

TAKING ON A NEW DIMENSION

2021 ACTIVITY REPORT



TABLE OF CONTENTS

2

ABETAIRBUS

Chairman's message	4
Sectors	6
Technology (DAS)	10
Missions	12
Figures	14
Projects	16
Members	18
International	20
Communication & Events	22
Partners	24
Governance & Operational Team	26

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CHAIRMAN'S MESSAGE

Let's not stop at bemoaning one crisis after another: the climate, the pandemic, Ukraine, which are harming humanity and affecting our business, our markets and our supply chains.

Let's look ahead.

Fortunately, the Belgian regional and federal authorities have helped in the short and medium term. Following on from this, the European Recovery and Resilience Plan is paving the way for the long term, thereby laying out the paths of the future. Beyond the real potential for commercial development, two more societal, albeit highly industrial, issues will impact our ecosystem: decarbonization and European sovereignty.

Each of our sectors is brimming with exciting prospects:

- Air transport where, in addition to the conventional incremental improvements, electricity, hydrogen and sustainable fuels are emerging as the tools of decarbonization. While we await new breakthroughs...
- Space, with new space, without neglecting classic space, is bound up with that desire for sovereignty.

- Drones, where we're still in the early stages.
- Defense, where a firm trend was emerging, while respecting alliances, in favour of European sovereignty. The horrors of the Ukrainian crisis are today exacerbating this imperative and urgent need.

These areas offer us great opportunities, some of which are bordering on duties. More than ever, research and innovation have a role to play, mainly in a collaborative approach between the industry and the research bodies.

Skywin, on a mission expanded and developed hand in hand with the Walloon government, is committed to supporting all players in the sector in the face of these important challenges.

Jacques Smal Chairman



01

SECTORS

6

Aeronautics Space Drones Defense

For the Skywin cluster, the year 2021 was marked by a redefinition of the general strategy of the cluster, following a collaborative process, henceforth structured around 4 economic sectors, 5 new technology areas (DAS for "Domaines d'Actions Stratégiques") and 5 missions defined in the future Objectives and Means contract with the Walloon government.



MISSIONS

- Support for the regional strategy
- Innovation
- Economic growth
- Talent development
- Internationalisation



TECHNOLOGAL AREAS - DAS

- Structures, propulsion and flying subsystems
- Innovative materials and processes
- On-board and communicating systems
- Data economics, artificial intelligence
- Simulation, modelling and test facilities



SECTORS

- Aeronautics
- Space
- Drones
- Defense

For the **Aeronautics sector**, strongly impacted by the Covid crisis, several actions have been undertaken, such as :

- assistance with operational excellence for SMEs,
- in collaboration with the Administration, monitoring of the WINGS structuring program including the preparation of phase 2,
- the development in partnership with Awex of a digital showcase dedicated to the Walloon aeronautics sector - www.wallonia.aero,
- a partnership agreement with the Tweed Cluster was signed by Skywin, covering energy-related aspects of carbon-free mobility.

For the **Space sector**, Skywin has produced, with the assistance of an international consultant, a technological roadmap for the Walloon space sector, particularly highlighting Earth Observation and Launchers.

For the **Drone sector**, the collaboration with the ID2Move incubator continues, as well as the partnership within the European consortium Prestigious, aiming to establish the Inspection and Security drone value-chains, while intensifying the collaboration of drone-related clusters in Europe, strengthening competitiveness and sustainability of the drone SMEs in Europe.

For the **Defense sector**, in addition to the dissemination of the technological priorities defined by the sector, a brochure listing all the Walloon players and the collaborative projects of the Skywin and MecaTech clusters has been published.



AERONAUTICS

The Walloon sector dedicated to Civil Aviation is a historical sector resulting from the metallurgical and mechanical skills acquired in the 20th century and is still growing in Wallonia. It brings together more than 70% of the Belgian activity and supplies alone 5% of the equipment in the Airbus range, while also being present at Boeing.

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

The activity is concentrated around the following areas:

- Structures (metal and composite);
- Aircraft engines ;
- Engine test benches ;
- Embedded systems ;
- Maintenance and repair (MRO);
- Assisted simulation and design ;
- Airport services ;
- R&D;
- Training.

This sector brings together large companies recognized worldwide such as:

- Sonaca, world leader for 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 that integrate into the global supply chain, sometimes as Tier 1.



SPACE

For more than 50 years, the Walloon space sector has been an important part of the Belgian sector, which ranks 5th in Europe in terms of investment both in research and in the space industry.

