Technology Request

Robotics and IoT prototyping company looking for new projects and cooperation possibilities

Summary

Company from Poland working on rapid prototyping for robots, Unmanned Aerial Vehicles and the Internet of Things. Its business model focuses on challenging hardware and software projects and Research & Development outsourcing. Expected form of cooperation: research cooperation agreement or subcontracting.

Expiration Date	30 December 2017
Reference	TRPL20161220001
Profile link	

Details

Description

A promising startup from Poland, with ambitious international team, dealing with projects related with the use of drones and robots in different areas of life. The company combines the creativity of young enthusiasts with the knowledge of experienced professionals. They have already been present on the market for over a year and employ more than 15 robotics and software engineers. The company cooperates with large research and development organisations from Poland and abroad. Their activity is focused primarily on developing their own products and solutions, and currently they are working on:
- vertical take-off plane (studies on improvement of flight stability)
- object detection from air
- a system to control a swarm of drones/robots via GSM
- robotics products

Company can help its partners with:
- Research & Development outsourcing
- Rapid hardware prototyping
- Software development for robotics, UAV and IoT
- Cloud integration
- Low volume & mass production

The company would like to extend the network of its partners in European research and development institutions and organisations involved in the research works in robotics and drones and find new projects. Research cooperation agreement or subcontracting is considered.

Technical Specification or Expertise Sought

The partners should have considerable expertise in the following fields:
- Mechanical engineering related to robotics and UAV

- Robotics software development
- Machine Learning
- Cloud data analysis

Keywords

Technology

01001001 Automation, Robotics Control Systems

Market

02007016 Artificial intelligence related software

NACE

M.72.1.9 Other research and experimental development on natural sciences and engineering

Open for EOI : Yes

Dissemination

Send to Sector Group

ICT Industry and Services

Client

Type and Size of Organisation Behind the Profile

Industry SME <= 10

Year Established

2014

Turnover

<1M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Polish

Client Country

Poland

Partner Sought

Type and Role of Partner Sought

Partners sought: research and development institutions and universities with areas of interest or implementing projects related to robotics and drones, as well as in other related fields. The partnership would be based on a research cooperation agreement, according to which the partners would share their professional and technological knowledge.

