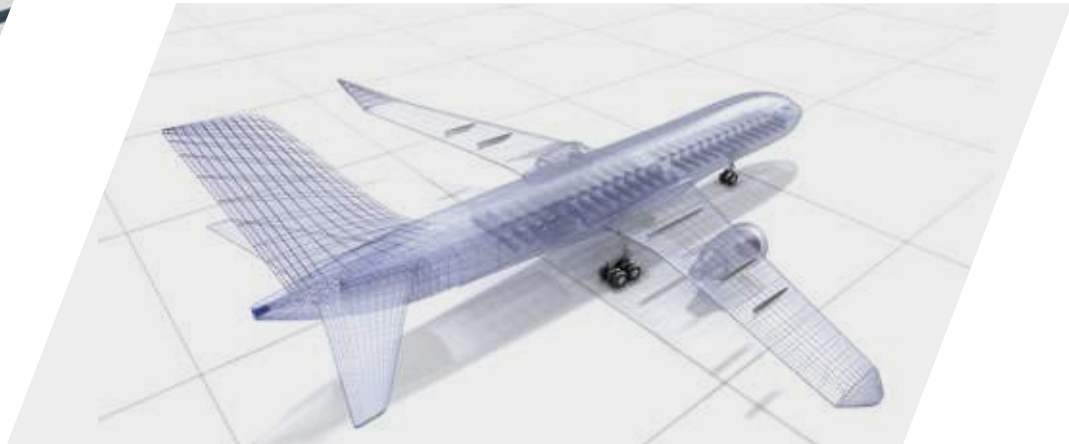
ENGINEERING

Engineering in Wallonia includes 4 types of entities:

- Digital simulation software editors. They usually have an engineering team available to support companies;
- Companies specialising in design, calculation, structure testing or development and manufacture of tools;
- Manufacturing companies that value their external skills to meet local needs;
- Research Centres which offer engineering services.

The main areas:

- Design, calculation, verification, optimisation of structural components;
- Updating of production processes;
- Fluid mechanics advice and calculations;
- Data processing.



02

STRATEGY

6 technological axes

4 action levers

Technological axes

Action levers

Research & Development:

Encourage collaborative innovation to serve the industrial competitiveness of members. The approach builds on the skills of universities and research centres, and downstreams on industrial fabric applications to strengthen and increase market access in the targeted sectors.

Investments:

To help companies (mainly SMEs) in their growth or industrial redeployment by proposing the various investment aid solutions available in Wallonia, possibly in synergy with R&D or training projects.

Training:

To offer innovative training to industrialists and job seekers: new technical skills necessary for the competitiveness of companies and soft skills needed to consolidate or confront new markets.

Internationalisation:

In collaboration with the AWEX, to promote the development and recognition of the cluster's companies in a sector naturally oriented internationally. Propose synergies with other international aerospace clusters. To improve the visibility of the sector and organise regional communities at international trade shows.

03

FIGURES

*Since 2006, the cluster has promoted the networking of aerospace sector stakeholders via **77 certified industrial projects**.*

Skywin represents **7,500 direct jobs** *and* **€1.6 billion** *of turnover.*

The number of members increased from 86 in 2006 to 144 entities at the end of 2017

70% of Belgian aeronautical companies are based in Wallonia. These Walloon companies provide an average of 5% of the components for each Airbus product.

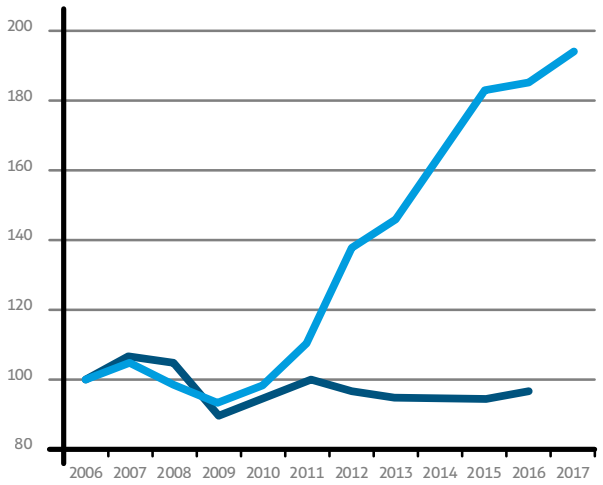
- **96** SME
- **16** Large companies
- **7** Universities and High schools
- **11** Research centres
- **2** Centres of expertise
- **12** Other members

77 labelled projects over 22 Calls (2007-2017)

