ROYAL HIGHER INSTITUTE for DEFENCE

belspo

7 May 2024

Agenda

1. General introduction
2. Context and objectives
3. R&D Themes
4. Process, proposal submission and on-line platform
5. Evaluation procedure
6. Q&A
7. Closure and Reception

Housekeeping rules

1. Please mute your mobile devices
2. **You can use SLIDO for interaction and Q&A; code: # 1334936**
3. **Closing reception will take place in the bar**

Meet the DEFRA/NGCAT team

RHID Royal Higher Institute for Defence - Scientific & Technological Research of Defence
&
BELSPO Belgian Science Policy

Silke Van Steelant
Program manager

Marleen Bosschaerts
Dep. Director Research Programs
Coordinator BCCM – FED-tWIN - SEPRO

Steven Lauwereys
Strategy and Policy
Development Officer

Karen Pieters
Director a.i. STRD
Program Manager DEFRA

DIRS, the broader context

Defence, Industry and Research Strategy aims at developing and consolidating a strong Belgian defence technological and industrial base (DTIB)

- supporting the national security and defence policy while reinforcing the open strategic autonomy of the EU.
- positioning Belgium as a relevant, reliable and competitive technological partner.
- guaranteeing national autonomy in critical areas.
- generates economic and societal return in the form of knowledge, jobs and defence-related and dual-use technologies.

Invest upstream to be able to participate in European and transatlantic capability development programs from the start and support Belgian national capability requirements when required.

https://www.defence-institute.be/nl/defence-industry-and-research-strategy-2/

DEFENCE

NGCAT Initiatives

NGWS/FCAS Observer Status

AIRBUS DASSAULT Indra

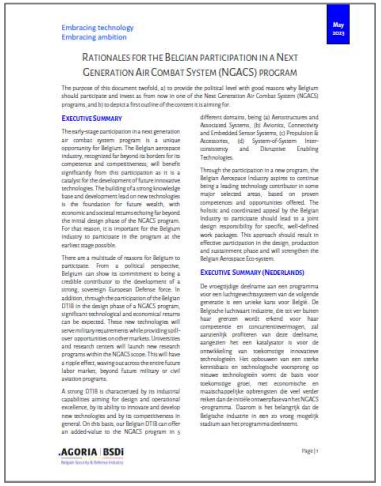
NGCAT

R&D Call 2024

DEFENCE

Shaping NGCAT R&D Call

May 2023 NGCAT AHWG Report 5 workstrands	Nov 2023 NGWS/FCAS Industry Day 4 domains	Dec 2023 NGCAT R&D Theme Definition	Dec 23 – Apr 24 NGCAT R&D Domain Ideation and exchange



Embracing technology
Embracing ambition

May 2023

RATIONALES FOR THE BELGIAN PARTICIPATION IN A NEXT GENERATION AIR COMBAT SYSTEM (NGACS) PROGRAM

The purpose of this document twofold, a) to provide the political level with good reasons why Belgium should participate and invest as from now in one of the Next Generation Air Combat System (NGACS) programs, and b) to depict a first outline of the concerns it is aiming for.

EXECUTIVE SUMMARY

The early-stage participation in a next generation air combat system program is a unique opportunity for Belgium. The Belgian aerospace industry, recognized far beyond its borders for its competence and competitiveness, will benefit significantly from this participation as it is a catalyst for the development of future innovative technologies. The building of a strong knowledge base and development lead on new technologies is the foundation for future wealth, with economic and societal returns echoing far beyond the initial design phase of the NGACS program. For that reason, it is important for the Belgium industry to participate in the program at the earliest stage possible.

There are a multitude of reasons for Belgium to participate. From a political perspective, Belgium can show its commitment to being a credible contributor to the development of a strong, sovereign European Defense force. In addition, through the participation of the Belgian DTIB in the design phase of a NGACS program, significant technological and economical returns can be expected. These new technologies will serve military requirements while providing cutting-over opportunities on other markets. Universities and research centers will launch new research programs within the NGACS scope. This will have a ripple effect, waving out across the entire future labor market, beyond future military or civil aviation programs.

A strong DTIB is characterized by its industrial capabilities aiming for design and operational excellence, by its ability to innovate and develop new technologies and by its competitiveness in general. On this basis, our Belgian DTIB can offer an added-value to the NGACS program in s

different domains, being (a) Aerostructures and Associated Systems, (b) Avionics, Connectivity and Embedded Sensor Systems, (c) Propulsion & Accessories, (d) System-of-System Interconnectivity and Disruptive Enabling Technologies.

Through the participation in a new program, the Belgian Aerospace Industry aspires to continue being a leading technology contributor in some major selected areas, based on proven competences and opportunities offered. The holistic and coordinated appeal by the Belgian Industry to participate should lead to a joint design responsibility for specific, well-defined work packages. This approach should result in effective participation in the design, production and sustainment phase and will strengthen the Belgian Aerospace Eco-system.

EXECUTIVE SUMMARY (NEDERLANDS)

De vroegtijdige deelname aan een programma voor een luchtgevechtssysteem van de volgende generatie is een unieke kans voor België. De Belgische luchtvaart industrie, die tot ver buiten haar grenzen wordt erkend voor haar competentie en concurrentievermogen, zal aanzienlijk profiteren van deze deelname, aangezien het een katalysator is voor de ontwikkeling van toekomstige innovatieve technologieën. Het opbouwen van een sterke kennisbasis en technologische voorsprong op nieuwe technologieën vormt de basis voor toekomstige groei, met economische en maatschappelijke opbrengsten die veel verder reiken dan de initiële ontwerpfase van het NGACS -programma. Daarom is het belangrijk dat de Belgische industrie in een zo vroeg mogelijk stadium aan het programma deelneemt.

