

Introduction to EMPIR 15RPT04 TracePQM Project

Traceability routes for electrical power
quality measurements

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Summary

- ☐ Motivation
- ☐ Project Objectives
- ☐ Partners
- ☐ Project Timeline
- ☐ Project structure

Worldwide Electrical Energy Production = 22×10^{12} kWhr per year

Rank	Country	Annual Consumption (kWhr/year)	Per Capita Consumption (kWhr per year)
1	China	6×10^{12}	4 300
2	USA	4×10^{12}	12 077
....
65	Ireland	0.025×10^{12}	5 047



1 kWhr = 

Total Solar Energy received on earth = $1\,500\,000 \times 10^{12}$ kWhr per year

$\approx 0.001\%$



Power Distribution Grid

- Many sources with fluctuating power
- Non-linear loads
- Highly sensitive electronic equipment
- Power Quality Monitoring is vital



Power Quality Monitoring

- Large number of diverse parameter
- (harmonics, flicker, dips, swells.....)
- IEC 61000-4-30, IEC 62586-2, IEC 61000-4-15, IEC 61000-4-7
- Wide range of measuring instrumentation



SI Traceability of PQ measurements is imperative to ensure comparability of results

BUT

Difficult to obtain traceability for all PQ parameters

Overall goal:

To develop and validate a **modular** and well documented **metrology grade** system for sampled power and PQ parameter measurements, which can be easily established at all partner NMIs and other interested parties.

Particular objectives:

- ☐ To develop and validate a modular, metrology grade measurement setup.
- ☐ To develop and make available an open SW tool.
- ☐ To develop and make available a good practice guide.
- ☐ For each participant to develop an individual strategy for long-term operation of the developed research capacity.

