Connectivity platform and automatic surface cleaning for industrial purposes

Who we are

- Started as a small family company
- Gained technology experience in telecommunications
- Delivered high-volume orders to multinational partners
- Always invested in innovation as a Telecommunication wholesaler:
  - Continuous optimization of workflow
  - Automatization of processes
  - Acceleration of delivery process
  - Storage Monitoring system

Our partners

UPC Hungary Kft. (Liberty Global)

HungarianTelekom IT-Systems Hungary Slovak Telekom Czech Telekom

Huawei Technologies Hungary Kft.

Digi Hungary Digi Slovakia

RayNet

Atradius

Focus areas - AUTOMATION

Storage Automation With **Augmented Reality**

1. Reduce assembly time

2. Eliminate inaccuracy

3. Automated validation

Robotics Inventions

COMPANY OVERVIEW

Robotics Inventions is a New Product Development company delivering in 6 months preproduction prototypes (including Bill of Material), excelling in fully- and semi-autonomous robots, vision systems, the autonomy module RI SPIRIT, the robot swarm management system RI FLEET, innovative user interfaces and various components, having a dedicated production facility, as well as the robotics professional services.

Our mission is to design and manufacture semi- and fully-autonomous robots and its parts to allow human tele-presence in harsh and extraterrestrial environments as well as to undertake dangerous & repetitive tasks on human behalf.

Moreover we offer RI Professional Services to companies and organizations seeking support in designing and implementing solutions that require dedicated electronics, mechanical constructions, automatics, robotics, autonomous software and artificial intelligence. In addition Robotics Inventions aspire to deliver a flexible autonomous component to animate any hardware.

HISTORY

Founded in 2004 the company is based in Warsaw, Poland. Research & Development is led by Marek Sadowski, an International Space University alumnus, an ex-vice president of Polish Astronautics Society, a former researcher at NASA Ames Research Center on robotics 3D control systems and an engineering researcher at the Nippon Telegraph and Telephone Software Laboratories in Tokyo.

VISION

The word "Robot" was used by Karel Capek for the first time in the play " Rossumovi Univerzalni Roboti" in 1921 to call a simplified version of a human. After one age the concept still is a fascinating idea, but a vision of common usage of a robot becomes reality. Robotics Inventions builds advanced r obots to support or replace people in difficult, dangerous and repetitive missions, as well as in tasks that require utmost precision (surgery) or that are very expensive or impossible for human today (missions to Moon, Mars or an ocean floor).

RI builds autonomous robots, that work without supervision (cleaning of garages, cleaning barns, EOD missions, etc.). RI develops also semi-autonomous robots, that support people in difficult missions. Finally thanks to tele-operated robots (remotely controlled) - that are being steered and controlled by person in order to obtain better precision or work results.

Storage
Cleaning
With **Industrial Robot Scrubber**
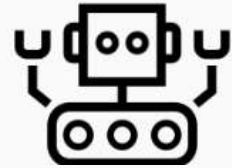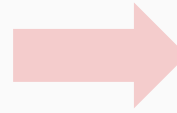
1. No user interaction necessary

2. "Military" autonomy applied for the commercial building cleaning

3. Affordable price range

RI Spirit autonomy module

Type of the autonomy module	RI SPIRIT	RI mSPIRIT
CPU	1-2 CPU (2-4 cores) & GPU on board	1-2 mCU (ARM class)
Operating System	Open Source – ROS	Open source or licensed RTOS
Sensors	2D/3D lidars, ultrasound, IR, IMU, image processing, GPS	Ultrasound, IR, IMU, image processing
Local navigation	SLAM navigation based on a lidar readings, Ultrasound and mechanical sensors used for positive & negative obstacles detection, mechanical sensors used for soft vs hard obstacle detection	Ultrasound & IR readings for obstacle detection, mechanical and contact sensors used for detection of any critical situation Odometery & IMU based local navigation
Global navigation	OUTDOOR: GPS and lidar based (SLAM) INDOOR: lidar based (SLAM) and wall following	Virtual Wall (IR, RFID, magnetic strip) based; camera based SLAM mapping; beacon based navigation
Docking & MULE (moving on path) scenarios	OUTDOOR: Based on mapping and GPS waypoints INDOOR: based on SLAM and/or wall following	Based on identification of the Virtual Walls and a docking station beacon

