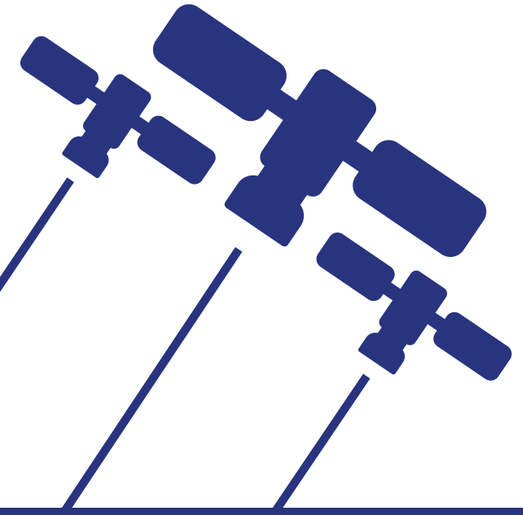

PROJECT FACTS

Start: 1st December 2020

Duration: 28 Months

Call: H2020-SPACE-2018-2020

Topic: SPACE-29-TEC-2020, Satellite communication technologies

Type: Research & Innovation Action

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DYNASAT project

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Funded by the EU's Horizon 2020 programme under agreement n° 101004145

DYNASAT

DYNAMIC SPECTRUM SHARING AND BANDWIDTH-EFFICIENT TECHNIQUES FOR HIGH-THROUGHPUT MIMO SATELLITE SYSTEMS

DEMONSTRATIONS OVERVIEW

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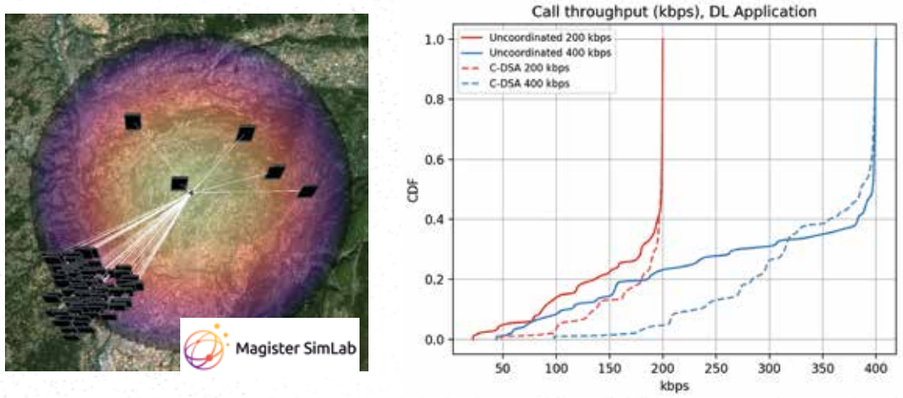
DEMO 1

Coordinated Dynamic Spectrum Allocation (C-DSA) for Efficient Spectrum Utilization

- Enablement of flexible spectrum sharing between Terrestrial Networks (TN) and Non-Terrestrial Networks (NTN)
- Definition of required measurements, signals, and system architecture
- Limitation of allowed spectrum per system based on current needs
- Efficient utilization of satellite connectivity for coverage extension where TN connectivity is not possible or financially feasible
- Example results show significant gains from C-DSA for NTN users in comparison to an uncoordinated, fully shared spectrum.

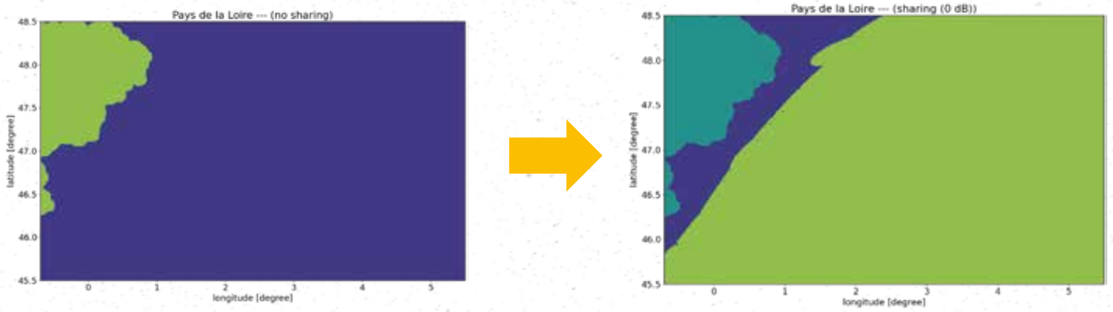


C-DSA scenario visualized in SimLab and user throughput distributions with and without C-DSA

