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### CHAIRMAN'S MESSAGE

### 2024, SOVEREIGNTY, INNOVATION AND RESILIENCE

Aeronautics is an exciting sector. Born of a thousand-year-old dream, it is reinventing itself today, reducing its carbon footprint in order to guarantee its long-term future, maintain its openness to the world and enable future generations to meet and get to know each other.

Reducing carbon emissions is a major issue today, and an exciting challenge for a whole generation of engineers, operators and technicians. It is a technological challenge that calls for breakthroughs and advances, the likes of which we have never seen, to achieve new goals.

2024 will be a year of political renewal, a year in which our entire sector hopes for

guarantees of stability and continued support for innovation. It will also be a year of exciting milestones, such as the new fighter jet of the future, the F35, and the first Ariane 6 launch.

I firmly believe that by maintaining a high level of innovation, unwavering excellence and cohesion among Walloon industrialists, we will be able to maintain our position in this industry of giants. The ambition of Skywin and its members is to support, encourage innovation and contribute to the long-term future of Wallonia's aeronautics and aerospace industries.

François Lepot Chairman



### **SKYWIN IN A NUTSHELL**

The year 2023 has been, for the sectors of the Skywin cluster, a year of post-Covid recovery, with high growth rates compared to the Covid years leading sometimes to operational difficulties, both in terms of available personnel and means of production.

For the Skywin division, the year 2023 have been mainly marked by

- · the arrival in September of a new President, François Lepot (CEO of Safran Aero Boosters),
- · the continuity of the strategy around
  - 4 economic sectors.
  - 5 technological areas (DAS for "Domaines d'Actions Stratégiques")
  - 5 missions defined in the Objectives and Means contract with the Walloon government.
- the delivery to the Walloon government of **4 strategic and technological roadmaps** covering the aeronautics, space, drone and defense sectors, creating a real dynamic of reflection within members on the future of these sectors,
- the support for Wallonia's Smart Specialization Strategy (\$3)
- the labeling of 4 new collaborative innovation projects as well as the continued support of the cluster with the Walloon administration in monitoring the WINGS project dedicated to future low-carbon aviation,
- the participation with AWEX to several **international major events** such as the Paris Air Show in June or the Space Tech Expo in Bremen in November



#### **MISSIONS**

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



#### **TECHNOLOGICAL AREAS - DAS**

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



#### **SECTORS**

- Aeronautics
- Space
- Drones
- Defense





### **AERONAUTICS**

The Walloon sector dedicated to Civil Aviation is a historical ecosystem resulting from the mechanical skills acquired in the 20th century. Still growing, our regional industry brings together more than 70% of the Belgian activity and supplies up to 6% of the equipment in the Airbus range, while also being present at Boeing and Embraer.

The Walloon aeronautical community employs directly more than 6,000 people, with a turnover of over 1,5 billion euros.

In 2023, driven by the renewal of fleets worldwide, the level of activity returned to that before Covid. The priority is now to develop new brands to progress towards the net zero carbon objective in 2050 that the sector has included at the top of its global roadmap.

Our region is resolutely committed to this approach.



#### 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. (350 MEuros/y).

The Walloon space sector includes 40 players who generates a turnover in 2023 of 300 MEuros and provides more than 2000 direct jobs. The activities of these actors cover the 7 main segments of the space sector: Preparation for space, Launchers, Ground segment, Satellites in EO and Satcom, Cybersecurity and Exploration.

Skywin's "2025 space strategy" has focused on 2 industrial and research sectors in which it can operate on an international scale: Earth Observation (upstream and downstream) and launchers.

Regional support has been provided in 2023 to complement important industrial investments in these two sectors.

At the same time, Research Center and Universities have joined forces to create the JRI4Space in order to jointly develop these fields by pooling equipment and supporting 30 theses.

The results of these industrial and scientific efforts are expected by 2025 to place our region among the most active European Regions in the field of New Space.



### **DRONES**

Business picked-up for most private drone actors in Wallonia, especially in the indoor and energy transportation related applications.

The war in Ukraine has brought attention to the Defense and dual-use application in the UAV industry. High-altitude applications gain traction, supported by an experienced Earth Observation community, and robust Aeronautics actors considering diversification.

Regulators are gearing up to facilitate the local drone operations, delivering the first Light Operator UAS Certificate to a major Aeronautics actor, and PDRAs allowing for smooth commercial operations.

Custom embedded electronics & AI, C-UAV, cybersecurity, vehicle structure, and diversified test facilities are other key parts of the blooming UAV sector in Wallonia.



