AVIATION SYSTEM FOR MONITORING COSMIC IONIZING RADIATION EXPOSURE TO FLIGHT CREW DO-RA.Avia

PJSC INTERSOFT EURASIA

Intersoft Eurasia

DO·RA® DOSIMETER-RADIOMETER

7th Sense®

M DO-RA

СиДиСи Центр Корпоративных Разработок группа компаний

RADOSE FLY SAFE — FLY MORE

Sk Skolkovo

DO-RA PROJECT TEAM

Elin V. A.

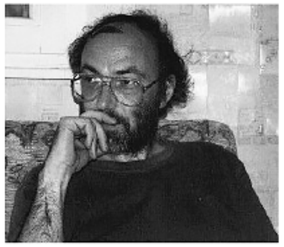
PhD, DO-RA Project Manager and Investor

EMSTS Corporation President (www.emctc.ru), the owner of several dozens of patents in the field of dosimetry, computer translation technology, original multi SIM cards smartphones. Has more than 30 years experience in private logistics business.

Kibkalo A. A.

Head of DO-RA Project Software Development

Candidate of Physico-Mathematical Sciences, Doctor of Economic Sciences. Has over 20 years of experience at the Federal Nuclear Center and Intel's Research and Development Center. At the moment, the Director of the Software Development Center in the Innovation Technology Center "Sistema Sarov" (AFK "SISTEMA" www.sistema.com).



Merkin M. M.

Leading Designer of the DO-RA Project Engineering and Electronics

Doctor of Sciences in Physics and Mathematics, Specialty - High Energy Physics, winner of M. V. Lomonosov Moscow state University 1st degree prize in 2007, published more than 500 scientific works. Currently, Head of the Silicon Detectors Laboratory of the Lomonosov Moscow State University Skobeltsyn Research Institute of Nuclear Physics (Division of Experimental High Energy Physics).

Novikov A. E.

Head of New Technologies Implementation Department

Master of Technical Sciences. Area of responsibility: Science and Technology. Full-time participation in the project. Professional experience: 2007-Deputy Dean of the Faculty of Computer Design at the Belarusian state University of Informatics and Radioelectronics, Minsk. 2013 – Head of Equipment Development Department at "PROMWAD" Electronic Engineering Company, Minsk. From 2014 - present – Head of New Technologies Implementation Department at PJSC "Intersoft Eurasia".

Shvedov A. V.

Circuit Design Engineer. Head of Electronics Department.

Responsibilities: Development of new devices, Circuit design, Testing and Debugging solutions, Modeling and Simulation. Working in the DO-RA Project team since 2011. Designed a number of DO-RA line devices and its micro control protocols.

Bashurov V. V.

Circuit Design Engineer at Electronics Department

In 1986 got MSU degree with Mechanical Engineering Specialization. Has 20 years experience as Senior Scientist at Russian Federal Nuclear Center (Numerical Simulation of Three-Dimensional High-Speed Flows), 10 years experience as INTEL employee (Numerical modeling, 3-dimensional graphics), 10 years experience of iOS Applications Development, 2 years of Mathematical Algorithms Development for Machine Learning. Working in the DO-RA Project team since 2011, created the first DO-RA software for iOS.

Intersoft Eurasia was founded in 2010, the maximum number of the team members was at the Project's peak - 29 people, working mostly on the outsourcing from: MGTU, Moscow State University, Sarov Technopark, PROMWAD and other organizations. Currently, the core of the team consists of 6 people.

PROBLEM DESCRIPTION

Aircraft vessels do not have a single, automated control system for monitoring personal radiation dose of flight personnel, taking into account on an object basis the constantly changing levels of cosmic radiation exposure during the flight.

Health Effects of Cosmic Rays on the Human Body:

Molecular level:

DNA and RNA metabolic disorders of purine and pyrimidine metabolism.

Intracellular level:

Damage of the membrane, nucleus, chromosomes and mitochondria.

Cellular level:

Termination of cells division and its death, transformation of cells into malignant formations.

Tissue and organic level:

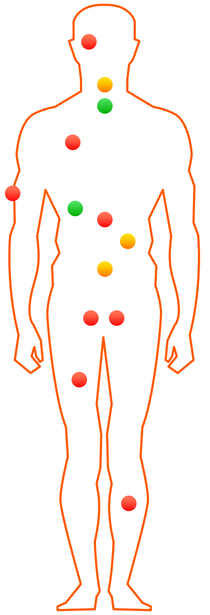
Damage of Central Nervous System, bone marrow, gastrointestinal tract.

Organismic level:

Immune dysfunction and exacerbation of chronic diseases.

