

 <p>EURÓPSKA ÚNIA Európsky fond regionálneho rozvoja OP Integrovaná infraštruktúra 2014 – 2020</p>		 <h1>PROJECT CARD</h1>		 <p>VÝSKUMNÁ AGENTÚRA</p>	
Integrated Infrastructure Operational Program	<b>European Development Fund</b>	European Regional Development Fund			
	<b>Call</b>	Call for applications for a non-repayable financial contribution			
	<b>Call code</b>	OPVal-VA/DP/2018/2.2.1-01			
	<b>Project code in ITMS2014+</b>	<b>313021W479</b>			
	<b>Project title</b>	<b>Research Center for Analysis and Data Protection - II. stage</b>			
	<b>Entity / Beneficiary</b>	<b>Asseco Central Europe, a. s.</b>			
	<b>Partner 1</b>	<b>Center for Scientific and Technical Information of the Slovak Republic</b>			
	<b>Partner 2</b>	<b>DWC Slovakia a.s.</b>			
	<b>Partner 3</b>	<b>NanoDesign, s.r.o.</b>			
	<b>Partner 4</b>	<b>Slovak University of Technology in Bratislava</b>			

<b>Project financing</b>	COV	<b>7 962 983,18 €</b>
	NFP	<b>6 279 406,03 €</b>
	VZ	<b>1 683 577,15 €</b>
<b>Project implementation period</b>	12/2020 – 06/2023	
<b>Place of project implementation</b>	SR / Bratislava Region / Bratislava – city district Old Town SR / Bratislava region / Bratislava – city district Ružinov SR / Bratislava region / Bratislava - city district Karlova Ves	
<b>The domain of intelligent specialization</b>	Digital Slovakia and the creative industry	
<b>Main relevant SK NACE industry</b>	J62 Computer programming, consultancy and related services	
<b>Functional bonds</b>	not relevant	
<b>Subject of research</b>		
<ul style="list-style-type: none"> <li>○ industrial research of the unified data model and interface of the SmartLife IoT platform and experimental development focused on the issue of the data model and interface of the SmartLife IoT platform (applicant Asseco Central Europe, a. s.)</li> <li>○ industrial research into the specific properties and contexts of data obtained from heterogeneous IoT sources, and experimental development aimed at verifying the models of operation of the SmartLife platform in relation to life situations of ordinary person (partner 2 DWC Slovakia a.s.)</li> </ul>		

- industrial research in the field of sensor points and IoT-based systems and experimental development in the field of sensor elements and verification of their functionality (partner 3 NanoDesign, s.r.o.)
- independent research and development in the field of receiving, processing and storing large amounts of data with the protection of principles analysis and data protection and privacy protection (partner 1 Center for Scientific and Technical Information of the Slovak Republic)

## Outputs to practice

- experimental model of configuration services for "Smart Life" platform and experimental model of data structures for services in individual layers
- analysis of risks and security threats of the new concept of the configuration services model
- an experimental tool for editing data from video technology ensuring the protection of personal data
- communication interfaces and a validated sample of the communication interface
- experimental model of the "Smart Life" platform with implementation of data model, interfaces and communication protocols
- prototype SW of security processes for service registration
- prototype SW enabling mutually cooperating multisensor data solution for application and use of platform data
- methodology and technology of preparation of special sensory structures and systems for connection with the "Smart Life" platform and use for the population in practice
- prototypes of sensor systems for mass use and deployment in real operation
- filed patent applications / applications for registration of intellectual property rights
- cooperation in international networks and participation in international activities

## We pay attention to ..... (specifics / unique and interesting facts of the project)

The research and development activities of the project include, among others:

- research into the overall new functional and security concept of the platform for collecting data from different networks;
- research into the search for the optimal concept of communication and related interfaces from the point of view of universality and data security;
- specific research in the specific field of sensors and detection.

