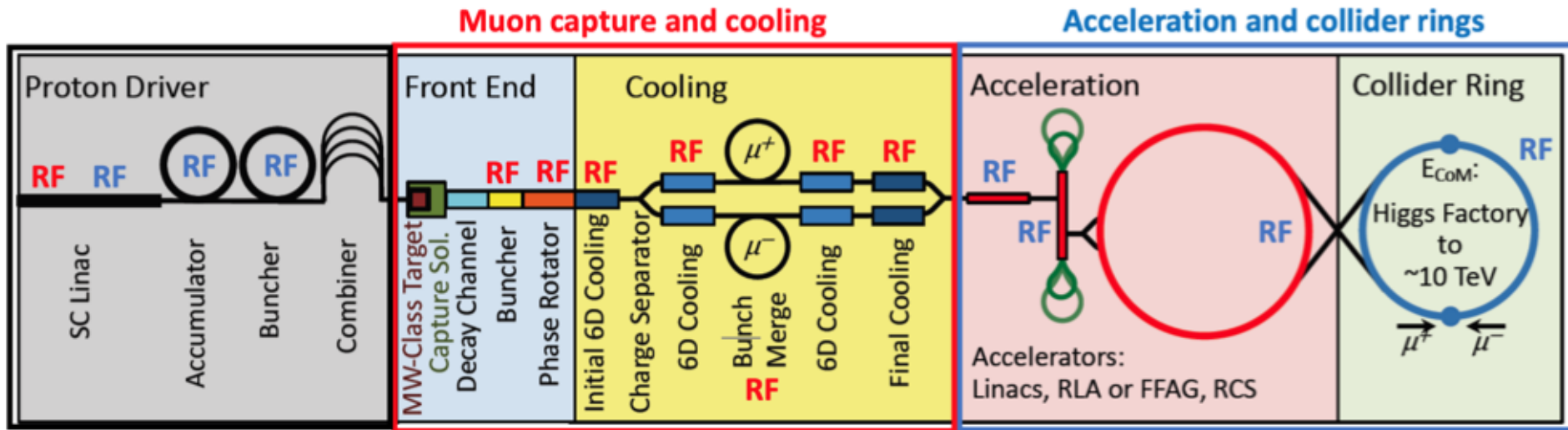


Setting the scene



Courtesy of A. Grudiev et al.

Where the R&D could go

- High intensity/brightness H⁻ source
 - Very positive experience from J-PARC and SNS
 - Low repetition rate, long-pulse, high-current source needs dedicated experts and a continuous effort.
- Stripping foil at accumulator injection
 - Lifetime and injection hardware activation might become a limiting factor
 - SNS predicts limit for the foil at 5 MW
- Accumulator/buncher and combiner

PDAC Studies done and to be resumed

- ◆ Mechanisms looked at in the accumulator ring
 - Transverse space charge
 - RF matching w/o and w/ space charge
 - Longitudinal microwave instability from a broad-band impedance
 - Longitudinal coupled-bunch instability from RF HOMs
 - Transverse head-tail instability (single-bunch and coupled-bunch) from RW
 - TMCI from a broad-band impedance
 - BBU (single-bunch and multi-bunch) from a broad-band impedance
- ◆ Mechanisms looked at in the compressor ring
 - Bunch rotation with longitudinal space charge (analytically and using the ESME program)
- ◆ **No major obstacles** have been found with the current parameters
- ◆ **More detailed investigations have to be performed to investigate**
 - **Electron-cloud effects**
 - **Halo formation and beam losses in both rings**

Proposed Workpackage Description

3 sub-workpackages:

- Linac design → Multi GeV superconducting H- Linac
- Ring design → Accumulator, buncher and combiner (target delivery system)
- Alternative Proton driver schemes → full FFA scheme

Open studies

- Linac BD → source: ESS linac? Or ESS
- Rings BD → lattice design. Collective effects
Intensity limitations.
- FFA full design

Linac “construction” Tasks

Code	Task
1.1	Ion Source and LEBT,
1.2	Radio Frequency Quadrupole
1.3	Chopper Line,
1.4	Accelerating Structures
1.5	Linac Beam Dynamics
2	Radio Frequency Systems
2.1	Beam Instrumentation
2.2	Transfer Line
2.3	Magnets
2.4	Power Converters
2.5	Vacuum Systems
2.6	Beam Intercepting devices
3	Civil Engineering

Inspired from Linac4 WBS

Rings “construction” Tasks

Code	Workpackage
1.1	Optics & Machine Parameters
1.2	Integration
1.3	Radio Protection
2	Mechanical Design and Supports
2.1	Magnets
2.2	RF
2.3	Power Converters
2.4	Vacuum System
2.5	Beam Instrumentation
2.6	Injection & Ejection Kickers
2.7	Injection Septum
2.8	Beam Transfers and target delivery
3	Civil Engineering