Type of the autonomy module	RI SPIRIT	RI mSPIRIT
Reconnaissance, area coverage (cleaning, searching)	Open Source based (ROS)	Proprietary algorithms (Zig Zag, Gaussian, wall following, spot) and usage of the virtual walls for large area coverage
Internal interfaces	TCP/IP based (Ethernet)	Direct electronics integration
External interfaces	WiFi, xBee based communication with the device; direct connection of a game controller	RF based communication with the system
Remote control	Linux based control station with a game controller;	An RF based remote controller with basic calendar functionality
Included	1 license (for the end user) 1 module of RI SPIRIT 1 control station 1 modeling environment 12 months maintenance support	1 license (for the B2B customer) 1 module (or bill of material) 1 modeling environment 24 month of maintenance support
Not included	Sensors (lidars, GPS, IMU, cameras, CBRN-E sensors)	A remote controller, a virtual wall
Implementation	Based on the RI Professional Services engagement	Based on the RI Professional Services engagement
Licensing	For end-user of the UGV or an autonomous system	For producer of the UGV or autonomous system pre-calculated for a production batch

Robotics Inventions - References
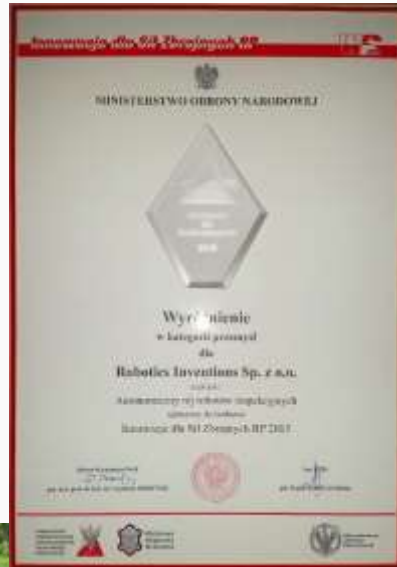
- **Small Inspection & cleaning robot** – USA maintenance company PURIFAD – used at **Fidelity Real Estate Company for UFAD floors**

- **2016 Polish DoD awards Robotics Inventions with the recognition for the one of the most innovative products for Polish Army** – RI Fleet – the swarm system to manager a group of autonomous search and discover robots

- **RI SPIRIT – 1st Place for the autonomous transport** in Military Elrob 2014 in Warsaw

- **RI SPIRIT – Best Scientific Solution award** – for the autonomous robot in Military Elrob 2012 in Switzerland

- Etc…

OFFERED SOLUTIONS

1 Combine best practices with modern technologies: use wired modules in mission critical situations and use wireless when it is possible.

2 **CAN bus**-based controlling with wide range of high precision wired industrial sensors.

3 **One hardware for all**: the uniosensor module consists of one central module which can be programmed for any purpose: **heating control, valve, 5V, 12V OUTPUT, Relays, lightning, air conditioner, solar panel control**.