48 R&D Projects	**€197** M
19 Investment Projects	**€30** M
10 Training Projects	**€15** M
Total budget:	**€242 M**

Private budget (from industry)	**€88** M
Public funding (for Research & Education)	**€70** M
Public funding (for industry)	**€84** M
Total budget:	**€242 M**

Evolution of the Added Value of the member companies and the manufacturing industry - base 100



144 ENTITIES

JOBS **7500**

90% EXPORTS

04

SERVICES

Developing technological excellence
Improving competitiveness
Increasing impact
Sustaining employment

Innovation projects:

- Skywin advises and accompanies companies in the development of collaborative projects (R&D, training and investment) until their labelling and financing.
- The projects bring together the skills of industrialists, universities and research centres.
- The ultimate goal is to create economic activity and sustainable employment.

Networking:

- The members of the cluster have access to a wide network of Walloon and international industrial, scientific and training partners.
- The cluster regularly organises thematic events to promote exchanges and partnerships (conferences, seminars, technology roundtables).
- The cluster frequently participates in its partners' events.

Competitiveness:

Various means are made available to members, for example:

- Availability of market studies from the Frost & Sullivan catalogue.
- The MACH Initiative which aims to optimise the Walloon aerospace supply chain by relying on the privileged links of the customer-supplier relationship.
- Active participation in the "Made Different" program, which aims to promote the deployment of the Industry of the Future (4.0) in Wallonia.

International:

- The cluster offers international visibility to its members and their projects through organisation or participation in various events or exhibitions (in collaboration with the AWEX).
- Skywin collaborates with NCP Wallonia to promote the involvement of companies in European projects.
- The cluster has a network of international partners (France, Canada, Germany, etc.), and is an active participant in the European Aerospace Cluster (EACP).

Training:

- With its partners, Skywin participates in the circulation and acquisition of the skills necessary for the technological development of companies.
- Skywin supports innovative training projects in order to support a specific advanced field or to ensure the development of skills related to a R&D project.

05

PROJECTS

For 2016 and 2017:

- *22 accompanied project ideas*
- *10 project deposits*
- *7 certified projects*

N Modelling & Numerical Simulation

SW_ARTEMTEC

Augmented Reality Technologies and enhanced maintenance for test cell

The purpose of the SW_ARTEMTEC research project is to implement modern and advanced tools from "Big Data" technologies and "augmented realities" for the improvement and optimisation of the maintenance of industrial sites distributed around the globe.

The objective is to create a new platform integrating, on the one hand, algorithms for 4.0 predictive maintenance, applicable to similar geographically distributed sites, and on the other hand, an intelligent help system facilitating support maintenance operations by an on-site technician with remote support from an expert. This help system can also suggest actions based on the results of the predictive maintenance algorithm.

This research will be applied to the test bench of aeronautical engines. However, this concept may be used in other cases of application of geographically distributed infrastructures requiring 4.0 predictive maintenance.

Project leader: Safran Aero Boosters

Partners: Big Bad Wolf (SME), CETIC (Research Centre), UCL (University).

C Composite Materials & Industrial Processes
N Modelling & Numerical Simulation

SW_VISCOS

Sizing by numerical simulations of composite structures subjected to impacts of foreign bodies

In the aerospace sector but also in all other sectors, composite materials are becoming more widespread. The behaviour of these materials at impact is particularly complex and poorly controlled.

The VISCO project aims to develop digital tools (Virtual Testing) in the field of impact. The methodology will be developed on low energy impacts (tool drop...) which cause almost invisible damage, but which deteriorate resistance. The feasibility on the high energy extension (bird impact...) will be explored. The project fundamentally rethinks the approach to propose a technological break in terms of prediction quality to reduce costs while increasing the potential for innovation. The objective is therefore to strengthen the Walloon competitiveness in this area. The project benefits from the support of key players (AIRBUS & AGC).

Project leader: SONACA

Partners: Isomatex and e-Xstream (companies), ULiège and UCL (Universities).

E Embedded Systems
S Space / Drones Applications & Systems

SW_NESPEL

NEwSPace Electronics

NESPEL (NEwSPace Electronics) focuses on the evolution of NewSpace in satellite-embedded electronic systems: less costly solutions, both in terms of development and manufacturing, recurring manufacturing and shortened production times.

To achieve these objectives, a widespread approach is required: new technological approaches are to be adopted, allowing in particular the detailed use of certain commercial or military components, the flexible development methodologies must be implemented, and the qualification aspects must be studied in a new way.

The Consortium is made up of 2 industrialists, Thales Alenia Space Belgium and Deltatec, which cover most of the electronics embedded in satellites and two university laboratories, CSL and CRC, the latter constituting a platform (PFI) certified by the Government's International Jury.

