JOB OFFER
Research Scientist/Engineer (M/F/X)
Dept CISS > Research Unit Radio Networks
Project SHABAM
Publication: 07/05/2025

CONTEXT

The Royal Military Academy is fully recognized as a university, fulfilling the same criteria as civilian universities. The RMA is also conducting scientific research at university level for projects funded by the Belgian Defense department or external sources.

In the framework of the study SHABAM, we are looking for a full-time researcher in digital communications with a Bachelors/Master degree in Telecommunication Engineer (MSc), or equivalent, with firm background on Signal and Systems theory, digital communications and electronics.

We value diversity and equal opportunities. Whether you are a man, a woman or X, or come from any background, we firmly believe that diversity enriches our community, and we encourage all qualified candidates to apply.

PROJECT:

You work within the department of CISS of the Faculty of Polytechnic of the RMA and in close collaboration with researcher, scientists and engineers from the other consortium partners. You conduct scientific research at university level on a project entitled 'SHABAM'.
The EDA ad hoc project type B called SHABAM for "SHAring BAndwidth in Military systems" will investigate the capability of DSM concepts to allow efficient spectrum usage between radio systems in an operation theatre that may consist of several nations operating on several co-operative or non-co-operative waveforms. Another challenge will be to provide robust improvements to the super high fidelity simulator to accommodate the new objectives, such as adding new UHF and VHF basic waveforms. The consortium is composed of 10 prime contractors, representing 5 different countries (BE, FI, FR, GE, NO). The Consortium Coordinator is Thales SIX from France.

MAIN TASKS:

- Adding a second VHF waveform using bandwidth scaling. The N1 mode of the NBWF offers only a limited transmission capacity. A higher bit rate, by compromising some range, will render NBWF more interesting for bridging IP communication or control traffic, supporting UHF waveform, etc
- Control of WF frequency hopping sequences : the idea is to control the VHF/UHF frequency hopping sequences of the communication networks for the coexistence of heterogeneous waveforms using Local DSM with cross-waveform signaling
- VHF rate adaption : Having the possibility to use multiple bit rates within the same VHF network will add flexibility in dynamic environments where link characteristics change over time. To be able to handle multiple bit rates in the same VHF network, a link adaptation mechanism is needed at the link layer.

SKILLS AND EXPERIENCE:

Degree(s) required: **Master degree in Telecommunication Engineer (MSc), or equivalent, with firm background on Signal and Systems theory, digital communications and electronics.**
This position is open for experienced profiles (ideally 3 years of experience minimum).

"MUST HAVE" skills :

- Good experience in SDR/digital communications : modulation schemes, error correction coding, characterization of communication links (channel distortion, BER, FER)
- Good experience in digital signal processing : digital filtering, digital modulation/demodulation, coding/decoding, interference mitigation etc.
- Software Programming : MATLAB, C/C++ , Python.

"NICE TO HAVE" skills :

- Knowledge of Dynamic Spectrum Management
- Knowledge of Routing Algorithms (e.g. OLSR)
- Knowledge of Neural Networks, Artificial Intelligence.

Personal skills :

- You conduct scientific research in an independent and upright way within a multidisciplinary environment.
- You think in an innovative and creative way.
- You communicate your results in a clear, concise and precise manner.
- You solve problems autonomously and find alternatives or solutions.

Other skills:

- The applicant shall have good knowledge of English (oral / written).
- Minimum knowledge of French or Dutch is an added value for collaboration with peers.

SPECIFIC REQUIREMENTS

- The researcher may be exposed to classified information and will therefore have to obtain the required security clearance. The candidate must consent with the background check required to obtain this clearance, which will be executed by Belgian Defense.
- Only applicants with a nationality of a country that is both part of NATO and the EU will be eligible.
- Working for the Patrimony requires living in Belgium for the duration of the study.

APPLICATION

Please send by email:

- a CV
- a scan of your ID card (both sides)

to Dr. Ir. Le Nir Vincent (vincent.lenir@mil.be) / Prof. Dr. Ir. Mathias Becquaert (mathias.becquaert@mil.be) and to erm-deao-rswo@mil.be

Please mention clearly the reference of the project: **"SHABAM".**

Application deadline: 25**/05/2025.**

The interviews will take place at the Royal Military Academy, Hobbemastraat 8, 1000 Brussels. If needed, on-line interviews can be organized. The date and time of the interview will be communicated to the preselected candidates.

CONTRACT

- Probable date of recruitment: **from 01/06/2025**, in consultation with the applicant.
- Status: **Full-time employment (38 hours / week)** based on an **open-ended contract** with the Patrimony of the Royal Military Academy (you will not be a civil servant).
- Please note that your contract will be open-ended, but the financing of the contract will be tied to the funding project, which is guaranteed for 3 years. There is a high chance for the project to be prolonged after this initial period, depending on the availability of new funding.
- Wage scale: class A1 (holder of a Master's degree in Science or equivalent), class A2 (holder of an Ir degree or equivalent Master's in Engineering Sciences, doctor's degree in the same area of expertise). RMA-Patrimony applies a merit-based research career track, allowing researchers to advance in wage scale based upon annual evaluations.
- Holiday pay.

EXTRA LEGAL BENEFITS

- Possibility to benefit from a bilingualism allowance (Dutch/French) following a SELOR test;
- End-of-year bonus;
- Free DKV hospitalization insurance. Possibility of additional affiliation for one or more persons living under the same roof: spouse, child(ren) (50% of the price per additional member);
- Bike allowance / Free public transport (home-work commute);
- Meal vouchers (6€ / day);
- Free access to campus sports facilities outside working hours;
- On-campus restaurant and cafeteria with democratic prices (discount on the daily menu);
- Flexible working hours within the 38-hour week;
- Teleworking possible with allowance (2 days / week max);
- Holidays:
  - 29 days holiday / year from the 1st year of contract (then from 45 years: +1 day holiday every 5 years)
  - 1 week OFF every year between Christmas and New year's Eve (independent of the annual balance of holidays).
- Advantages and interesting offers thanks to the Benefits@work card (discounts, vouchers...);
- Entitlement to services offered by the 'Office Central d'Action Sociale et Culturelle de la Défense' (OCASC): among others holiday centres, discount on travel organised by the tour operator...;
- Possibility to benefit from the nursery funded by Belgian Defence (subject to availability).

WORKPLACE

Royal Military Academy, Avenue de la Renaissance 30, 1000 Brussels. Occasional travels abroad for scientific conferences, etc.