



PRISMA PILOTS RRI ROADMAPS:

Aerialtronics

CEN workshop background document

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The Company

Aerialtronics develops autonomous Unmanned Aerial Vehicles (UAVs). UAVs, also known as drones, are large vehicles that can operate either autonomously or in a swarm. The company focuses on specific technologies that allow the drone to operate more independently from an operator and aims to sell the drones for professional and commercial tasks, such as monitoring and small maintenance tasks carried out for instance by police, fire departments or industrial inspection and maintenance companies. In the Autumn of 2017, the company was acquired by Drone Volt, a French manufacturer of commercial drones. With the acquisition of the knowledge base of Aerialtronics, Drone Volt can further develop the drone technology and include specific technologies, in particular in the field of security.

Central to the UAVs is the development of technologies allowing these vehicles to operate safely in an urbanized environment. Currently, existing legislation prevents these activities and as such the commercial value of the technology.

Commitment

- The RRI PRISMA pilot has been endorsed by the head of legal council and regulatory affairs
- Motivation for RRI: learn about new methods and approaches to identify the risks and uncertainties with respect to potential future ethical, legal and social impacts when developing and implementing commercial and professional drones. In the past, the company has faced serious pitfalls in the drone development as a result of ethical, legal and social issues which led to longer lead times, higher costs and endangered competitive position.

Context

- Type of pilot organization: SME
- Country: The Netherlands
- R&I project selected: PENSAR
- Technology: autonomous vehicles
- Relevant regulatory regimes: safety, security legislation, General Data Protection Regulation
- Type of R&I activities: in-house
- Type of business: business to business
- Time to Market (indicative): 1-3 years
- CSR policies: in-house corporate sustainability, privacy and dual-use ethical policy
- Gender policies in R&I: the company has no explicit policy in this respect, but given the field of operations it is relatively more men as compared to women who work in aerospace and electronics
- RRI Maturity Level: Tactical

Materiality and experimentation

- Key stakeholders: users and bystanders, authorities (e.g. police), civil aviation roads authorities, national Civil Aviation Authority, local municipalities, market clients and end-users such and inspection companies for off-shore and wind-turbines.
- Key ethical, legal and social issues: safety, security, privacy, data protection, data ownership (use of data and images that are produced by camera's), respect to the use of and the criteria for type of public and commercial drone operators
- RRI actions selected for the PRISMA pilots: stakeholder dialogue, ethical and social analysis

Validation aspects (key performance indicators)

- The most significant criteria identified with the company to analysis and monitor over time the impacts (in terms of costs & benefits) of the RRI actions on the PENSAR project are ⁷

- Q1.4: Product quality; Q1.5: Product reliability;
- Q2.1: Product acceptability; Q2.6: Address user's needs and rights' (e.g. privacy, data ownership, etc.); Q2.7: Trust with/avoid conflicts with business partners, suppliers and end-users
- Q3.5: Building legitimacy and gain consumer loyalty on the product;
- Q4.3: Address regulatory barriers; Q4.7: Avoid irresponsible behaviour
- Q5.5: (favoured) access to financial support;
- Q6.1: Direct costs to perform the RRI action

RRI Roadmap

RRI VISION

Develop drones with innovative active visual monitoring systems for application in public emergency and security, and industrial applications, ensuring safety, and safeguarding users' rights, including privacy and fair use of data.

RRI technologies and products

Aerialtronics has developed professional drones that are equipped with technology to monitor and survey by drawing on artificial intelligence and big data analytics. The main technology is the Altura Zenith surveillance system which can be extended by data capture modules (audio, video, physical parameters, etc.) and software for the processing and analysis of the data collected.

The technology we focus on in the PRISMA pilot is the PENSAR. The PENSAR is a dual spectrum computer vision platform that is mounted to a drone and operates with the Altura Zenith. The PENSAR can capture images and data and analyse it real-time by making use of reading text or thermal vision. This helps the operator of the drone, for instance to recognize characteristics, read license plates of cars or serial numbers of equipment immediately in the course of performing monitoring tasks.

