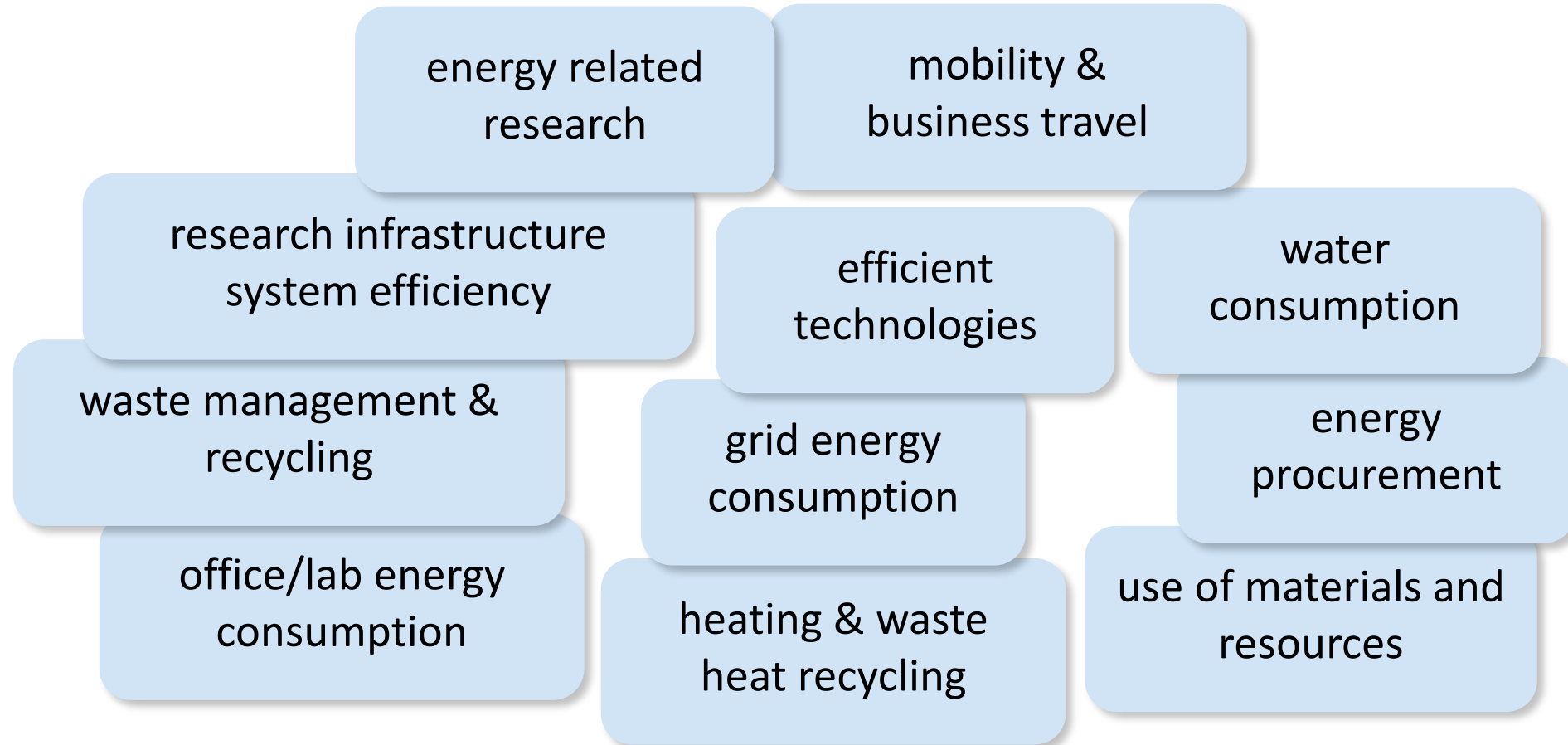




# iFAST 1<sup>st</sup> Period I Review, February 9, 2023

Mike Seidel, PSI/EPFL, Switzerland

# Categories of Sustainability for RI's



# WP11 Overview

**task 1: Sustainable Concepts for RIs:** networking, workshops on selected topics  
deliverable: report

- 1) System Efficiency of Accelerator Concepts (N.Catalan Lasheras, CERN)
- 2) Key Technologies and Components for High Efficiency (C.Martins ESS)
- 3) Cross Linking Accelerator R&D with Industrial Approaches (P.Spiller GSI)
- 4) Ecological Concepts (D. Voelker DESY)

**task 2: High Efficiency Klystron** (O.Brunner CERN, THALES, ULANC)

- deliverable: industrial prototype
- replacing klystrons in LHC

**task 3: Permanent Combined Function Magnets for Light Sources** (B.Shepherd, UKRI, DLS, KYMA, DESY)

- deliverable: magnet prototype, applicable for Diamond upgrade, PETRA-4
- several advantages of permanent magnets, not just power consumption

# Summary of activities in P1

- Organised and co-organised the workshops “ESSRI” (Grenoble), Efficient RF sources (Geneva region) and “Rare Earth Materials + Live Cycle Management” (Hamburg)

New (6.2.2023-8.2.): <https://indico.desy.de/event/35655/>

- Contributing presentations to an IFAST Industry Workshop and a Plenary Talk at IPAC’22/Bangkok
- Studies on Photovoltaic DC Injection started at ESS and diverse studies at GSI including campus energy management

# Milestones and Deliverables

Schedule of relevant Milestones

Milestone number <sup>18</sup>	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS50	Workshop on energy for sustainable science at research infrastructures, at ESRF	41 - PSI	6	Web site (task 11.1)
MS51	Workshop on efficient RF sources	1 - CERN	13	Web site (task 11.1)
MS52	Workshop on efficient magnet- and RF power supplies	2 - ESS	22	Web site (task 11.1)
MS53	Workshop on sustainable materials and lifecycle management for accelerators	12 - DESY	18	Web site (task 11.1)
MS54	Workshop on industrial approaches for sustainable accelerators	13 - GSI	42	Web site (task 11.1)
MS55	Design review	1 - CERN	12	Web site (task 11.2)
MS56	Magnets constructed and tested	25 - KYMA	25	Magnetic measurements completed (task 11.3)

ESSRI Grenoble, ESRF, J.P. Revol et al  
September 2022; Done!

Chateau de Bossey, N.Catalan-Lasheras et al  
July 2022, Done!

during 2023

DESY, D.Völker, A.Klumpp et al  
February 2023, Done!

December 2024

June 2022

July 2023

## Deliverables related to WP11

<b>D11.1:</b> Sustainable Accelerators Report. <i>Report on strategies to improve sustainability and reduce environmental impact of accelerators.</i>	M45
<b>D11.2:</b> Klystron prototype completed and validated. <i>Report on the construction of the klystron prototype and on the test results.</i>	M36
<b>D11.3:</b> Prototype adjustable PM quadrupole and combined function magnets. <i>Two prototype PM-based magnets – one quadrupole and one combined-function magnet designed, built and measured.</i>	M28

# task 1: relevance of objectives and impact

- Climate change and scarcity of resources are increasingly important concerns, and the present energy crises boosts the relevance of sustainable concepts also for research infrastructures (RI's)
- WP11 of I.FAST focuses on sustainability topics, on networking and two concrete hardware developments
- Presentations, milestone reports and deliverable reports present **documentation for best practices on sustainable solutions** for accelerators; these are **valuable sources for new projects or upgrades**

# iFAST

Thank you for your attention!



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