

PANEL DISCUSSION: FROM INNOVATION TO BUSINESS AND MARKET UPTAKE

INTRODUCTION

Horizon Europe (HEU) defines the EU research and innovation (R&I) programme between 2021 and 2027, with a budget of \notin 95.5 billion. The programme aims at *developing*, *supporting and implementing EU* policies while tackling global challenges. The programme creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact ¹.

Specifically, the pillar 'Global Challenges and European Industrial Competitiveness', which includes 'Civil Security for Society', aims to reinforce the European industrial competitiveness, [...] and support the uptake of innovative solutions in industry, in particular in SMEs and start- ups, and society to address global challenges².

European entities operate in a fierce and highly competitive global market. Ensuring long-term sustainability of the European research and industrial base requires continuous innovation, IPR assurance, and access to market prospects.

HEU offers a unique opportunity for inventors, researchers, innovators, entrepreneurs, buyers and investors, since it provides them direct access to funding and orientation to develop tailored solutions aiming at addressing European priorities, critical issues and development goals, complying with European regulation, values and principles.

Despite existing support, overcoming the so called 'Valley of Death' (i.e., the gap from an idea/invention/prototype to a successful innovation) is still challenging.

This roundtable is devoted to the topic 'From innovation to business and market uptake'. It gathers individuals with different types of perspectives and experiences on the matter, leveraging on exploitable results and impact from HEU actions (and prior EU frameworks) and their path towards viable business and market uptake.

It is noted that the opinions and thoughts expressed herein reflect only the participants' own views.

The roundtable is constituted by:

- Alberto Bianchi (alberto.bianchi@leonardocompany.com, Leonardo): Large Industry representative

- Isabelle Linde-Frech (isabelle.linde-frech@int.fraunhofer.de, Fraunhofer INT): RTO representative
- Marina Martinez (marina.cdti@sost.be, SOST): NCP representative
- Krzysztof Samp (krzysztof.samp@itti.com.pl, iTTi): SME representative

- Rosellina Di Santo (<u>r.disanto@meta-group.com</u>, META Group): Horizon Results Booster representative

- Giannis

The session is chaired by Marco Manso (marco@particle-summary.pt, PARTICLE Summary / IMG-S).

¹ <u>https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en</u>

² European Commission, Directorate-General for Research and Innovation, Horizon Europe, pillar II - Global challenges and european industrial competitiveness, Publications Office, 2021, <u>https://data.europa.eu/doi/10.2777/881197</u>



SPEAKERS' PERSPECTIVES

Alberto Bianchi (alberto.bianchi@leonardocompany.com, Leonardo)

Large Industry perspective

All EU Agencies and DG are moving toward a more strategic and supporting approach toward security stakeholders to overcome the well-known limitations of return of investments for players operating in this sector. Large Industries are challenged by a number of aspects that might be summarized in the following points:

- Small security market, with "varying in time" requirements, which bring to fragmentation. It is fundamental that the Large Companies manage the EU supply chains, involving all the sectorial, well focused and skilled SMEs we have in our EU ecosystem;
- **Standards and procurement life cycles** must be better harmonized between member states, to promote interoperability, reduce fragmentation and better enhance the excellences;
- Harmonize the need from national countries with those pushed by EC Agencies; there are specific national needs to not forget and other common interests among MSs which need to be better shared and promoted;
- Improve the participation of end user in the security projects. Active participation in the Research and technological communities is the best way to not only have a better reciprocal knowledge but from end user side to understand potential roadmaps of technological availability and from RTOs and Industries to understand how to better focus developments in the interest of the end users and hence of the EU societal needs;
- **Favour dual use of technologies** improving the EU sovereignty on critical ones and develop synergies with defence research of course in the full and plain interest of the EU societal needs;
- Secure societies themes are often cross sectorial, mostly because security is transversal both from mission/application perspective and from multidisciplinary scientific concerns. Hence the R&D&I investments should be improved in the "Civil Security" as much as possible in the interest even of many other sectors.