### Professional project activities

**Entity / Beneficiary - Asseco Central Europe, a.s.**

**Research activity 1 - Industrial research of the unified data model and SmartLife IoT platform interface**

**Theme 1** - Industrial research in this activity will focus on area of procedures for automation of data exchange definition. A specific part of this research activity will be devoted to impact new concepts for data security and finding suitable ones means to maintain or increase it. They will be tested means of monitoring and evaluation of risk behavior of services for timely evaluation security threats related to capability development process new stimuli and thus create an increasingly universal platform in the SmartLife IoT concept. For platform layers and blocks the separate scope and content of the structures as well as their possible appropriate depths will be examined. The platform will be explored in context use in domains linked directly to "SmartLife" structures and services.

**Research activity 4** - Experimental development focused on issues of data model and SmartLife IoT interface platforms

**Topic 1** - The aim of the activity is experimental verification of the concept the SmartLife IoT data model, which verifies the suitability and feasibility of concepts of defining structures and their parameters from the higher layers to the lower ones so that the

**Partner 1 - Center for Scientific and Technical Information of the Slovak Republic**

**Research activity 8 - Independent research and development in the field of admission, processing and storing large amounts of data with security principles of data analysis and protection and privacy**

**Topic 1** - Within the activity in addition to the implementation of research and development itself the research infrastructure of the data center will be built, which will be served for the purposes of research and development for STU and CVTI SR and on the principle of open access will publicly provide some of the data. In cooperation with STU it will be data center used internally for the purposes of research and development of the project together with the design and implementation of HW and SW solutions for platform research and elements in strict compliance with state aid rules to prevent unlawful aid, as amended by the current Appendix. They will be investigated aspects of data analysis and protection in the acquisition and management of large amounts of data generated by IoT elements, including advanced technology elements visual record processing. When managing a large amount of data is necessary to build elements of data security and also sufficiently secure user interface. For these purposes, CVTI SR will be as project partner to carry out research activities related to the design and implementing data nature and vulnerability assessment processes. The result of the implementation of research tasks will be automated evaluating the type

<p>lower layers are "Data / information suppliers" according to higher layer requirements.</p> <p>Simultaneously with the verification of the concept, they will be experimentally verified as well as suitable interfaces and protocols within the SmartLife IoT platform.</p> <p>Configuration automation capabilities will be validated processes. Semantic connection options will also be verified objects for data, information and metadata. During verification it will be a special section dedicated to the capabilities of the proposed platform SmartLife IoT and implemented analytics tools in areas of video technology.</p>	<p>of data, whether it is structured data, measured data, or data carrying exploitable information e.g. personal data, if any other data. Automated data evaluation will affect the follow-up ways of using the means of securing them.</p>
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**Partner 2 - DWC Slovakia a.s.**

**Research activity 3 - Industrial research in the field of specific properties and contexts of data obtained from heterogeneous IoT sources**

**Theme 1** - The subject of industrial research under Activity 3 will be Business Intelligence issues for IoT networks. Specifically, it will be about analysis of specific properties and contexts of data obtained from heterogeneous sources of output unified IoT devices universal communication platform. Research will focus on specifics of physical measured quantities of investigated IoT devices in the context of existing IoT devices as well as in the context of the connection perspective other types of equipment and the development of specific rules and procedures processing and visualization of acquired complex data in real time. Data processing, modeling and simulation of situations of their use and prediction models and models of artificial intelligence, created in relation to their usability in the field of everyday life of the population, their quality of life, their relation to residence, public administration, etc. will specifically focus on their real application in space and time to the search for patterns of behavior and the relationship between individual sources or groups of signal sources IoT devices with usability for residents. The knowledge gained will be examined in the context of establishing rules for the application of knowledge in practice, i.e. management, monitoring, provision of new types of services, creating communication tools for cities and municipalities, etc. In this sense, activity 3 must be seen as complementary to activity 2, which will be implemented by Partner3 - NanoDesign - that is, there is interaction and cooperation between Partner2 – DWC and Partner3 - NanoDesign. It will serve as inputs for this activity on the one hand, the laboratory model of the SmartLife IoT platform with admission sensory data for the implementation of the investigated models and modules for life situations and proposed definitions of a validated data model, and life situation models for the purpose of experimental interface development.