Project Partners

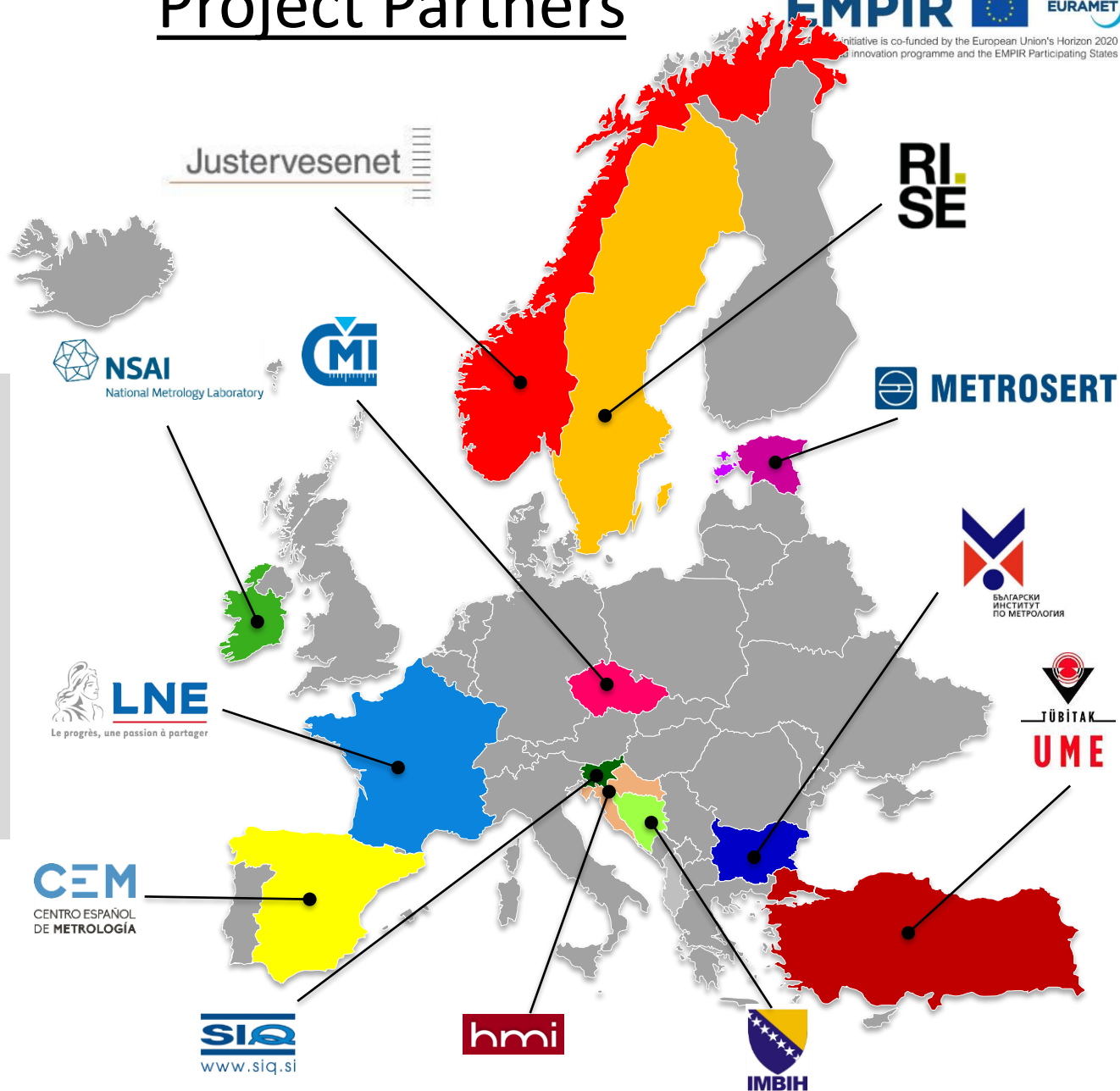
13 Partners

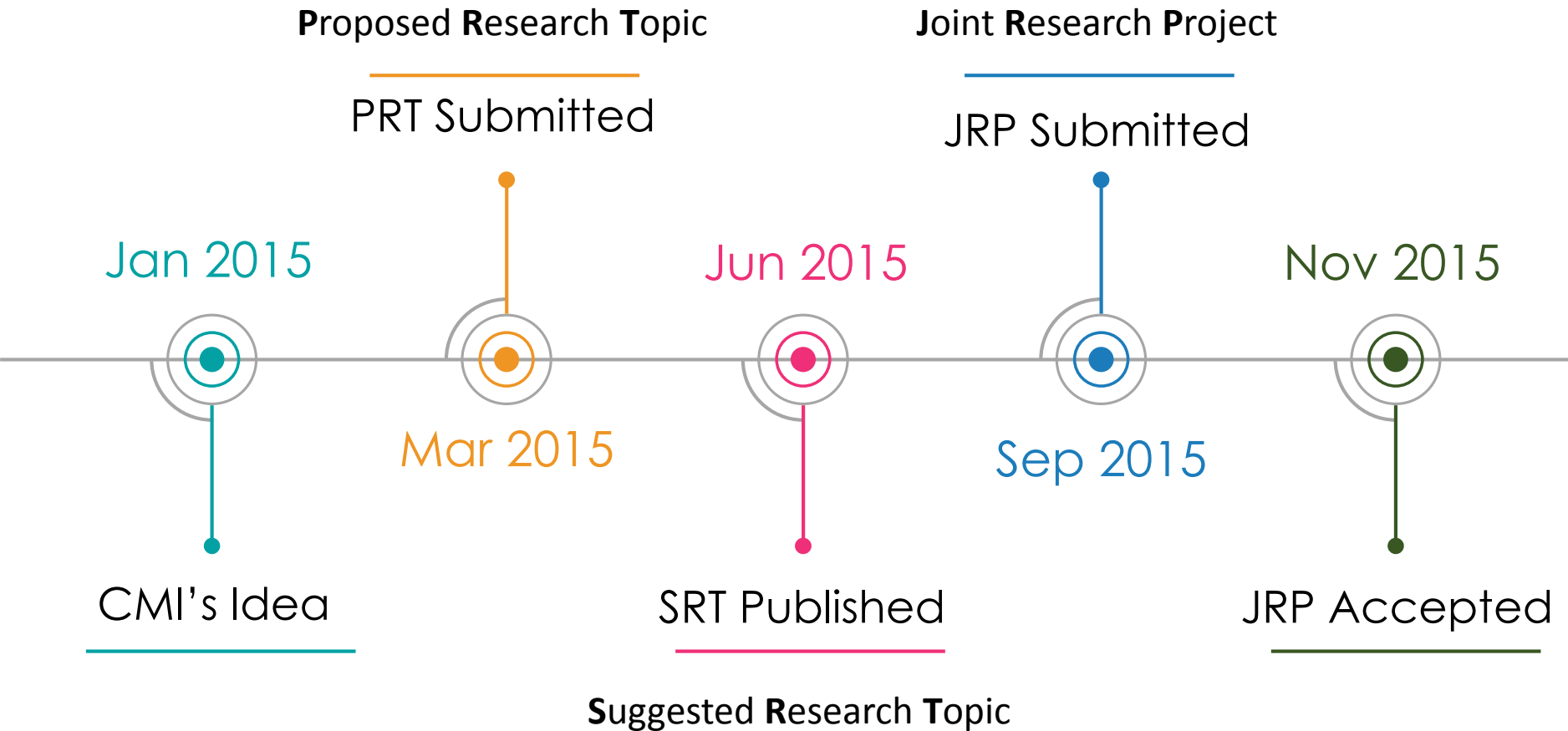
Budget: €494k

