

Description of challenges in Warsaw:

Safe food:

Actions increasing the availability and enabling the development of high quality food products, consistent with the idea of sustainable development, safe for both the final recipient and the environment throughout the production and distribution cycle. Safe food specialization particularly includes:

- food production:
 - crop / breeding monitoring systems,
 - production and packaging processes,
 - quality assessment systems for raw materials and products,
 - automation and robotization of production,
 - precision agriculture,
 - live organisms used in the production process (including the agri-food sector, biotechnology),
- distribution:
 - packaging (including agri-food sector, chemical sector, nanotechnologies),
 - logistics,
 - supply cycle management,
 - storage (including the agri-food sector, IT sector, information and communication technologies, B2B services),
- high quality food:
 - qualitative classification systems,
 - equipment for quality assurance and testing,
- minimizing the impact on the environment (sustainable development):
 - crop protection measures and techniques,
 - veterinary measures,
 - bio-pesticides,
 - management of by-products of agricultural and food production and processing,
 - solutions in the field of closed circulation (including the agri-food sector, energy sector, chemical sector, biotechnology, nanotechnologies, B2B services),
- security of the recipients:
 - biologically active substances,
 - functional food,
 - nutraceuticals (including agri-food sector, medical sector, chemical sector, biotechnology).

Intelligent management systems:

Infrastructure and process solutions characterized by a high degree of adaptability, leading to increased automation and enable effective monitoring of processes related to economic activity, enabling, among others, increasing the effectiveness of raw materials and energy and improving the quality of life, also in the context of human safety. Particular areas included:

- infrastructural solutions:
 - intelligent networks (including energy sector, IT sector, information and communication technologies, photonics, electronics, construction sector),
 - infrastructure management and control systems, intelligent buildings, traffic control systems (including IT sector , information and communication technologies, photonics, electronics, electromechanical sector, construction sector),
 - Internet of things (including IT sector, information and communication technologies, photonics, electronics, R & D services),
 - modern production systems, including technological systems and equipment for material surface engineering solutions implementation, production automation (including IT sector, electromechanical sector, information and communication technologies, electronics, mechatronics, photonics, R & D services),
 - safe and environmentally friendly means and transport system , including transport systems for hazardous substances (including the chemical sector, the agri-food sector, the electro sector machinery, medical sector, biotechnology, nanotechnology, electronics, R & D services),
- safety and monitoring:
 - control and measurement equipment,
 - diagnostic devices (including chemical sector, medical sector, nanotechnology, photonics, electronics, biotechnology, R & D services),
 - automation of measurement, control and diagnostics systems, including using machines and robots, multi-functional composite and self-healing composite spatial materials (including IT sector, construction sector, electromechanical sector, information and communication technologies, photonics, electronics, R & D services),
- safety and monitoring:
 - control and measurement equipment,
 - diagnostic devices (including chemical sector, medical sector, nanotechnology, photonics, electronics, biotechnology, R & D services),
 - automation of measurement,

- control and diagnostics systems,
- including using machines and robots,
- multi-purpose composite and self-healing composite spatial materials (including IT sector, construction sector, electromechanical sector, information and communication technologies, photonics, electronics, R & D services),
- threat detection and prevention systems (incl. others: IT sector, information and communication technologies, electrical machinery industry, photonics, electronics, chemistry, biotechnology, R & D services)
- digital security solutions (including IT sector, information and communication technologies, photonics, electronics, chemistry, biotechnology, B2B services),
- material and energy efficiency:
 - industrial waste utilization and recycling systems,
 - energy production from waste (including chemical sector, biotechnology, nanotechnologies, B2B services, construction sector, energy sector),
 - energy storage (including energy sector, construction, IT sector, information and communication technologies),
 - increasing the energy efficiency of energy receivers (among others, the electromechanical sector, energy sector, electronics, mechatronics, photonics, chemistry, nanotechnologies).

High quality of life:

Technological and organizational solutions used to provide social services, in particular in the areas of education, health, safety, work and leisure time; actions aimed at stimulating social innovations, development of social capital and counteracting the negative effects of the developmental polarization of the region. Particular areas included:

- education:
 - education and skills development programs stimulating creativity and entrepreneurship (IT sector, information and communication technologies, R & D services),
 - open access to knowledge (IT sector, information and communication technologies, R & D services),
- health:
 - modern technologies and solutions in medicine, including telemedicine, teliagnostics, nanomedicine, diagnostics and therapy in personalized medicine,

molecular medicine, gene therapy and hadron therapy, regenerative medicine information and communication, biotechnology, nanotechnologies, photonics, electronics),

- advanced pharmaceuticals, including biological medicines
 - advanced dietetics
 - plastics, layers and coatings that meet special requirements,
 - health economics
 - development and dissemination of the use of inert materials and substances for living organisms and the environment, e.g. hypoallergenic paints
- security:
- detection and threat prevention systems, systemic organizational and management solutions in the scope of protection of human life and health (including IT sector, chemical sector, medical sector, construction sector, information and communication technologies, photonics, electronics, B2B services, R & D services),
 - digital security,
- work:
- teleworking,
 - organizational solutions that reduce non-magazines' workloads
- free time:
- advanced entertainment systems,
 - development and increasing the availability of services provided via electronic data transmission channels.