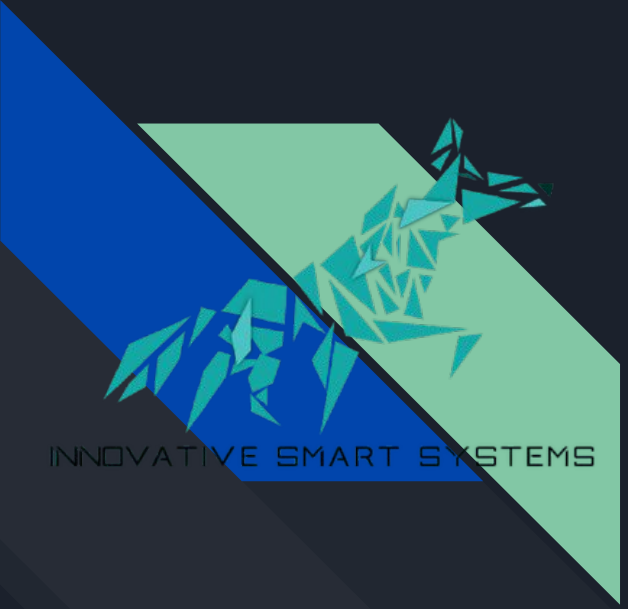

Smart Cabin

CHAUVET Louis
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I. Context
II. Project Specifications
III. Planning
IV. Risk Assessment

I. Project context

CLIENT

STERELA (Airbus Subcontractor)

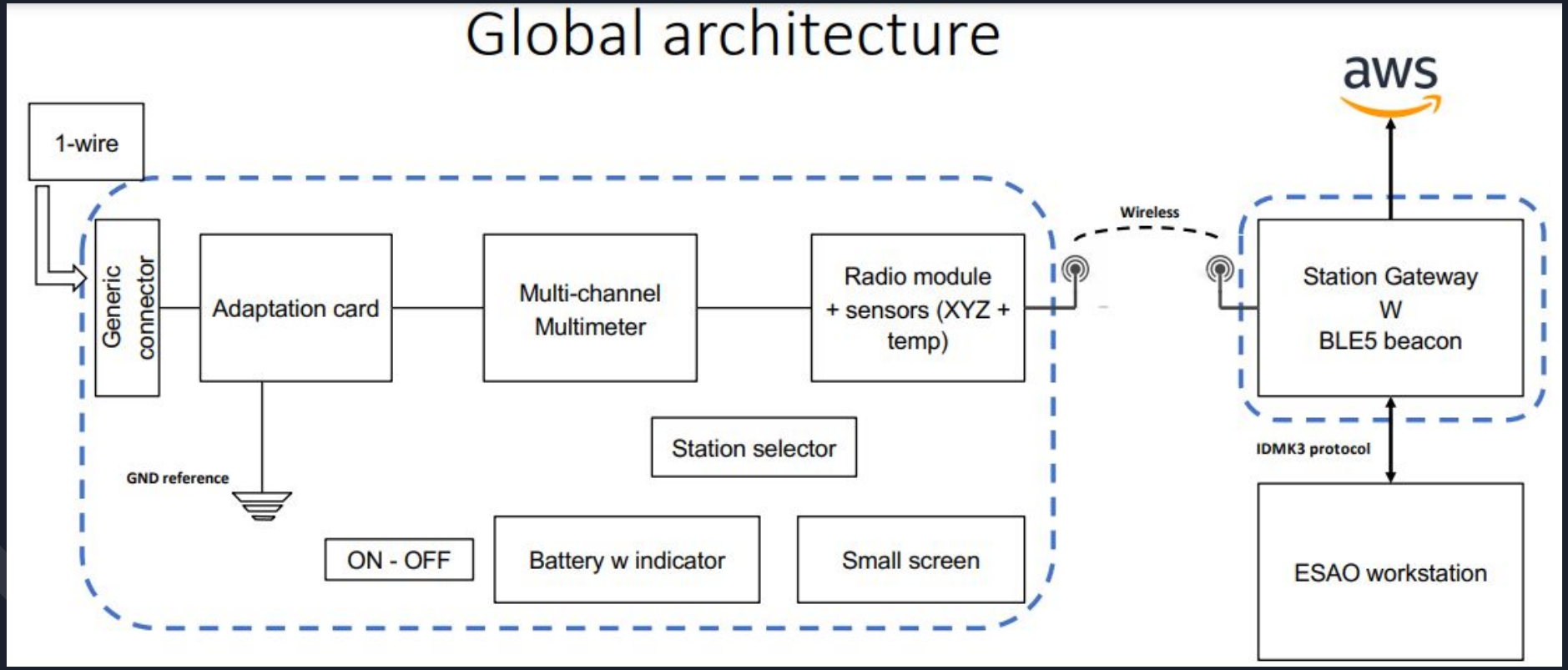
REQUIREMENT

Make the ground test sequence wireless to reduce wiring costs, workforce and time.