Start Date: 1 Jun 2016

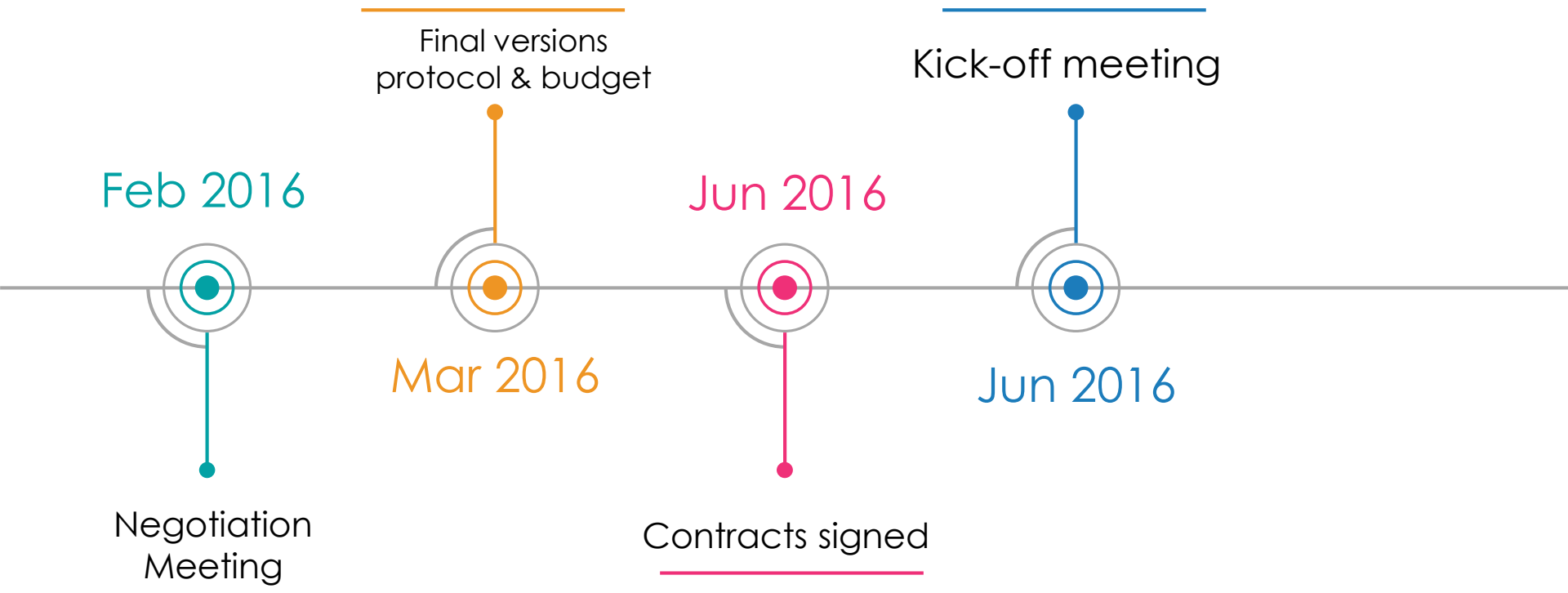
Duration: 36 months

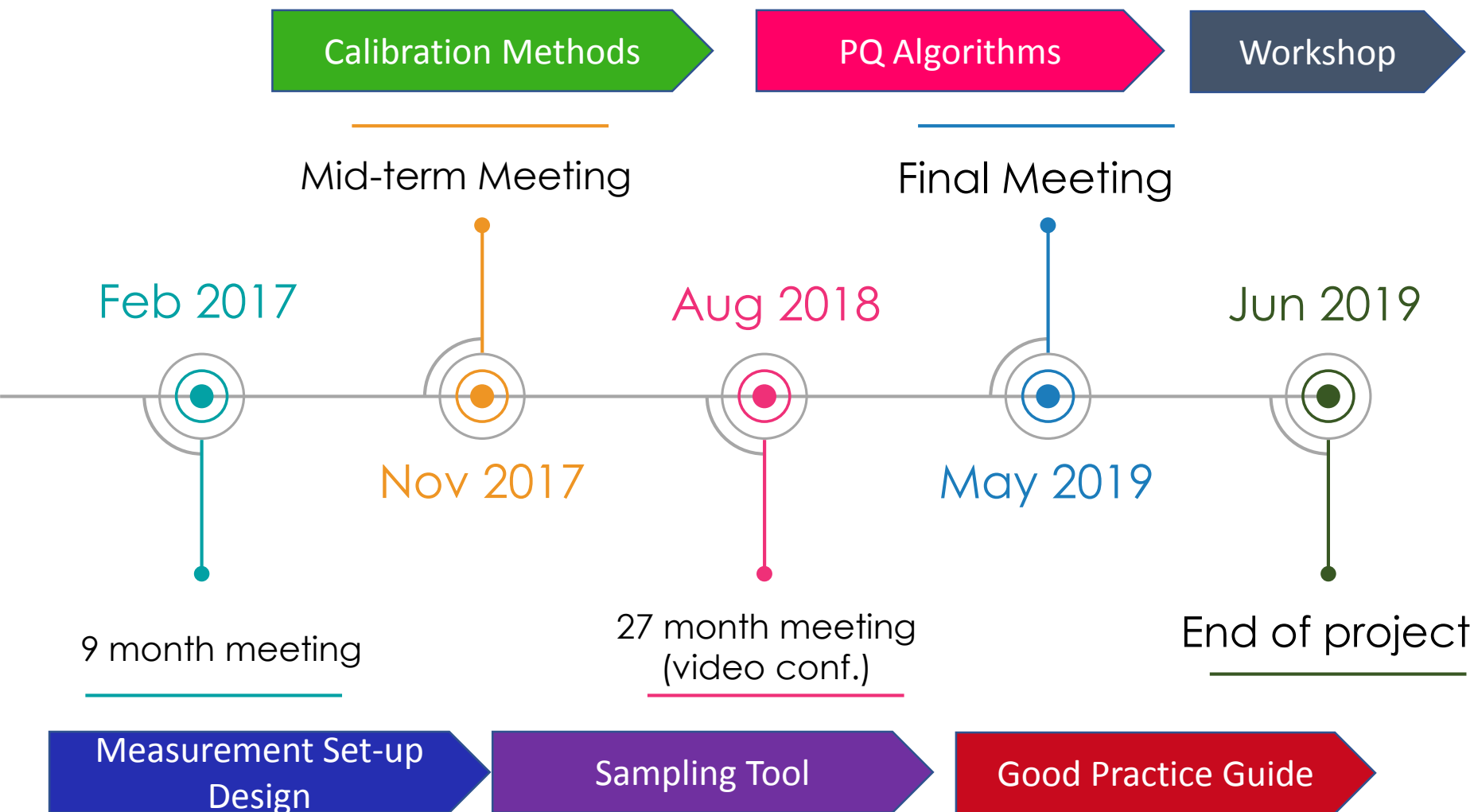
