



5G Communication with a Heterogeneous, Agile Mobile network in the Pyeongchang Winter Olympic competition

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Deliverable D1.4 5GCHAMPION impact report and future EU-KR collaboration plan

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Abstract

D1.4 is a public deliverable, which presents and details the envisioned future collaborations between the European and Korean partners and stakeholders. Therefore, this deliverable, after recalling the major cooperation success of the project, presents three concrete leads for the future collaboration between the European and Korean partners and stakeholders:

- (i) the contribution of 5GCHAMPION partners to the 3GPP study item on 'new radio impacts to support Non-Terrestrial networks' through active participation to the standardization meeting and through its technical results that will continue even after the end of the 5GCHAMPION project;
- (ii) the active discussion between the Korean embassy to France and the French embassy to Korea on the organization of a workshop to establish new international cooperation between the two countries;
- (iii) the Europe-Korea 3-years collaborative 5GAllStar project that will focus on translating 5G use cases, vertical industries requirements and ambitions in adopting 5G, into viable business cases. The 5G ALL-STAR project builds on the outcomes and the cooperation experience of 5GCHAMPION to design, develop, evaluate and trial multi-connectivity based on multiple access, combining cellular and satellite access technologies to support seamless reliable and ubiquitous broadband services. The 5G ALL-STAR project will develop a set of technologies and validate system interoperability to provide global connectivity and support mission critical applications of interest in both European and Korean regions.

Index terms

International Cooperation, 5G, Trials, Olympic Games.



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1 Impact

The project coordinators CEA and ETRI - supported actively by all European and Korean partners and in particular by INTEL, Nokia, TASF and GIST- have continuously monitored the project impact and proactively offering opportunities to the 5GCHAMPION consortium to obtain and select opportunities for enhance the impact of the project.

Thanks to a continuous alignment of cross-WP activities and joint objectives and success, 5GCHAMPION has demonstrated a notable impact in Europe, Korea and over the globe on several axes:

- Active participation to the 5G trials during the 2018 Winter Olympic Games
- Standardization and 5G Global visibility
- Education
- Scientific publications and active participation to international major scientific conferences
- Press for technical experts, generic public and economic experts
- Spectrum regulators
- Joint long-lasting collaboration between Europe and Korea

The 5GCHAMPION coordinators have also day-by-day worked on the establishment of long last relations between partners of the consortium with the objective of creating the momentum for a long lasting collaboration even after the end of the project. To this end, the coordinators, the WP7 leaders and a selection of partners have organized events to share experience and knowledge among partners.

Several major event presented a milestone in such direction among which (just a selection):

- In the context of IMT-2020 workshop and demo day in 2016, 5GCHAMPION has provided an extensive presentation on the targeted 20GHz 5G proof-of-concepts at 2018 Winter Olympic Games.
- During the IEEE 5G Berlin Summit in November 2016 with an invited presentation on " 28 GHz 5G Proof-of-Concepts at 2018 Winter Olympic games".
- With the organization of the ETSI Multi-RAT workshop held in Paris on March 2016 during which 5GCHAMPION has delivered a presentation on " 28 GHz 5G Proof-of-Concepts at 2018 Winter Olympic games".
- 5GCHAMPION has co-organized with the H2020 project Flex5Gware and MiWaves an half day workshop on "Prototyping 5th Generation Cellular Wireless Technology" in the frame of EuCNC conference, Oulu, Finland, 12-15 Jun. 2017.
- First, the workshop organized at IEEE Globecom 2017 in Singapore entitle '5G Test-Beds & Trials – Learnings from implementing 5G (5G-Testbed)' (<http://globecom2017.ieee-globecom.org/workshop/ws-21-international-workshop-5g-test-beds-trials-learnings-implementing-5g-5g-testbed>) where representative work from WP 2, WP3, WP4, WP5 and WP 6 have been presented (see deliverable D7.4 and D7.5).
- After the Winter Olympic 5GCHAMPION Trials, the 5GCHAMPION consortium has co-organized in collaboration with IITP, the European Commission, the French Embassy, CEA-LETI, ETRI the EU-Korea workshop on "From the 5G challenge to 5G CHAMPION Trial at Winter Olympic Games". In such occasion, about 80 international participants from Industry, standardization bodies, academia, and operators,

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institutional had the opportunity to learn about the results of the 5G Trials of 5GCHAMPION and the occasion to discuss. This event has been also a flora of discussion and cooperation among European and Korean partners and institutional. As one outcome of this workshop, the French embassy to Korea and the Korean embassy to France has started discussing on future cooperation and joint research frameworks.

- During the very visible event for the 5G community, the 4th 5G Global Event, in the special session on cross-regional activities, 5GCHAMPION has delivered a plenary talk on its achievements and its plans for the winter Olympic Games trials.
- During several strategic workshop (in 2016, 2017 and planned for October 2018) organized by the EU commission and the Korean government on Europe-Korean cooperation, showing the example of 5GCHAMPION.

1.1 Impact on 5G interoperability architectural framework

During the two years of the project, 5GCHAMPION has intensively worked on developing, evaluating and demonstrating a selection of technologies, which are foreseen to unlock some of the key 5G challenges. On February 2018, during the Olympic Games, 5GCHAMPION has provided a multi-technology proof-of-concept benchmarking the effectiveness of the 5GCHAMPION solutions notably on mmW mobile links, Core network, and satellite communications.

