WP4-Task5: Integration

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Recap: What we would like to do for XLS

- Help **establishing alignment and stability requirements** for each component in the linac
- Develop **design for support structure** of components for the entire length of the accelerator
- Use lessons learned from CLIC module for **high quality and affordable** realization of **support design**
- Use **synergy** in **prototyping** for **CLIC module** to improve XLS support design if necessary

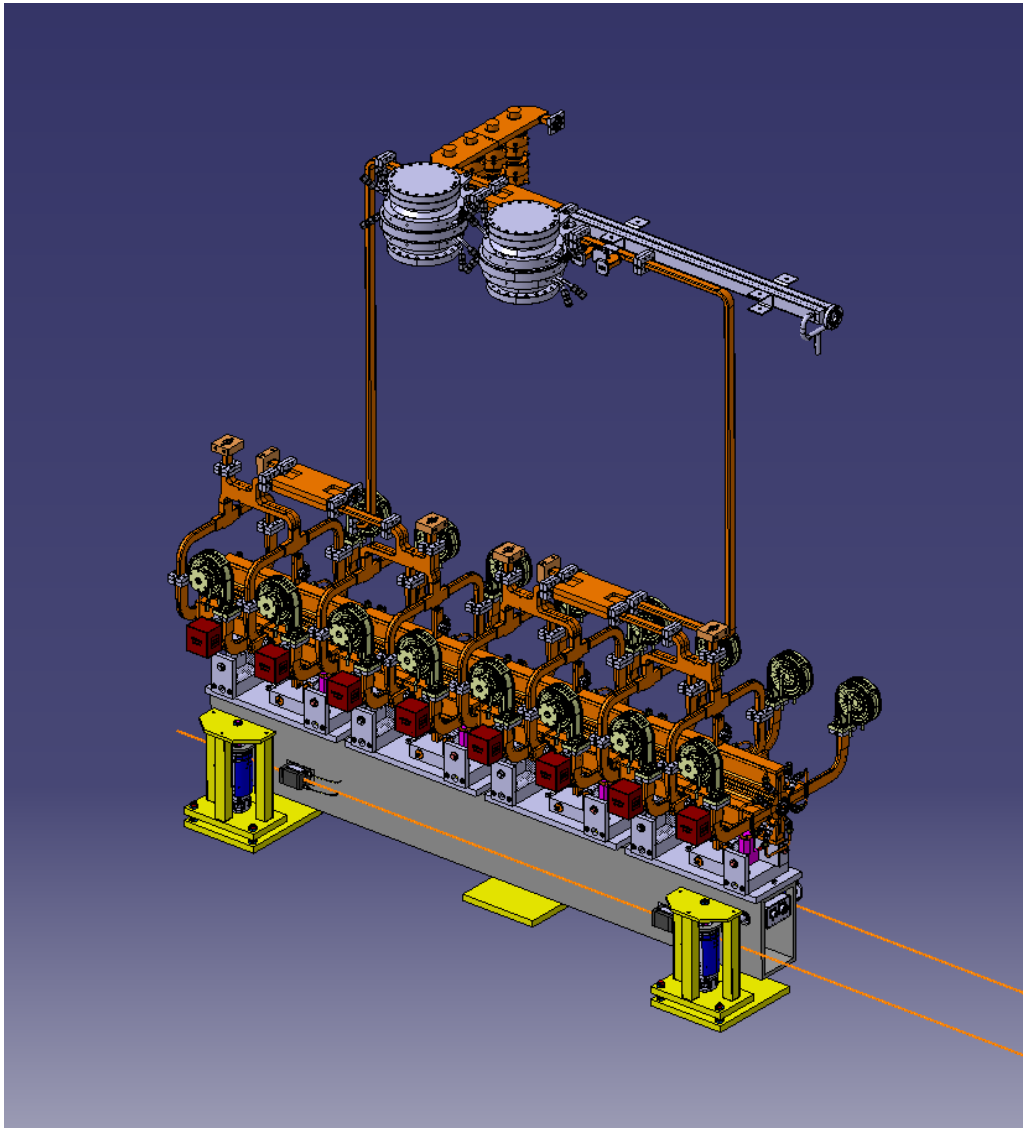
Task 5: Integration

Description:

- Providing a framework for condensing/bringing together mechanical designs and related systems designs
- Translating stability requirements of components in concrete mechanical designs for supports
- Ensuring proper interfacing with adjacent injector and undulator
- Establish lists of components for costing exercise
- Issue space allocations?
- Auxiliary systems (magnets, vacuum, cooling, …)

K-module CLIC380

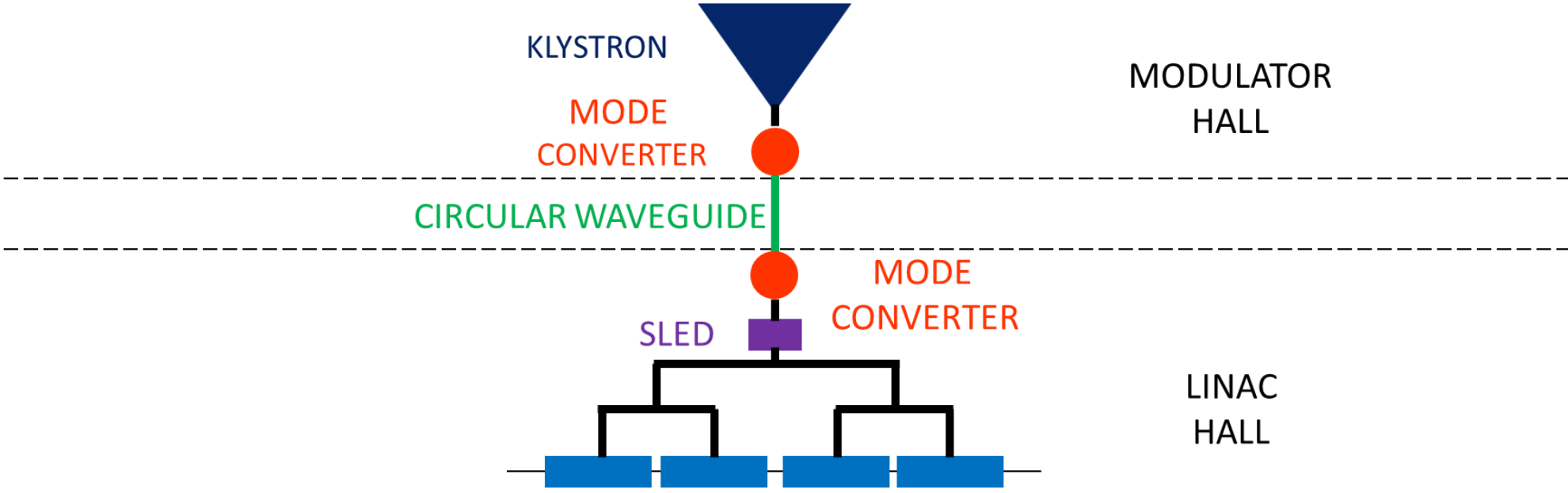
- New girder and actuators
- Adjustable support for every SAS
- Spiral loads
- New compact loads for RF network



