**In-depth interview on the Business Impact of ARTEMIS projects**

From the results of the earlier questionnaires it became clear that the business impact of the ARTEMIS projects needs investigation in more detail. And, since there is quite some diversity in business impact, this topic was found not suitable for a web-based questionnaire.

To be more flexible and not to overlook great results, the interview method was selected with the main focus on the question: “How will the results of your project lead to future commercial success and improve industry competitiveness?”

These interviews will be carried out by members of the ARTEMIS-IA office via phone. The base questions of the interview are listed below. Please make sure that your answers are easy to understand for educated non-technical people.

# Introduction:

* Please introduce shortly the project and its main targets.

SHIELD is “the security methodology”

– business impact: measure security, privacy and dependability

– research impact: composable security

## Examples

Easy to understand exampel for security, privacy, and dependability

Example security for Railway monitoring

– currently: if a signal is not working, it turns to red and all trains stop (0/1 decision)

– with SHIELD: composable security. One signal is not working, but track (in a station) can still be observed through cameras, then operation at reduced speed

Example privacy:

– loan out your car to your children (< 80 km/h, within area of Brussels)

– SMS or location acces when not following the agreed rules

Example dependability

* power and data cable for police HQ are in the same cable tunnel. If that cable tunnel is destroyed, even an extra power generator does not help (no data communication).
* Common power supply for whole embedded system. Power drop will take the whole platform down.
* Communication: one fixed communication channel (e.g. WLAN) might be spammed, and then the whole surveilance system is “out of operation”.

Business Impact – taken to real business

Core platform: middleware + prototypes + metrics + validation approach

1. Facial recognition by Eurotech, - nSHIELD product with “secured” communication
2. secure boot, trusted execution environment by SICS and others
3. railway – security (monitoring of stations) by Ansalto STS, monitoring of signalling infrastructure needs standardisation/certification
4. software defined radio – UAV communication, integrated in OMNIA communication platform from Selex ES
5. UAV flight operation, novel concept IQ\_Engine “fly by search database” demonstrated in a flight simulator, and add-on
6. Social Mobility - - Seek and Find – sknfnd.com, applied (1) with Volvo trucks and (2) “tired-monitoring” – privacy aware
7. Norwegian Center of Excellence on Smart Grid – Methodology applied for Smart Grid in Halden

**Business impact:**

* What was the societal challenge for which your project contributed with a solution?

Security, Privacy - measurability

* What business impact was foreseen when the project started?

Establish components and an architecture to get it done

* What business impact has been realized by now, and what is still foreseen?

We experienced that “methodologies for measurable security” are far from being standard, and that we had to establish new grounds. - But thanks to “NSA” and others we have seen that we delivered results “just in time”: We have around 40 prototypes enhancing security. Ranging from “secure boot”, “trusted execution environments”, over “adaptable radio interfaces” to “different implementations of middleware for measuring security”. - On the science side, we have the methodology for composable security, answering with the configuration needed to fulfill a security requirement.

Personally I do also believe that we have demonstrated a novel concept for unmanned arial vehicles (UAV/UAS) software: “A real breakthrough”. Alfatroll's IQ\_Engine, a search-engine based steering system for UAVs, was successfully prototyped together with the OMNIA communication unit of Selex ES. Just think about: Germany has terminated the UAV (drones) development after having spent 600 M€, due to the lack of software certification. You can't certify 10 millions lines of code economically. - Our search-engine based approach has below 10.000 lines of code, and the real knowledge is in the search database (which we call knowledge base). Thus, certification will (probably) not be a problem, just a question of time, money and commitment.
But as long as suppliers only want “of the shelf products”, we need some more years with R&D funding for getting there.

Which of the possible types of business impact below is targeted by your project, and can you give some examples?

1. Improved enabling technology for production (lower production cost)?

Our goal was to get better products, with security (not lower production cost). At the end of the day “cheap is something everyone can do”).

1. Improved products (better specifications such as lower power, safer, cheaper, more features etc.)?
* Helps to stay competitive
* Helps to gain market share
1. New products in existing markets?
* Improves competitivity of one or more companies in project
1. New products that created new markets?

Products – about 40 prototypes, out of which 10-20 are ready for production

1. New start-ups or spin-off companies already started or in preparation?

For all the options above: can you mention one or more examples?

Which publications did you already made concerning your Business Impact? (if so, couls you send it?)

Are there plans to create publicity around one or more of these examples?

When relevant: can you provide names of partners having more details on these examples?

Thank you!.