AGORIA | BSDI

1. Aerostructures and associated systems
   Asco, Sonaco, Sabca
2. Propulsion and accessories
   Safran Aero Boosters
3. Comm, Cy, Avx, Sensors and NW
   Thales, Scioteq
4. Transversal Disruptive Technologies
   BMT Aerospace

Themes & Indicative budget

Theme	Indicative budget (M€)	
Theme 1 – Structures and associated subsystems	12	24
Theme 2 – Propulsion and accessories	6	
Theme 3 – Communication, cyber, avionics, embedded sensors and networks	10	
Theme 4 – Transversal disruptive enabling technologies	8	
TOTAL 60 Million €	36	24

Theme 1
Aerostructures and Associated Systems

Group 1
Aerostructures & Associated Systems

- Next generation aircraft platforms rely on new technologies :
  - High-precision manufacturing
  - Smart surface technologies
  - Light-weight design
  - Manufacturing techniques

- Complete wing like structures and sections will include
  - Electrification of the actuation systems for high-lift and control surfaces
    - High-performance
    - Lower weight
    - Increased reliability
  - With health monitoring for predictive maintenance and self-tests
  - Complexity reduction and Line Replaceable Unit/Modules approach for fast replacement

- Aerodynamical surfaces will consider smart surfaces technology with multi-materials, structural health monitoring and damage-tolerant design

- Points of interest :
  - Innovative approaches for thermal management :
    - To ensure the complete temperature control of the equipment/body surface temperature control
  - Advanced technologies for structural integration of battery packs and active flow control

Group 1
Aerostructures & Associated Systems

Technology focus areas :

- improving low observability
- Aerodynamical performances
- Enery efficiency and thermal management
- Supersonic research related to aerodynamic stability, shock waves and sonic booms
- Advanced materials and structural design,such as composites, high strength steels, hybrid and smart materials
- Internal system layout design
- External coatings to reduce radar and infrared reflections/emissions
- Engineering of innovative system sustainment
- Electro-mechanical actuators for high-lift control surfaces
- Increasing European technological autonomy

Theme 2
Propulsion and Accessories

Group 2
Propulsion and accessories

Future integrated Propulsion System :

To deliver propulsive energy with as challenge :

→ to be able to deliver a high trust for interception missions

→ to have a low fuel consumption → to allow endurance flight for loitering missions/extended range for penetration missions

To deliver non-propulsive energy with as challenge :

→ the ability to deliver variable amount of energy without any impact on the delivery of thrust or the engine's operability.

Short list of main coming challenges for which Belgian industry can bring added value :

- Variable cycle engine : allowing alternatively high trust for interception missions/reduced fuel consumption for long mission
- Energy consumption : increasing energetic and decreasing dry weight
- Test capabilities : be able to test compressors and critical compounds in altitude conditions, and thrust vectoring and power extraction on ground test facilities
- Thermal management : higher compactness and increasing electrification will require improved heat exchangers.

Group 2
Propulsion and accessories

Technology focus areas :

- System architecture and integration modelling
- Advanced high operability, high efficiency compressors
- Inspections and repairs advanced technologies
- Engine thrust vectoring measurement systems
- Test equipment able to capture electrical power and to reinject it afterwards
- Thermal management and associated simulation
- Advanced high compactness, high efficiency heat exchangers
- Propulsion system miniaturization
- Electrification and more electrical equipment
- Increasing European technological autonomy

Theme 3
Communication, Cyber, Avionics, Embedded sensors and Networks

Group 3
Communication, Cyber, Avionics, Embedded Sensors and Networks

Cloud Combat and C4ISR : critical domains

Development of Cloud Combat Platforms : to enhance the situational awareness and decision-making capabilities of military personnel

→ leverage cloud computing, big data, distributed computing, advanced communications and autonomous and collaborative operations to provide real-time insights and analysis.

Aviation industry : rapid technological advancements aimed at enhancing efficiency, safety and situational awareness but brings forward :

→ challenges in fields such as cybersecurity, communication, on-board computing power, big-data management, sensor fusion, visualization technology,…

Enhanced manned-unmanned teaming is paramount to operational success

The need to prioritize and strenghten cybersecurity in aviation becomes paramount : new cybersecurity challenges must be addressed to ensure safety, reliability and effectiveness

Group 3
Communication, Cyber, Avionics, Embedded Sensors and Networks

Technology focus areas :

- Design, development, manufacturing and qualification of avionics, sensors and effectors
- Integration of systems
- Large, redundant avionic display devices
- Airborne computers able to cope with the increased demand for computing power, big data handling etc..
- Information Systems and complex computing solutions
- Airborne and ground communications, including cyber
- Electro-optical and infrared systems, with focus on miniaturization and cost-reduction
- Enhanced computer vision
- Effectors and related technologies
- Enhanced pilot interfaces and interaction for high performance cockpits
- Increasing European technological autonomy

Theme 4
Transversal Disruptive enabling Technologies

Group 4
Transversal Disruptive Enabling Technologies

Transversal Disruptive Technologies :

- Artificial Intelligence
- Advanced Materials
- IoT
- Additive Manufacturing
- Advanced Modelling
- Digital Twins and Digital Threads
- Cloud Computing
- Big Data Analytics

→ Are revolutionizing all subdomains of Structures and Subsystems, Propulsion and Accessories, Communication, Cyber, Avionics and Networks

→Enable smarter, more efficient and secure operations, enhancing everything from design, engineering, manufacturing and in service support and are essential for increasing European technological autonomy.

