

HORIZON

The EU Research & Innovation Magazine

HEALTH



Fewer antibiotics used as public awareness of resistance grows

People are increasingly aware of the dangers of misusing antibiotics.



OPINION

Robotics 2020: a challenge and a target for Europe

Robots can make Europe more competitive, creating jobs, according to Professor Bruno Siciliano from the University of Naples Federico II, Italy. →

MONTHLY FOCUS

Make way for the Robots

Connected through the cloud, as part of an intelligent swarm, in homes and on the streets, robots are about to break into our daily lives. →

KEY THEMES



BIOECONOMY

In 2012, the European Commission adopted a strategy to shift our economy towards a greater and more sustainable use of these renewable resources.



HORIZON 2020

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STORIES



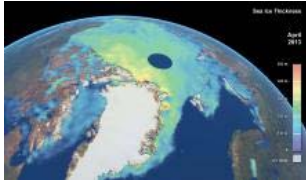
FROM AROUND THE WEB



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MEDIA

PICTURES



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'#Robots will enter almost all areas of human activity including the home.'

Prof. Bruno Siciliano explains in [#HorizonMagEU](#) how development and use of smart robotics will create jobs in [#Europe](#) and enable European entrepreneurs to be more competitive:

<http://bit.ly/ProfBSici> [#Horizon2020](#)



Make way for the Robots

02 December 2013



Robots could become part of everyday life. Image courtesy of the RoboEarth project

Connected through the cloud, as part of an intelligent swarm, in homes and on the streets, robots are about to break into our daily lives. In this issue of Horizon, we talk to the scientists who are putting Europe at the forefront of robotics research.

That includes Dr Markus Waibel, who is turning low-cost robots into highly intelligent devices by connecting them to remote data centres, and Professor Maurice-Xavier François, who is developing technology to enable robots to carry out missions deep into interstellar space.

We sent a camera crew to France to meet Rob Knight, an engineer who has made Europe's most human-like robot. Professor Maarja Kruusmaa from Estonia explains how underwater robots can navigate the seabed using sonar.

Professor Bruno Siciliano, at the University of Naples Federico II, explains that robots can make Europe more competitive, creating jobs. We also speak to Professor František Štěpánek, from the Czech Republic, where the word 'robot' was first used. He is making microscopic robots to deliver cancer drugs directly to a tumour.

See also

[100-year mission into interstellar space](#)

[Robotics 2020: a challenge and a target for Europe](#)

OPINION



Robotics 2020: a challenge and a target for Europe

Professor Bruno Siciliano specialises in control and robotics at the University of Naples Federico II and is a past president of the Institute of Electrical and Electronics Engineers Robotics and Automation Society. He believes that robots can make Europe more competitive, creating jobs.



The value of the sea can't just be measured by markets

Dr Tim O'Higgins, coordinator of the EU-funded KnowSeas project, based in Oban, Scotland, argues that implementation of the EU Integrated Maritime Policy will require a delicate balance between the use of Europe's seas and conservation of the maritime ecosystem.



Fast track immigration for attracting researchers

Dr Conor O'Carroll, Research Director at the Irish Universities Association, argues that the Scientific Visa pioneered by France and implemented as a European Directive in 2005 is in itself a really effective method for attracting researchers to Europe.



How to tackle the ticking bomb of diabetes

Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science, urges global collaboration to stop the epidemic. Diabetes currently affects more than 350 million people around the world.



Hidden keys to Europe's R&D

Economist and author Mariana Mazzucato argues that for innovation to flourish in Europe, its governments must become more entrepreneurial and invest in technologies that private investors consider too risky.

Robotics 2020: a challenge and a target for Europe

04 December 2013

KEY THEME: HORIZON 2020

by Professor Bruno Siciliano

Professor Bruno Siciliano, professor of control and robotics at the University of Naples Federico II, believes that robots can make Europe more competitive and create jobs.

Professor Bruno Siciliano specialises in control and robotics at the University of Naples Federico II and is a past president of the Institute of Electrical and Electronics Engineers Robotics and Automation Society. He believes that robots can make Europe more competitive, creating jobs.

Traditional industrial robots have had a vital role in maintaining the competitiveness of the European manufacturing industry. While this will continue and widen, it is robots outside of these traditional functions that will have increasing importance and provide opportunities for rapid market growth. The significant short- to medium-term opportunities will be in areas such as agriculture, healthcare, security and transport, while in the longer term robots will enter almost all areas of human activity including the home.

The use of industrial robots in large manufacturing companies is generally well established and understood. To expand the market, smaller scale and small to medium-sized enterprise (SME) manufacturing needs to embrace smart robotics to maintain efficiency

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and create jobs.

space

Make way for the Robots

Raising the output and efficiency of SME manufacturers will have a significant impact on Europe's manufacturing and employment capacity. In turn, this will increase overall employment as companies expand into markets considered inaccessible given Europe's comparative labour costs. Increasingly, Europe will not only be competing against low-wage economies, but also highly automated ones. Leadership in robotics technology will be a key differentiator of market share in many sectors.

These smart robot technologies and their integration into existing product markets will enable the exploitation of latent potential for a wide range of European manufacturers and service providers. In food security, autonomous transportation, automated farming and livestock management, as well as in improving healthcare delivery, and environmental monitoring, robots have the potential to provide cost-effective services, and enable the efficient delivery of high-value services.

Sustained investment

Robots will transform almost every industry and service sector. Europe has the potential to lead this process, but this requires sustained investment in research, innovation, companies, and in the infrastructures needed to integrate robotics technology within our systems and society.

At its completion, the EU's 2007-2013 funding programme FP7 directly funded some 130 robotics-based research projects involving around 500 organisations with total grants of some EUR 536 million. Other funding with elements related to robotics amounted to some EUR 170 million. This unique level of investment has yielded a vibrant and active research community within Europe both in academia and industry. Europe therefore has a strong basis on which to innovate and create. The focus of the next funding programme, Horizon 2020, concentrated closer to the market and encompassing innovation, will help to leverage this advantage for the European robotics community as new markets and service opportunities are created.

'Robotics technology will become dominant in the coming decade. It will influence every aspect of work and home. Robotics has the potential to transform lives and work practices, raise efficiency and safety levels, provide enhanced levels of service, and create jobs. Its impact will grow over time as will the interaction between robots and people.' - This is the vision of Robotics 2020, an initiative containing the Strategic Research Agenda (SRA) for Robotics in Europe drafted by the European Association of Robotics (euRobotics aisbl) along with the advent of Horizon 2020.

Robotics 2020 will lead to a public-private partnership (PPP) to link the science base to the marketplace, a connection that ultimately benefits society. It aims to help Europe attain a worldwide leading position in the robotics market across all domains. It should also help policymakers resolve the legal and ethical issues which still surround the use of robots in society.

Helped by initiatives such as the PPP, robot technology should become increasingly prevalent, helping to solve Europe's societal challenges, and create new jobs.

The launch of the Robotics PPP is planned for 17 December 2013.

More info

[euRobotics aisbl](#)

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