Project leader: Deltatec

Partners: TAS Belgium (company), CRC and CSL (Universities)

06

MEMBERS

144 members

8 new members in 2017

Membership of the Skywin Cluster is open to private or public legal entities with a registered office or operation headquarter in Wallonia and who are active in the research, development and/or application of technological products and processes in the aeronautic or spatial sector.

Members of the professional associations EWA (Walloon Aeronautics companies) and Wallonia Espace are de facto members of the Skywin cluster. Any other company or association may become an adherent member of the Skywin cluster, upon written request to the board of directors and following the agreement of the latter based on the following criteria:

- Active in the research, development and/or application of technological products and processes in the aeronautics and spatial sectors.
- Have a link with at least one of the strategic focuses defined by the cluster.
- Pay an annual fee.

A company may also become a temporary member if it is part of a consortium for a certified project.
Since 2007, the total number of members has increased from 86 to 144, including a remarkable rise in the number of SMEs.

In 2017, 4 SMEs, 2 large companies and 2 research stakeholders joined the cluster

ALX System (PME)

ALX Systems offers innovative intelligence solutions embedded by drones, via custom-built software. Different activity sectors: security, threat detection, people surveillance, border control, nature reserves, installation monitoring, etc.

LASEA (PME)

Lasea produces high precision laser solutions (machines, software), reliable and efficient for the industry.

Different applications : Ablation of thin layers, cutting, engraving, marking, drilling, structuring, texturing.

Cyclotron Resource Centre (technology platform)

The Cyclotron Resource Centre is a UCL technology platform whose activities can be divided into two categories:

- Electronic component tests with heavy ion beams, proton, neutrons and a Cobalt60 source. They are used to characterise the components by simulating a spatial environment.
- Production of Microporous Membranes.

07

INTERNATIONAL

To accompany members in their international development.

To increase the visibility of the Walloon aerospace sector.

Skywin develops and implements its internationalisation strategy in close collaboration with AWEX and regularly consults its members.

It is based on the following actions:

- Participation in the **two essential meetings** of the aerospace sector (Bourget, Farnborough).
- Actions in **more difficult to access or newer markets** (e.g. Canvassing and participation in trade fairs in Singapore, Russia, Brazil or China).
- Targeted actions in **geographically close markets** (France, Germany, Luxembourg, Poland), or traditional ones (Quebec, USA).
- Continuation of the **MACH initiative** (in partnership with Aéro Montréal).
- Participation, in collaboration with AWEX, in **economic missions** abroad.
- **Reception** in Wallonia of **foreign delegations**.
- Active participation in European networks, in particular the **EACP network** – European Aerospace Cluster Partnership.
- Participation in two **COSME projects** (Abroad and Space2ID) : Collaborations between clusters to support the internationalisation of SMEs.

Major events in 2017:

- **Drone Days** at Brussels Expo
- **JEC 2017** in Paris
- **Space Forum** in Luxembourg
- **Montreal Aeromart**
- The **Bourget** Airshow, with record participation in 2017:
  - 54 Walloon exhibitors (out of 80 Belgian entities in total)
  - Organisation of **several B2B meetings** for our members with different delegations: Quebec, Poland, GD Luxembourg, Bremen, Washington State, Alabama State, etc.
- **MAKS** salon in Moscow, with 6 Walloon exhibitors out of a total of 10 Belgian exhibitors.
- **Mission in Poland** for the spatial sector
- **Space Tech Expo** in Bremen
- **Visit of a Russian Delegation** in Wallonia

52e SALON INTERNATIONAL
DE L'AÉRONAUTIQUE ET DE L'ESPACE
PARIS LE BOURGET
19 - 25 JUIN 2017

MAKS 2017

RAMENSKOE AIRFIELD • ZHUKOVSKY • MOSCOW • RUSSIA • JULY 18–23

AEROMART
MONTRÉAL 2017

08

COMMUNICATION & EVENTS

Strategic evolution in 2017:

- *Development of a new website*
- *Visual identity enhancement*
- *Better use of social networks*

Main local events organised in 2017:

Innovate with Skywin (January 17):
Presentation and launch of calls for projects 2017, in the presence of more than 80 people. Organisation of topical discussion tables for constructive dialogue on the expectations of the member companies in terms of R&D on materials, Simulation, Space and Industry 4.0.

Big data: Bad or Relevant? (February 17):
Seminar for discovering the expertise of universities and colleges in the field of data processing. Presentation of the Big Data innovation platform.

Skywin meeting - High Schools (March 17):
Bilateral meeting between the operational unit of the Skywin cluster and representatives of 6 Francophone tertiary colleges open to collaborations with the aerospace sector.

