

# MINDS & SPARKS

## ORGANISATION PROFILE



[www.mindsandsparks.org](http://www.mindsandsparks.org)



## ABOUT MINDS & SPARKS

MINDS & SPARKS is an independent, non-profit research and innovation organisation based in Vienna, Austria. It focuses on fostering science, innovation and technology to address major challenges and to develop new methods and solutions for a better society. MINDS & SPARKS creates strong connections between science, technology and society using interdisciplinary approaches, promoting best practices and raising awareness on research and innovation

achievements. For technology-oriented projects we are offering established services in the field of requirements engineering, information visualisation, application testing, and user validation. Furthermore, the organisation focuses on improving sustainability of research and innovation outcomes especially of public funded projects to ensure that spent resources lead to enduring positive impacts for the society as a whole. MINDS & SPARKS is formed by a team of highly

skilled personnel which holds many years of experience in designing, leading and implementing research and advisory projects. The organisation is connected to various research and innovation networks including international research organisations, academic institutions, civil societies, NGOs, governments, municipalities, technology providers and industries in various sectors including health, security, energy, and transport.

## INVOLVEMENT IN RESEARCH AND INNOVATION PROJECTS



### Requirements Engineering Use Case Specification

We offer to take over the requirements engineering in software projects to help to address the specific needs of the clients and the end-users. In order to refine the specifications collected within this phase, we are using different techniques like visual personas, surveys, interviews and other to derive the users' needs. To uphold consistent high-quality standards, we emphasize thorough and iterative communication techniques between all partners during the stages of requirements engineering.



### Information Visualisation Interface Design

We are experienced in providing information visualisation in context of big data analytics and other data-driven projects. Using modern graph libraries and web-based implementation frameworks, we excel in creating modern data dashboard designs. We are also specialised in providing intuitive interface designs for web applications and mobile apps. During the creation process of user interfaces in research projects we are following a multi-step approach to provide designs at right scale based on the individual project focus.



### Application Testing User Validation

We are using established testing approaches for application tests at different scales for the specific needs during research and innovation projects. To validate project outcomes through the opinion of end users we are applying user surveys or acceptance tests. Due to this approach we are able to integrate real-life experiences into projects and therefore increase the overall quality of the software and services resulting out from it.



### Dissemination Project Marketing

We are an experienced dissemination, exploitation and communication partner for your project. Following the DEC guidelines provided by the EC, our creatives provide recognisable project identities, leaflets and individual print materials, as well as project websites and digital designs for your social media channels thus maximising your projects' impact. We are planning all marketing activities along the main project strategy.

## A Disruptive Technology That Enables Low Cost Real-Time Monitoring of Road Pavement Condition by Any Ordinary Vehicle Circulating on the Road, and Predictive Maintenance



Despite the huge public budget effort (6.000M€/year) for road pavement maintenance, the European road network (5.5M km) is not in an acceptable condition. Current pavement maintenance strategies are mainly based on corrective maintenance which is both financially and environmentally inefficient. In order to implement a predictive maintenance strategy based on lower cost preventive operations, a new approach is needed. PAV-DT is a disruptive technology that can be installed in any customer vehicle. This allows to convert such vehicles into a very low-cost real-time pavement inspection equipment. Additionally, advanced algorithm, cloud-based platform allows the customers to access the latest information on pavement conditions as well as when and where to apply required actions. PAV-DT consortium is formed by APPLUS (Spain), BECSA (Spain), M&S (Austria), MICRO-SENSOR (Germany) and IMM-UPV (Spain). A Joint Venture for commercial exploitation through a Product-as-a-service business model is planned. Revenues above 38.8M€, with an associated profit of 25.5M€ and the creation of 52 new highly qualified jobs with further 746M€ of savings are expected within the first 3 years.

Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-EIC-FTI-2018-2020	EIC-FTI-2018-2020	Innovation Action	5 Partners

## A Cybersecurity Framework to GUArantee Reliability and Trust for Digital Service Chains



ICT services are reshaped by evolving business models, which includes virtualization paradigms and integration with the physical environment. Multi-domain and complex business service chains bring more agility in service deployment and operation, but also introduce additional unsolved security and privacy issues. GUARD tackles conflicting trends in the cybersecurity market, like fragmentation or vendor lock-ins. It will develop an open modular, pluggable, extendable, and scalable security framework for advanced assurance and protection of trustworthy and reliable business chains. Its purposes include: i) increase analysis and detection information base, while preserving privacy, ii) improve detection capabilities by data correlation between domains and sources, iii) verify reliability and dependability via formal methods that take into account configuration and trust properties of the whole chain, iv) increase awareness by better propagation of knowledge to the humans in the loop. Blending security-by-design with enhanced inspection and detection techniques will enable quick and effective reaction to cyber-threats. Demonstration and validation in two challenging scenarios are envisioned to bring the technology to an acceptable level of maturity.

Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-SU-ICT-2018	SU-ICT-01-2018	Innovation Action	14 Partners

## Advanced Cybersecurity Simulation Platform for Preparedness Training in Aviation, Naval and Power-Grid Environments



The FORESIGHT project aims to develop a federated cyber-range solution to enhance the preparedness of cyber-security professionals at all levels and advance their skills towards preventing, detecting, reacting and mitigating sophisticated cyber-attacks. It will provide an ecosystem of networked realistic training and simulation platforms from the aviation, smart grid and naval domains. The creation of complex cross-domain/hybrid scenarios will extend the capabilities of existing solutions with emphasis on realistic and dynamic scenarios based on cyber-attacks and vulnerabilities gathered from the dark web. Cyber-security professionals will be able to respond to evolving threats, estimate cyber-risk impacts, selecting the most appropriate security measures, and minimising the cost and time to recover from cyber-attacks. Innovative training and certification programs will guide cyber-security professionals to implement and combine security measures using new technologies and established learning methodologies. The project aims at a holistic approach to cyber-threat management with the ultimate goal of cultivating a strong security culture.

Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-SU-DS-2018	SU-DS01-2018	Innovation Action	21 Partners



## Pilots for Healthy and Active Ageing



Pharaon aims to integrate highly customizable interoperable open platforms with advanced services, devices, and tools including IoT, artificial intelligence, robotics, cloud computing, smart wearables, big data, and intelligent analytics for Europe's ageing population. Pharaon will consider relevant standards and will contribute to them with the help of the two standardisation bodies of the consortium and will be implemented within health and other domains (energy, transport and smart cities). Pharaon will be user centric and utilize cloud technologies, AI and algorithms for big data intelligent analytics, while at the same time be concerned with data privacy, cybersecurity, interoperability and openness. Pharaon will evolve from the user feedback and results from a MAFEIP framework that will be implemented for impact assessment. This will be used to find innovative solutions through two "open calls": 1) single solutions and 2) small-scale pilot demonstrations. Validation takes place in two stage: pre-validation and large-scale pilots (LSPs) in Spain, Portugal, The Netherlands, Slovenia and Italy, where team of partners in each of them will ensure its right development. Public development tools will simplify customization, integration and help to promote development of new solutions similar to Pharaon.

Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-SCI-FA-DTS-2018-2	DT-TDS-01-2019	Innovation Action	41 Partners

## Advancing Collaboration and Exchange of Knowledge Between the EU and Japan for AI-Driven Innovation in Manufacturing



Artificial Intelligence technology is already having a great impact in many areas, especially including the manufacturing sector. The integration of AI with advanced manufacturing technologies and systems makes it possible to exploit the full potential in the manufacturing industry by achieving a higher level of adaptability, efficiency, and robustness. At the same, such systems will be human-centric and promote the inclusion and cooperation with humans during planning and execution, which can help to improve the quality of products and processes. Both the EU and Japan have recognised these new development trends and their importance. In order to widely deploy and take advantage of such novel approaches and technologies, special attention is given to international cooperation and exchange of knowledge between EU and Japan for AI-driven innovation in manufacturing. Therefore, the EU-Japan.AI project aims to establish, stimulate and support long-term cooperation between all the relevant stakeholders from the EU and Japan, by connecting them via the project's platform and by using modern, online-driven awareness approaches to facilitate the information exchange.