DEFENCE

Process, proposal submission and on-line platform

DEFRA
DEFENCE-RELATED RESEARCH ACTION

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Timeline

Step	Date	At / via
Call launch	29 April 2024	Website & mailing
Information day	7 May 2024	RMA
Deadline Expressions of Interest	**7 June 2024 (14h00)**	**Online submission platform**
Communication of eligibility check	28 June 2024	Mail
Deadline Full proposals	**25 September 2024 (14h00)**	**Online submission platform**
Remote scientific peer review evaluation and consensus reporting	1 October – 15 November 2024	Online evaluation platform
Feedback to applicants in preparation of panel meeting (consensus reports and questions to applicants)	20 November 2024	Mail

Timeline

Step	Date	At / via
Written feedback by applicants (answers)	**29 November 2024**	**Mail**
Experts Committee evaluation, incl. interviews with the applicants	4 December – 20 December 2024	RHID
NGCAT Programme Selection committee	January 2025	RHID
Final selection of proposals by the board of directors of the RHID	February 2025	NA
Communication of results to applicants	**February 2025**	**Mail**
Signature of contracts and start of activities	March 2025	Online E-sign platform

Projects

- The projects will have a duration of **24 to maximum 30 months**.
- Selected projects will start in **March 2025**.

- **Funding rules**

	Small enterprise	Medium-sized enterprise	Large enterprise	RTO[5]
Eligible project costs for fundamental research.	100%	100%	100%	100%
Eligible project costs for applied research (industrial research or experimental development up to TRL 6) conducted within the framework of an effective collaboration with at least one SME and a research organization.	100%	90%	85%	100%
The project coordination costs incurred by the project coordinator from an effective collaboration with minimum four entities.	100%	100%	100%	100%

Contracts

- Contract between Belgian Defence and funded partners.
- Three parts:
    - Basic contract
        - Designates the contracting parties
        - Contains the general obligations applicable to the project
        - Defines the contract duration and budget
        - Is signed by the heads of the partners (directors, rectors, CEOs)
    - Annex I: Technical specifications
        - Operational implementation of the project
        - Work description and planning
        - Details on funding by expenditure category
        - Is signed by the persons in charge of the realisation of the project (the promotor)
    - Annex II: General conditions applicable to the 2024 contracts.
        - General provisions applicable to all NGCAT contracts
        - Must not be signed

Eligibility Criteria

- Eligibility Criteria for Partners
- Eligibility Criteria for the Partnership

Eligibility Criteria for Partners

Public research sector: all Belgian universities, colleges of higher education, federal scientific institutions, defence research institutes and other public research institutes

Private non-profit research centres must have operational and/or research activities in Belgium. They must have legal personality and their registered office in Belgium.

Private sector, companies (including SMEs) complying with the following criteria are eligible partners:

- The company must have operational and/or research activities on the Belgian territory.
- The company must have a legal personality and its registered office in Belgium. The legal personality is required at the latest when signing the research contract.
- The company must hold the intellectual property rights for the R&D activities they are engaged in.
- At the moment of signing the contract, the company must have fulfilled its obligations to pay its taxes and social security contributions.

All types of organizations can act as project coordinator

Eligibility Criteria for Partners

Every applicant must either already hold a **security clearance** or apply for one to the National Security Authority.

Applicants without security clearance can receive, upon a positive security verification by RHID, “a need to know” document required to initiate the security clearance application with the National Security Authority.

If applicant requires “need to know” document he has to tick the appropriate box in the online submission platform with the submission of the Expression of Interest.

Eligibility Criteria for Partners

You are a **company, a(i)sbl or a foundation**? Upload your **UBO register** in the online platform!

The delivery of an extract of the UBO register is a formal requirement for a valid application for the call.

The documents of the applicants are submitted to the General Intelligence and Security Service which will examine them in accordance with its missions and legal powers as defined in the law of November 30, 1998 governing intelligence and security services. The advice rendered by the security service may be based on a classified note.

Eligibility Criteria for the Partnership

TRIPLE HELIX

Partnership:

- minimum 4 partners
- at least one (public or private non-profit) research institute
- at least one innovative small private company
- at least one large or midsize company

Submission Procedure and On-line Platform

- DEFRA Website
- NGCAT On-line Submission Platform
- Submission Procedure
- Communication

DEFRA Website

https://www.belspo.be/belspo/defra/NGCAT_call_2024_en.stm

Available documents

- Information document, incl. submission & evaluation guidelines and budget rules
- Evaluation matrix (full proposals)
- Platform submission guidelines
- FAQ
- Structure full proposals
- General conditions contract

NGCAT On-line Submission Platform

https://ngcat.belspo.be

Consult the Platform submission guidelines on the website

PHASE 1 - submission of Expression of interest:

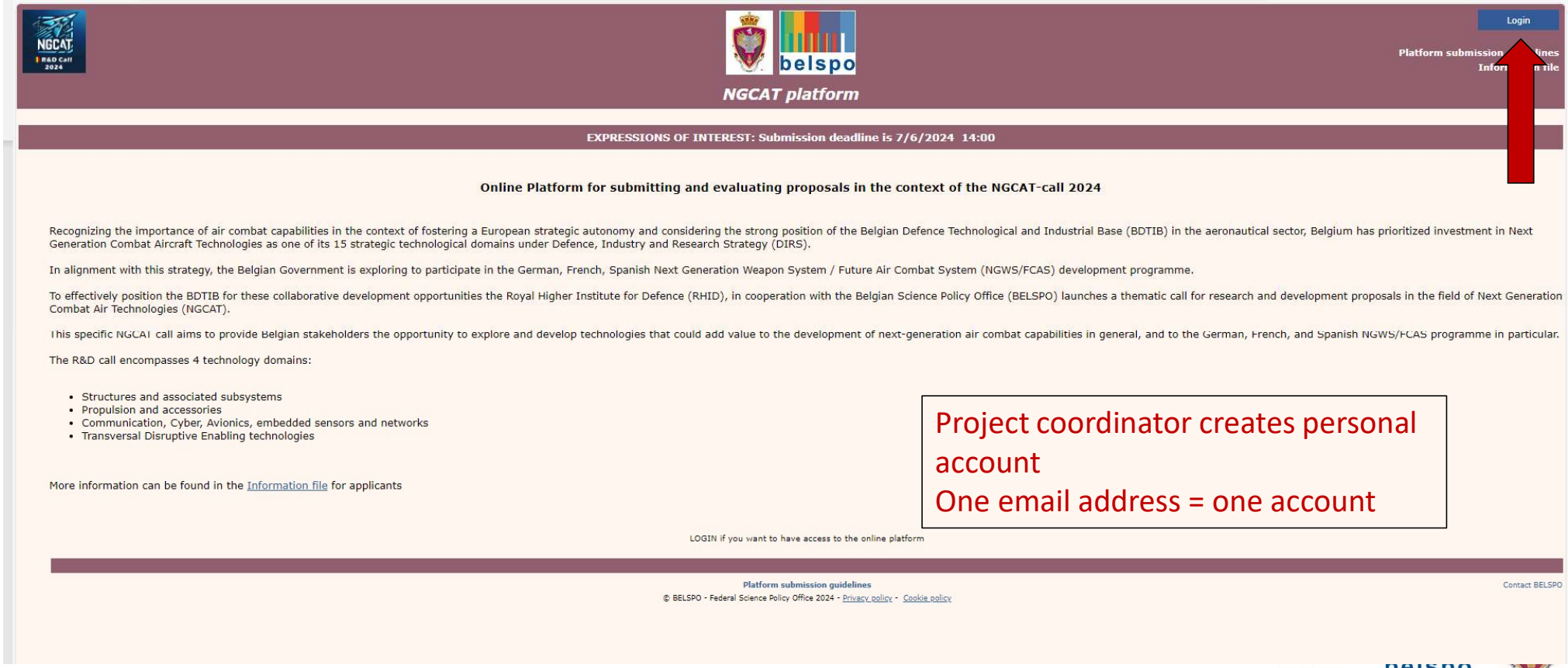
- Information sheet on the platform

PHASE 2 – submission full proposals:

- Full Proposal template (Word file)
- Gantt chart (Excel file)
- Budget file (Excel file)