<u>RECOMMENDATIONS</u>:

- Identify capability gaps and research needs, based on the operational needs of practitioners (police, border guards, customs, first responders etc.) as well as in identifying the most promising tools developed by research that have the potential to be taken up by practitioners; just find any possible way to make them collaborate;
- Supporting synergies and the exchange of knowledge among security research projects and other relevant activities (e.g. practitioner and knowledge networks); the sharing avoids duplication and increase the quality levels of the results;
- **Promoting the testing and validation** of research projects and of their results in an operational environment paving the way for the uptake of innovative technologies; the Security is by definition a "mission" nothing can be really meaningful without concrete tests and validations on the filed involving "all" the actors of the supply chain and operational command and control;
- Valorise the not awarded but valuable proposals. There are many valuable not awarded proposals which would need NOW the funding for these proper investments.



Isabelle Linde-Frech (<u>isabelle.linde-frech@int.fraunhofer.de</u>, Fraunhofer INT)

Research and Technology Organisation (RTO) perspective

"RTOs are applied research driven organisations that harness science and technology to develop innovations which positively impact society and quality of life and stimulate economic competitiveness and growth. To do so, they closely cooperate with large and small industries, a wide array of public actors and universities. In this respect, RTOs are in a pivotal position in the innovation ecosystem, as demonstrated for example by leading roles in operating Digital Innovation Hubs (DIHs)³. According to EARTO economic footprint study, each job created in an RTO leads to four additional ones in the entire EU economy⁴. RTOs tend to be closer to industry, especially to SMEs, than academies and, in many cases, working together with universities and other fundamental research bodies, they can smoothly streamline technology transfer to industry and users. Moreover, RTOs have a strong focus on creating business value thanks to robust Intellectual Properties policies, used as assets for collaboration with industry and/or creating new business through spin-offs or start-ups. RTOs play a key role in disseminating research opportunities to industry and gathering strategic stakeholders, public and private, across Europe to create competitive consortia and critical mass. Many RTOs have strategic collaboration agreements with policy makers and practitioners at Member State level establishing a firm link between policy, needs and research. This makes RTOs a key pillar for bridging the "valley of death" in European Security Research."⁵

Some barriers for reaching a capability driven approach (so far):

- **Budgeting** on the demand side, which is predominantly **geared to current procurement instead of sustainable, long-term capability-oriented planning**, results in procurement not being primarily demand-oriented, but always geared to the availability of current technology.
- Missing identification of future (common) capability gaps the focus on future capability gaps through improved foresight capacities would not only generate time to conduct targeted R&D, but would also enable an open and transparent discussion of capability gaps in sensitive/critical areas such as FCT or border security.
- Little openness to innovative solutions on the demand side as well as too little (open) exchange of practitioners/end-users and relevant subject matter experts (solution providers).
- An extremely **fragmented**, small-scale and unclear **market** in the interdisciplinary field of civil security and a resulting lack of overview of what solutions are currently available.

<u>RECOMMENDATIONS</u>:

Next to **fostering a capability-driven approach**, by not only involving practitioners early in RDI processes, but by generally co-creating such processes with all relevant stakeholders from the beginning (demand side, supply side and incl. procurement aspects):

• A recommendation quite often given by experienced innovation or EU project managers (so it's not my invention) is **"building the right system" instead of "building the system right"** – the objective of projects should be to maximise the benefit of having all stakeholders of a certain topic on the table to understand each other's requirements and objectives wrt to the solution to be developed, i.e. those of the later users. There is more to achieve in a project wrt the later operationalization than the improved pure technical functioning.