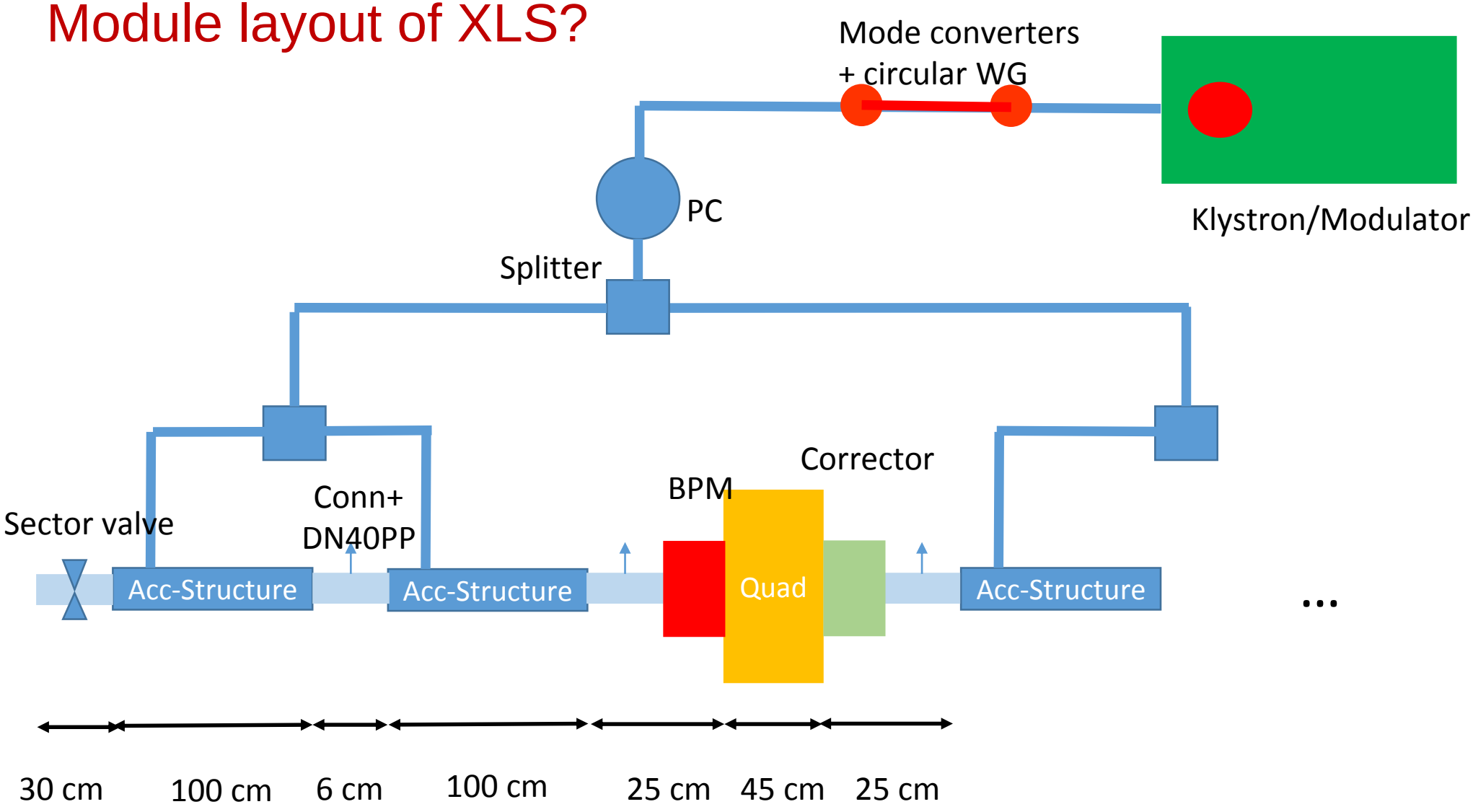
Slide from Marco Diomede
Current meeting

RF MODULE

The preliminary **RF module** is made up of **4 TW structures** fed by **1 klystron** with **1 SLED**.



Module layout of XLS?

