

# Net!Works

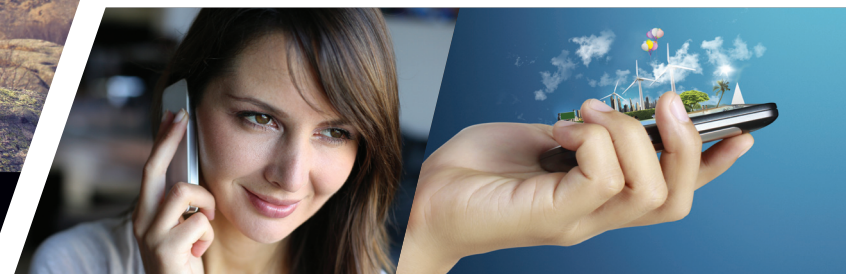


Networked  
Society

EUROPEAN RESEARCH & INNOVATION  
IN TELECOMMUNICATIONS

SUCCESS STORIES

## MOBILE COMMUNICATIONS



### An international success story which has it's origins in EU-funded research projects



The growth of mobile communications, since the launch of the GSM system on the market in 1991, has been phenomenal.

Mobile communications has changed people's lives for the better the world over by enabling people to communicate anytime and anywhere. Mobile communication drives productivity growth and economic performance across all sectors of the economy and is expected to continue to do so for many years to come. The services enabled by mobile networks made a strong contribution to the rapid growth in the ICT sector in Europe and generated several million new jobs. The results of Framework Programme research projects have played a key role in enabling this growth. The projects developed the basic concepts, processes and product innovations, contributing to several generations of mobile communication systems and services (e.g. GSM, UMTS, DVB, LTE and IMT-Advanced), over a twenty-five year period.

The introduction of mobile technology accelerated the global growth in the ICT sector. The Information and Communication Technologies (ICT) sector now generates 5% of European GDP, with an annual value of € 660 billion. ICT has become a ubiquitous technology and investments in ICT are responsible for at least 50% of European productivity growth in recent years.

We can already see a dramatic increase in data traffic on converged mobile and fixed communications networks generated by smart city, smart energy, environmental monitoring and ehealth applications. By 2020, enormous growth in network traffic is expected. The European success story resulting from the investment in collaborative research projects is certain to continue for many years to come, if Europe continues to invest in collaborative research!

MANY OF THE BASIC CONCEPTS AND TECHNOLOGIES USED IN THE 3G UMTS STANDARDS AND THE NEWER LTE STANDARD HAD THEIR ORIGINS IN FRAMEWORK PROGRAMME COLLABORATIVE RESEARCH PROJECTS, CO-FUNDED BY THE EUROPEAN UNION.

The investment of Framework Programme funds in mobile communications research has contributed strongly to job creation in Europe and improvements in living standards and economic growth on a global scale. The level of return on investment achieved by the key collaborative research projects has few, if any, parallels in other sectors and contributes to the export power of European industry. Collaborative research provides an environment in which many stakeholders (competitors, customers and research experts) can cooperate to prepare consensus before global standardisation starts. Collaboration provides the opportunity to quickly exploit research results through standardisation, leading to the global deployment of new ICT systems.

1991



The development of the **GSM** standard was part of the early formation of the European Union at the level of technology and mobile communications. For the first time, a solution was developed for Europe and the world enabling users to roam internationally using only one phone. Europe pooled its R&D, industrial base and services to provide the user with a mobile world without national borders. This initiative and the further collaborative R&D created a new generation of technologists focused on European and global needs. The GSM group was formed in 1982. GSM networks are now accessible in more than 85% of the world's land area.

*First commercially introduced in 1991*

2001



European research projects developed the key contributions to the **3G UMTS** standard in the '90's. 3G systems provide users with broadband multi-media mobile communications, including voice and video services, mobile Internet access, mobile TV services and machine to machine communications services.

Key Framework Programme co-funded project:  
• FRAMES (FP 4)

*First introduced in 2001*

2010



European research projects developed key contributions to the **LTE system** in the '00's. **LTE** provides high speed mobile broadband connectivity to laptops, smart phones, tablet PC's and other mobile devices. On-line gaming services, streamed video and cloud computing services are brought to life by LTE. The LTE service has been progressively introduced in European cities since 2011.

Key Framework Programme co-funded projects:  
• WINNER (FP 6),  
• WINNER II (FP 6)

*First introduced in 2010*

FUTURE



The technical basis for ultra high speed broadband and M2M communication using energy efficient techniques are research challenges being addressed in Framework Programme 7 projects at present. European research has to continue in Framework Programme 8 to ensure that European organisations further develop their leadership positions in communications technologies!

*2025 and beyond*

[www.networks-etp.eu](http://www.networks-etp.eu)  
[netsoc.future-internet.eu](http://netsoc.future-internet.eu)