³ European Innovation Hubs: An Ecosystem Approach to Accelerate the Uptake of Innovation in Key Enabling Technologies. Online link: <u>https://www.earto.eu/wp-content/uploads/EARTO-Paper-European-Innovation-Hubs-Final.pdf</u>

⁴ Economic Footprint Study: Impact of 9 RTOs in 2016. Online link: <u>https://www.earto.eu/wp-content/uploads/EARTO-Economic-Footprint-Study-Impact-of-9-RTOs-in-2016-Final-Brochure.pdf</u>

⁵ EARTO Working Group Security and Defence Paper - Towards Horizon Europe: Bridging the Valley of Death in Security Research. Online link: <u>https://www.earto.eu/wp-content/uploads/EARTO-WG-SD-Position-Paper-Bridging-the-Valley-of-Death-in-Security-Research.pdf</u>

SALES INTERPRETATION & INTERPRETATION

- Systemic view on the solution A single solution/technology is almost never the answer. usually, the framework conditions/procedures etc. have to change and/or need to be reflected in order to successfully implement a new solution. You need the right people in the development phase with appropriate (broad) understanding and vision wrt the later operationalisation. This means both solution providers (i.e. in larger industry sometimes only the "screwdrivers" are involved) and users (On-site personnel during pilots and demos are (usually) not enough operational, tactical, strategic level). An iterative evaluation (demand/capability-driven verification and validation) needs to be implemented from the beginning of the project with a systemic perspective considering the overall impact of the solution from user acceptance and usability to ethical/legal/societal/political/organisational/procedural aspects.
- Thinking in **all dimensions of a capability gap** rather than already in potential technological solutions, when talking about capability needs. A capability usually consists of the dimensions organisation, personnel, procedures and equipment. Very often, it is not the equipment dimension to close a gap.
- Establish a **taxonomy of capabilities** in the area of civil security for enabling a common understanding and definition of "capabilities" (or even defense and space wrt the EC Action Plan on Synergies). This should follow the taxonomy of the European security solutions, as develop within the study of DG HOME⁶. It could be used to categorize gaps that have been identified in different security sectors (like border management, FCT or DRS) into one single taxonomy and as a result to enable the **identification of common/joint needs across sectors**. The IFAFRI gaps are a very good start, proving the benefit of identifying gaps of broader interest. In addition, the taxonomy could be used to **cluster the so far fragmented security market** and should thus support the access of the demand side to solution providers, i.e. to SMEs.
- For optimizing the project outcomes, it is recommended to ensure a **shared understanding of terms used and objectives to be reached** in collaborative projects. Consider the respective background of the project participants involved, which have a different understanding of terms like "crisis", "risk", "use cases" etc. Starting from that, the understanding and interpretation of tasks and outcomes of a project might be different amongst partners.

Krzysztof Samp (*krzysztof.samp*@*itti.com.pl*, *ITTI*) *Small and Medium Enterprise* (*SME*) *perspective*

SMEs, due to their flexibility and short decision process, seem to be very well prepared to development of innovations and applying them in the market. However, they encounter numerous challenges and barriers while crossing the 'Valley of Death' between research and market.

The most critical ones can be described as follows:

- **Limited resources** at numerous levels, e.g.:
 - **financial** SMEs cannot fund product development for too long, and they need soon find the customer who is going to pay for their products or services,
 - **human** the staff of the SMEs is limited, and the management needs to carefully decide if invest the time and effort of the most skilled people into the new developments or current operations (which usually bring significant revenue to the company),
 - **organisational and legal** SMEs do not have experts familiar with regulations, IPRs, ethics issues, etc., and they need to learn it fast or acquire this expertise from third parties (usually not for free),
- Access to the customer in security sector it is a challenge for SMEs to access the customer which is quite often a public body, and is used to collaborate with bigger players; thus, it's important for an SME to have already established contact with potential end-user or to be a part of well-defined

 $^{^{6}}$ EU security market study (2020-2022), to be published in May/June 2022



value chain (i.e. a relationship with bigger companies who are already selling products to the public sector).

