Fraunhofer Institute for Open Communication Systems

Press Release

Berlin
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Autonomic Communication – demands on the Internet can only be met by self-organising, self-regulating communication systems – a challenge for European research

Fraunhofer FOKUS has been requested by the European Commission to co-ordinate research activities for the development of a new network generation

Internet Evolution – self-regulating, self-resolving, self-protecting – on target

The complex demands placed on the Internet of the future can only be met with a self-organising and self-regulating communication infrastructure. This is the key idea driving the R&D programme for "Autonomic Communication" co-ordinated by FOKUS, the Fraunhofer Institute for Open Communication Systems which has now received official backing from the European Commission as a key challenge and research foundation for the coming years. As a paradigm for a new generation of networks (NGN), Autonomic Communication will have a significant impact on all levels of communication from network infrastructure and communication management right through to applications. With the broadly co-ordinated development of research and development activities, European leadership can succeed in generating true sustainable innovation in the IT and communications sector.

"The idea of Autonomic Communication has already been tested by FOKUS in numerous research projects, and now is ready to be run in a dedicated R&D programme spanning the whole of Europe. This has been recognised by the European Commission and a whole host of colleagues who have charged FOKUS with the central co-ordination of activities." Prof. Dr. Radu Popescu-Zeletin, head of Fraunhofer FOKUS fills in the next stages, "We are organising a world-wide Autonomic Communication Forum to bring together interested parties from science, industry and government, to define work packages and to draw up a plan of action."

Involvement of national programmes in the undertaking will be a decisive factor. As Prof. Popescu-Zeletin comments, "All our activities must be meaningfully integrated with the R&D programmes of specific European

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countries – for instance with the forthcoming research project on Next Generation Networks funded by the Federal Ministry for Education and Research. Because firstly, a communication infrastructure is not a purely national phenomenon, and secondly, all our resources – from scientific expertise to funding – need to be bundled if we are to truly meet this "European challenge" and master its expected impact in terms of new innovation and business opportunities."

Talking about just how important Autonomic Communication is destined to be, Dr. Mikhail Smirnow, Senior Scientist at Fraunhofer FOKUS and Initiator of the Autonomic Communication Forum comments, "Autonomic Communication is endeavouring to develop the communication system so that it will react according to context even in unknown situations. For instance it will self-react in recognising and accommodating different user profiles, self-configure in emergency situations, especially in Critical Mission Systems, self-protect by barring viruses and junk mail from the network, and much more. The deliverables here are akin to a revolution. The one-dimensional functionality of the Internet as we know it will be superseded by a network infrastructure equipped with a huge array of different flexible capabilities which empower response to known and unknown situations and complex demands."

If you decide to go out into the garden, you don't consciously command each minute detail like "right leg forward, eyes now to the left" and so on. You just let your body and your central nervous system get on with the job. Our everyday experience gives us enough examples of how a communication system could carry out the widest range of communication needs with a similar degree of self-regulating autonomy. The challenge lies in regulating the network so that it can react autonomously in correctly targeting sets of disparate demands.

Dr. Mikhail Smirnow, Fraunhofer FOKUS

The concept of Autonomic Communication draws on approaches from a wide range of different sectors. As Mikhail Smirnow underlines, "We are not starting out with Autonomic Communication from scratch. Much of the ground work on autonomous devices and systems has already been done by university and applied research and also by industry. What we are doing in Autonomic Communication is to gather these different approaches together and collate them in one single overall system. Because we are now at a time when Internet problems have reached a critical mass – mainly due to the demands and sheer creativity on the part of the users, and the increasing role played by the Internet as a Business Platform. The Internet now needs to be completely restructured to cope with these new multi-layered requirements."

The driving force behind Autonomic Communication is an international consortium of research institutes and companies headed by Fraunhofer FOKUS and funded by the European Union (IST Programme Future and Emerging Technologies) who have joined together to build this research domain that will fundamentally change the shape of IP-based communication systems. Organised in the Autonomic Communication Forum, the partners have taken up their work in this major undertaking with immediate effect. The Forum is open for partners from research and industry.

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The partners in the Autonomic Communication: Coordination Action (ACCA) project are: FOKUS, the Fraunhofer Institute for Open Communication Systems, Berlin, Hitachi, Intel, and universities and research establishments in Great Britain, Greece, Ireland, Germany, France and Switzerland. Further corporations such as Nokia, France Telecom, British Telecom, NTT Group, Thales, Ericsson, and IBM have already expressed great interest.

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The following web sites will shortly be online

www.autonomic-communication.de
www.autonomic-communication.org

Dates

18./19.October 2004, Berlin
1st IFIP Workshop on Autonomic Communication:
Autonomic Communication Principles (WAC2004)

www.autonomic-communication.org/wac

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Autonomic Communication – (FAQs)

What's Autonomic Communication going to change for the better?

Autonomic Communication will revolutionise the shape of electronic communication by introducing a sweeping range of new changes such as:

– personalisation – i.e. recognition and response to completely different sets of demands;

– realisation of a huge array of different services via heterogeneous technologies and crossing provider boundaries;

– development of totally new kinds of services;

– development of a Network Information Theory that will enable the Internet to do much more than just point-to-point data transmission. In future complex sets of demands will be automatically networked with networking groups or combinations of demands in what is called "Cooperation of Networks". "Networked Group Communication" is the real challenge to be faced.

What impact will Autonomic Communication have on innovation forces in Europe or Germany?

A lot of the groundwork might already have been done, but building the Next Generation Communication System is going to require a broad-based joint effort that opens up new domains for European research endeavours. We need well prepared and well equipped networks – for mission-critical applications and emergency situations. We have to develop "immune systems" that fend off viruses, junk mail and other kinds of damage and nuisance. And we have to generate applications that can really ensure network-driven business transactions. Co-ordination of European research activities in the Autonomic Communication Forum will generate synergies by bundling existing research potential and thus inject new impulses into European research.

What impact will Autonomic Communication have on business development in Europe or Germany?

Up to now Europe has lacked its own network industry. Autonomic Communication will lead to the integration of the whole vertical value-added chain – from network and management and service levels to the application level – into one single communication system that will provide a new basis for European industry.

By its very nature Autonomic Communication will also lead to the convergence of industry sectors that up to now have been largely separate.

(Continued on the Web: www.autonomic-communication.org)

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