



# Challenges and opportunities for policy and technical EU-China cooperation on 5G

## EXCITING Webinar – Summary Notes

The EU-China Study on IoT and 5G

April 25, 2018



The EXCITING project number 723227 is partly  
funded by the EC and the Chinese government

EXCITING (项目编号 723227) 由欧盟和中国政府联合资助。

## The EU-China Study on IOT and 5G

*EXCITING, the EU-China Study on IoT and 5G, analyses the research and innovation ecosystem for IoT and 5G in China and compares it with the European model. The main purpose of the EU-China Study on IoT and 5G (EXCITING) is to support the creation of favourable conditions for cooperation between the European and Chinese research and innovation ecosystems, mainly related to the key strategic domains of Internet of Things (IoT) and 5G.*

*Collaboration in ICT research and innovation between the EU and China is not new and partners of the EXCITING project have good experience of past EU-China joint-research projects. However, the breadth and depth of the collaboration can be improved considerably, and ICT could find a stronger and more visible place among the key areas for EU-China collaboration. This will be facilitated through a better understanding of the European and Chinese research and innovation ecosystems.*

*EXCITING-中欧物联网与 5G 研究项目，旨在分析对比中欧物联网和 5G 领域的研究和创新生态系统。本项目的主要目的在于支持创建促进中欧在物联网和 5G 重要战略领域的研究创新生态系统。*

*ICT 相关的研究创新合作并不是中欧合作的新领域，而且 EXCITING 项目合作伙伴拥有中欧联合研究项目的丰富经验。但合作的深度和广度可以进一步提升，而且 ICT 可以成为中欧合作众多关键领域中更加突出重要的一个。本项目将通过更深入的理解中欧科研创新生态系统来促进这一目标的达成。*

## About the EXCITING Webinar

The objective of the webinar is to discuss the main challenges and opportunities for policy and technical cooperation between the EU and China in the field of 5G.

## Programme

10:30	<b>Welcome</b> (Kai Zhang, Martel)
10:40	<b>Status of EU-China policy and technical cooperation on 5G</b> Jean-Pierre Bienaimé – EXCITING Advisory Board Member
11:00	<b>5G: Technical challenges</b> Christian Jacquenet - Orange & EXCITING Advisory Board Member
11:15	<b>Discussion and Q&amp;A</b>
12:00	<b>Closing</b>

*[All times CEST]*

## Webinar resources

Additional information on the webinar can be found on the EXCITING website:

<https://euchina-iot5g.eu/resources/webinars/>

**Presentations** can be accessed here:

- [Welcome](#) (Kai Zhang, Martel)
- [Status of EU-China policy and technical cooperation on 5G](#) (Jean-Pierre Bienaimé – EXCITING Advisory Board Member)
- [5G: Technical challenges](#) (Christian Jacquenet - Orange & EXCITING Advisory Board Member)

**Video recording** can be accessed [here](#).

## Webinar – Summary Notes

### Presentation 01 | Welcome and introduction to EXCITING

**Presenter: Kai Zhang – Martel, EXCITING Coordinator**

The mission of the EXCITING project was presented to the audience, which is to support co-operation opportunities between Europe and China, in particular for IoT and 5G, by studying and comparing the corresponding research and innovation ecosystems, identifying the opportunities and making recommendations for creating the appropriate conditions.

The three funding authorities were identified. These are: the EU (Horizon 2020 Programme), The Chinese Ministry of Science and Technology (MoST), and Switzerland.

The five project objectives were presented and described. These are:

- To investigate and document the research and innovation policies and ecosystems in China and compare these with the European ones. Including the legal aspects of participation in reciprocal programmes.
- To investigate which international standardisation bodies are responsible and appropriate for the key strategic domains of IoT and 5G, given that these are areas where global approaches are needed.
- To investigate how global interoperability testing (with the focus on EU and China) is being used to validate research and innovation in the key strategic domains of IoT and 5G, to ensure prototypes can be turned into mature results/standards and successful deployments.
- To investigate practical opportunities for future co-operation on Large Scale Pilots for IoT and 5G on a reciprocal basis.
- To produce a roadmap showing how research and innovation ecosystems, policy, standardisation, interoperability testing and practical Large Scale Pilots should be addressed during the H2020 timeframe, and making recommendations for optimising collaboration between Europe and China for IoT and 5G.

The EXCITING project work plan (divided into work packages) and target groups were presented, as well as key expected outcomes, related to communication and dissemination, Chinese and European framework conditions, standardisation and interoperability, large scale pilots and roadmapping activities.