There is no doubt that SME companies cannot make big investments in product development, and they need to make smart decisions while transferring the innovation from research to the market.

RECOMMENDATIONS:

Regarding the enablers and recommendations to improve the status quo, the following ones can be proposed for consideration:

- It would be beneficial to further run, at the European level, the mechanisms which will facilitate the collaboration between SMEs and practitioners/customers as well as big industry. HE program is a very good platform for this action, and there should exist mechanisms which will encourage participation of SMEs to such programmes (as it was in FP7 and H2020),
- There should appear **smaller programmes like open calls** (**in cascade funding**) which will allow SMEs to get involved in mini consortia (e.g. with one practitioner and/or one big industry) in which they could make experiments and tests on smaller scale the innovative solutions in operational environment,
- It is recommended to have also **support services which could help SMEs** in solving legal issues (e.g. IPRs, standards, etc.) and business issues which they are facing (e.g. marketing, access to foreign markets, etc.).

Marina Martinez (<u>marina.cdti@sost.be</u>, SOST)

National Contact Point (NCP) perspective

The following main three aspects have been observed by NCPs (and MS) in the last years when supporting our participants (industry, RTOs & end-users) to address the transfer process of the successful R&I results towards operational products on the field:

1.- Let's talk about the final point of the chain, that is, the tools allowing the costumer (usually a public body) to purchase a solution coming from a successful R&I process. Tools such as the PCP-PPI are still far from being a "common / usual procedure", easy and efficient to be implemented.

- The change in the cultural mindset when buying new products is not as quick as the speed of technology and the requirements of solutions on-the-field.
- The public administration (in general) faces bureaucratic barriers and internal control mechanisms which are not extremely agile. In addition, only few public buyers are provided with specialized teams prepared to implement these new tools at large scale within their organisations.
- Also, the uncertainty in the final result of that innovative purchase, in addition to the fear that the solution will not cover all the customer expectation, is a factor that makes potential public buyers become cautious in the decision of adopting new procedures of purchasing. Too much fear to fail puts severe concerns of leaving the "old-ways-of-doing".

2.- <u>The "industrialisation process" of an R&I result to become an "on-the-field-product"</u> is something costly (from the economical and rrhh points of view) and extremely time consuming. Not everybody knows to "industrialise" research in an efficient way. Other sectors such as the pharma sector has better "know-how" (and bigger order of magnitude in resources) devoted to this process.

On the other hand, security research lacks of these big public & private investors and, in addition, sometimes the process of transforming research result into operational product is (unfortunately) underestimated, not well designed and with a dramatic shortness of resources (economical and of human ones).

Let's say that the "garden of actors" specialized in the efficient transfer process is not so "lavish" as in other sectors, where the direct benefits and returns are sharply envisioned.

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3.- Finally, let's go to the first point of the chain. That is, <u>the R&I tools allowing the innovators to find</u> <u>the right resources to test</u>, <u>demonstrate and to develop innovative solutions</u> with the support and guidance of the end-users.

Cluster-3 on Civil Security Research is suffering from the beginning of Horizon Europe of dramatic cuts that, in a proportional way, are much bigger than other clusters or actions in the framework programme. The skinny budget that we have observed from call to call generates that:

- Many excellent projects, involving committed operational units of end-users that could test innovative solutions, are being left down. This means that many potential good solutions carried out by international & interdisciplinary consortia do not have a first opportunity to show their potential.
- On the other hand, the few ones getting financial support have difficulties to accomplish their full expectations, as resources available per topic are becoming extremely tight.

As a result, the whole security chain suffers from this situation when, on the contrary, according to Eurostat, security is one of the top concerns of the EU citizens!

The NCPs and MS representative colleagues are consequently disappointed on this critical situation of continuous drastic cuts in the budget devoted to R&I in civil security. We fear that not only our participants (industry, RTOs and end-users) but also the citizens as a whole will face the consequences in the very short term of this lack of attention and resources.