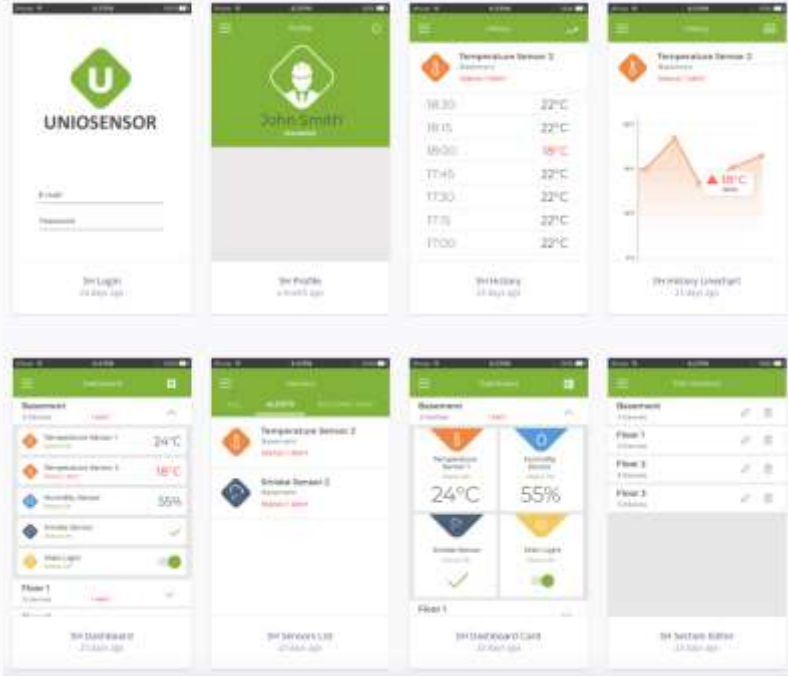**4** No cloud dependency on the whole SCADA system operation, but always accessible.

5 Multi-platform user interface for every purpose: system setup, 7/24 monitoring, remote setup of control circuits.
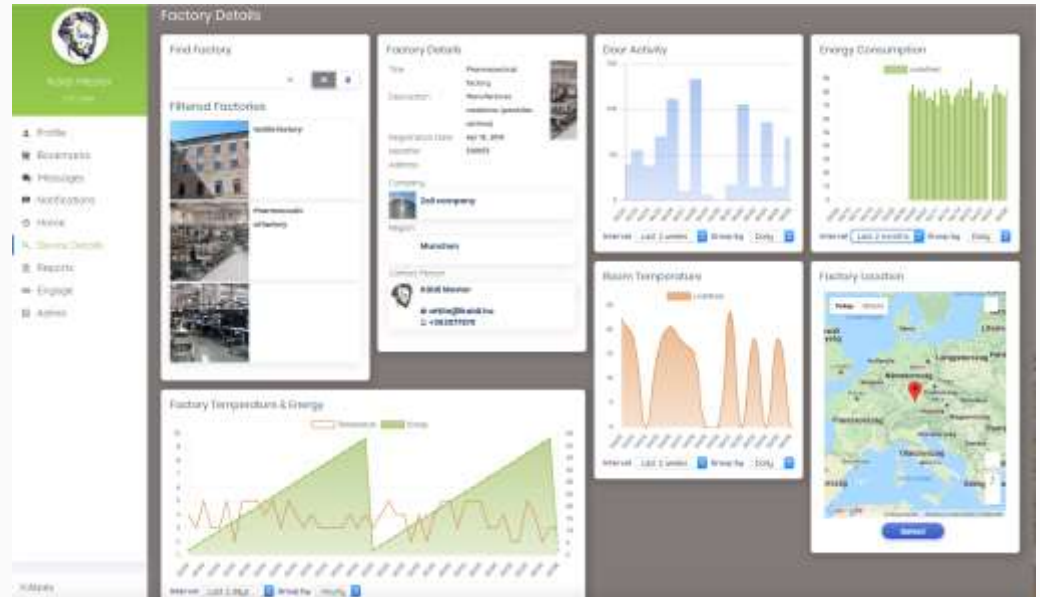
6 Scalable control component setup.