**Research activity 6 - Experimental development focused on verification models of operation of the SmartLife platform in relation to the life situations of an ordinary person**

**Topic 1** - Subject of experimental verification in the field of Business Intelligence for IoT networks will be performance analysis of visualization and analytical tool for specific properties and contexts of data acquisition from heterogeneous sources of IoT devices and verification of models of SW tools to address the everyday life situations of citizens in relation to the public SmartLife message. Experimental verification will be focus on practical testing, deployment and implementation models and functional modules, verification of performance parameters in in the context of existing IoT systems and SmartLife platforms and specifics, obtained from complex real-time data. The knowledge gained is will be examined in the context of establishing rules for the application of knowledge in practice, it is management and monitoring. The inputs for this activity will be models and prototypes of IoT platform elements.

	<p><b>Partner 3 - NanoDesign, s.r.o.</b></p> <p><b>Research activity 2 - Industrial research in the field of sensory IoT-based points and systems</b></p> <p>Topic 1 - In activity 2, which is its content focus complementary activity to activity 1 implemented by the Applicant - Asseco, Partner3 - NanoDesign will carry out industrial research in the field of new sensory elements depending on the needs of the present project.</p> <p><b>Research activity 5 - Experimental development in the field of sensory elements and verification of their functionality</b></p> <p>Within this activity, experimental development will be carried out focused on development of prototypes of sensory elements and verification of their properties a functionality by performing test procedures. Theme 1 - Sub-activity will focus on research and development of new ones material sensory structures, evaluating their parameters and their integration into elements as well as the integration of sensory elements into sensory systems to create state-of-the-art IoT elements, which will provide easy connectivity to the prepared platform on the basis of meeting the requirements that are on them put.</p>
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**Partner 4 - Slovak University of Technology in Bratislava**

**Research activity 7 - Independent research and development in the field progressive sensory IoT systems**

**Topic 1** - Sub-activity is focused on research and development of new ones sensory layers and technological procedures for the preparation of these layers in order to improve the parameters of subsequently prepared sensory elements. Subactivity 7.2. will focus on research and development new material sensory structures, by evaluating them parameters and their integration into elements as well as the integration of sensory elements into sensor systems in order to create the most modern IoT elements that will provide easy connectivity to the prepared platform on the basis of meeting the requirements that are on them put. The researched elements will be prepared by the most modern methods using simulation and visualization tools for preparation and implementation appropriate systems to ensure the preparation of energy and functionally the most efficient elements, even with the help of the most modern techniques implementation itself through the SMD deployment center.

### Professional guarantors in the project

<b>Entity / Beneficiary - Asseco Central Europe, a.s.</b>	<b>Partner 1 - Center for Scientific and Technical Information of the Slovak Republic</b>
<b>Name and surname (or title) of the professional guarantor</b> <b>Profile</b>	<b>Name and surname (or title) of the professional guarantor</b> <b>Profile</b>
<p><b>doc. Mgr. Pavel Tuček, PhD.</b>  publications - 46 / citations - 147 / H-index 7 SCOPUS  Investigator of research projects at national and international level. At Palacký University in Olomouc, Czech Republic teaches mathematical analysis, statistics, geostatistics, geocomputing, data processing, GIS modeling, logistics, advanced data processing. Participated in several (8) research grants for technological development, and data research in the field of data security, industry, automotive industry and geodata. He worked as a partner in research and development of imaging and lighting technologies, and optoelectronics for the optical and automotive industries. Is an author of the solution design and project manager at Hella. Is an holder of several awards, among others - Award holder – na 8th International Symposium on Industrial Applications Mössbauer effect. Dalian - China (ISIAME2012). He acted like coordinator of foreign science parks and as a member top teams of scientists. He was a member of the professional of the Ministry of Education, Youth and Sports for the configuration of the H2020 program committee. Is an co-author of the patent: Prochazka R., Tucek P., Tucek J., Maslan M., Pechousek J. : Mössbauer Spectrometer. No. CZ302779, 2010.</p>	<p><b>Mgr. Dalibor Bošňák</b>  He has many years of experience in building and operating complex information systems gained in the world's leading companies such as Volkswagen, IBM, Siemens. He graduated several times courses for project management, ITIL and quality management in IT. He is currently working on architecture design and information integration systems, server administration, and user support activities information systems. Performs sustainability activities projects NITT SK, DC VaV and IS NPC.</p>
<p>The results of his many years of work are also reflected in the 1st functional prototype, 2 certified technologies and 8 contract</p>	<p><b>Partner 2 - DWC Slovakia a.s.</b>  <b>Name and surname (or title) of the professional guarantor</b>  <b>Profile</b>  <b>RNDr. Peter Kaššák, PhD.</b>  He has more than 12 years of experience in software development and implementation solutions for various medical and health projects. He was active in various positions on projects in the Slovak Republic and abroad (Netherlands, Poland), in which as a member of the scientific research team. He also published extensive publishing activities. He has experience as a key team member in important and strategic projects (eg team member responsible for the deployment of ezdravie.sk).</p>