The Walloon space sector includes 31 active players and nearly 40 other players partially participating in the development of the sector. Despite the health crisis, this sector maintained a turnover in 2021 comparable to that of 2018, namely 340 million euros, while providing more than 2,000 direct jobs in Wallonia.

Their activities cover the 7 main segments of the space sector:

- The ground segment ;
- Launchers and space vehicles ;
- Satellites ;
- Instruments (for Earth observation) ;
- Testing of space equipment ;
- Ground-based satellite applications ;
- Space science which covers scientific missions and exploration.

As part of its missions, the Skywin cluster launched a major analysis in 2021 to identify sectors with "high economic and scientific potential" in the Walloon space sector. At the end of this study, 2 sectors will be particularly supported: the Earth Observation sector, both on its upstream segment (development and production of SmallSats in series for Earth Observation constellations) and on its downstream segment (processing and geospatial data analysis and related cybersecurity services) and the Launchers sector, including reusable launchers.





DRONES

The drone sector is strongly growing in Wallonia. It mainly revolves around the following activities:

- Development of on-board applications, which can be closely linked to on-board applications in space ;
- Development of services of all types for industry and the public sector ;
- Machine design for various applications ;
- Design of on-board electronics ;
- Autonomous flight ;
- Pilot training ;
- Diversified testing facilities.



DEFENSE

The Walloon sector devoted to Defense and Security is a historical sector resulting from the metallurgical and mechanical skills acquired in the 20th century. It is still a growing sector in Wallonia.

It brings together several large companies (Belgian and international) as well as an extremely dynamic network of SMEs that are constantly developing new skills.

The Defense and Security activity focuses on the following areas:

- Structures (metal and composite, shielding) for military aviation and land armored vehicles ;
- Military aircraft engines (production and MRO);
- Maintenance for military aviation (planes and helicopters);
- Weaponry ;
- Weapon boarding system on-board air carrier (pod) or ground (turret),
- Secure communication system for military mission aircraft (Awacs, maritime patrol, etc.);
- Embedded electronic system according to military and civil qualification ;
- Military drone system (sensors, secure operating system, remote control, etc.).





TECHNOLOGY (DAS)

Structures, propulsion and flying subsystems

- Innovative materials and processes
- Embedded and communicating systems
- Data economics and artificial intelligence
- Simulation, modelling and test facilities





Structures, propulsion and flying subsystems

This theme covers all structural elements and their integration into aircraft, drones, propulsion systems, launchers and satellites, at all stages of their life cycle. It encompasses the adaptation of existing systems and subsystems to take account of the issue of environmental transition.

In the longer term, this theme goes beyond such adaptation by gradually integrating the energies of tomorrow (H2, synthetic fuels, hybridisation, electrification, etc.) which are due to profoundly transform the flying systems and subsystems of the future.

Innovative materials and processes

This covers various aspects of flying systems and subsystems (aircraft, drones, launchers, satellites):

- materials (intelligent materials, composites, metals), manufacturing and associated special processes (additive manufacturing, advanced composite processes, process equipment,...);
- mechanical components and their assembly;
- surface treatments and coatings.

The theme also covers the sectorial specific qualification/certification aspects as well as the environmental transition, integrating the principles of the circular economy. It is supported by the solutions developed in the "data management and AI" theme, in particular to integrate with the establishment of an industry of the future.



Embedded and communicating systems

The third theme covers systems embedded in flying systems and subsystems (transducers, sensors, communication systems, energy management, human/machine interfaces) to meet the main challenges of the following four pillars:

- autonomy supported by on-board artificial intelligence;
- electrification, with the challenge of increasing power and voltage;
- continuous connectivity is a major issue on land, at sea, in the air and in space;
- cyber security to provide safe and secure platforms.

Embedded systems contribute to the challenges of digital continuity, massive data processing, systems of systems, and miniaturisation in all areas such as drones and satellites.



Data economics and artificial intelligence

This theme covers methods and tools for data processing and mining. Firstly, it covers the data economy and the specific integration of artificial intelligence. Second, it includes services related to data from earth observation (space, drones, etc.) and from test and maintenance benches. Finally, it supports the development of the industry of the future (Industry 4.0).

As a matter of fact, this theme is a provider of solutions to the other themes, such as design, simulation, production, operation, maintenance (especially predictive) and it provides the solution for everything related to the themes of materials / processes and structure / propulsion / subsystems.



Simulation, modelling and test facilities

This last theme brings together :

- the development of agile and secure design algorithms and software;
- the development and operation of numerical simulation methods and numerical twinning techniques;
- facilities for ground tests and physical simulations (NDT, engine testbeds, autonomous systems, aerodynamics, vibration, radiation, extreme conditions, etc.).

