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## **€4.6m to deliver next-generation cloud service provisioning for the Internet of Everything**

Researchers at [IMDEA Networks](#) are working on a **€4.6million EU-funded project** called **RECAP** to develop the next generation of optimised **cloud computing** systems to support the **Internet of Everything**. The project will pave the way for a radically novel concept in the provision of cloud services.

The cloud is a key enabling technology for connected people, devices and computers. Over 13 billion devices are connected to the internet and whilst the cloud supports this connectivity at hyperscale, it is slowly reaching the end of its capacity.

Modern network structures currently place data centre resources and servers closer to the end user to overcome the growing latency and delays arising from the growing usage. Despite advances in technologies, most services and resources are still provided in a best-effort fashion and quality of service guarantees cannot be controlled. These practices are perceived to be a major barrier in the rapidly emerging Internet of Everything and the wider networked society.

RECAP will develop the next generation of cloud, edge and fog computing capacity provisioning via targeted research advances in cloud infrastructure optimisation, simulation and automation. It will look at how we design and manage new infrastructures and service provisioning models. It will incorporate a much more elastic model, which delivers services and allocates resources in a dynamic manner, tied to time-varying user requirements. This will ensure that communication critical applications will always achieve their goals without unnecessary delays, no matter where they are located.

“Today, countless services are provided by the cloud”, says IMDEA PI for RECAP Dr. Paolo Casari. “This is not limited to distributed storage systems: collaborative online editing, videoconferencing, web site deployment and hosting, intensive computation services, data processing and enterprise administration tools are just a few examples of resources and services that the cloud can provide.”

“This is bound to increase much more: by 2020, the number of devices requesting services to cloud platforms will be huge”, continue IMDEA co-PIs Vincenzo Mancuso and Antonio Fernandez Anta. “To provide prompt reactivity to user requests, most data will have to be stored and processed at the network edge or directly in neighbouring, possibly mobile, devices. This calls for a radical rethinking of the cloud infrastructure and service provisioning model, and will require intensive data processing, machine learning and analytics, to ensure that the cloud infrastructure can be optimized on the fly, and that faults are promptly identified and remediated.

“The reward is very appetizing” concludes Casari. “Both best-effort and real-time communication-related or mission-critical services could be provided in a distributed fashion, with no unnecessary delays or bottlenecks.”

RECAP was selected for funding by the European Commission's research and innovation

programme, **Horizon2020**. The **project consortium** comprises **nine research partners from five European countries** – Ulm University (Germany), Umea University (Sweden), Tieto (Sweden), IMDEA Networks (Spain), SATEC (Spain), Linknovate (Spain), DCU (Ireland), Intel (Ireland) and BT PLC (UK). The «[Ubiquitous Wireless Networks Group](#)» group (led by Dr. Paolo Casari), the «[Opportunistic Architectures Lab](#)» (led by Dr. Vincenzo Mancuso) and the «[Global Computing Group](#)» (led by Dr. Antonio Fernandez Anta) will lead the project activities related to big data analysis for the evaluation of cloud and edge system performance, machine learning and network optimization to support the delivery and maintenance of agile systems at the edge of the network. The project will run until January 2020, and will solve known constraints and offer genuine commercial benefits to the consortium partners and other European adopters of the RECAP output.

*Photograph of the project partners.*

**Source(s):** IMDEA Networks Institute; RECAP  
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**IMDEA Networks Institute** is a **research organization on computer and communication networks** whose multinational team is engaged in cutting-edge fundamental science and technology. As a growing, English-speaking institute located in Madrid, Spain, IMDEA Networks offers a unique opportunity for pioneering scientists to develop their ideas. IMDEA Networks has established itself internationally at the forefront in the **development of future network principles and technologies**. Our **team** of highly-reputed researchers is designing and creating today the networks of tomorrow.

***Some keywords that define us:** 5G, Big Data, blockchains and distributed ledgers, cloud computing, content-delivery networks, data analytics, energy-efficient networks, fog and edge computing, indoor positioning, Internet of Things (IoT), machine learning, millimeter-wave communication, mobile computing, network economics, network measurements, network security, networked systems, network protocols and algorithms, network virtualization (software defined networks – SDN and network function virtualization – NFV), privacy, social networks, underwater networks, vehicular networks, wireless networks and more...*

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