#### **DEFENCE**

The Walloon sector devoted to Defence and Security is a historical sector resulting from the metallurgical and mechanical skills acquired in the 20th century.

This sector is still growing and brings together several large companies as well as an extremely dynamic network of SMEs that are constantly developing new skills in the following areas:

- Unmanned Intelligent Autonomous Systems (UIAS)
- Information Processing/Data management, Communication & Embedded intelligent systems
- Ammunition Systems/Effectors and integration
- Structures, materials (including energetic) and protection éléments
- Life cycle support & services
- Advanced Air Vehicles, ContromSustems and Propulsion



### Aeronautic Roadmap

Drawn up by a working group bringing together representatives of all actors of the Walloon aeronautics sector, the Aero Roadmap aims to identify the strategic paths to be followed in Wallonia to integrate our industry and our research ecosystem into the great challenge of the global decarbonization.

This dense and substantiated document emphasizes the need to maintain a huge research effort enabling Wallonia to stay a reliable partner worldwide despite the unprecedented changes that are coming, and thus to consolidate a high-tech sector that provides quality jobs.

Paths are mapped out, recommendations are given, an action plan is drawn up. We therefore urge you to discover and exploit it.

The Skywin cluster is already working on this.



### Space Roadmap

2023 was the year of consolidation for the space roadmap. The industrial projects launched in 2022, focusing on the 2 strategic sectors (EO and Reusable Launchers), have reached cruising speed. The 2nd objective concerning the structuring of space research for the benefit of the industry, has taken shape with the creation of the "Joint Research Institute 4 Space", bringing together the skills of all Walloon Universities and Research Centers. The 3rd objective concerned the transversal integration of cybersecurity in the space sector led to the creation of a permanent WG between these 2 worlds. The 4th recommendation was to back this roadmap with external fundings. An MoU was signed with the EIB in 2023. Finally, in the wake of international tensions, we initiate by the end of 2023 a new roadmap addressing "Space4Defense".





### **TECHNOLOGICAL AND STRATEGIC ROADMAPS**



### **Defence Roadmap**

Developed by the Skywin and MecaTech clusters, in collaboration with the industry, the Defence roadmap aims to:

- Define strategic technological priorities for Wallonia in the field of defence in an international context characterized by strong competition, but where Wallonia is already significantly present.
- Build, within these technological priorities, proactive and effective support to European institutions and federal and regional authorities, as well as potential industrial or academic partners considered strategic.
- Establish partnerships between research centres, industry and the Ministry of Defence to enable industry to contribute to the development, supply and maintenance of advanced equipment.



### **Drone Roadmap**

The drone sector of Wallonia will be consolidating in the coming years. The current UAV commercial actors rose from isolated – yet successful - techno-push initiatives, delivering state-of-the-art solutions to the entertainment, energy-transport and security industries, as well as custom solutions provided by actors diversifying from the Aerospace industry.

Building on the historical technological expertise in Wallonia, the UAV value chain is covered from R&D to OEMs, in segments like embedded electronics, optics, image generation and analysis, simulation, flight control, structure (material and shape), ...

Skywin will contribute to the consolidation of this ecosystem by initiating a collective working group and increasing the visibility and potential of the regional UAV and payload expertise.









### 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 (H<sub>2</sub>, synthetic fuels, hybridisation, electrification, etc.)



# 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.



### **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.



# 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.



### 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.).













# Regional strategy support

- Skywin develops in 2023 strategic and technological roadmaps for 3 sectors (Civil aeronautics, Defence and Drone), the Space roadmaps was achieved in 2021.
- Skywin leads 3 thematic working groups (Civil aeronautics, Defence and Space) aiming to anticipate mid-term technical and business evolutions.
- Skywin supports and pilots with the administration the Walloon structuring project WINGS dedicated to future carbon-free aviation.
- The cluster collaborates in co-working or incubation initiatives such as A6K or ID2Move.

### **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, financing and valorization.
- The projects bring together the skills of industrialists, universities and research centers.
- 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 participates in the scale-up program for Walloon SMEs in partnership with WE (Wallonie Entreprendre) and WSL.
- Skywin regularly organises thematic events to promote exchanges and partnerships (conferences, seminars, technology roundtables).
- Skywin advises and accompanies companies in the development of investment projects.

### **Talent development**

- With its partners, Skywin participates in the circulation and acquisition of the skills necessary for the technological development of companies.
- Skywin wants to support innovative training projects in order to support a specific advanced field or to ensure the development of skills related to a R&D project but this action is limited due to budget issues at regional level.