Type and Size of Partner Sought

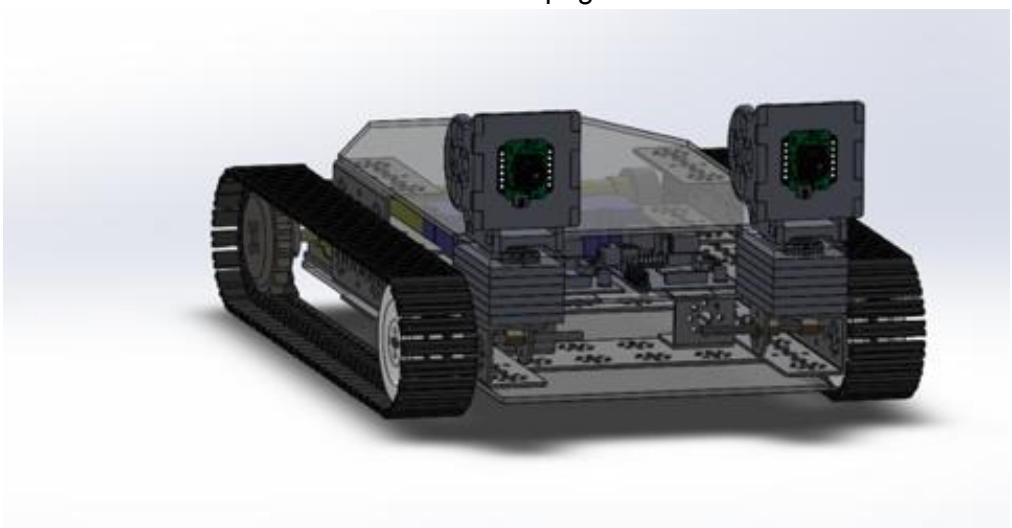
University,R&D Institution

Type of Partnership Considered

Research cooperation agreement

Attachments

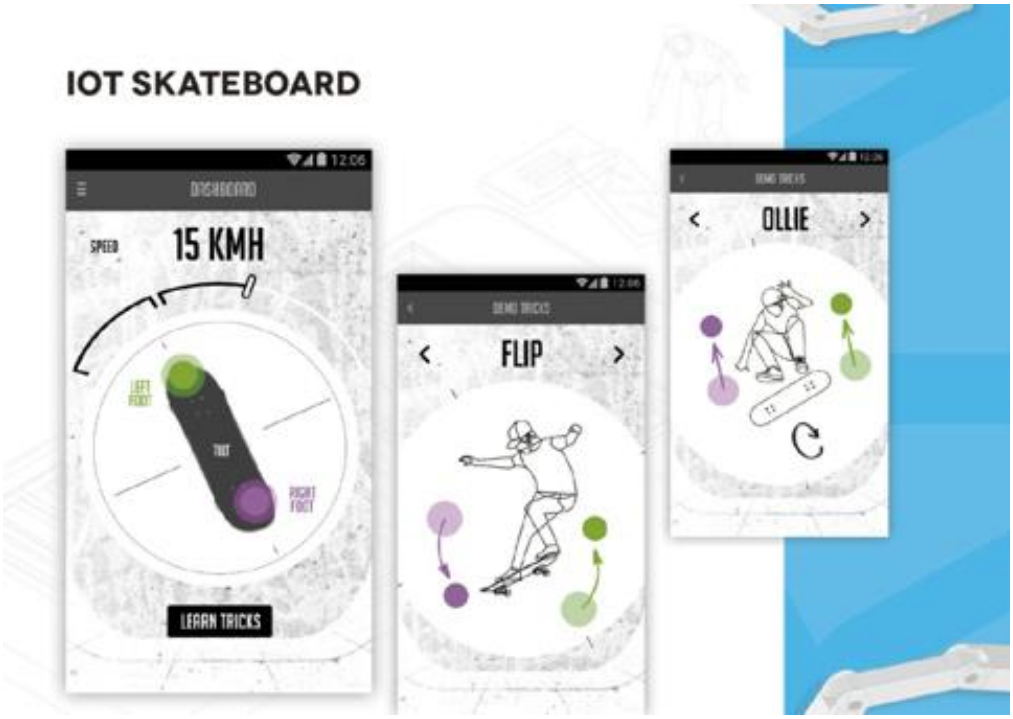
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Integrated microwave photonic antenna system technology for the fifth generation (5G) and broadband satellite communication applications

Summary

A Dutch SME specializes in the development and production of antenna technology. The SME offers integrated microwave photonic antenna technology to enable the next generation of robust high speed broadband communication. Demonstrators of on-chip integrated ultra-flat dynamic antenna arrays, capable of maintaining connection with satellites at high speeds, are available. The Dutch SME looks for commercial agreements with technical assistance or joint ventures with telecom system integrators.

Expiration Date 03 March 2017
Reference TONL20150223002
Profile link

Details

Description

A Dutch SME is specialized in the development and production of microwave photonic antenna beamformer technology. The Dutch SME aims to introduce a breakthrough antenna system to target the land mobile, nautical and avionics satellite communication market by meeting future requirements for broadband communications with an ultra-flat “smart” antenna, capable of maintaining a connection with satellites, even at high speed.

Microwave photonics is an emerging field in which high frequency (radio frequencies, microwave range) electronic signals are generated, distributed, processed and analysed using the strength of photonic techniques. Taking control over the interactions between radio waves and optical waves allows dramatic improvements in many applications of technology. Technology applications in the field of information technology (ICT) are for example wireless communications, wireless access networks, sensor networks, radars, satellite communications and Radio Astronomy. Other examples of technology applications are biomedical applications, instrumentation, imaging systems, and more. All those applications require ever increasing speed and bandwidth, in conjunction with devices which are small, lightweight and with low energy consumption. Multiple solutions have been proposed over the years to answer this “need for speed”, that match or even surpass the expected performance. Nonetheless, those photonic solutions can be bulky and expensive. For this reason, the international community looks at the integration of complex microwave photonic functionalities into photonic integrated circuits (PIC) as crucial to the realization, commercialization and wide diffusion of microwave photonic solutions.

What makes the microwave photonic technology special?
The optical beam forming technology can be applied to transmit and receive applications in

frequencies which range between 500 MegaHertz (MHz) and 100 GigaHertz (GHz). The microwave photonics antenna systems satisfy the growing need for bandwidth and capacity in telecommunication. The technology is elegant, scalable for volume manufacturing, has a small form factor and enables further on-chip integration of functionality. Therefore it is robust and reliable with acceptable cost and assembly time. Eight unique enabling performance features that can be realized in this technology are:
1. Dynamically & continuously steerable beam.
2. Adjustable beam shape and beam profile (2D).
3. Active interference suppression capability.
4. Large bandwidth achieved at large view angles.
5. Multiple independent beams capability.
6. Applicable for 1-100 GHz.
7. Low power consumption.
8. Mass producible at acceptable cost.