PENSAR is equipped with a special privacy masking tool. This tool automatically and instantly blurs the details of sensitive data such as the privacy of bystanders.

We decided to focus on the PENSAR technology, because it is being sold and has a potential high intrusion on people's private life.

Drivers and challenges for RRI

Drivers

- Possible **areas of application for drones are continuously increasing**
- **Entry into new markets**, such as urban areas

Challenges

- **Industry fragmentation, absence of industry standards in technology**
- **Regulation needs evidence, public and media are receptive to the issues with drones**

⁷ For more details on the criteria for impact analysis used in this section, see PRISMA D5.1: Report on conditions for success of RRI uptake by industry

- **Regulation for emerging and novel, autonomous, AI data driven drone technologies**
- **High level discussions and international regulation authorities are difficult to access for SMEs**

Risks and barriers to be addressed by RRI actions

- **Small companies do not see their relevance** in the ethical discussion and acceptance of drones
- **Lack of space to conduct experiments no living labs for aerial drones, no evidence**
- **Regulatory compliance burden and costs for companies**, in particular SMEs
- **Limited applications leading to an elimination of potential clients.** Applications suitable only for those with certificate to fly
- Limited product acceptability, **reluctance to autonomous aerial drones due to privacy and safety**

RRI approaches, tools, actions

Reflection & Anticipation

- **Privacy and social impact analysis:** to ensure that the drones and the camera systems are used wisely by commercial operators, the technology is equipped with smart camera's that automatically blur faces of people and protect the disclosure of other private information. This technology is not fully certified and needs to be included in compliance and regulatory protocols. Within the pilot it has discussed within the company and with stakeholders how to generate data and evidence in order to build a case for regulatory authorities to accept the technology and allow operators to use it in their operations.

Inclusiveness

- **Building legitimacy, connecting stakeholders and industry partners.** Individual companies do need to see they have a role in the development of regulation. By building a community of producers and users of drones, bringing together their knowledge and concerns, the company tries to develop a playing field for discussion, and strengthen the legitimacy of the overall sector
- **User based and stakeholder inclusive approaches to experimental sites/living labs.** The development of living labs and test fields with stakeholders can help to conduct experiments and provide evidence that the new technology does respect ethical, legal and social issues.
- **Engage collaborations within industry to develop common interest, set standards.** To ensure the industry is committed to hold to the guidelines it necessitates the inclusion of various industry and policy experts and have them jointly collaborate by warranting their ownership and commitment.

Responsiveness

- **Development of design guidelines for regulatory compliance (safety and ethical requirements), in cooperation with regulators and authorities.** The aim is to provide a framework for companies in the drone industry to organise and have a common approach for drone development and operations which can also be easily checked and monitored by local and regional authorities.

Roadmap design

The aspects relevant for the RRI uptake by the company have been synthesized in an overall diagram, following the visual approach described in the PRISMA exemplar roadmap (Figure 5).

The RRI roadmap developed in PRISMA is a useful starting point for RRI uptake for Aerialtronics. It could be as well helpful for other companies in the field developing specific add-on technologies for drone applications, such as smart camera systems.

Aerialtronics is very active in the short-term activities, developing a framework of reference for drone design and development. The effect of these guidelines is aimed at the longer term to ensure acceptance between commercial drone operators and the governmental authorities.

The smallness of the company in terms of resources and representativeness, puts pressure on the extent the company can live up to meeting the steps as outlined in the roadmap. Yet the drone sector is characterised as an emerging one with many small players and Aerialtronics is, despite its small size, among the major leaders in the sector, and has a strong position in the stakeholder dialogues with governments at EU level to promote further regulation in the field.

