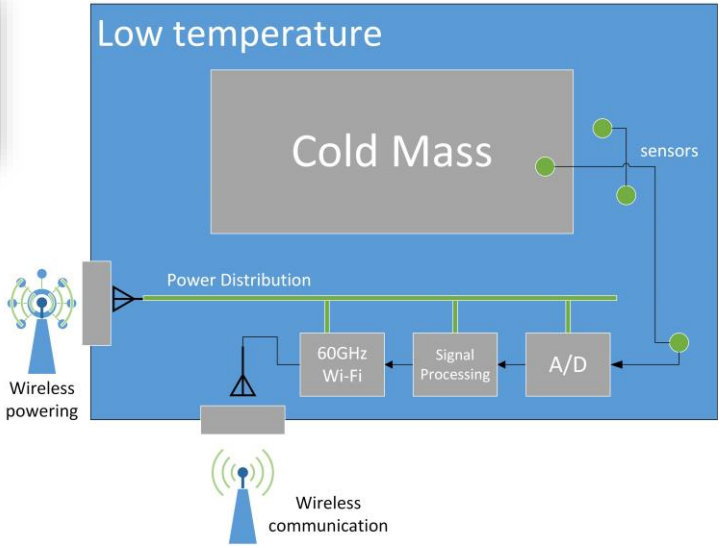
FuSuMaTech

Task 4.3 : Smart Wireless Diagnostics for Superconducting and Cryogenic Applications

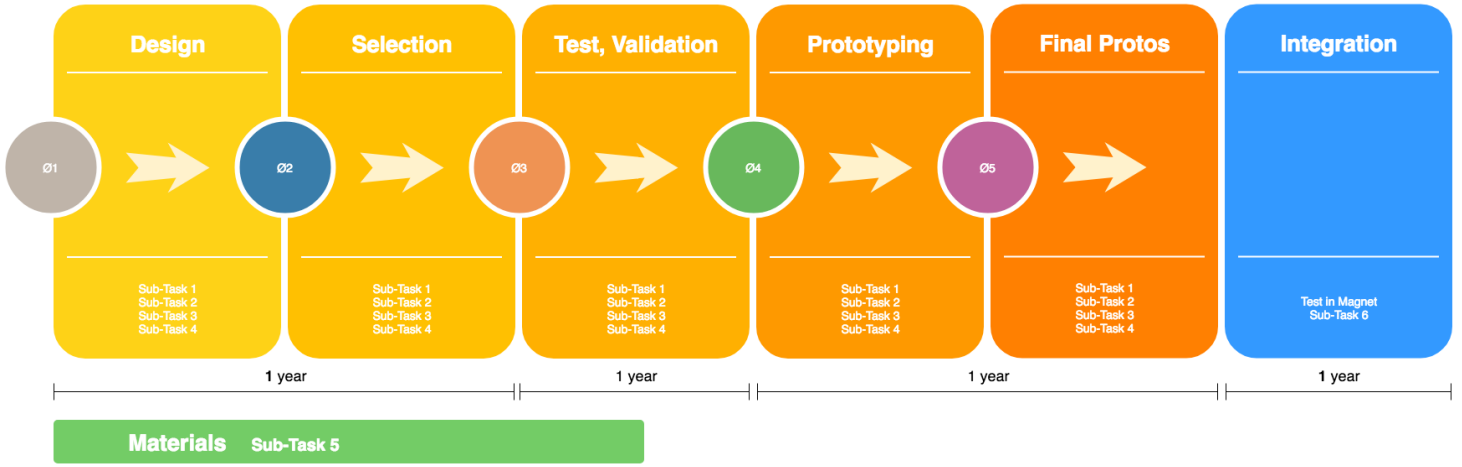
The long-term objective is to access a superconducting magnet efficiently and conveniently from remote devices (like smart phones, tablets or intelligent screens). Provide abundant and high precision data for the monitoring, diagnostics, control and protection functionalities, with real-time algorithms using intelligent applications such as Neural Networks, Deep Learning, Artificial Intelligent, etc…

To make this real, the ambitious step forward of this program is to have the instrumentation electronics embedded inside the low temperature vessel with the powering and communication provided by wireless links.

Partners :



Task 4.3: plan, schedule, cost



Estimated costs in Euros

	Sub-Task 1	Sub-Task 2	Sub-Task 3	Sub-Task 4	Sub-Task 5	Sub-Task 6	
	3 years	3 years	3 years	3 years	1.5 years	1 year	
Material	100K	200K	150K	150K	80K	100K	
Manpower	150K/year	250K/year	180K/year	180K/year	180K/year	150K/year	
Use of installation	80K/year	80K/year	80K/year	80K/year	80K/year	80K/year	
Total	790K	1190K	930K	930K	470K	330K	4640K

Sub-Tasks

1. electronics 1 - Sensors
2. electronics 2 - Control, acquisition and data processing
3. electronics 3 - Wireless communication link
4. electronics 4 - Wireless powering
5. Materials
6. Integration

Who can benefit from this ?

- Any application doing measurement at low temperatures (cryogenics environments).
- superconducting magnets (MRI, research accelerators and colliders)
- superconducting links (electrical distribution)
- superconducting generators (windmills)
- quantum computers
- low cost aerospace devices
- intelligent transport of liquefied gases on gasoducts at low temperature

Potential partners

This proposal is open for more partners willing to collaborate.

These institutions :

- VTT Technical Research Centre of Finland
- KU Leuven - Department of Electrical Engineering - ADVISE and MICAS

were interested only in the case of custom electronics (ASIC) development for low temperature

In the context of FuSuMaTech the outcome of Task 4.3 will provide the abundant information needed by Task 4.1 and will allow to monitor and control any technological pilot (Task 5).
The knowledge collected from the studies of electronics components at low temperature will be stored in the database (Task 4.2) and shared among the members of the Consortium.