It provides innovative solutions for the four previous themes by reducing the time to market for the introduction of new differentiating, reliable and certified technologies in flying systems and subsystems.

MISSIONS

03

Regional strategy support Innovation projects Networking and Economic dynamics Talent Development International





Regional strategy support

- Skywin leads 3 thematic working groups (Civil aeronautics, Defense and Space) aiming to anticipate mid-term technical and business evolutions.
- Skywin develops strategic and technological roadmaps for its sectors.
- The cluster collaborates in co-working or incubation initiatives such as A6K or ID2Move.
- Skywin supports and pilots with the administration the Walloon structuring project WINGS dedicated to future carbon-free aviation.
- Skywin participates in the European projects Cosme PRESTIGIOUS (Drone value chain) and Interreg ET2SMEs (Einstein telescope).

Innovation projects

- Skywin provides a technology watch to enable its members to anticipate future technological challenges.
- Skywin advises and accompanies companies in the development of collaborative projects (R&D, training and investment) up to their labelling and financing.
- The projects bring together the skills of industrialists, universities and research centers.
- Skywin supports the management of the labelized collaborative projects and provides assistance in the economic valorization of these projects.
- The ultimate goal is to create economic activity and sustainable employment.



Networking and Economic dynamics

- The members of the cluster have access to a wide network of Walloon and international industrial, scientific and training partners.
- Skywin regularly organises thematic events to promote exchanges and partnerships (conferences, seminars, technology roundtables).
- Skywin frequently takes part in its partners' events.
- Skywin advises and accompanies companies in the development of investment projects up to their labelling and financing.
 Skywin participates in
 - Skywin participates in the scaling-up program for Walloon SMEs in collaboration with Sowalfin and WSL.



Talent development

- 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.



International

- The cluster offers international visibility to its members and their projects through the organization or participation in various events or exhibitions (in collaboration with 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) and the European Network for Defense-related Regions (ENDR).



FIGURES

Since 2006, 91 certified industrial projects promoted

End 2021, Skywin represents **7,500 jobs** and **€2 billion of turnover**

The number of members increased from 86 in 2006 to 148 entities at the end of 2021

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

820	101	SME
	16	Large companies
	9	Universities and University Colleges
Q	12	Research centres
	2	Centres of expertise
(+)	8	Other members

91 labelled projects over 33 Calls (2007-2021)

	€ 228 M
	€ 30 M
	€ 15 M
Total budget:	€273 M

Private budget (from industry)	€ 98 M
	€ 77 M
— Public funding (for industry)	€ 98 M
Total budget:	€273 M



148





PROJECTS

05

- For 2021:
- 8 accompanied project ideas
- 8 project deposits
- 6 certified projects

SW_SPAGHYTI

SPace for AGriculture with Hyperspectral Teledetection & Innovation

Development of smart services for farmers based on earth observation hyperspectral data

Project Leader : ScanWorld (SME) Partners : AMOS, Deltatec (SME's), CRA-W (Research Center), UCLouvain (University) Associated cluster : Walgralim



SW_ELOISE

Engine LOop heat pipe In Severe Environment

Integration of loop heat pipe technology for thermal management of aeronautic subsystems

Project leader: Calyos (SME)

AERO

Funded Partners: Deltatec, QSquare, Open Engineering, V2i (SME's), Cenaero, Materia Nova (Research Center), ULB (University)

Supporting partners : Safran Aero Boosters, Safran Electronics & Defense, Hutchinson, Liebherr Aerospace (Large Companies)





SW_COMP4++

Composites 4++

Industry 4.0 optimization for aeronautic composites pieces manufacturing process

Project leader: Coexpair (SME)

Partners: Sobelcomp, MTU (SME's), ULiège, UMons (Universities)



SW_CAFCA

Auto-calibrated Sensors on multi-core Fibers for Embedded Applications

Development of new multi-core optical fibers and associated sensors for monitoring of structure deformation

Project leader: JDC Innovation (SME)

Walloon Partners: Open Engineering (SME), Multitel (Research Center)

French Partners: IDIL Fibres Optiques, Pixel sur mer (SME's), Photonics Bretagne (Research Center)







MEMBERS

06

148 members6 new members in 20205 new members in 2021

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 within one of the 4 sectors covered by Skywin.
- 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 148 including a remarkable rise in the number of SME's.

In 2020-2021, 9 SME's, 1 large company and 1 University College joined the cluster.

