

# **Imperial College London Participation**

Smart Networks and Services Joint Undertaking

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6G Goal-Oriented AI-enabled Learning and Semantic  
Communication Networks

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## **Introduction**

This booklet comprises the Project under the Smart Networks and Services Joint Undertaking that Imperial participate in as an Associated Partner. Funding from UKRI Horizon Guarantee.

# 6G Goal-Oriented AI-enabled Learning and Semantic Communication Networks

## Fact Sheet

### Project Information

#### 6G-GOALS

Grant agreement ID: 101139232

#### EC signature date

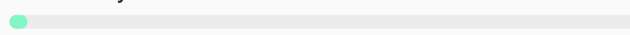
6 December 2023

#### Start date

1 January 2024

#### End date

31 December 2026



#### Funded under

Digital, Industry and Space

#### Total cost

€ 3 296 619,50

#### EU contribution

€ 3 174 154,88

#### Coordinated by

COMMISSARIAT A L ENERGIE  
ATOMIQUE ET AUX ENERGIES  
ALTERNATIVES

 France

## Objective

Wireless mobile communication has continually evolved towards higher data rates, with 5G expanding its scope to include massive and ultra-reliable low-latency links. The underlying quest in the wireless evolution has been to solve the technical problem of reliable data exchange between two end-points. 6G-GOALS will take the wireless system design to its next stage by considering the significance, relevance, and value of the transmitted data, transforming the potential of the emerging AI/ML-based architectures into a semantic and goal-oriented communication paradigm. Two trends corroborate the timeliness of 6G-GOALS: (1) the burden on wireless networks by data flows with low semantic content or relevance for the end goal; (2) the increased AI capability of network nodes and devices to extract 'meaning' and

intention from unreliable data flows. These trends underpin the two main objectives of 6G-GOALS: (1) to reduce data traffic by conveying only the most relevant information; (2) to design data-efficient, robust, and resilient protocols that can adapt to network conditions and communication objectives using modern AI/ML techniques. The research breakthroughs and innovation of 6G-GOALS are three-fold: First, 6G-GOALS will develop AI/ML-empowered semantic data representation, sensing, and compression algorithms combining data-and-model-driven approaches, and work towards exploiting untapped gains from AI-based joint source-channel coding. Second, 6G-GOALS will introduce semantic-oriented solutions for supporting distributed reasoning and time-sensitive communication, generalizing low-latency of 5G by tailoring communication to the actual goal. Finally, 6G-GOALS will introduce wireless technologies for sustainability in energy efficiency, EMF exposure, and spectrum management, by defining the concept of semantic cognitive radio.

## Fields of science

[engineering and technology](#) > [electrical engineering, electronic engineering, information engineering](#) > [information engineering](#) > [telecommunications](#) > [telecommunications networks](#) > [mobile network](#) > **5G**

[natural sciences](#) > [computer and information sciences](#) > [data science](#) > **data exchange**

[engineering and technology](#) > [electrical engineering, electronic engineering, information engineering](#) > [information engineering](#) > [telecommunications](#) > [radio technology](#) > **cognitive radio**

## Keywords

[6G](#)

[Semantic](#)

[Communication](#)

[Wireless](#)

[AI](#)

[Machine Learning](#)

[Goal-Oriented](#)

[Energy Efficiency](#)

[EMF](#)

[sustainability Control](#)

[ORAN](#)

## Programme(s)

[HORIZON.2.4 - Digital, Industry and Space](#)

MAIN PROGRAMME

## Topic(s)

[HORIZON-JU-SNS-2023-STREAM-B-01-02 - Wireless Communication Technologies and Signal Processing](#)

# Call for proposal

[HORIZON-JU-SNS-2023](#)

[See other projects for this call](#)

## Funding Scheme

[HORIZON-JU-RIA - HORIZON JU Research and Innovation Actions](#)

## Coordinator



### COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

Net EU contribution

€ 673 644,50

Address

Rue leblanc 25

75015 Paris 15

 France 

Region

Ile-de-France > Ile-de-France > Paris

Activity type

**Research Organisations**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

€ 0,00

## Participants (8)



CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE  
TELECOMUNICAZIONI



Italy

Net EU contribution

**€ 548 750,00**

Address

**Viale g. p. usberti 181a**

**43124 Parma** 

Region

**Nord-Est > Emilia-Romagna > Parma**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

**€ 0,00**



## **NEC LABORATORIES EUROPE GMBH**



Germany

Net EU contribution

**€ 368 582,63**

Address

**Kurfursten-anlage 36**

**69115 Heidelberg** 

Region

**Baden-Württemberg > Karlsruhe > Heidelberg, Stadtkreis**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

**€ 40 953,62**

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 THIRD-PARTY 

## NEC ITALIA SPA

 Italy

Net EU contribution

**€ 132 061,50**

Address

**Via cornaggia, 58**

**20092 Cinisello balsamo (mi)** 

Region

**Nord-Ovest > Lombardia > Milano**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

**€ 14 673,50**

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## TELECOM ITALIA SPA

 Italy

Net EU contribution

**€ 268 312,50**

Address

**Via gaetano negri 1**

**20123 Milano** 

Region

**Nord-Ovest > Lombardia > Milano**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 



Other funding

€ 29 812,50

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## EURECOM GIE

 France

Net EU contribution

€ 405 516,25

Address

**Route des chappes 450 campus sophia antipolis**  
**06410 Biot** 

Region

**Provence-Alpes-Côte d'Azur > Provence-Alpes-Côte d'Azur > Alpes-Maritimes**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

€ 0,00

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## AALBORG UNIVERSITET

 Denmark

Net EU contribution

€ 444 062,50

Address

**Fredrik bajers vej 7k**  
**9220 Aalborg** 

Region

**Danmark > Nordjylland > Nordjylland**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

€ 0,00

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## HEWLETT-PACKARD FRANCE

 France

Net EU contribution

€ 138 600,00

Address

**4 rue paul lafargue**  
**92800 Puteaux** 

Region

**Ile-de-France > Ile-de-France > Hauts-de-Seine**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

€ 15 400,00

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## HEWLETT PACKARD ITALIANA SRL

 Italy

Net EU contribution

€ 194 625,00

Address

**Via g di vittorio 9**  
**20063 Cernusco sul naviglio mi** 

Region

**Nord-Ovest > Lombardia > Milano**

Activity type

## Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

€ 21 625,00

## Partners (3)

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### TOSHIBA EUROPE LIMITED

 United Kingdom

Net EU contribution

€ 0,00

Address

1 st floor 3 furzeground way stockley park

UB11 1EZ Uxbridge 

Region

London > Outer London — West and North West > Harrow and Hillingdon

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

No data



### IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE

 United Kingdom

Net EU contribution

€ 0,00

Address

South kensington campus exhibition road  
SW7 2AZ London 

Region

London > Inner London — West > Westminster

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

**No data**



## SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

 Singapore

Net EU contribution

**€ 0,00**

Address

**8 somapah road**  
**487372 Singapore** 

Activity type

**Public bodies (excluding Research Organisations and Secondary or Higher Education Establishments)**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Other funding

**No data**

**Last update:** 8 January 2024

**Permalink:** <https://cordis.europa.eu/project/id/101139232>