Lastly, the ways in which EXCITING can support EU-China collaboration were discussed:

- Facilitating access to the IoT Large Scale Pilots and the 5G PPP as well as the 5G IC at the University of Surrey.

- Supporting and channelling ideas for collaboration between EU and China in the fields of IoT and 5G into the future EC Work programmes that define the scope of upcoming R&DI projects that will be funded. A panorama tool is being developed and will be available soon.
- Having an impact through early recommendations, especially with the AIOTI-AII MoU signing, as well as identifying different LSP cooperation potentials.

## Presentation 02 | Status of EU-China policy and technical cooperation on 5G

**Presenter: Jean-Pierre Bienaimé – 5G-PPP Secretary General and EXCITING Advisory Board Member**

Presented the 5G-PPP governance model, which represents the public private partnership between the European Industry on the one hand and the European Commission (which represents the public investments and has committed €700 million for three projects). The private sector includes various stakeholder groups, which will also accompany the investment effort.

Presented the 5G-PPP mission statement, which is to be the voice of the European industry for the development and evolution of 5G.

Explored the 5G-IA and 5G-PPP work groups – 16 in total. There are policy-focused groups, shared work groups (involving the Networld 2020) and technical-focused groups (e.g. architecture, automotive, etc.). International cooperation has more institutional aspects (involving international partners) and more business related cooperation involving trials.

Regarding the Phase 1 5G-PPP projects, which was finished at the end of 2017, it was composed of 20 projects covering the research domains of different 5G aspects (i.e. radio, frontend/backend, network automation, virtualization, security). The projects involved 167 partners.

Regarding the Phase 2 5G-PPP projects, currently ongoing (as of May 2018), it is composed of 22 projects, mainly research oriented, but also focused on vertical aspects, such as 5G media, 5G city, 5G car, and others. It involves 224 partners, many not involved in Phase 1.

One of the key activities of the 5G-PPP is the Pan-EU Trials Roadmap strategy. This was initiated by the 5G-IA involving members and non-members of the association. A roadmap targeting several streams was defined, addressing 5G trials cities, 5G platforms, 5G vertical pilots, private trials, etc. The roadmap started in 2014 and will run until 2024. 5G Deployment and Commercialisation will start in 2019 and run until 2024. The UEFA Euro 2020 will be one of the main events where 5G will be deployed, across multiple European cities. The South Korea Winter Olympics (2018) have also initiated 5G tests.

The roadmap also involves international trials. Objectives for international cooperation include to ensure a global 5G vision and consensus on 5G standards and spectrum requirements, thus avoiding potential

fragmentation among different countries. The 5G-IA is contributing to this by promoting joint actions (e.g. workshops), joint cooperation via participation in trials (private trials and 5G PPP calls of H20020).

Regarding EU-China cooperation, in the framework of MoU's involving the 5G-PPP, there was a large workshop in Brussels (July 2017), which provided an opportunity to discuss concrete topics for trials between the EU (5G-IA) and China (IMT-2020 Promotion Group), including on connected vehicles.

It was mentioned that China supports a global unified IMT-2020 standard. This shows that, contrary to other regions (e.g. North America, Korea), there could be good cooperation between the EU and China in this area because the timeframe will more or less be the same. China has been contributing to global unified standardisation.

Regarding international trials under Phase 3 (running from 2018 to 2021), these will take place in a number of countries, including Japan, Korea and China. There was already an EU-China call that closed in January 2018, focusing on eMBB trials at 3.5 GHz and trials in the V2X context. The specific call was ICT-22-2018: EU-China 5G collaboration. This project expects twinning efforts with a project within the National Key Projects, led by China Mobile.

### Presentation 03 | 5G: Technical challenges

**Presenter: Christian Jacquenet - Orange & EXCITING Advisory Board Member**

Presented the major use cases which the 3G-PPP calls the network slices. These are specific to the different services that can be fostered by the introduction of 5G technologies. This includes eMBB (enhanced mobile broadband), which has strong ambitions in terms of service parameters. There is also the massive connectivity, which deals with accommodating thousands of connected objects (related to health, automated services, etc.). Lastly, it includes the ultrahigh reliability and low latency network slice, which is related to real-time services.

The basic concept of 5G network infrastructure is that it is composed of radio network technologies, cloud computing resources, next generation core network and a connection to the internet. On top of this infrastructure will lie multiple network slices, which are meant to represent the networks which are involved in the forwarding of traffic. There will be slices for mobile traffic, mobile communication, etc., which all have to accommodate robustness, security and other requirements.