7
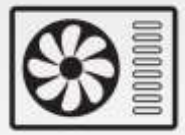
UnioSensor – User interface

Web page

Phone application

Focus areas - HOME & INDUSTRIAL AUTOMATION

WIRED MODULE

BENEFITS

Sense & Control
Wired & Wireless
Stable & Innovative

zigbee
MODULE

Support for control
- Water Heating control
- Floor heating control
- Air conditioning control
- Solar panel control
- Stepper motor control
- Individual valve control

Sensing
- Inside temperature
- Outside temperature
- Contactless liquid level metering
- Distance metering
- Water leakage
- **Every 5V/12V analog or DIGITAL sensors can be adopted**

UNIOSENSOR CLOUD

UNIOSENSOR HUB

UNIOSENSOR MODULE

WIRED
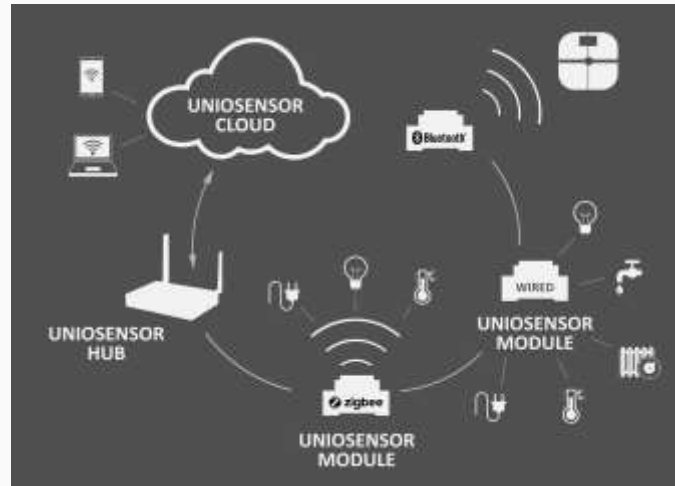UNIOSENSOR MODULE

zigbee
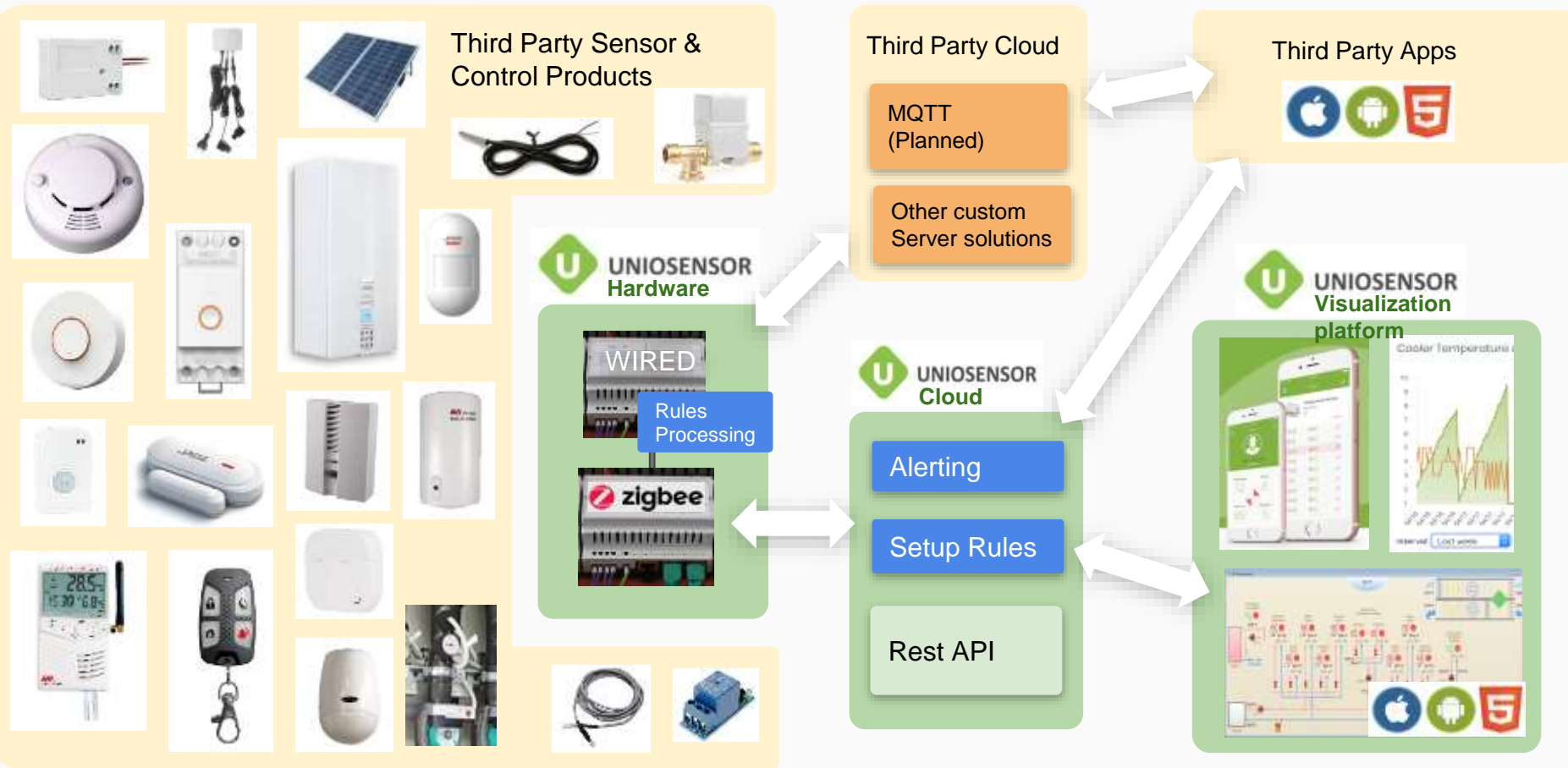UNIOSENSOR MODULE

Support for control
- Programmable remote control
- Remote switch
- On-Off Relay
- Energy plug

Sensing
- Inside / Outside temperature
- Humidity
- Gas
- CO
- Smoke
- Air Condition
- PIR
- Door
- Electricity consumption meters

Modularity > Optional Hardware, Optional Backend, Optional Visualization

Third Party Sensor & Control Products

Third Party Cloud

MQTT (Planned)

Other custom Server solutions

Third Party Apps

UNIOSENSOR Hardware

WIRED

Rules Processing

zigbee

UNIOSENSOR Cloud

Alerting

Setup Rules

Rest API

UNIOSENSOR Visualization platform

- **MOL hungary** (hungarian oil industry), full scada system with **180 sensors and controllers**, since 2008

- Pharmacy, **50 sensor system**, since 2010

- Control of **Assembly line** in Lituania

- Various **demo setups**