5GCHAMPION have an intercontinental impact, having actively disseminated the results of the project and on the proof of concept influenced and still influences the 5G ecosystem on a global scale. The details of the disseminations related to 5GCHAMPION is provide in D7.4.

1.2 Impact on Standardization Activities

Status and results of the activities of 5GCHAPION on standardization activities and their impact are details in D7.4.

2 Future Europe-Korea Collaboration Plan

5GCHAMPION has started in June 2016 and ended in June 2018. It is one of the three project launched for the first time in the framework of the collaboration between MIST (Korea) and European Commission (Europe). Its ambition is to develop key enabling technologies for a proof-of-concept environment to be showcased at the 2018 Winter Olympics in PyeongChang, Korea. The very successful trials offered by the 5GCHAMPION consortium during the 2018 winter Olympic Games allowed maximum visibility for the today available 5G technology two years ahead of the targeted 5G service deployment in 2020.

Thanks to the extraordinary cooperation in the project, several partners from both Korea and Europe has started bilateral cooperation (scientific mainly) on the topics related to 5G and beyond. Thanks to the very pleasant and effective cooperation experienced during the two years of the project, a selection of partners has federated and discussed on future cooperation opportunities in the context of the new Europe-Korea H2020 cooperation project call.

After a precise analysis of the 5GCHAMPION results but also of other worldwide actives aiming at demonstrating the effectiveness of 5G technologies, some partners from Europe and Korea

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have started looking for translating 5G use cases, vertical industries requirements and ambitions in adopting 5G, into viable business cases. However, the support of 5G new services and seamless connectivity across various vertical industries and very diverse use cases still requires the integration of multiple access technologies, which has not been covered by 5GCHAMPION and neither by other collaborative research.

In order to face this new challenge, with the strong wish of continuing the fruitful and interesting cooperation between Europe and Korea, a selection of partners of 5GCHAMPION has decided to continue working together. The new challenge is to develop a set of technologies and validate system interoperability to provide global connectivity and support mission critical applications of interest in both European and Korean regions. The result of this collaboration is the accepted proposal for the phase 2 joint Europe Korea call on 5G, the 5GAllStars project that will start on 1/07/2018, coordinated again by ETRI and CEA.

Moreover, with the goal of planning and creating future collaborations between European and Korean partners, the 5GCHAMPION team has participated in October 2017 to international workshops, and EU and MSIP event to identify the challenges in order to exploit both EU research results and development in Korea as well as to exploit Korean research results and development in EU. The coordination team of 5GCHAMPION and some key industrial partners will also actively participate the the Europe-Korea collaboration workshop that will be held in Seoul on the 12/10/2018 delivering several presentations on the achievements and results of 5GCHAMPION, the lesson learnt with the cooperation and the vision on future needs.

2.1 Future collaboration plan between the European and Korean partners

During the two years of collaboration, several partners have created and fortified their collaboration publishing collaborative technical journals and conference papers. ETRI, CEA and Fraunhofer HHI have been drawing several possibilities of cooperation and exchange of personal for the future. Moreover, thanks to the support of the French embassy to Korea, CEA and ETRI are also discussing on other opportunities and frameworks for collaborations between Korea and France.

2.2 Future collaboration plan between the European and Korean stakeholders

The 5GCHAMPION consortium has federated to include in the 3GPPP standard a study item on 'new radio impacts to support Non-Terrestrial networks' through active participation to the standardization meeting and through its technical results. Moreover, in the context of the 5GAllstar project (accepted in the phase 2 of the H2020 Europe-Korean cooperation on 5G), industrial stakeholders from Europe and Korea have a clear roadmap for cooperation to validate the effectiveness of Non-Terrestrial networks in 5G.

2.3 Future collaboration plan between the European and Korean Institutions

Thanks to the workshop on "From the 5G challenge to 5G CHAMPION Trial at Winter Olympic Games" co-organized by 5GCHAMPION, the IITP, the European Commission, the



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French Embassy, CEA-LETI, ETRI, Europe and Korea institutions are planning future cooperation and exchanges.



[Left] The French Ambassador to Korea (Mr. F. Penone)

[Center]: Dr. Kim Gwansu, Director General for Information and Communication Industry Policy

[Right]: Ms. Anna Huovila, Deputy Head of Mission, Embassy of Finland in Korea

To this end, CEA-LETI, the French Embassy to Korea, the Korean Embassy to France are co-organizing a 'Korea-French day' to further investigate potential axes of cooperation. The workshop will be held in 2019 in France. Similar discussion has been started between the Finish embassy to Korea, the 5GCHAMPION consortium, the French Embassy to Korea and the Korean government.

3 Conclusions

During the two years of intense activity, 5GCHAMPION has succeeded in achieving its objectives, influencing the 5G ecosystems by contributing to the identification of key 5G interfaces to be standardized, contributing to the integration framework toward access ad core, contributing to standardization activities and proposing a new study item on new radio for non-terrestrial communications.

Moreover, the 5GCHAMPION consortium has effectively and pro-actively transfer knowledge to generic public and press, industry, telecom operators, academia, etc. on 5G technologies

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and show-cased the 5GCHAMPION solutions and prototypes with several representative trials during the 2018 winter Olympic Games.

Thanks to an active day-by-day coordination work from ETRI and CEA, the two parts of the consortium (from Korea and Europe) have learnt to work together, cooperate and today they have established cooperation on scientific research, industrial activities and standardization study items that will last also after the end of the project.