Discussed what automation means in terms of 5G service delivery. It is the ability of a 5G customer to access the services and the parameters of the services. A customer will have the ability to negotiate the parameters it requires to its specific needs. At the bottom of the service delivery is traffic processing to make sure that what is delivered to the customer accommodates what has been negotiated with a customer.

Regarding network slices, these are sophisticated ‘facilities’. The objective of these slices is to provide virtually independent networks that reside on top of the infrastructure and can be accessed by the customer and third parties. These can be regarded as a new form of virtual private network technology.

Regarding the negotiation of network slices, many vendors have been involved in the standardisation of techniques. One of the major technical challenges is the notion of “network slice tenant in a ‘NSaaS’” environment, which is the hosting place to trigger negotiation cycles with the provider and to accommodate the requirements of the 5G end-customer. Another important aspect for promoting 5G services is the availability of standard data models.

Provided an example of MIoT 5G service negotiation outcome, focusing on two services (e.g. e-health and home automation).

With regard to security, it is believed that this has been poorly addressed. Attacks are becoming massively distributed and more efficient. There have been reports that it takes less than 2 minutes to attack an object. Furthermore, they last longer than before. It is important to focus on prevention and anticipation by means of predictive analysis and adapted signalling mechanisms.

Presented the 3GPPP standardisation roadmap, with commercialisation of 5G services in early 2020 (Europe). Also discussed the possibility of some events (e.g. Olympics) being used to host large scale deployments of 5G.

Regarding the 5G Spectrum, the conclusions of the CMR-15 conference was to accommodate European recommendations (to explore the 26 GHz band), but some countries (e.g. USA and other Asian countries) will be launching experiments on the 28 GHz band. Europe will start with 26, then move to 32 and 42 GHz. It is important to avoid 4G saturation from 2020 to 2023.

Lastly, regarding 5G challenges, there are many to be addressed. Automation and security are the hot topics to be explored. There are other topics that must also be addressed. Spectrum and standardisation must also be addressed. Lastly, it is important to address the relationship between costs, regulation and revenues.

## Discussion and Q&A

*Question: Given that 5G standards are becoming more mature and that EU-China have a similar opinion on the standards to adopt, the next step would seem to be to make more interoperability tests. Is anything being planned for interoperability tests?*

Interoperability on key aspects will be a key item in the intercontinental collaborations and trials. It must be seen what will be the results of the EU trials and examine the description of what will be done. With regard to challenges, there are various aspects to consider, including harmonization of spectrum, which could be an interoperability issue. Inside the 3.5 GHz band there are adjustments to be made

considering EU and China interoperability. Spectrum will be one of the most important topics to study, and the next World Radio Conference will be important for this discussion.

*Question: What are the main security challenges in network slices?*

Concerning slicing, there will be a number of challenges. Network slicing has been defined as one of the main parameters of 5G. The first challenge is to demonstrate that operators will maintain network neutrality and diversified levels of services.

*Question: Comparing Europe and china, who has the most forward looking and ambitious policies for 5G deployment?*

Both Europe and China are both aiming to deploy the 5G disruptive capabilities. Considering Europe, to some extent it can be considered more ambitious. With all the 5G-PPP projects, Europe has announced and deployed the most important R&D programme on 5G in the world. It was also asserted by the EC that we want to create a different ecosystem compared to 3G and 4G by including verticals in the testing, trialling and standardisation process. Europe wants to involve new stakeholders in the ecosystem.

*Question: Frequently on the internet, we see that China is at the forefront of 5G deployment. In contrast, we see that Europe is lagging behind. Is there a misinterpretation in the current status and if not, are there political and/or technical reasons behind this?*

Yes and no. Yes in terms of first launches, but the word launch has to be analysed. In the 5G race we will see North America and Korea at the front, which will not wait for the full completion of 5G. Japan will target the Summer Olympics for full 5G launch. Most big operators in Europe prefer to prepare carefully for 5G while fully monetizing 4G and preparing their business case. In China it may be intermediary. They may come before the European operators as the three main Chinese operators have announced ambitious plans in terms of trials (e.g. China Mobile with 5 Chinese cities). The China MIIT has reserved a number of bands for this purpose – there is a push from the government. From the EU side, when the European operators launch, they will launch a more complete service.

*Question: China is a single country while Europe has the EU Member States and other countries. Is this a barrier to 5G activities or is there a coordinated effort at the European level?*

The 5G roadmap is clear that by 2020 there will be 5G in at least one city in each Member State.

# Consortium