### International

- The cluster offers international visibility to the 4 sectors (Civil aeronautics, Space, Drone and Defence) and their collaborative projects through the organization or participation in various events or exhibitions (in close collaboration with AWEX).
- Skywin collaborates with NCP Wallonia to promote European projects.
- The cluster has a network of international partners (France, Canada, Germany, etc.), and is an active participant in European Clusters of Clusters (EACP, ENDR or NEREUS)



### The number of members increased from 86 in 2006 to 145 entities at the end of 2023

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

8 8 **99** SME



**16** Large Enterprises



9 Universities and Colleges



**15** Research centres



2 Competence centers



Other members

### 98 labelled projects over 39 Calls (2007-2023)

- 68 R&D Projects

— 20 Investment Projects

— 10 Training Projects

— Private budget (from industry)

€110 M

— Public funding (for Research & Education)

**€80** M

— Public funding (for industry)

**€105** M

Total budget:

€295 M



145 A



90%



### SW ADVICE

Advanced low-power electromechanical de-icing system for leading edges designed for new generations of transportation modes with limited energy capacity

Advanced low-power electromechanical leading-edge de-icing system for new-generation energy-constrained transport modes.

Project Leader: SONACA (LE)

Partners: I-care (LE), Altéris Technologies (SME), Cenaero (Research Center), VKI (Public Research Organization), ULiège (University)

Associated cluster: MecaTech













### **SW MPL2030**

### Thermal control by mechanically pumped two-phase loop

Two-phase loop thermal control with mechanical pumping

Project leader: EHP (LE)

Partners: Calvos (SME), UCLouvain (University), ULiège (University)























### WINGS



### Walloon Innovations for Green Skies

Agreement to launch the third phase.

Project leader: Safran Aero Boosters (LE) WINGS (Walloon Innovations for Green Skies), the technological innovation partnership for the health crisis in the aeronautic sector, brings together up to 21 partners with an R&D project budget of €147 million for 56 months planned duration, funded and financed by Wallonia.

21 partners have joined their R&D forces around the ecological and digital transition of the aeronautical sector to actively contribute to the European Green Deal.

### R&D themes are:

- Aerostructure
- **Propulsion**
- Communication systems
- Materials & processes
- Digitalization & digital simulation
- Industry 4.0

The Walloon aerospace cluster Skywin supports the Walloon administration in its steering activity.

To go further: wingspartnership.be





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 145 including a remarkable rise in the number of SME's.

In 2023, 6 SME and 1 research center joined the cluster.

### New members in 2023



Info@inddev.be



info@globalmobilelab.com



info@machinesight.eu



info@nanopyro.be



cl@sichemcoatings.com



info@veowarespace.com



info@welri.org







Skywin develops and implements its internationalization strategy to increase the visibility of the walloon sectors (Aero, Space, Drone and Defence) 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, space, drone or defence sectors.
- Actions in more difficult to access or newer markets (e.g. participation and prospection to trade fairs in Brazil and Singapore).
- Targeted actions in geographically close markets (France, Germany, Luxembourg, Spain), or more traditional ones (Quebec, USA).
- Participation to economic missions abroad, in 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 Defence-related Regions).

2023 saw the return of the Paris Air Show "Salon du Bourget" after several years of COVID...

This year's show was marked by the enthusiasm and dynamism of the aerospace sector.

The Belgian stand was the 5th largest at the show, with 72 Belgian companies, including 53 from Wallonia.

The show was the occasion for some major announcements for our sectors: Belgium's entry as an observer in the European consortium for the Scaf (sixth-generation fighter aircraft) was made official, and the extension until July 2025 of the Walloon WINGS, federative programme on low-carbon aviation, with an additional budget of €20 million. It was also the opportunity to sign a new MOU with the Aerospace Valley Cluster.

### Participation in international projects:

- COSME project "PRESTIGIOUS" euroPean stRatEgic cluSter parTnershlp to Go InternatiOnal for Uav Smes
- Interreg Project "ET2SMEs EINSTEIN"
- Clean Aviation (Horizon Europe) project "ECARE" European Clean Aviation Regional Ecosystem

## Participation in major events in 2023:

- Belgian Industry Day NSPA -OTAN (Luxembourg)
- SPACE4DEFENCE (Luxembourg)
- Paris Space Week
- · Aeromart Montreal
- IA4Copernicus (Luxembourg)
- Paris Air Show (Le Bourget)
- Symposium Nereus Matera
- EACP General Assembly (Ireland)
- Space Tech Expo (Breme)
- Defence Aerospace Valley (Bordeaux)
- Networking Aerospatial (London)

Other activities related to international and communication to promote the technological and industrial skills of the Walloon aerospace sector have also been set up via a digital marketing. A series of webinars have therefore been organised:

- Webinar SONACA Brazil
- Webinar Andalousia Aerospace



### Main local events organized in 2023:

### Wallonia4Space

Tis conference organised by Wallonie Espace in collaboration with Skywin at the Euro Space Center (Transinne) was a resounding success.

