

# Optical fibre network for time and frequency comparisons and services

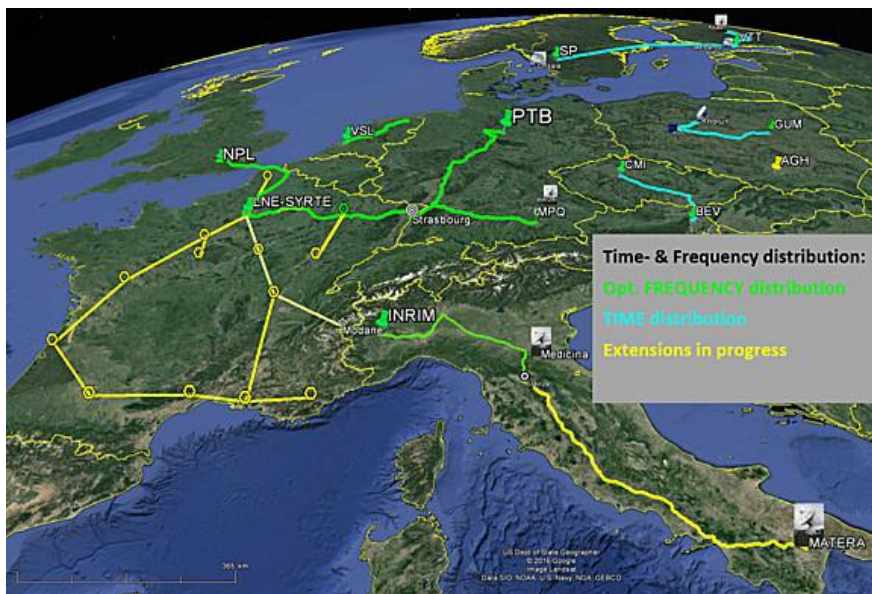
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## Rationale

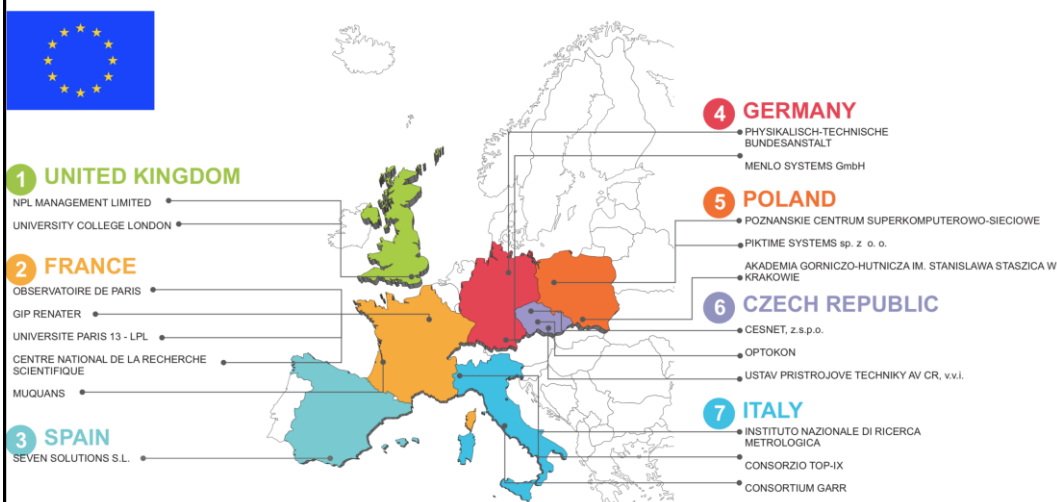
- Need for permanent optical fibre links between NMIs for optical clock comparisons.
- Active development of time and frequency dissemination services over optical fibre.
- Strong European position in this area.
- Several relevant JRPs, currently OFTEN and WRITE.
- Current H2020 Infrastructure project, CLONETS, concerning a permanent European optical fibre infrastructure for time and frequency. “INFRAINNOV” call (CSA): needs case, strategic plan, technology transfer roadmap, market study. 19 participants of which 4 NMI. End of CLONETS in June 2019, possible follow-up Design Study, ESFRI listing.
- Need for long-term collaboration among NMIs, to define metrological priorities and orient the development and exploitation of the fibre network infrastructure.

### Optical TF links in Europe



OFTEN: [http://www.ptb.de/emrp/often\\_home.html](http://www.ptb.de/emrp/often_home.html)

### CLONETS consortium



<http://www.clonets.eu>

## Activities and actors

- Coordination among NMIs. Define priorities, including research.
- Development, deployment and operation of a permanent, pan-European, optical fibre network for time and frequency comparisons and dissemination. Need a strong consortium to carry this out and to attract significant funding.
- Support the exploitation of the fibre network (expertise, procedures) for inter-NMI comparisons, development of fibre-based services, etc.
- Potential actors: Network time dissemination by NTP is universal among NMIs. This EMN is more specifically oriented toward NMIs interested in going beyond this. About 13 have already worked on such topics. Other possible actors include National Research and Education Network operators, high-tech SMEs, university research groups, Research Infrastructures, TF service operators, ...

## Outputs

- A European research and service infrastructure: optical fibre network for time and frequency comparisons and services.
- Contractual framework for operating the infrastructure. Interface with the larger community.
- Guidelines for joining the infrastructure
- Guidelines for exploiting the infrastructure: inter-NMI comparisons, dissemination services, ...
- Point of contact for common service offers of NMIs

## Impact

- Economic impact associated with the development, deployment and operation of the European infrastructure: technology transfer, commercial services.
- Strengthening European research by providing high-performance references to Research Infrastructures
- Enable continuous, permanent optical comparisons among European NMIs and thus contribute to the development of optical clocks and their applications (timescales, chronometric geodesy,...)