NGCAT On-line Submission Platform

Platform homepage before log in



Project coordinator creates personal account
One email address = one account

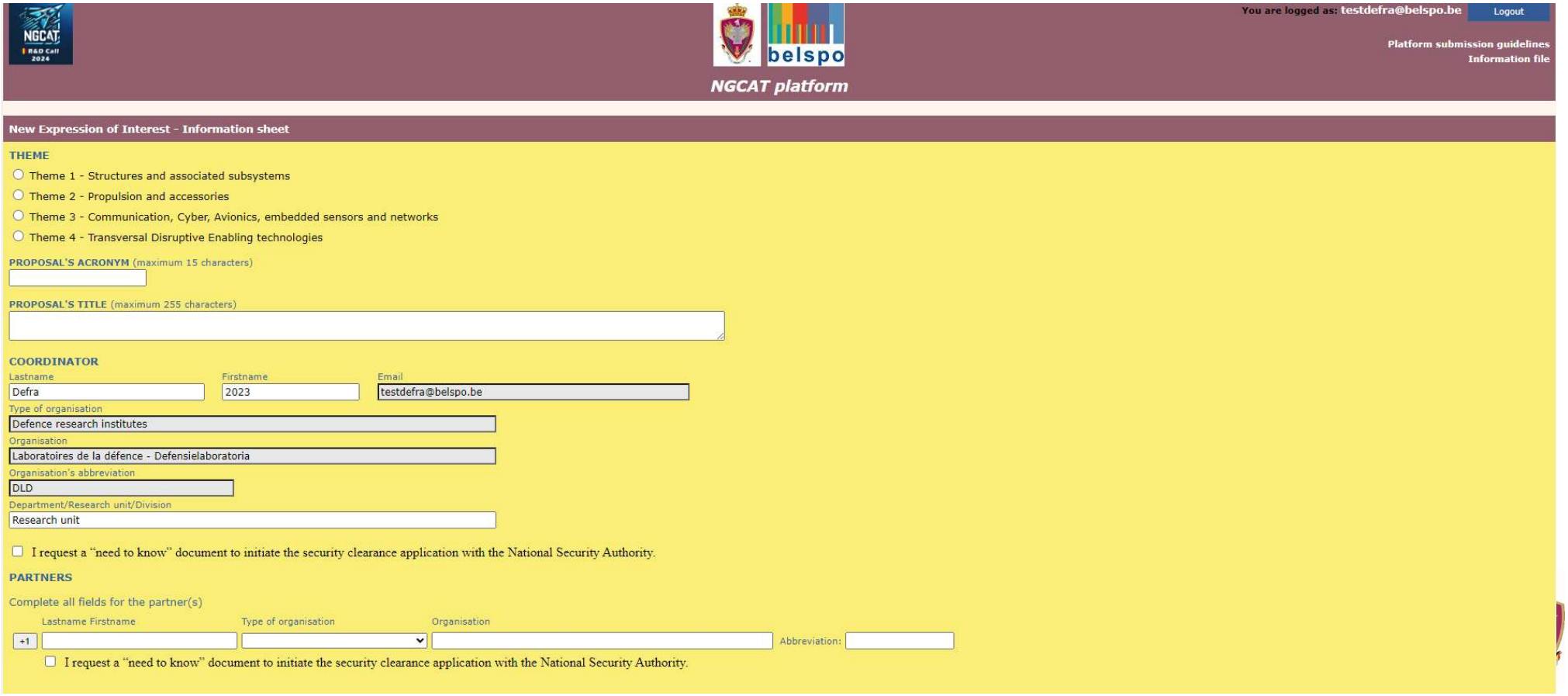
NGCAT On-line Submission Platform

Once logged-in: directed to your personal homepage

Click on “Add Expression of Interest” button to create Expression of Interest.

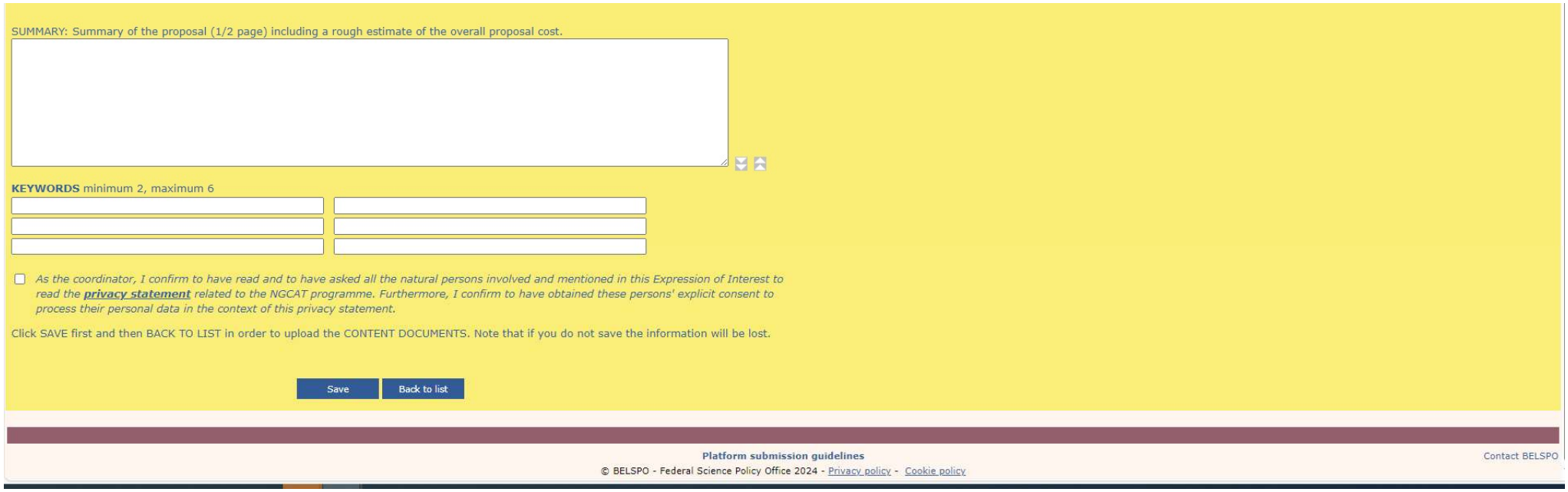
NGCAT On-line Submission Platform

Expression of Interest page (1/2)



NGCAT On-line Submission Platform

Expression of Interest page (2/2)



NGCAT On-line Submission Platform

Expression of Interest – mandatory fields:

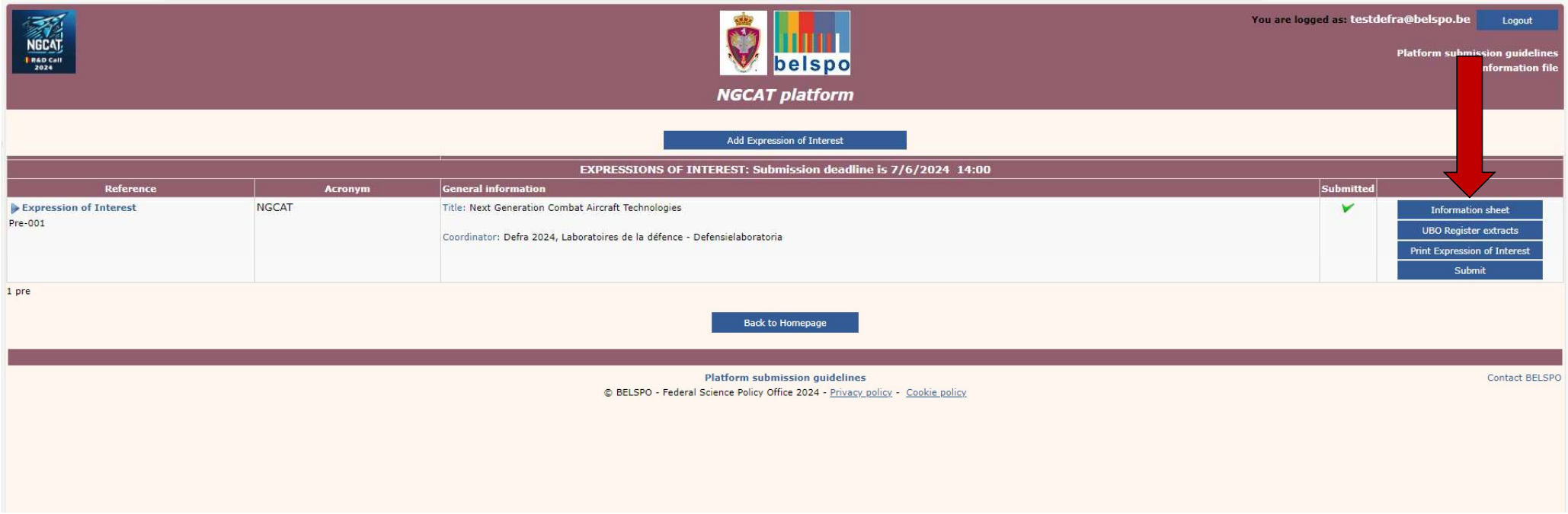
- Themes of the Call
- Proposal's Acronym
- Proposal's Title