EXPECTED OUTCOME

Wireless proof of concept

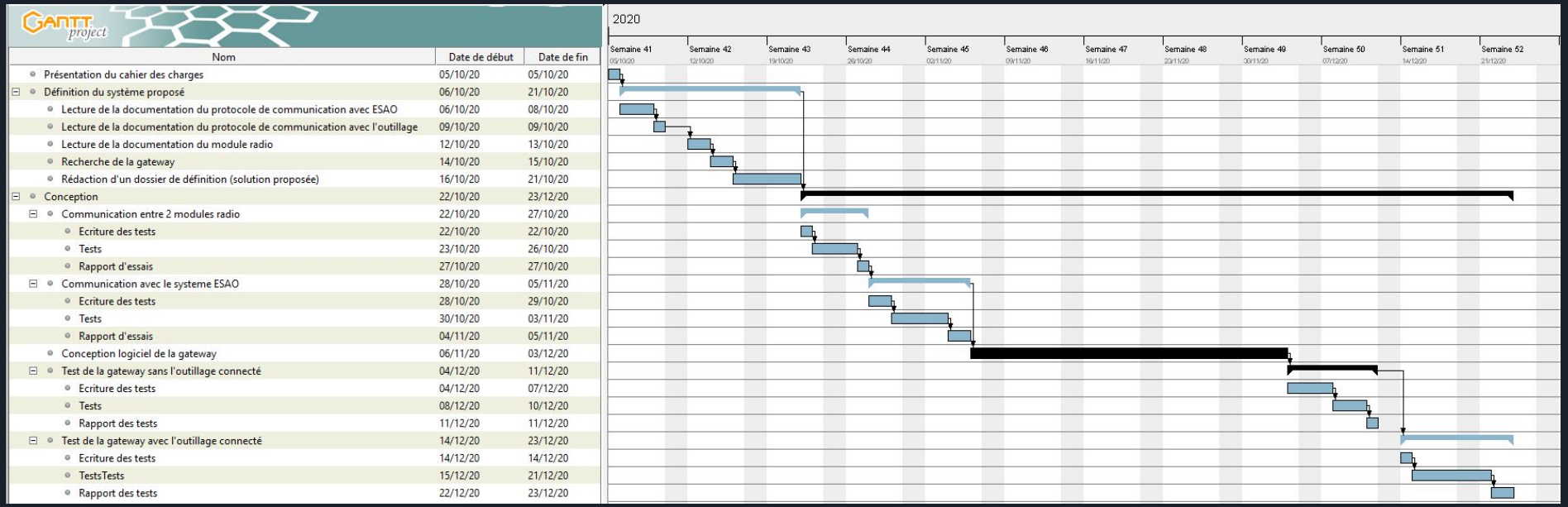
II. Specifications



II. Specifications

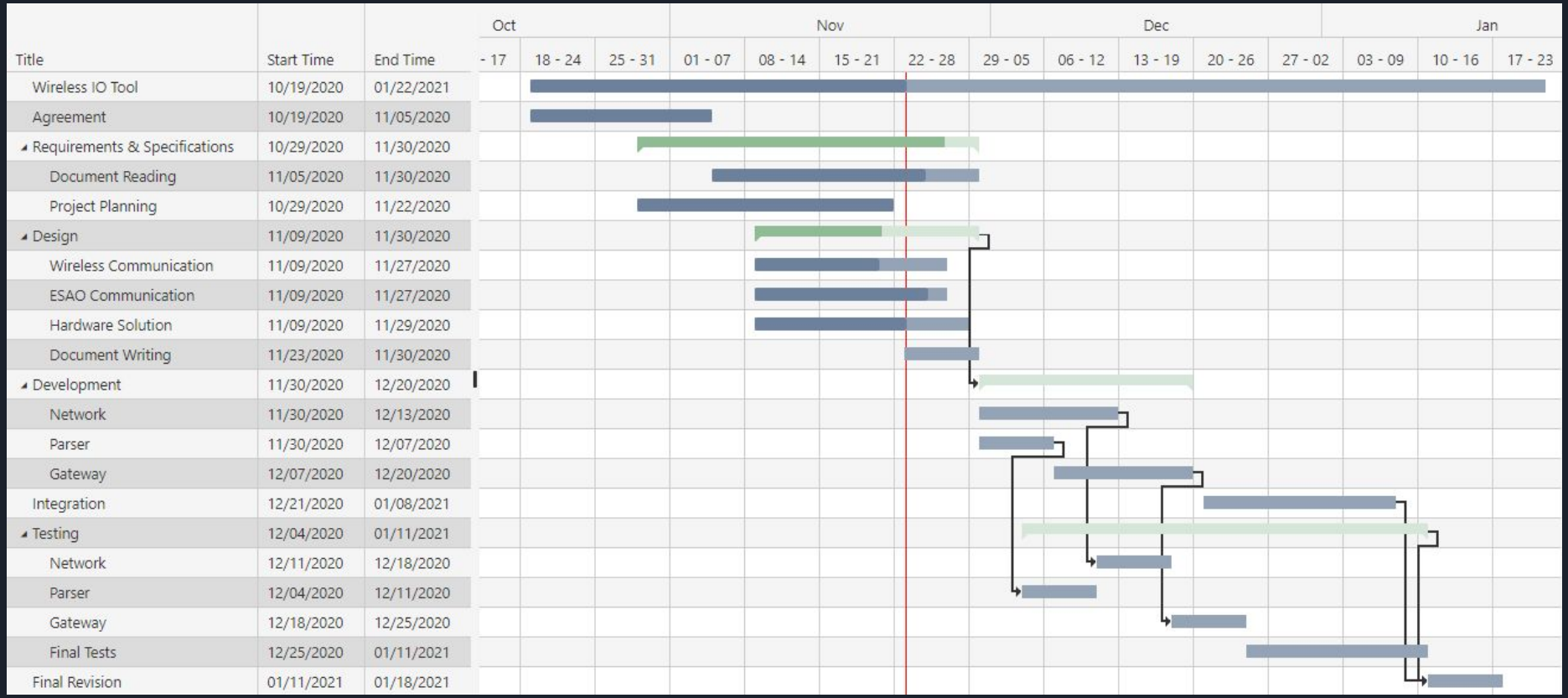
Thorough list of specifications
To meet our project requirements:

- Hardware : x86 Machine , Zigbee Radio Module
- Operating System : Ubuntu
- Programming Language : C / C++
- Librairies: Qt and others
- Tools: Git (versioning and sharing)



Nom	Date de début	Date de fin
Présentation du cahier des charges	05/10/20	05/10/20
Définition du système proposé	06/10/20	21/10/20
Lecture de la documentation du protocole de communication avec ESAO	06/10/20	08/10/20
Lecture de la documentation du protocole de communication avec l'outillage	09/10/20	09/10/20
Lecture de la documentation du module radio	12/10/20	13/10/20
Recherche de la gateway	14/10/20	15/10/20
Rédaction d'un dossier de définition (solution proposée)	16/10/20	21/10/20
Conception	22/10/20	23/12/20
Communication entre 2 modules radio	22/10/20	27/10/20
Ecriture des tests	22/10/20	22/10/20
Tests	23/10/20	26/10/20
Rapport d'essais	27/10/20	27/10/20
Communication avec le systeme ESAO	28/10/20	05/11/20
Ecriture des tests	28/10/20	29/10/20
Tests	30/10/20	03/11/20
Rapport d'essais	04/11/20	05/11/20
Conception logiciel de la gateway	06/11/20	03/12/20
Test de la gateway sans l'outillage connecté	04/12/20	11/12/20
Ecriture des tests	04/12/20	07/12/20
Tests	08/12/20	10/12/20
Rapport des tests	11/12/20	11/12/20
Test de la gateway avec l'outillage connecté	14/12/20	23/12/20
Ecriture des tests	14/12/20	14/12/20
TestsTests	15/12/20	21/12/20
Rapport des tests	22/12/20	23/12/20

III. Timing



Title	Start Time	End Time
Wireless IO Tool	10/19/2020	01/22/2021
Agreement	10/19/2020	11/05/2020
◢ Requirements & Specifications	10/29/2020	11/30/2020
Document Reading	11/05/2020	11/30/2020
Project Planning	10/29/2020	11/22/2020
◢ Design	11/09/2020	11/30/2020
Wireless Communication	11/09/2020	11/27/2020
ESAO Communication	11/09/2020	11/27/2020
Hardware Solution	11/09/2020	11/29/2020
Document Writing	11/23/2020	11/30/2020
◢ Development	11/30/2020	12/20/2020
Network	11/30/2020	12/13/2020
Parser	11/30/2020	12/07/2020
Gateway	12/07/2020	12/20/2020
Integration	12/21/2020	01/08/2021
◢ Testing	12/04/2020	01/11/2021
Network	12/11/2020	12/18/2020
Parser	12/04/2020	12/11/2020
Gateway	12/18/2020	12/25/2020
Final Tests	12/25/2020	01/11/2021
Final Revision	01/11/2021	01/18/2021

III. Timing

IV. Risks assessment

What are the risks ?

Risk Event	Likelihood	Impact	Detection Difficulty	When	FMEA
Hardware Delivery delay	2	3	1	hardware conception	6
Difficulties with Technologies provided by the client	2	3	2	software development	12
Conception of the software system not relevant	3	5	4	software development / programming	60

IV. Risks assessment

How to avoid/minimize risks ?

Order the hardware as soon as possible and on a reliable website

Scheduling weekly meetings with the client ⟶ software conception/development progress

Using conception best practices, agile method

V. Conclusion

THE CONTEXT

Before flight tests, aircrafts must pass a long list of requirements. These tests require hundreds of meters of cables to be plugged on various parts of the plane that cost money and time.

THE MISSION

Conceive and build a Proof of Concept of a wireless communication gateway to connect the test box on the plane to the test workstation on the ground.

THE OUTCOME

Our prototype will allow faster testing procedures.
It will be able to:

- Communicate with the workstation via MK3 protocol
- Communicate wirelessly with the test box on the plane
- Extract the information received by the test box
- Send commands from the workstation to the test box