Around a hundred people from the space sector attended this inspiring information session on the new strategy and the tools put in place for the benefit of research, industry, education and the promotion of the space sector among young people and the general public in Wallonia. It was also an opportunity for the Skywin team to meet Raphaël Liégeois, the European Space Agency's new Belgian astronaut.

#### **GTEO Showcase**

The Working Group for Earth Observation, in collaboration with Skywin, presented an overview of drone imagery research and solutions. The event, held at ID2Move in Nivelles, was aimed at service providers, users of Earth Observation data and drone operators. Speakers from the research, public and private sectors presented the state of the art and Walloon skills in drone imagery, from acquisition to operational use. The 130 participants also enjoyed live software and practical demonstrations.

### "Cybersecurity 4 AERO SPACE & DRONES"

Skywin, Cyberwal by Digital Wallonia and LiEU (University-Industry Bridge Network) organised a day of workshops for players and users. On the agenda: state of the art cybersecurity in Wallonia in aeronautics and space and feedback on the development needs of the 80 Skywin members attending.

#### **Workshops Defence**

Several workshops were held as part of the **Defence Roadmap** process. At the end of June 2023, a final workshop identified SMEs and research centres capable of integrating into the value chain of large Walloon companies active in the defence sector. In collaboration with the MecaTech cluster, we discovered new SMEs that could develop innovative solutions for this sector.

### **IIS CONTRIBUTE** - lightening of structures

As part of the S3 strategic approach put in place by the Walloon Government, the IIS CONTRIBUTE - Intelligent Specialisation Strategy (wallonie.be) organised an innovation workshop at SONACA, in collaboration with the Skywin cluster and the LiEU network, on the theme of the lightening of structures.

### "Sustainable Airport of the Future" SAF -

Destination Zero Carbone. The innovation day was organised jointly by the walloon airports, SOWAER, the clusters Skywin, Logistics in Wallonia and Tweed at WAN, the training centre dedicated to aeronautics. A hundred representatives from the worlds of academia, industry, government and research came together for a day of reflection on the airports of the future, in line with the diversity and cross-disciplinary approach openly sought by the organisers.



### 2023 figures

articles and news published on Skywin.be and via 10 newsletters and 32 mailings

**1.050** newsletter subscribers

**41** events relayed

2.650 LinkedIn followers

**1.170** X (Twitter) followers

Over participar organised

participants at seminars organised by the cluster



### **Main Walloon partners**































### Main international partners









































## **OPERATIONAL TEAM**



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# **GOVERNANCE**

Ехесиtive Board (2023-12-31)					
F. LEPOT	Chairman	Safran Aero Boosters	Industrial		
J-PH. PONTHOT	Vice President	ULiège	University		
B. DIVRY	Board member	Thales Alenia Space Belgium	Industrial		
T. JONGEN	Board member	Sabca	Industrial		
N. VANHILLE	Board member	SONACA	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)		
V. TIGNY	Board member	AMOS	Industrial (SME)		
A. BERTIN	Board member	Coexpair	Industrial (SME)		
D. SIMON	<b>Board</b> member	EWA	Association		
L. BARREMAECKER	Board member	Wallonie Espace	Association		
C. CAUCHETEUR	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		
E. POURBAIX	General secretary	Skywin	Cluster		
C. DATH	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 (2023-12-31)					
F. LEPOT	Chairman	Skywin	Cluster		
J-PH. PONTHOT	Vice President	Walloon Universities	University		
N. VANHILLE	Member	SONACA	GE		
M. DUBOIS	Member	SABCA	GE		
O. DEVRIENDT	Member	Safran Aero Boosters	GE		
T. DU PRÉ-WERSON	Member	Spacebel	PME		
P. GEUZAINE	Member	Wal-Tech/CenAero	Research Center		
E. POURBAIX	Member	Skywin (General secretary)	Cluster		
T. CHANTRAINE	Participant	Skywin	Cluster		
A. BIÉVELEZ	Participant	Skywin	Cluster		
S. GUALANDRIS	Participant	Skywin	Cluster		
M. STASSART	Participant	Skywin	Cluster		
A. GRANDJEAN	Participant	Skywin	Cluster		



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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