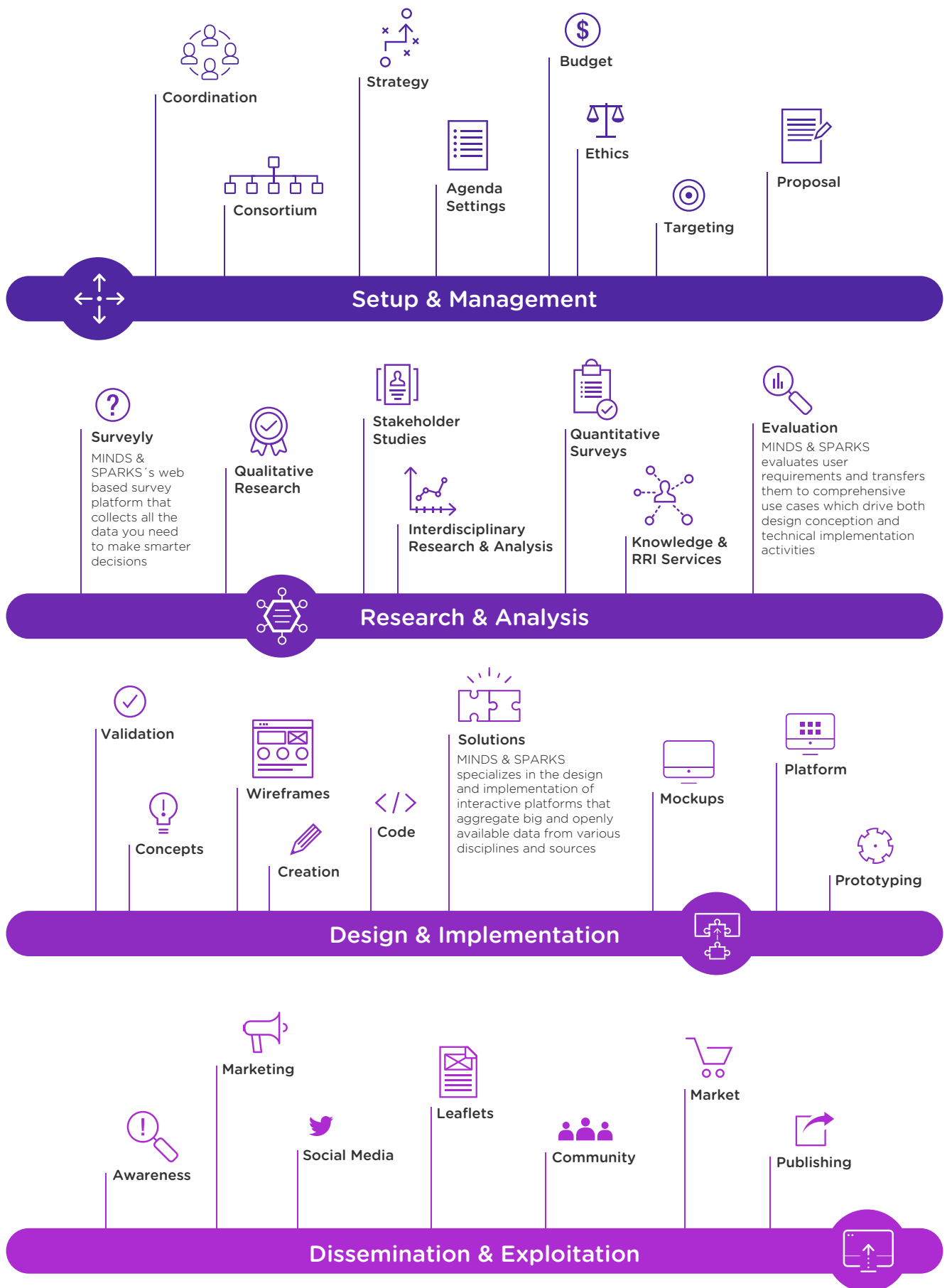
Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-ICT-2018-20	ICT-38-2020	Coordination and Support Action	6 Partners

## Leveraging AI based technology to transform the future of health care delivery in Leading Hospitals in Europe



During the past 30 years, Intensive Care Unit beds in Europe have been permanently reduced. Especially the current pandemic situation shows that these hospital budget cuts must be complemented with organizational restructuring including the use of innovative technologies to be successful. ODIN has identified eleven critical challenges within hospitals in advance for which the project will deploy technologies along three lines of intervention: a) empowering workers through the use of AI, cybernetics and bionics, b) introducing autonomous and collaborative robots and c) enhancing medical locations with the Internet of Things (IoT). These areas of intervention will be piloted in six hospitals in Spain, France, Italy, Poland, the Netherlands and Germany. Seven use cases will be created and the research will analyse patient management as well as disaster preparedness and hospital resilience. Within the ODIN pilot these multicentred longitudinal cohort studies shall demonstrate the safety, effectiveness and cost-effectiveness of ODIN technologies.

Programme	Call	Topic	Funding Scheme	Consortium
Horizon 2020	H2020-DT-2020-1	DT-ICT-12-2020	Innovation Action	20 Partners



MINDS & SPARKS GmbH  
Gumpendorfer Straße 73/17  
1060 Wien  
Austria

E-Mail [contact@mindsandsparks.org](mailto:contact@mindsandsparks.org)  
Phone +43 1 9972019  
Web [www.mindsandsparks.org](http://www.mindsandsparks.org)

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