New Aluminium Alloys (November 17):
These alloys are widely used in aeronautics and are competing with composites. This seminar assembled more than 40 people to listen to the speakers: 2 International producers, 2 companies and 2 Walloon research units.

Industry 4.0 (December 17): Technological Table on Augmented Reality in the manufacturing industry. More than 60 people were able to listen and converse with Walloon and international experts. They participated actively in a very lively and constructive debate on the identified technological locks.

Earth Observation: The Skywin-driven working group met 3 times in 2017, with more than 30 participants at each meeting.
Topics covered: Forestry, Agriculture and Pleiades satellites images.

Beyond its own organisations, Skywin regularly participates in events proposed by its Walloon partners (Digital Wallonia, InnovaTech, competition clusters, etc.).
In 2017, Skywin participated specifically in several events at the invitation of several companies candidates to replace the Belgian F16.

2017 figures

65 publications press and audiovisual appearances

67 news published by electronic means, via 16 newsletters

966 newsletter subscribers

18500 website visits

395 people present at seminars organised by the cluster

09

PARTNERS

Main Walloon partners

Wallonie

Wallonia.be
EXPORT
INVESTMENT

Wallonia Clusters

Wallonie recherche SPW

digital wallonia .be

BELGIAN AEROSPACE

EWA

WALLONIE ESPACE

ncp Wallonie

LiEU

INNOVATECH

PI CARRÉ
PROPRIÉTÉ INTELLECTUELLE

Main international partners

AÉRO MONTRÉAL

CRIAQ
CONSORTIUM DE RECHERCHE ET D'INNOVATION EN AÉROSPATIALE AU QUÉBEC

aerospace valley

ASTech Paris Region

LUXINNOVATION
TRUSTED PARTNER FOR BUSINESS

EACP

10

GOVERNANCE & OPERATIONAL CELL

Operational unit

Etienne POURBAIX
Director
etienne.pourbaix@skywin.be

Executive Board

P. Sonveaux	*Chairman*	SONACA	Industrial
J. Ph. Ponthot	*Vice-president*	ULiège	University
E. Vermeiren	*Board member*	Thales Alenia Space Belgium	Industrial
T. Jongen	*Board member*	S.A.B.C.A.	Industrial
V. Duprez	*Board member*	Safran Aero Boosters	Industrial
A. Quévrin	*Board member*	Thales Belgium	Industrial
M. Tilmant	*Board member*	Siemens Samtech	Industrial
T. du Pre Werson	*Board member*	Spacebel	Industrial (SME)
P. Gilson	*Board member*	AMOS	Industrial (SME)
L. Henkes	*Board member*	Capaul	Industrial (SME)
A. Bertin	*Board member*	EWA	Association
P. Bury	*Board member*	Wallonia Space	Association
O. Verlinden	*Board member*	UMons	University
P. Lambin	*Board member*	UNamur	University
G. Winckelmans	*Board member*	UCL	University
P. Hendrick	*Board member*	ULB	University
M. Milecan	*Board member*	Cenaéro	Research Center
J.-J. Westhof	*Secretary General*	Skywin	Cluster
F. Dobbelstein	*Observer*	Government Representative	Walloon Region
R. Montfort	*Observer*	DGO6-Research	Walloon Region
A. Lermusieaux	*Observer*	AWEX	Walloon Region
A. Cecconello	*Observer*	WAN	Training center

Steering committee

P. Sonveaux	*CA Chairman*	Skywin	Cluster
J. Ph. Ponthot	*CA Vice-president*	Walloon Universities	University
H. Langer	*Member*	SONACA	GE
J. D'Agruma	*Member*	S.A.B.C.A.	GE
V. Duprez	*Member*	Safran Aero Boosters	GE
T. du Pre Werson	*Member*	Spacebel	SME
M. Milecan	*Member*	Cenaero	Research Center
J.-J. Westhof	*Member*	Secretary General	Cluster
E. Pourbaix	*Member*	Operational Cell Director	Cluster
C. Bon	*Participant*	Dir. Deputy Cel. Op. Innovation	Cluster
P.-J. Fondu	*Participant*	Cel. Project Manager Op.	Cluster
M. Stassart	*Participant*	Dir. Deputy Cel. Op. Spatial	Cluster
D. Praet	*Participant*	Dir. Deputy Cel. Op. Internationalisation	Cluster

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Skywin

Aerospace cluster of Wallonia

Skywin is the Walloon Aerospace cluster (Belgium) consisting of an association of companies, research organisations and training centres engaged in public-private partnerships and in the implementation of innovative collaborative projects.

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