Minimal required info to start

- Name, institution and contact details of the Coordinator
- Partners (names and institutions)
- Summary
- Keywords (min 2)
- Approval statement for submission

NGCAT On-line Submission Platform

Personal homepage will change after saving Expression of Interest



Submission Procedure

Information sheet: displays Expression of Interest page for further editing

UBO Register extracts: Here the extracts of the UBO register must be uploaded

Print Expression of Interest: Preview pdf file of the Expression of Interest

Submit: for submitting the Expression of Interest

Submission Procedure

Complete the information sheet for the Expression of Interest

Upload extract(s) of the UBO register

For partners who do not yet have security clearance:
Tick the appropriate box in the online submission to request “need to know” document

Submission Procedure

Click on '**Submit**'. You will be directed to the Expression of Interest page

At bottom of page, click on '**Check**'.

! This "function" ONLY checks if all necessary fields are completed. The content of the Expression of Interest and the fulfilment of the eligibility conditions are your responsibility.

At bottom of page, click on '**Submit**'. The Expression of Interest will be submitted to BELSPO

Confirmation by e-mail to coordinator and a '✓' will appear on your Personal Homepage

Deadline for Expression of Interests : 7/06 - 14h

SV0

NGCAT On-line Submission Platform

Personal homepage after submission

Slide 42

SV0 Hier achter eligibility check en vervolgens full proposal submission
VAN STEELANT Silke; 2024-05-02T12:20:58.264

NGCAT On-line Submission Platform

- After reception of Expression of Interest
  → Eligibility check

- Non-eligible applicants are unable to advance in the process

Communication of results of eligibility check: 28/06

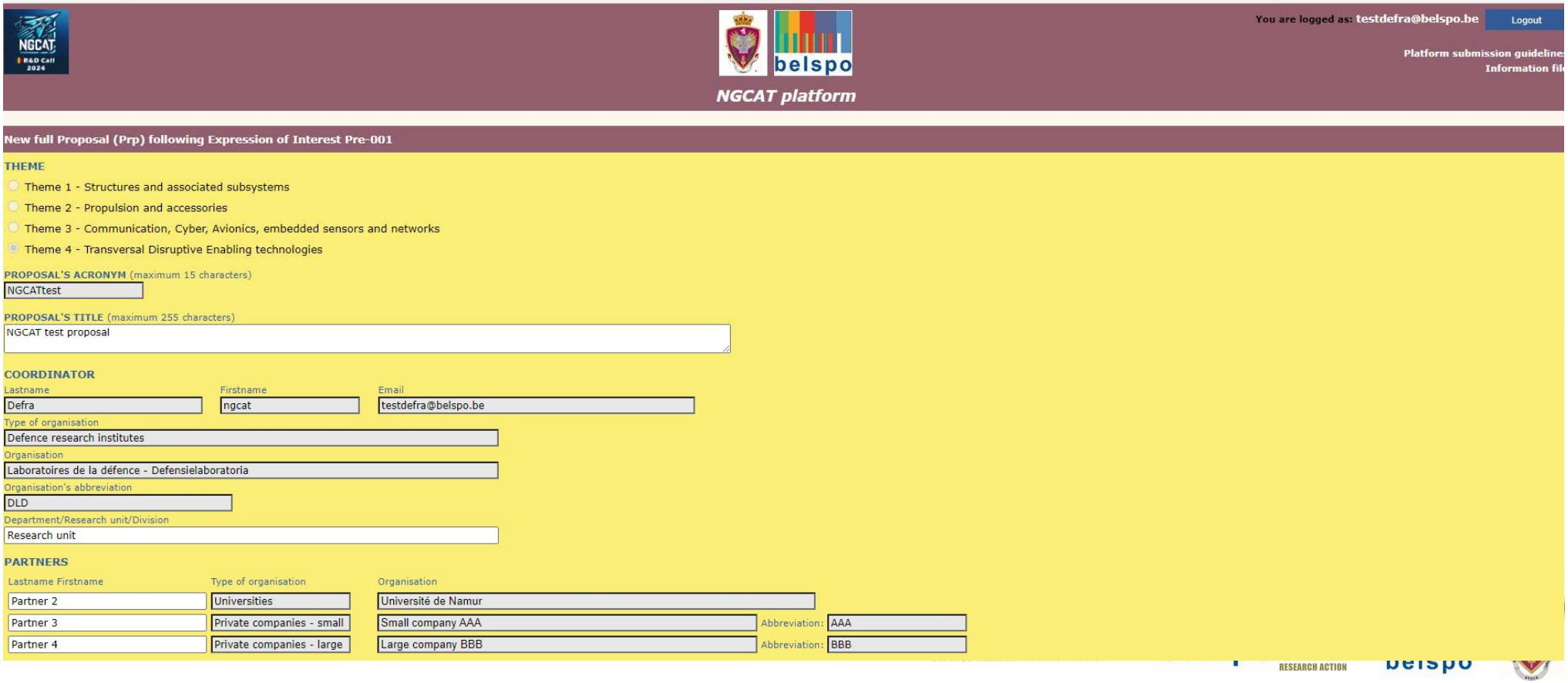
NGCAT On-line Submission Platform

Add a full proposal

Click on “Add Full Proposal” button to create a Full Proposal.