Effort: 81 person-months





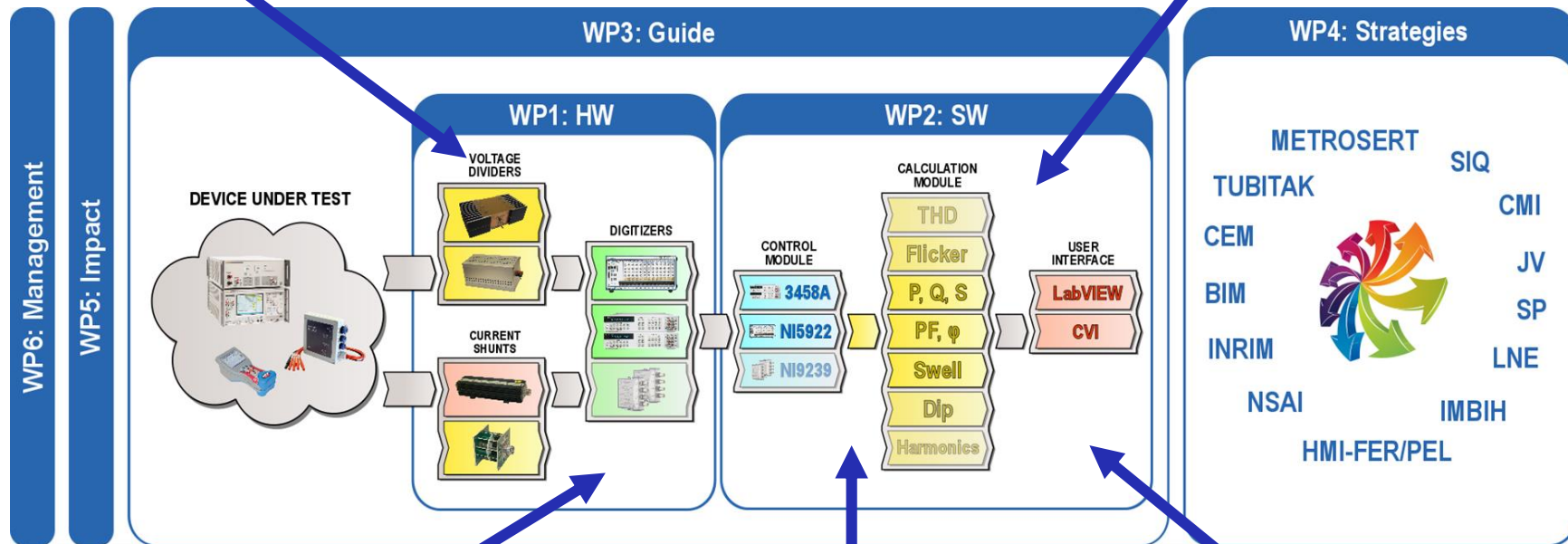
Project Timeline





Design of Set-ups

PQ Algorithms



Characterization of the transducers and digitizers

SW Sampling Tool

Good Practice Guide

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