Inspired from ELENA WBS

Proposed Workpackage Tasks



A bullet point list of the tasks in the workpackage with a very short description

Proposed Workpackage Timeline



A rough timeline for the work

In particular when you need information from some other group and when you will deliver some information

Please refer to Timeline on next slide

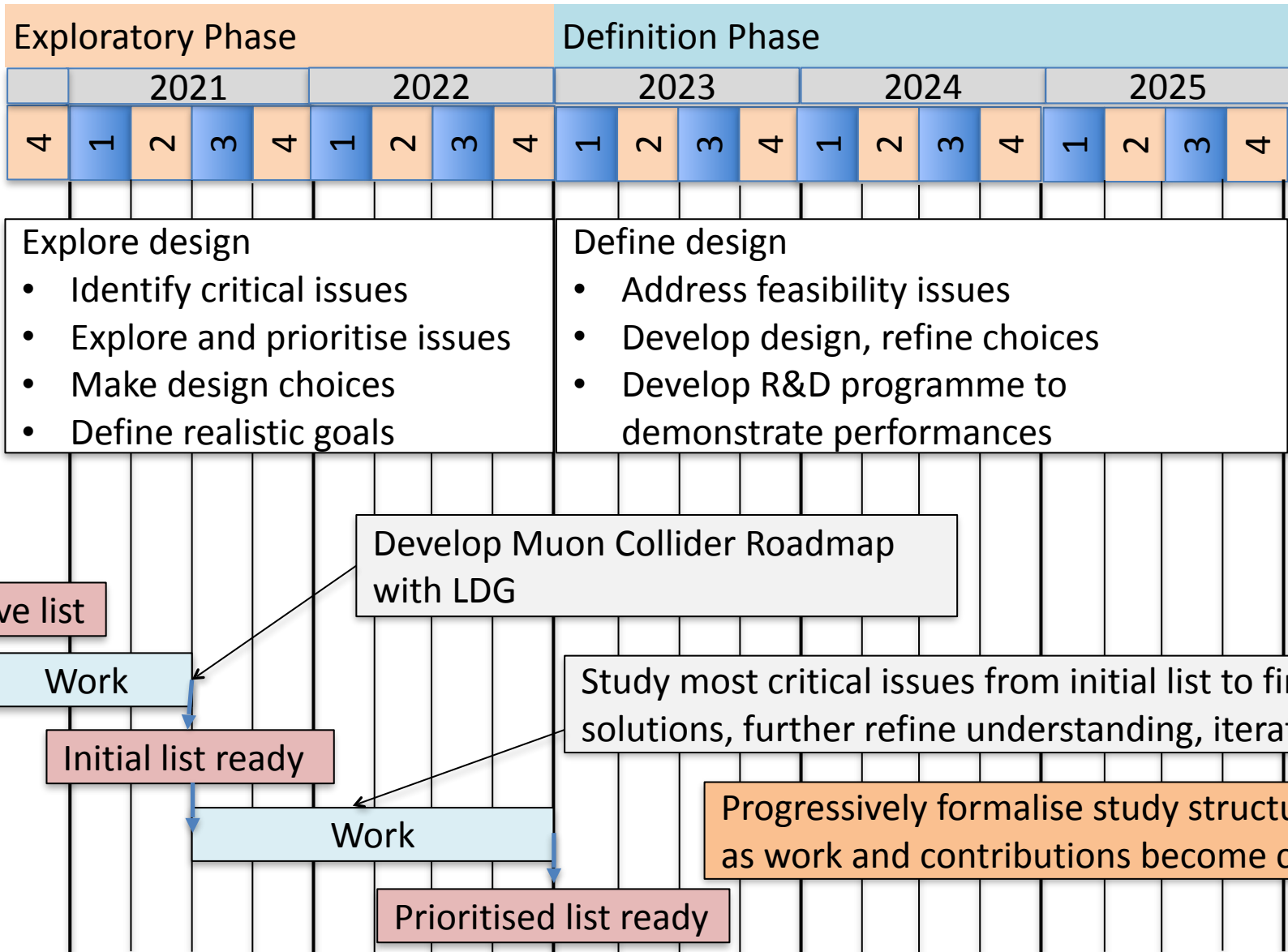
Proposed Workpackage Timeline



2021-2022 : Wrap-up of previous studies and performances of existing and future similar proton sources

- Identify R&D study subjects

Timeline until next ESPPU



Proposed Workpackage Resources

A table of the initial estimated required resources in FTE years, specifying staff, post-doc and student. If possible, resources should be associated with the tasks.

This is only indicative to get over the shock of having to fill such tables.

Task	Staff [pm]	postdoc [pm]	student [pm]	Cash [kEUR]	Comment

Also a list of who is interested in participating to define the work and carry it out.

There is no commitment required.

Technically Limited Long-Term Timeline