NGCAT On-line Submission Platform

Full Proposal page (1/2)



NGCAT platform

You are logged as: testdefra@belspo.be Logout

Platform submission guidelines
Information file

New full Proposal (Prp) following Expression of Interest Pre-001

THEME

- Theme 1 - Structures and associated subsystems
- Theme 2 - Propulsion and accessories
- Theme 3 - Communication, Cyber, Avionics, embedded sensors and networks
- Theme 4 - Transversal Disruptive Enabling technologies

PROPOSAL'S ACRONYM (maximum 15 characters)
NGCATtest

PROPOSAL'S TITLE (maximum 255 characters)
NGCAT test proposal

COORDINATOR

Lastname	Firstname	Email
Defra	ngcat	testdefra@belspo.be

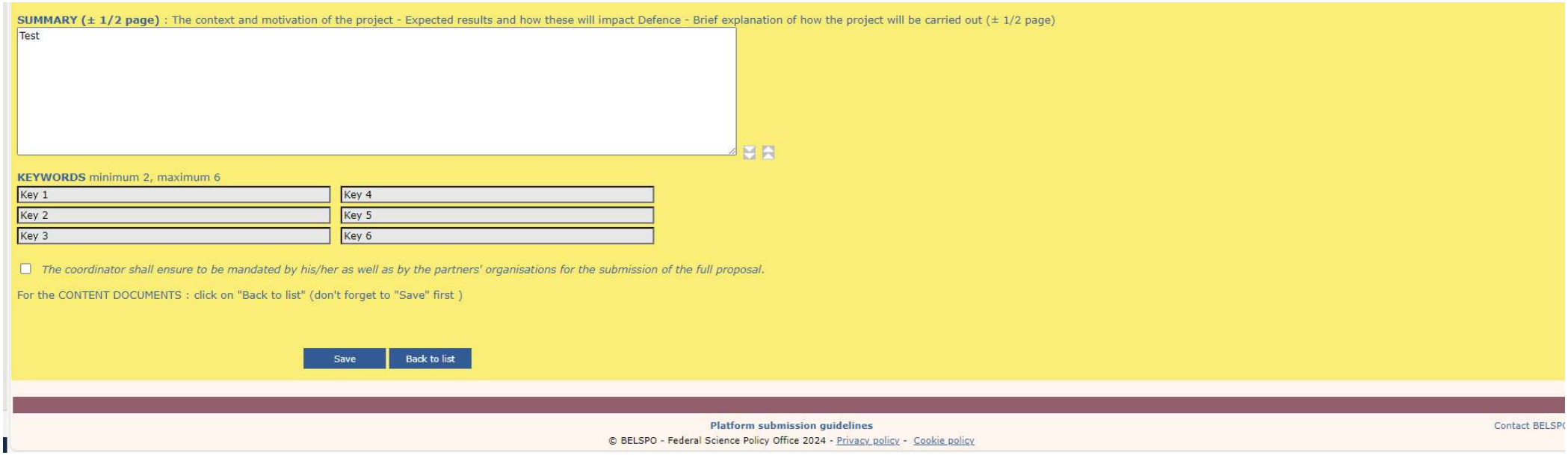
Type of organisation: Defence research institutes
Organisation: Laboratoires de la défence - Defensielaboratoria
Organisation's abbreviation: DLD
Department/Research unit/Division: Research unit

PARTNERS

Lastname Firstname	Type of organisation	Organisation		
Partner 2	Universities	Université de Namur		
Partner 3	Private companies - small	Small company AAA	Abbreviation:	AAA
Partner 4	Private companies - large	Large company BBB	Abbreviation:	BBB

