



# Deliverables 4.2 and 4.3:

Content, structure and scheduling



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### **D4.2:**

A design report of the optimized RF unit. Based on the parameters emerging from the facility optimization, the design of the RF unit will be established at the component level and described in a report.

#### **Objective:**

Present the baseline design of the RF module with all the components.

Describe the design process and optimization with results (parameter scans for example).

Illustrate the integration in the baseline design and extended variants.

Summary of other development in close relation to the RF system of the XLS.

### **D4.3:**

A report on the design and fabrication procedure, optimized for series industrial production, of the accelerating structure that is an important cost driver for the facility.

#### **Objective:**

Present the accelerating cavity for the baseline design.

Describe the optimization process leading to possible industrial-scale production.



<b>Section</b>	<b>Subsections</b>	<b>Comments</b>
<b>RF module</b>	Accelerating Structure RF power and distribution system LLRF & Timing	Main input from <b>INFN</b> , Uppsala and CERN. Material exists, needs to be entered
<b>Support and Alignment System</b>	Girder and Girder Support System Survey and Alignment Strategy	Main input from <b>Helsinki</b> , CERN Material in place
<b>Vacuum system</b>	Vacuum Pumps and Connecting Elements Vacuum Instrumentation System Vacuum Power Supplies Vacuum Sectorization	Main input from <b>Helsinki</b> , CERN Material in place
<b>Magnets</b>		Main input from <b>Helsinki</b> , CERN Material in place
<b>Harmonic linearizer system</b>	Baseline design Ka band power sources (gyroklystron, multibeam klystron) Waveguide system Linearizing structure Alternatives	Main input from Strathclyde, Cockcroft, CERN, INFN Gyroklystron and waveguide system material partially in place Other sections need to be entered
<b>Sub-harmonic deflector system</b>	Power source Traveling-wave transverse deflector design Standing-wave transverse deflector design	Main input from CERN, Material in place
<b>System integration</b>	Low energy module Medium energy module High energy module Component list	Main input from CERN, <b>Helsinki</b> , INFN Material in place
<b>Industrialization</b>		Main input from <b>VDL-ETG</b> Material to be entered

Each chapter needs an introduction and a list of specifications



<b>Section</b>	<b>Subsections</b>	<b>Comments</b>
<b>Electromagnetic design</b>	EM design & optimization of the regular cell Iris tapering RF breakdown consideration Wakefield simulations Coupler design	Main input from <b>INFN</b> Material partially in place
<b>Mechanical and thermal design</b>	Mechanical design of the RF structure Cooling optimization with thermal study	Main input from <b>VDL-ETG</b> , <b>INFN</b> Ongoing work
<b>Industrialization</b>	Feasibility for mass production Production process etc.	Main input from <b>VDL-ETG</b>

Each chapter needs an introduction and a list of specifications



- We've expanded the scope of D4.2 beyond that originally envisaged to include more of the linac and specialized RF systems (linearizer, sub-harmonic separator), and assume this will be OK for EU.
- A 3-D layout of the linac module is very important. Who does this needs to be clarified.
- C-band accelerating module - Will this be part of a WP3 deliverable or should it (also) be included in D4.2?
- Instrumentation and diagnostics – Should we include (or repeat) a subset of a WP8 deliverable?
- Wakefield monitors - Not a part of the baseline design but will be included as an option.  
Related also to previous point.