Thus, I can ensure that the community of NCPs and MS colleagues support DG-Home into this claim, for the good of innovation research and for the wellbeing of our society.

RECOMMENDATIONS:

1.- Better coordination and broader awareness of other programmes and actions in the EU to facilitate the market uptake \rightarrow Top-down involvement of other agencies and EU bodies in the objectives of the programme in order to make better connection with the results tested in Cluster-3 and to avoid duplications of resources and tools.

2.- Better involvement of the so called "innovation actions" of EC, for instance, in pillar-III, with specific and target windows for innovation in security tools and products in their calls as critical needs for strategic autonomy of Europe.

3.- Stop the budget drain in Civil Security Research towards other actions with are not directly related to the purpose, objectives and achievements expected in cluster-3.

Rosellina Di Santo (<u>r.disanto@meta-group.com</u>, META Group)

Horizon Results Booster perspective

Horizon Results Booster (HRB) is the initiative by European Commission which aims at maximising the impact of research projects. It includes three different type of services, free-of-charge and focussed on providing beneficiaries with tools and methodologies, able to transform project results into concrete benefit for the society.

HRB is assisting beneficiaries in an effective approach to Dissemination and Exploitation (D&E), through the work conducted by Experts which act as facilitators.

While one service is dedicated to Dissemination and Exploitation activities (Module A, B and C), a second service is focussed on Business Plan Development and a third service is structured in 6 different types of support for the GoToMarket (to get the research ready for commercialization).

More than 680 projects already benefitted from the HRB services and found the Experts' support of great value to their project. For instance, also projects supporting law enforcement agencies and focussed on taking down cybercrime, with great technological innovation but no idea on how to exploit their results,



benefitted of HRB D&E services. Having the opportunity to be supported by an Expert who can answer all the questions and provide templates to better organize thoughts, analysis, procedures, was rated as very useful for the project team which - impressed by the work conducted - strongly recommended the services.

With more than 350 services completed and more than 300 ongoing, there are many success stories. For example, the Cleanker project (with the aim to make cement production ecologically friendly) applied for 4 HRB services which allowed the beneficiaries to see beyond the end of the project and achieve a greater impact. Enlarging the networks, building synergies amongst projects, contacting stakeholders along with a systematic approach to exploitation, were the aspects that the project coordinator underlined in the appreciation of HRB services.

Also 5 distinct projects cofounded by H2020 and the Indian government, converged in communication and dissemination activities to maximise the impact of the EU-India Water Management Task Force, thanks to the HRB services.

Not only, but also projects that needed help in marketing their idea to politicians and the general public, hoping for an uptick in interest in a specific area, requested the HRB support. This is the case of the Geo-Drill project (focussed on the potential of geothermal energy) who affirmed "the HRB programme has broadened our horizons. We want to target not only policymakers, but also cross-sector groups. And particularly now that we're transitioning away from oil and gas as our energy base, we need them to understand the potential of geothermal". And on the outcome of the HRB services the project coordinator added: "I can't emphasise it enough – we would not be where we are in terms of getting engaged with people without the Horizon Results Booster."

RECOMMENDATIONS:

It is crucial to be assisted by Experts since the challenges in D&E often relate to wrong identification of Key Exploitable Results, and wrong basics lead to wrong output. Indeed, developing a solution that is not answering to a factual problem, does not create any impact.

In order to assure the impact of research projects, different activities should be carried out but most of all, everything should start from a key question:

What is the problem/need that your innovative solution is solving?

Responding to an existing demand of the economy and the society is crucial in order to use the results:

- in further research activities;
- in developing, creating and marketing a product or process;
- -in creating and providing a service, or in standardization activities.

HRB Experts are specialized in supporting projects in these key phases, from research to business uptake.