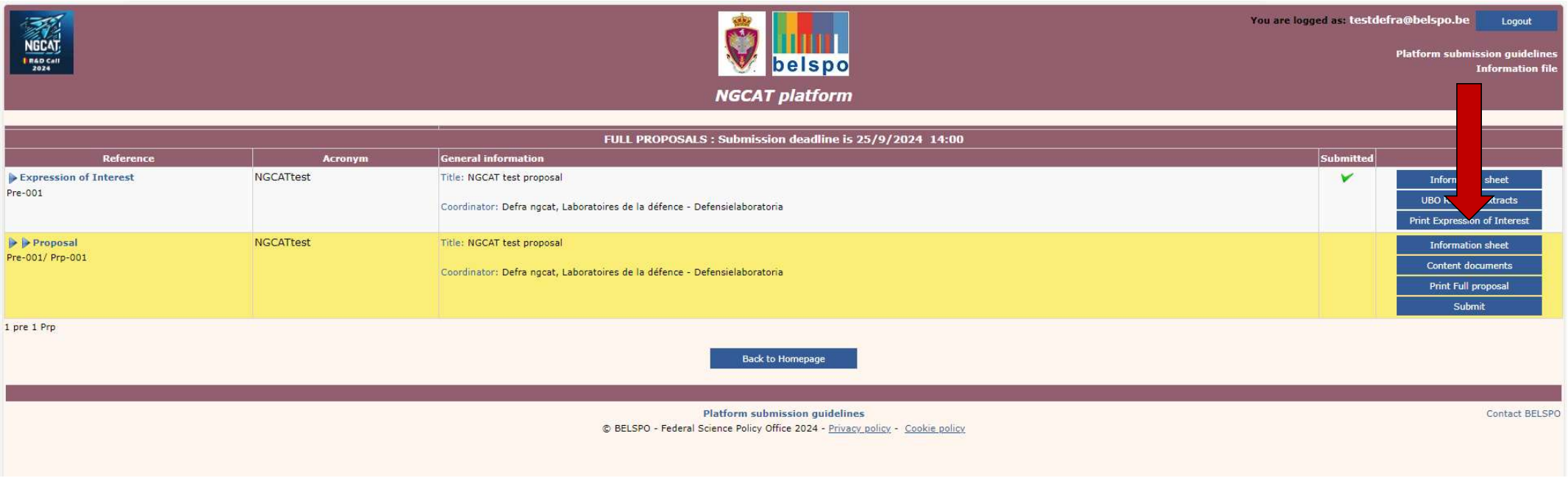
NGCAT On-line Submission Platform

Full Proposal page (2/2)



NGCAT On-line Submission Platform

Personal homepage will change after saving Full Proposal



Submission Procedure

Information sheet: displays Full Proposal page

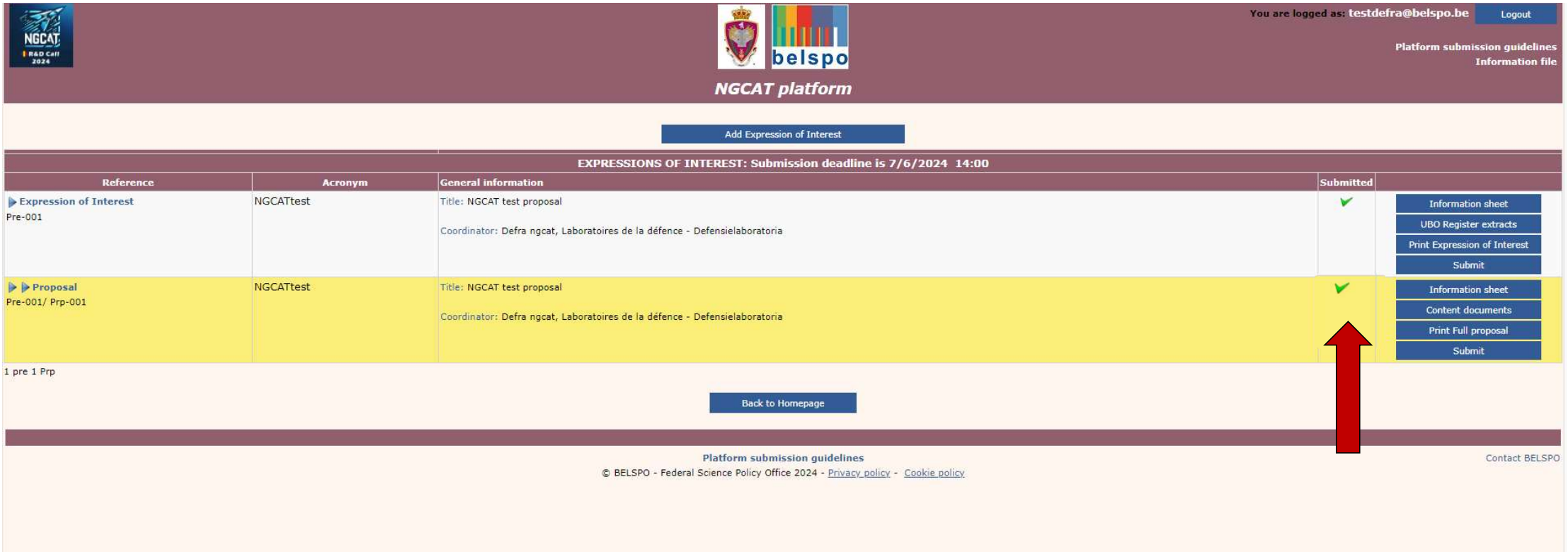
Content Documents: Contains all the downloadable forms to be filled out off-line, and subsequently uploaded to the platform

Print Full Proposal: Preview pdf file of the Full proposal

Submit: for submitting the Proposal

NGCAT On-line Submission Platform

Personal homepage after submission



Evaluation Procedure

Two-step procedure:

- PHASE 1: EXPRESSION OF INTEREST
- PHASE 2: FULL PROPOSALS

Phase 1: Expression of Interest

- General eligibility check
- Criteria :
  - Composition of the partnership;
  - The eligibility of each of the partners including security screening;
  - Compliance with the scope of the call;
  - Completeness of the Expression of Interest.

Phase 2: Full Proposal

- Step 1 - Remote evaluation
- Step 2 – Experts Committee (EC) evaluation, including interviews with the applicants
- Step 3 - Selection of proposals by the NGCAT programme Selection Committee
- Step 4 - Final approval by the Board of Directors of the RHID
- Selected projects start March 2025

Communication

For questions about the call for proposals, the call procedure and documents, the submission of proposals	For questions about the content of the call and projects, the evaluation of proposals, the conclusion of the contract for selected proposals, and everything related to the project implementation: questions about reporting, invoicing, implementation, communication, follow-up and valorisation of the project
ngcat@belspo.be	ngcat@mil.be

DEFENCE

Q&A

SCAN THE QR CODE TO JOIN AT

slido.com
Code: # 1334936

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DEFENCE-RELATED RESEARCH ACTION

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Further questions

FAQ on website
ngcat@belspo.be

GOOD LUCK!