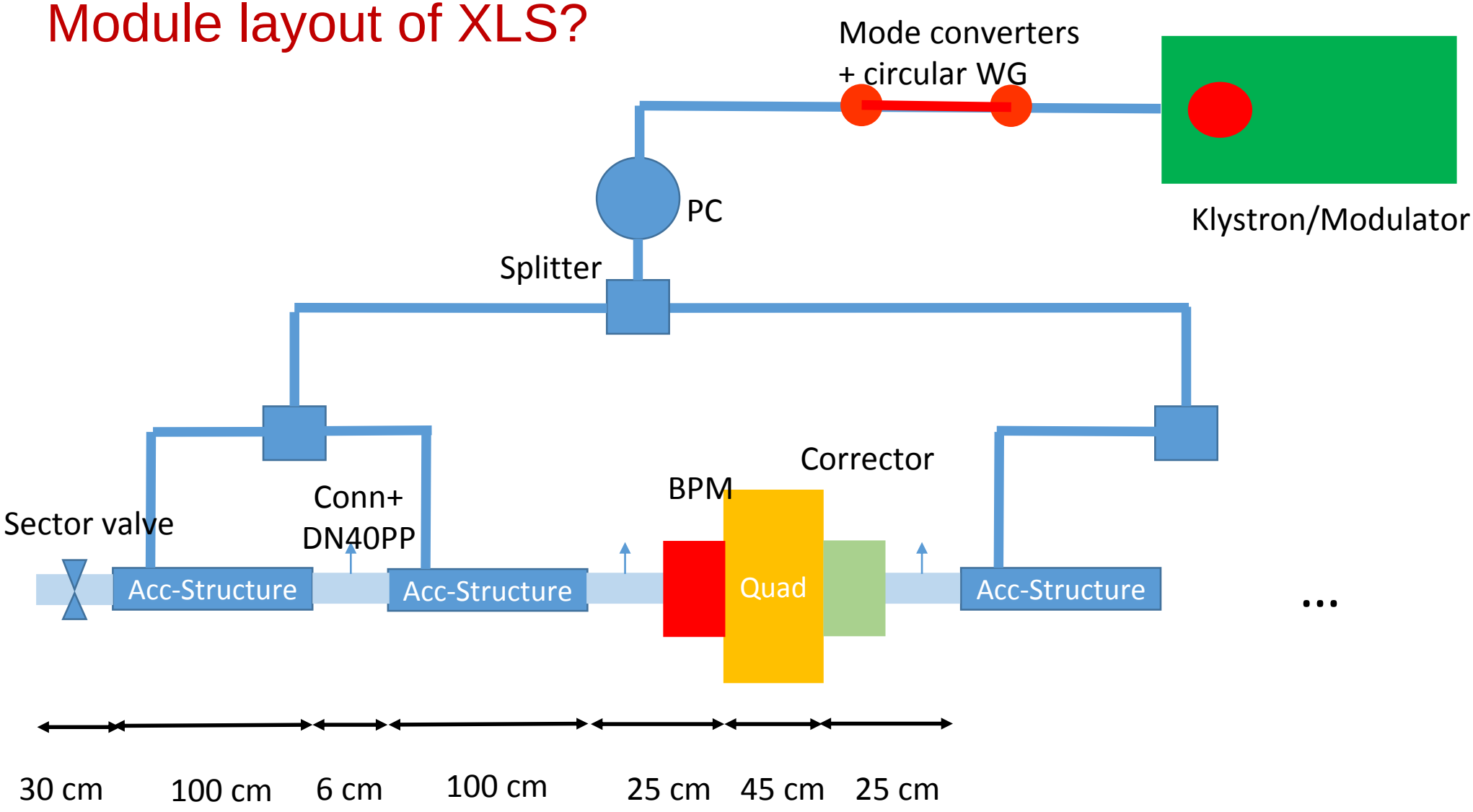


Dimension parameter list of components

Element	Active length in m	Mechanical length (approx.) in m
Accelerating strcuture	0.90	1.00
AS-AS-connection (inlcuding pumping port DN40)	0.06	0.06
Accelerating strcuture	0.90	1.00
AS-Quad connection (including corrector + PP-DN40)	0.25	0.25
Quad	0.23	0.45
Quad-AS connection (including BPM + PP-DN40)	0.25	0.25
Vacuum sector valves ?	0.30	0.30
Module length (2 times sum)		6.32

This assumes only two AS between Quadrupoles!!!

Module layout of XLS?



Performance parameters table of components

Element	Alignment tolerance lateral	Alignment resolution	Alignment tolerance longitudinal	Alignment resolution	active?
Alignment tolerances:					
Accelerating structures	100	10			
BPM	100	10			
Quad	100	10			
Correctors	100	10			
Other components to be considered:					
WG network					
PC (SLED or BOC)					
Supports (Girders)					
Electronics					
Other BI (e.g. BLM, etc.)					
Other requirements to be considered for each component:					
Vacuum					
Temperature stability					
Cooling water supply					
Mecahnical Stability					
Radiation					
Other:					
C&V					
Tunnel cross section					
other infrastructure					

Summary

WE NEED TO COMMUNICATE MORE!