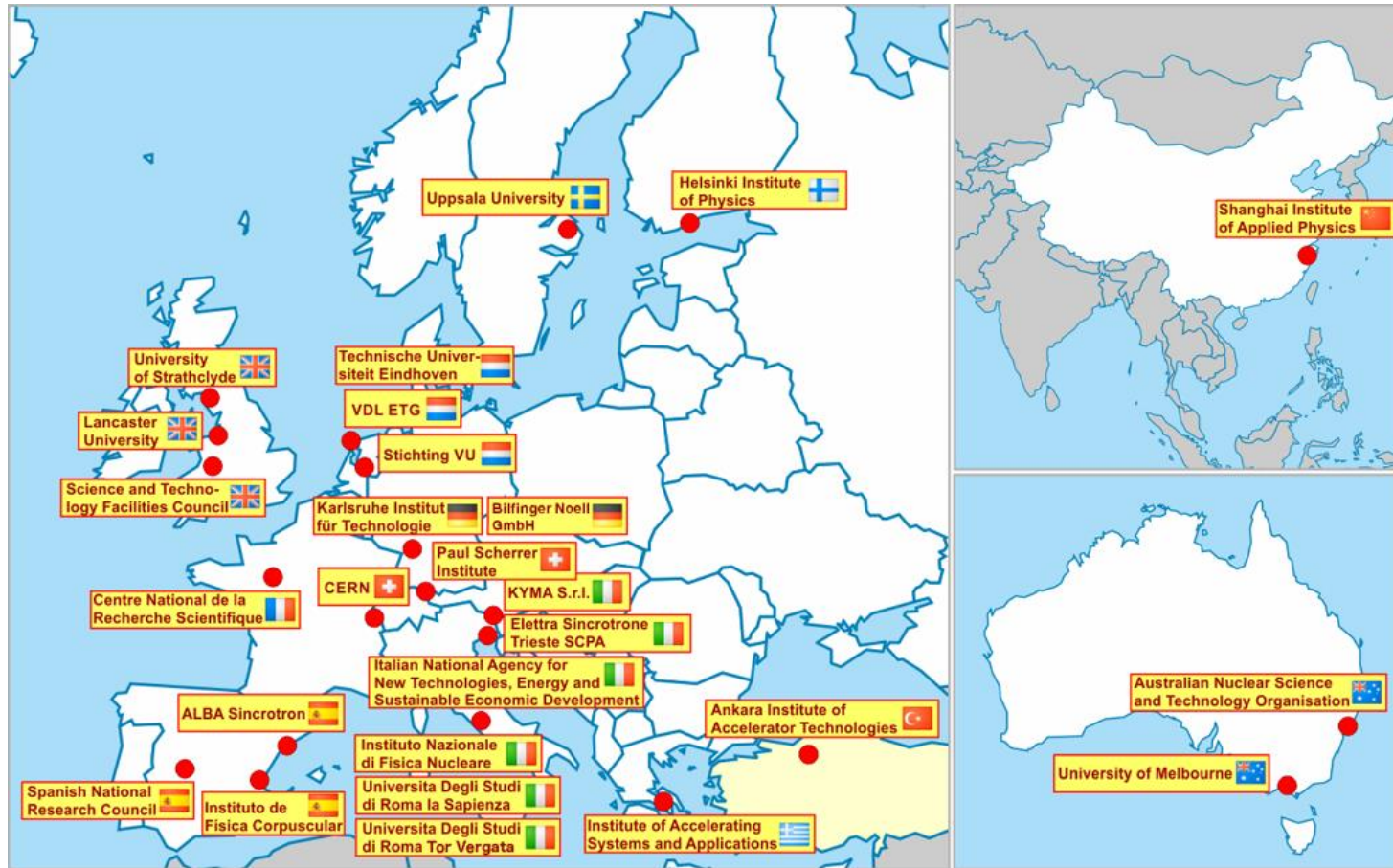
Date	Activity
Mid December 2020	A “zero-version” draft which includes all material submitted by Task leaders  <b><i>Some technical work still ongoing</i></b>
End of January	All technical work complete 1 <sup>st</sup> <u>complete</u> draft which includes all materials
During February	Cross checking for consistency, errors and omissions
End of February	2 <sup>nd</sup> complete <u>edited</u> draft
During March	Style editing, check for consistency, final corrections
<b>Late March</b>	<b>Submission to EU</b>



# Thank you!

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