DEMO 2

Non-Coordinated Spectrum Sharing for Efficient Spectrum Utilization

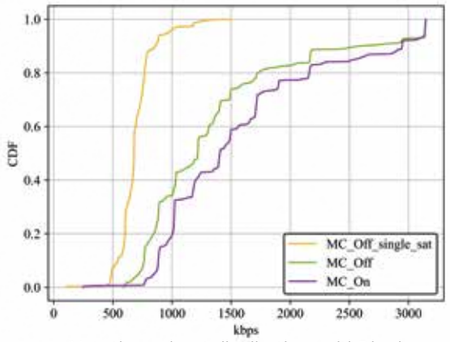
- Allows the coexistence of TN and NTN in the same frequency band.
- Can be applied to create coverage at sea (NTN) and on land (TN), between neighboring countries with different TN deployment timelines.
- Cooperating NTN and TN operators can flexibly tune the sharing parameters to maximize their common business targets.
- Provides spectrum utilization benefits as a significant improvement of coverage without causing harmful interference between NTN and TN, and as a possibility for accelerated allocation of spectrum for NTN broadband 5G and 6G communications.



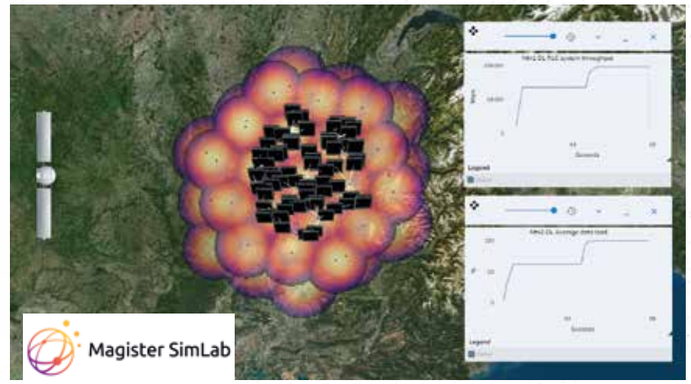
DEMO 3

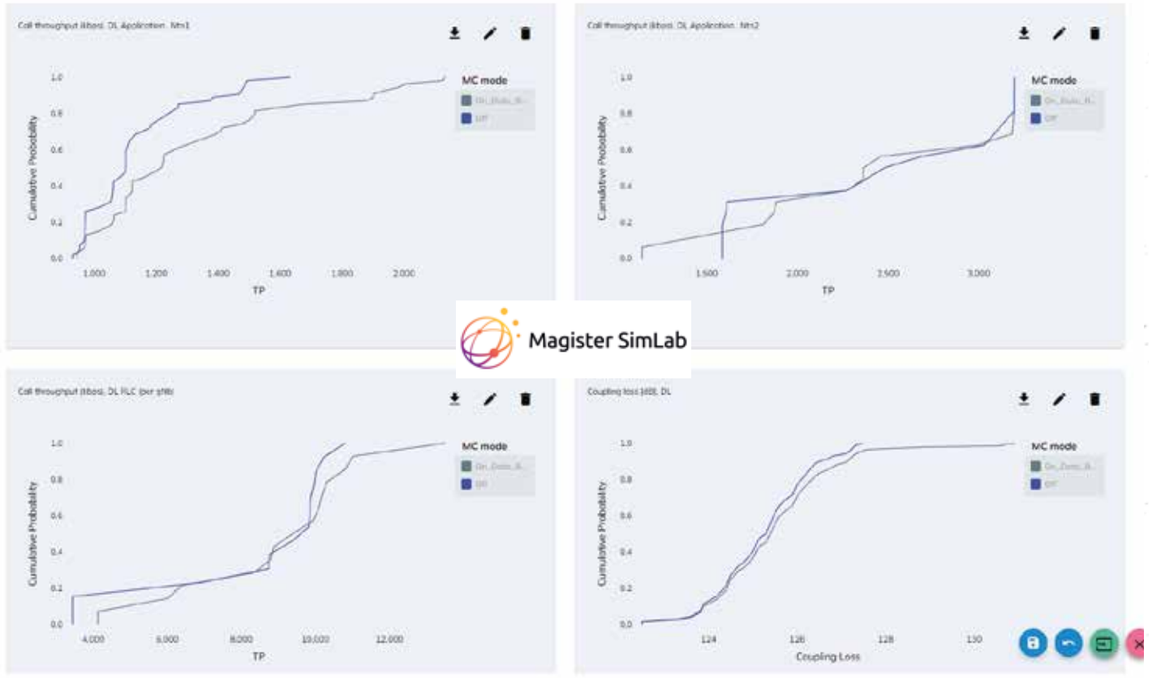
Multi-Connectivity for Bandwidth-Efficient Techniques

- Inter/Intra satellite Multi-Connectivity (MC) for throughput/reliability enhancement
- Design of MC related algorithms:
  - Secondary node addition
  - Traffic steering
- System architecture definition, including measurements and signalling, as well as scenarios where MC would be beneficial
- In the evaluation scenario, enabling MC showed significant throughput and resource utilization enhancements.s



User throughput distributions with single satellite and two satellites with and without MC





SimLab service reporting and visualization view showing MC results and scenarios