Sensitivity of body organs to radiation

Eye lens
Thyroid
Trachea
Lungs
Liver
Stomach
Intestine
Spleen
Skin
Bone marrow
Bone tissue



Sensitivity level:

Low Medium High

BACKGROUND TO THE PROJECT

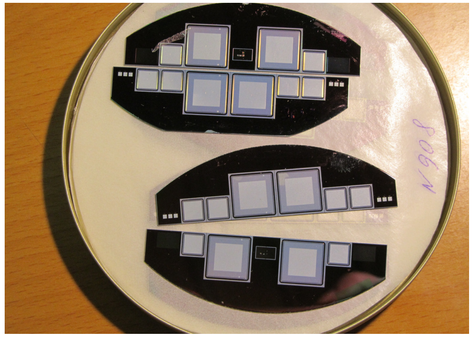
- According to the UAC Data, the number of global air flights will rise up to 4.7% per year till 2034.
- ICAO International Standards and Recommended Practices: The standards of flight time and flight duty period for the flight crew are determined by the norms of the State Aviation Agencies of ICAO Member States (article 7.6)
- Order of the Ministry of Transport of the Russian Federation No. 139 dated November 21, 2005: flight time for flight personnel may not exceed 80 hours per month, 240 hours per quarter, 800 hours per year.
- In 2018, ICAO plans to oblige all members of the Association (all airlines of the world) to inform air passengers about the level of radiation dose received during the flights.

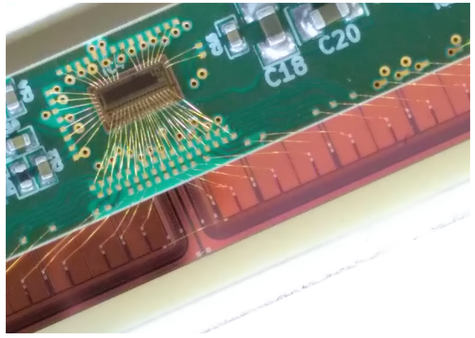
DO-RA TECHNOLOGY: MATRIX DETECTOR,READING ELECTRONIC EQUIPMENT, MONITORING AND CONTROL OF IONIZING RADIATION SYSTEM

- Matrix, solid-state radiation detectors in the form of PIN and NIP diodes
- The basis of the reading electronics equipment is a specialized chip – ASIC
- Application software
- Server solutions for network-centric intelligent monitoring
- More than 65 patents: Russia, Eurasian Economic Union, USA, Japan, Korea, China, India, EU

Russian Patents: RU № 109625; 124101; 116296; 116725; 117226; 2484554; 133943; 136194; 140489; 88973; 156901; 156906; 156907; 145480; 2545502; 159972; 125008; 126484; 2575939; 167308

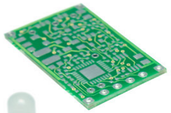
International Patents: № 025350; 74126; 14797; US 9547089 B2; US 8738077 B2; Korean: 20-0479248; CN 2033537453 U; JP 3189486

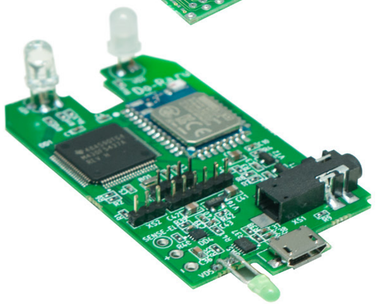




PERSONAL DOSIMETER-RADIOMETER FOR THE FLIGHT CREW

- Build on the basis of self-generated silicon sensor
- Wireless communication technologies
- Wireless charging
- Design documentation in international IPC format





Basic Technical Characteristics:

Dimensions (WxDxH), mm	29 x 7 x 62
Operating Temperatures	From 0 to + 55 C
Sensor Type	Self-generated silicon sensor DoRaSi
Gamma and Beta radiation detection range	From 25 keV to 10 MeV
Intensity of the detected radiation	Detected (MkZ/h)
Maximum error	10% after 60 seconds of measuring
Data Transfer Interface	Bluetooth low energy (BLE)
Supported operating systems	Apple iOS, Google Android 2.x, 3.x, 4.x, Windows Phone 7, 8, Java ME, Windows, Linux, Mac OS

USER INTERFACE

- DO-RA software for Apple iOS platform was updated
- iPhone 6, iPhone 6+, iOS 8 are supported by the DO-RA app
- DO-RA applied for the state registration at Federal Institute of Industry Property (FIPS)
- Project team developed ergonomic components for the next generation of DO-RA personal devices software

Perspective model

MARKETS, POTENTIAL USERS, COMMERCIALIZATION

Global market potential:

4

billion people are flying annually

+ 4,6% increase by 2034

Retail network and cellular stores

B2C

70

million frequent flying passengers per year

+ 30 flights per year

Contract Sales

B2B

10

million people from the flight crew annually

800 hours per year

E-commerce: Alibaba, Amazon, eBay

OFFER FOR INVESTORS

- Investment volume for the DO-RA Project is $6 million (RUB 360 million):
- Cash-in $5.5 million
- Cash-out $0.5 million
- Return on Investment for 35% of shares — 24 months
- Exclusive rights to Intellectual Property based on non-exclusive or exclusive license (subject of negotiations)
- Dow Jones Index assessed the capitalization of the Intersoft Eurasia company in $10 million

DO-RA.MONITOR
IS AN INTELLIGENT
SYSTEM FOR GLOBAL
MONITORING OF
IONIZING RADIATION

Intersoft Eurasia

THANK YOU!

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