BIOGRAPHY

Marco Manso



Dr. Marco Manso is an engineer and technology entrepreneur. He is Director of Innovation of PARTICLE Summary, a company specialised in security and high-mobility solutions. He has more than 20 years of experience working in the Security and Defence market, including more than 15 years in Executive and R&D Positions. He received his Engineering degree by the Technical University of Lisbon, Post-Grad and MSc. in Information Warfare/Competitive Intelligence by the Military Academy of Portugal and PhD in Earth and Space Sciences by the University of Évora. He has authored and contributed to several papers and book chapters on Command and Control, Network-environment Experimentation, Social Media, Sensor Networks, IoT and Emergency Services.

Alberto Bianchi



Alberto Bianchi is an engineer working in Leonardo R&D&I Projects since 2001 and previously researcher at Telecommunication and Information Department of the Siena Engineering Faculty. He is following cross-sectorial programs in the Leonardo Aerospace and Defence company, addressing also many civil markets, new R&D&I programs of all the Leonardo Divisions and he is assisting the lower TRL Leonardo Labs. He has nearly 30 years of experiences in the Safety&Security market and internal programs of investments toward Civil Security products mainly for critical infrastructures protection, surveillance, crisis management and cyber security.

Isabelle Linde-Frech



Isabelle Linde-Frech is a biologist and Head of the Business Unit "Technology and Innovation Planning for public clients" in the Department of "Technology Analysis and Strategic Planning" at the Fraunhofer Institute for Technological Trend Analysis INT. Moreover, she represents the Fraunhofer Segment for Defense and Security VVS in the EARTO Working Group on Security and Defense Research, is a certified EU liaison officer (research). Isabelle provides long-term expertise in strategic planning support for security related capability development and innovation management and has worked as a leading project manager in several international and national research projects in the field of security/disaster management/resilience and defense. The methodological core of her work is centered around the objective to foster a capability and end-user (demand) driven approach in security related (European) RDI activities.

Marina Martinez



Krzysztof Samp



Tecnológico e Industrial, Ministry of Research and Innovation) in Brussels. She is responsible for the capacity building activities on EU R&I Programmes addressed to Spanish entities. She is National Contact Point for the Cluster-3 Civil Security (and previously, Secure Societies Societal Challenge in H2020). Before joining The Spanish Innovation Agency she has worked in the private sector developing Earth Observation based products and applications. She has been lecturer at the Technical University of Catalonia (UPC) for thirteen years and Vice-director of the Institute of Geomatics. She is PhD in Physics (GNSS systems and satellites) and she has been researcher at the Technical University of Delft, as well as invited researcher at the Jet Propulsion Laboratory of NASA (Caltech, Pasadena). In addition of different working groups of the EC and the EU Council, she has been the EC expert conducting the Framework Programme infodays in South America since 2017.

Dr. Marina Martinez is programme officer at the Spanish Innovation Agency (CDTI – Centro para el Desarrollo

Krzysztof Samp is vicepresident and co-owner of ITTI company, where he works since 1997. He has over 25 years of experience in telecommunications and IT sectors. He contributed to numerous projects funded by European Commission (5th, 6th, 7th FP and H2020), European Defence Agency and European Space Agency, as well as by commercial organisations and public institutions. He is a co-chair of TA2 group in Integrated Mission Group for Security (IMG-S), as well as vice-chairman of the Programme Council of the Polish Space Agency.

Rosellina Di Santo



Rosellina Di Santo is part of the HRB management team at META Group, since December 2021.

Project manager experienced in strategy coordination at European level in both private and public sectors, managed the European Steel Technology Platform and sustainability projects for the European steel industry association. She worked at European External Action Service, at the NATO Academic Planning and Policy branch, Political and Commercial Offices of the Embassy of Italy in Prague and the Office of the Diplomatic Counsellor at the Italian Ministry of Research and Education. Graduated in Strategic Studies with study/work experience in Turin, Rome, Washington DC, Prague and Brussels, she is – inter alia - certified in NATO Civil Military Cooperation.