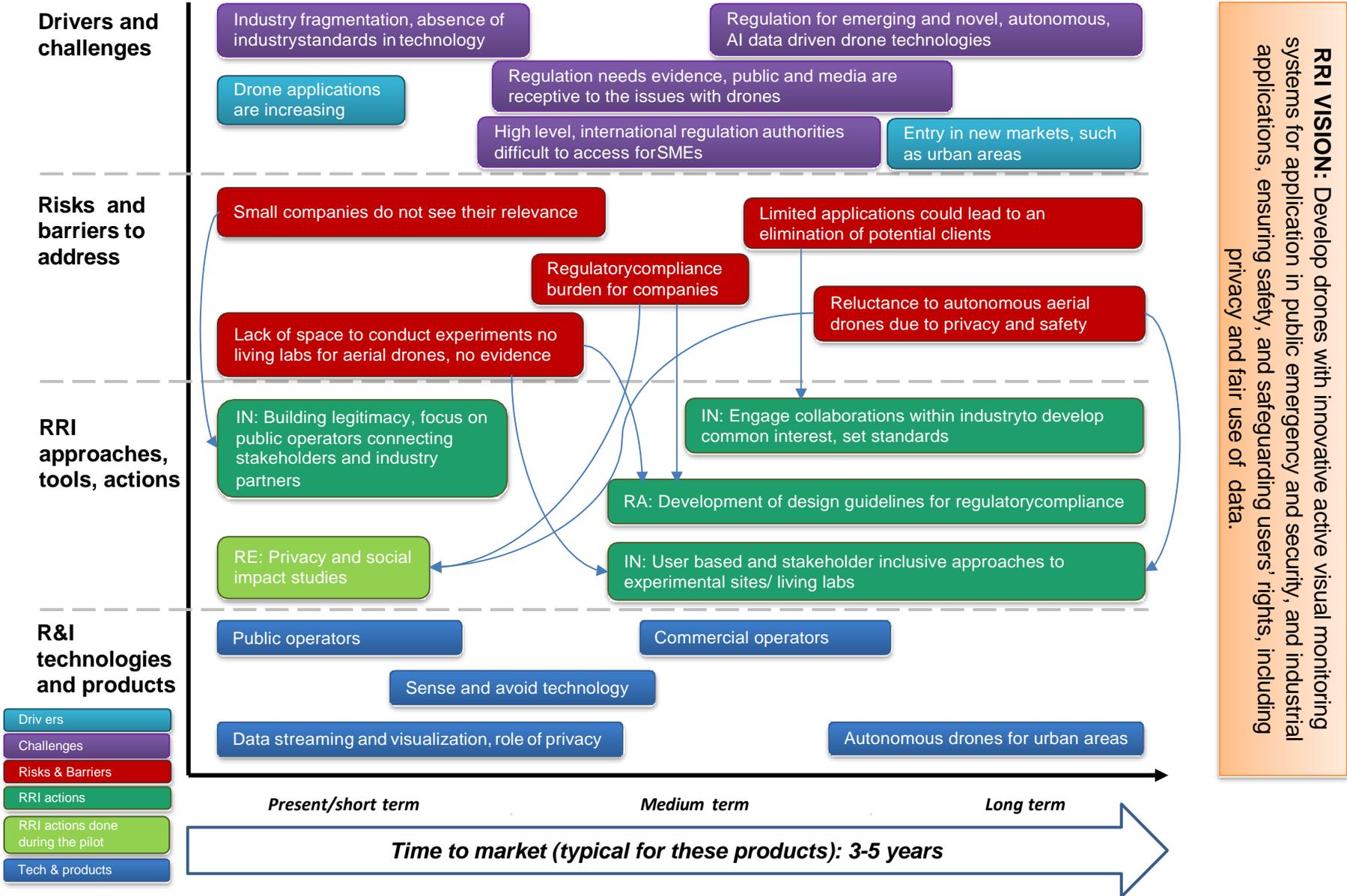


Figure 5 Aerialtronics, PRISMA RRI roadmap