<p>research reports.</p> <p><b>Ing. Patrik Brečka, PhD.</b></p> <p>He has many years of experience in the field of ITS. He has been the researcher of several scientific fields research projects focusing on data transmission and use in transport telematics (eg the researcher of the project "Process, security, legislative and operational issues of new ones telematics applications for road transport "). He was active in the council commercial projects in the field of transport and ITS implementation in cities. He has been working on IT projects at Asseco for the last 10 years Central Europe, a. s., where it builds the competence of Smart City. Is an co-author of several publications and outputs of science and research. He worked as a pedagogical worker at the university, where he lectured in areas of implementation of modern technologies in transport engineering. The scope of practical activity passes through the entire cross section the subject of the solved research project. He has experience with leading project as well as scientific teams.</p>	<p><b>Name and surname (or title) of the professional guarantor</b></p> <p><b>Profile</b></p> <p><b>Ing. Igor Balažovič</b></p> <p>He has more than 16 years of experience in Big Data Management, Architecture systems and implementation of software solutions. He was active in Slovakia and abroad as a key member of the team in IT projects focused onto intelligent SMART solutions (SAP Sweden, implementation software solution Škoda CZ). As a key member of the team he has an excellent communication and presentation skills as well as leadership experience project team managed by an agile method.</p>
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**Partner 3 - NanoDesign, s.r.o.**

**Name and surname (or title) of the professional guarantor**

**Profile**

**Ing. Martin Jagelka, PhD.**

SCOPUS publications - 14 / citations - 31 / H-index - 3

Professional in the design of electronic circuits of Internet of Things devices (IoT), sensor systems and medical electronics. Thanks to your research has extensive experience in the design of sensory and measurement systems, pre-processing of measured signals and transmission systems data. He is a co-author of 14 indexed scientific publications in the field of special electronic circuit design. His work so far has 31 citations, resulting in the H-index 3 design of special electronic circuits. His work so far has 31

**Partner 4 - Slovak University of Technology in Bratislava**

**Name and surname (or title) of the professional guarantor**

**Profile**

**Doc. Ing. Martin Donoval, PhD.**

SCOPUS publications - 42 / citations - 168 / H-index - 6

Expert in the implementation of solutions into practice, expert in the field sensory elements, smart systems, signal transmission and electronic circuits. His research focuses on utilization Internet of Things (IoT) systems for an innovative healthcare concept care, but the key is its ability to present the result of the research on the market. He is the co-author of 42 indexed scientific publications in the field sensors, monitoring systems and transmission and processing methods sensory data, which were cited together 168 times. He has a very rich experience with the transfer of research results into practice, in the last 5 years is the originator of two granted patents, four utility designs and one industrial design.

**Other information/contact/web**

<p><b>Entity / Beneficiary - Asseco Central Europe, a.s.</b></p> <p>www.asseco.sk</p>	<p><b>Partner 1 - Center for Scientific and Technical Information of the Slovak Republic</b></p> <p>www.cvtisr.sk</p> <p><b>Partner 2 - DWC Slovakia a.s.</b></p> <p>www.dwcslovakia.sk</p> <p><b>Partner 3 - NanoDesign, s.r.o.</b></p> <p>www.nanodesign.sk</p> <p><b>Partner 4 - Slovak University of Technology in Bratislava</b></p> <p>www.stuba.sk</p>
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