New members in 2021

SME



www.beblue-cryotech.eu

EUTRALEX

AEROSPACE CONSULTING

www.pecherandpartners.be

PECHER& PARTNERS



www.calyos-tm.com

www.genitek.be

SofeSky www.safesky.app

University College



www.dynali.com



www.mpp.be



www.scanworld.be

Large Company



www.bollore-logistics.com



www.henallux.be

INTERNATIONAL

To accompany members in their international development To increase the visibility of the Walloon aerospace sector



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

Globally, it is based on the following actions:

- Participation in the essential events of the aeronautics and space sector.
- Actions in more difficult to access or newer markets (e.g. participation and prospection to trade fairs in Dubaï, Brazil or China).
- Targeted actions in geographically close markets (France, Germany, Luxembourg, Poland, Denmark Norway), or more traditional ones (Quebec, USA).
- Participation to economic missions abroad, in collaboration with AWEX.
- Welcoming foreign delegations in Wallonia.
- Active participation in European networks, in particular the EACP network – European Aerospace Cluster Partnership, the NEREUS network - Network of European Regions Using Space technologies and the ENDR network
 European Network for Defense-related Regions.

The impact of the Covid-19 pandemic on the sectors covered by the Skywin was particularly significant throughout 2020 and 2021.

Some international events that were to be held in 2020 and 2021 have either been canceled, postponed or transformed into a digital event.

This health crisis therefore had a direct impact on the overall strategy and activities of Skywin on the implementation of its internationalization strategy.

Curent participation in the international projects:

- COSME project "PRESTIGIOUS" euroPean stRatEgic cluSter parTnershlp to Go InternatiOnal for Uav Smes.
- Interreg Project "ET2SMEs EINSTEIN".



Participation in major events in 2020:

- Singapore Airshow Belgian participation canceled
- Paris Space Week
- JEC 2020 in Paris event canceled
- Forum Innovation Aérospatial, Montréal transformed into a digital event
- ILA Berlin transformed into a digital event
- Farnborough Airshow transformed into a digital event
- IAC Dubaï event postponed
- Aéromart Toulouse transformed into a digital event

Participation in major events in 2021:

- Hannover Messe transformed into a digital event
- EACP-EEN Virtual B2B Event
- International Paris Air Show Le Bourget event canceled
- IAC Dubaï
- Dubaï Airshow
- Space Tech Expo Bremen
- UAV Airshow Bordeaux

The number of international events having been significantly reduced, other activities related to international and communication have been set up via a digital marketing tools to continue to promote the technological and industrial skills of the Walloon aerospace sector. A series of webinars have therefore been organised:

- Webinar "les carrefours de l'IA"
- Cross-presentation webinars with other European clusters (excluding EACP) Aerowest Development (F – private cluster), Aerospace Cluster Auvergne – Rhone Alpes (F), Ester Technopole (F), European pole of ceramics (F), Pole Alpha RLH (W)
- Series of webinars "Innovate Together", MecaTech, Materalia (F) and LuxInnovation (GD Lux)

COMMUNICATION & EVENTS

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Entrance North

Main local events organized in 2020-2021:

Innovate Together

Skywin partnered with Materalia (FR), Luxinnovation (LUX), MecaTech (BE), with the support of NCP (BE, FR) to organize a series of webinars regarding Recycling and Circular Economy, Circular economy & Energy transition in Industry, Advanced and sustainable by-design materials, and Digitalization and human-robot collaboration.

European Defense Fund

In the summer of 2021, the Skywin and MecaTech clusters together with NCP, the Walloon Administration, BeMod and DG DEFIS (UE) presented the European Defense Fund to over 250 participants. The "Defense Industry – Innovations, projects & players" brochure including Skywin and MecaTech members, was released during the event.

Boost Aero & Space

LiEU (university/industry interfaces) and Skywin hosted a day of prospective and collaborative creativity for 70 participants from academia and industry. The innovative approach had the academic representatives pitch their potential research ideas to the panel of Aero, Space, and Drone industrials, before they all grouped for creative workshops to identify the best leads for the future.



Earth Observation working group

The Skywin-driven working group met 14 times since 2015.

Working groups "Civil aeronautics" and "Defense" The objectives of these 3 WG is to identify the strategic priorities in the aeronautics and space sectors and to strengthen the Defense industrial sector in Wallonia. The Defense WG is managed in collaboration with MecaTech.

Cercle Skywin

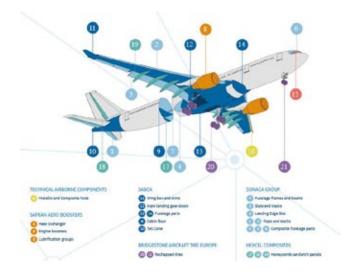
Forum dedicated to Skywin's corporate members aiming to meet in an informal setting, to share experiences, to discover opportunities for collaboration and to express expectations about Skywin action.