Mian market segments are:
• Satellite communication market for 10-12 GHz applications.
• The high volume market for configurable antenna arrays for the fifth generation (5G) and broadband communication applications (2.4 GHz and 5 GHz band).
• Communication applications for the aerospace (inclusive Radio Astronomy), avionics, maritime and automotive industry (Ku and Ka band).
• Large area antenna systems for astronomical research (500-1500 MHz and Square Kilometre Array).
• Mobile applications for high speed public transport and security operations in areas with poor infrastructure.
• Defence and security i.e. Unmanned Aerial Vehicle (UAV) surveillance.

The first demonstrators are available. The Dutch SME now looks for a telecom system integrator and aims for a commercial agreement with technical assistance or a joint venture. The desired area of activity of the system integrator is “building the bridge” between the suppliers of the hardware components and the system software for the telecom providers.

Advantages and Innovations

Advantages and innovations of the integrated microwave photonic antenna technology are:
• The beamforming antenna technology is based on faster and less energy consuming integrated on-chip photonics and replaces the electronic based technology for the key element of phased array antennas.
• Photonics based modules can be provided to various telecom applications, including broadband integrated optical beamforming modules for flat tuneable directional antennas, in particular for the popular so called “K-under” band and the emerging “K-above” band. The “K-under” band is the 12 – 18 GHz portion of the electromagnetic spectrum in the microwave range of frequencies. The “K-above” band covers the 26,5 – 40 GHz portion of the microwave range. The popular “K-under” band is used amongst others for broadband video reception for “In Flight Entertainment” (IFE) in aircraft.
• The technology also addresses the market of components for optical-fibre infrastructure which enable high dynamic range photonic links with higher bandwidth, combined with lower energy consumption, smaller size and lower weight.
• The main advantages are the high bandwidth, the small form factor of the chip, the enabled multi-beam functionality and the robust performance of the antennas. The beam is squint-free, that is to say there is no variation of beam pointing direction for all the frequencies in the desired 2 GHz band. The optical beamformer itself consists of continuously tuneable optical delay lines that enable seamless tuneability of the beam pointing direction. The smart flat antennas without moving parts or large dishes, are also capable of maintaining connection with satellites, even at high speeds.
• The integrated photonic beamformer can also be applied to tracking antennas and pencil

beam on base stations as required for fifth generation (5G) networks (Advanced beamforming, mm Wave Small Cell, Multi Input Multi Output).

Stage of Development

Available for demonstration

Comments Regarding Stage of Development

Several new integrated beamformers will be manufactured in 2015 for satellite communications and 5G networks.

IPR Status

Patents granted

Comment Regarding IPR status

The company has exclusive licences for use of the integrated microwave antenna (low-loss) technology for advanced beamforming networks.

Profile Origin

Other

Keywords

Technology

01006002	Broadband Technologies
01006003	Mobile Communications
01006004	Narrow Band Technologies
01006005	Network Technology, Network Security
01006008	Satellite Technology/Positioning/Communication in GPS

Market

01005001	Satellite services/carriers/operators
01005002	Satellite ground (and others) equipment
01005004	Microwave and satellite components

NACE

J.61.2.0	Wireless telecommunications activities
J.61.3.0	Satellite telecommunications activities

Open for EOI : Yes

Dissemination

Send to Sector Group

ICT Industry and Services

Client

Type and Size of Organisation Behind the Profile

Industry SME <= 10

Year Established

2009

Turnover

<1M

Already Engaged in Trans-National Cooperation

No.

Languages Spoken

English
Dutch
German

Client Country

Netherlands

Partner Sought

Type and Role of Partner Sought

Type of partner:
• System Integrator

Field of activity of partner:
• The system integrators are typically active in telecom sector.

Role of the system integrator:
• The integration of the beamforming network module in the antenna array and communication module.
• Is likely to have access to the suppliers of system software for telecom providers.

The Dutch SME looks for a telecom system integrator and aims for a commercial agreement with technical assistance or a joint venture.
The desired area of activity of the system integrator is “building the bridge” between the suppliers of the hardware components and the system software for the telecom providers.

Type and Size of Partner Sought

>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

Commercial agreement with technical assistance
Joint venture agreement