- New CLIC support structure design for K-module might be adapted
- Lattice for XLS needs to be defined

-> AS length, Quad length, how many AS between quads

- Space allocations for upstream RF chain?
- Interfaces with adjacent injector and undulator
- Integration needs to be part of the individual design components design process -> post-design bootstrapping not efficient and time consuming
- Project wide?

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European Union

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Thank you!

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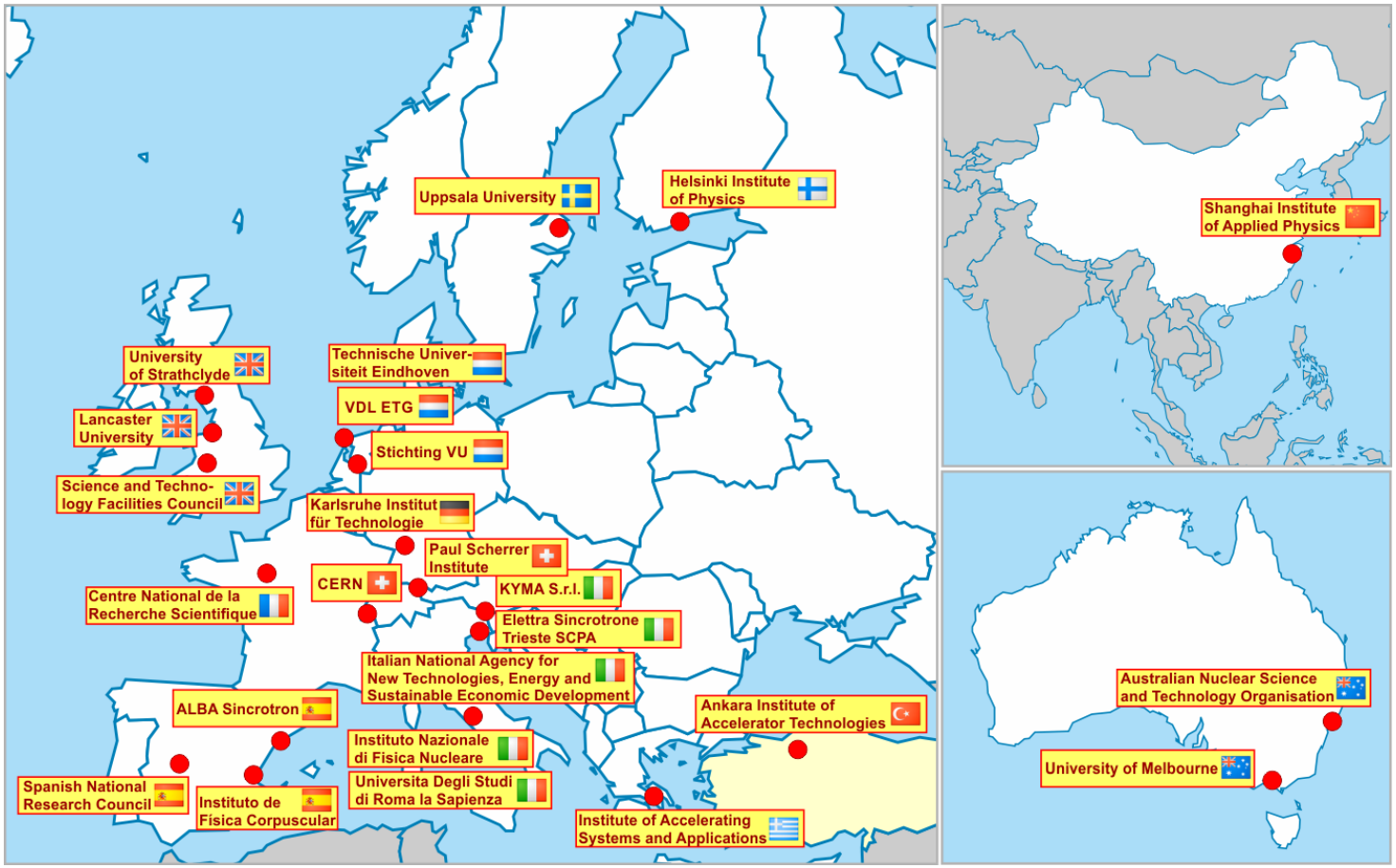

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