  - Teaching center in Beijing, Shenzen, China
  - Teaching center in Istambul Turkey

Team Experience

Hardware
- 24 years experience in automation
- Production line support projects (controlling)
- Air conditioning control of telco companies in Hungary
- Other Home automation projects (HVAC systems)
- 10+ hardware experience with wired and wireless technology experience
- 10+ embedded software development experience with AVR, 2 years of ARM C/C++ experience

Software
- 8 years experience of Android development
- 6 years experience of iOS development
- 4 years experience of web based development
- 6 years experience in working with SQL and noSQL databases
- UX / UI Design experience on all platforms
- Agile approach, quick prototyping capability thanks to our visualization tools

Telecommunications
- 10 years experience
- Partnership with major Hungarian Telco companies

Partners:
- UPC Hungary Kft.
- Magyar Telekom Nyrt.
- Huawei Technologies Hungary Kft.
- Digi Kft.
- Slovak Telekom
- Hír-Ker Kft
- Euronet Hungary Kft.
- Teleoptika Kft.
- G.Telecom Kft.
- Távközléstechnika Zrt.

We are looking For...

Telecommunication

1 Partner companies we can work with to exchange sales experience.

2 Partner companies to share product portfolio.

IoT Partnership

3 Partners to establish a standard-based alliance for IoT hardware and software solutions.

4 ZigBee sensor manufacturers we can work with on integration.

Deployment

5 Local co-partners to fascilitate installation and extend our services

For further information

www.uniotelecom.hu

www.uniosensor.com

www.robottakaritogep.eu