Our guest speakers were Stephane Cueille, R&T Director of Safran and Chairman of Clean Sky (2020) and Thomas Dermine, State Secretary for Economic Recovery and Strategic Investments, in charge of Science Policy (2021).

wallonia.aero

In 2021, Skywin launched its interactive digital platform www.wallonia.aero presenting the players of the Walloon aeronautics industry, and boosted its social network visibility through its new Linkedin page, soon gathering over 1000 followers.

Beyond its own organisations, Skywin regularly participates in events proposed by its Walloon partners (Digital Wallonia, A6K, ID2Move, other clusters, etc.).



2020 & 2021 figures

80 publications press and audiovisual appearances

200 news published by electronic means, via 20 newsletters

1.100 newsletter subscribers

80.000 website visits



PARTNERS

Main Walloon partners

Main international partners

AEROX

CRIAQ CONSORTIUM DE RECHERCHE ET D'INNOVATION EN AÉROSPATIALE

aerospace

valley

MONTREAL



Wallonie recherche







SPW









SYNHERA

WALLONIE ESPACE











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STech







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EUROPEAN NETWORK OF DEFENCE-RELATED REGIONS



GOVERNANCE & OPERATIONAL TEAM

Operational unit (2021)

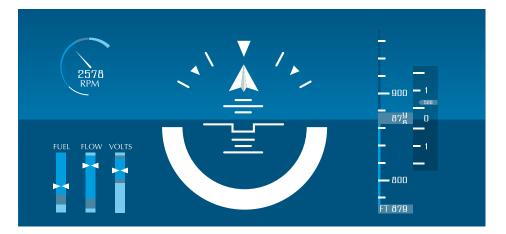


Etienne POURBAIX Director etienne.pourbaix@skywin.be

Executive Board (2021-12-31)

J. SMAL	Chairman	Safran Aero Boosters	Industrial
J-PH. PONTHOT	Vice President	ULiège	University
T. JONGEN	Board member	Sabca	Industrial
N. VANHILLE	Board member	SONACA	Industrial
P. BURY	Board member	Thales Alenia Space Belgium	Industrial
P. VAN HELLEPUTTE	Board member	Thales Belgium	Industrial
M. TILMANT	Board member	GD Tech	Industrial (SME)
T. DU PRÉ-WERSON	Board member	Spacebel	Industrial (SME)
P. GILSON	Board member	AMOS	Industrial (SME)
A. BERTIN	Board member	Coexpair	Industrial (SME)
D. SIMON	Board member	EWA	Association
L. BARREMAECKER	Board member	Wallonie Espace	Association
O. VERLINDEN	Board member	UMons	University
A-S. LIBERT	Board member	UNamur	University
G. WINCKELMANS	Board member	UCLouvain	University
P. HENDRICK	Board member	ULB	University
M. MILECAN	Board member	Wal-Tech/CenAero	Research Center
J-J. WESTHOF	General secretary	secretary Skywin C	Cluster
V. JEUKENS	Observer	Governement Representative	Walloon Region
B. VAN CALSTER	Observer	SPW-EER	Walloon Region
J-P. CHISOGNE	Observer	AWEX	Walloon Region
A. CECCONELLO	Observer	WAN	Training center

Steering committee (2	Steering committee (2021-12-31)				
J. SMAL	Chairman	Skywin	Cluster		
J-PH. PONTHOT	Vice President	Walloon Universities	University		
N. VANHILLE	Member	SONACA	GE		
M. DUBOIS	Member	SABCA	GE		
V. DUPREZ	Member	Safran Aero Boosters	GE		
T. DU PRÉ-WERSON	Member	Spacebel	PME		
M. MILECAN	Member	Wal-Tech/CenAero	CRA		
J-J. WESTHOF	Member	Skywin	Cluster		
E. POURBAIX	Member	Skywin	Cluster		
P-J. FONDU	Participant	Skywin	Cluster		
A. BIÉVELEZ	Participant	Skywin	Cluster		
S. GUALANDRIS	Participant	Skywin	Cluster		
M. STASSART	Participant	Skywin	Cluster		
A. GRANDJEAN	Participant	Skywin	Cluster		





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Stéphane GUALANDRIS

Project Manager

General Secretary



Jean-Jacques WESTHOF Laurence MORTIER Secretary $stephane.gualandris@skywin.be \ jean-jacques.westhof@skywin.be \ laurence.mortier@skywin.be \ laurenc$



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.



