

# Healthcare, the road to robotic helpers

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(PhysOrg.com) -- Robots are whirring away in factories all over the world, building cars, phones and cookers. Yet they can do so much more. Robotics for healthcare has been tipped as the next big wave, and Europe should be poised to ride it, according to a European road-mapping study.

Bill Gates, the PC pioneer, says robots are the future. The robotics industry is developing in much the same way that the computer business did 30 years ago, he once opined in *Scientific American*.

One area particularly ripe for robotics is healthcare, according to Arjan Rensma of the Dutch innovation agency TNO, which he says could be worth anywhere from €40 billion upwards depending on which study you read.

And the reason for all this excitement? It's simple economics: [robot](#) helpers promise sustainable and affordable health provision without compromising on the quality of care. The attraction for authorities trying to plan for increasingly ageing societies is palpable.

"Existing technologies like the surgical robot called Da Vinci show that it can be done," says Rensma. But Europe needs a clear road map to transform the current R&D effort - described by experts as still in its infancy - into a leading robotics for healthcare (R4H) movement, he suggests.

The R4H field is very much alive in Europe, according to the WTEC

technology report, with sufficient critical mass to take it forward, but there is a disconnect between R&D prototypes and commercial rollout.

“One of the biggest barriers in the commercialisation of robotics for care is the way healthcare systems are currently funded,” notes Rensma. This is a serious and complex challenge, he says, and more effort is needed to overcome it.

It is not a question of throwing more money at just any robotics application, he suggests. “More user involvement is needed to develop the ‘right’ robotic applications... [starting] with relatively ‘easy’ applications while keeping an eye on the complex ones in the future.”

This is where the [R4H road map](#) comes in.

## **Six points on the map**

Rensma led a group of research organisations, including Fraunhofer-Gesellschaft (DE), VTT technical research (FI), Vilans (NL) and EuroAct Japan, which took up the challenge to map the way forward for European robotics in the medical and health field.

Extensive consultation revealed 21 main innovation areas showing commercial potential. These were then whittled down by the study group to six key areas “ripe for further investigation and road mapping.”

The group predicts growth in smart medical capsules which can “journey” through the body unobtrusively to administer medicines, gather data or perform surgical procedures. Another area of interest is precise “robotised” surgery to perform, for instance, less invasive, automated procedures in inaccessible parts of the body.

Intelligent “natural limb” prosthetics controlled by the mind also have

huge potential, according to Rensma's group. As, too, does using robots to help stroke patients undergoing rehabilitation and others with compromised motor coordination.

Robots, perhaps linked to game playing platforms, can also be developed to further help with mental, cognitive and social therapy. A final priority area could be robotised patient monitoring systems, especially useful for homecare and elderly care in countries with ageing populations and overburdened healthcare systems.

The results of the R4H study were presented at two major conferences in June - the Dutch Robotics Conference and the International Conference on Rehabilitation Robotics (ICORR) in Japan. More presentations will follow at events this autumn, reports Rensma.

## **Robot in every home, really?**

To be sure that Europe is ready to meet its future health challenges, policy-makers are keenly aware of the need to lay the R&D groundwork today and in the coming years.

While significant scientific progress has been made in both robotics and healthcare, more needs to be done to meld the two.

Rensma's study notes several clear trends in R4H over the coming decade or so:

- A revolution in surgery by all kinds of robotic systems
- Developments in diagnostics, through the evolution of more intelligent and multi-functional endoscopic capsules
- Greater autonomy and independence for people with illnesses and disabilities at home through the introduction of domestic robots (first for monitoring, later for support tasks)
- Robotic systems in nursing care to support the arduous work of the

individual professional and to counteract the imminent staff shortages

European ICT research programmes need to be prepared to capitalise on the vast market potential in these emerging areas, suggest the authors of the study.

The Japanese are leading by example with the launch this year of a five-year “life-support” robotics project - with funding of €12 billion in the first year alone - aimed at helping carers in their daily tasks. Rensma says the Japanese will also launch a robotics programme aimed at helping the elderly at home, worth €4 billion in the first year (source: Rathenau Instituut).

Gates’ prediction of a “[robot](#) in every home” is, of course, a long way off. But the preparatory work - policy, funding, collaboration - needs to be done today to take the lead, shape standards and capture the huge market for better quality, more efficient healthcare that meets the mounting socio-economic and demographic challenges in Europe and much of the western world.

Provided by [ICT Results](#)

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