



HFM
High Field Magnets

RD6 - WP6

Scientific and Societal Impact

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CERN Knowledge Transfer Group



Focus of today's presentation

- Goal of the RD Line / Work Package
- Approach & Implementation
- Preliminary outcomes

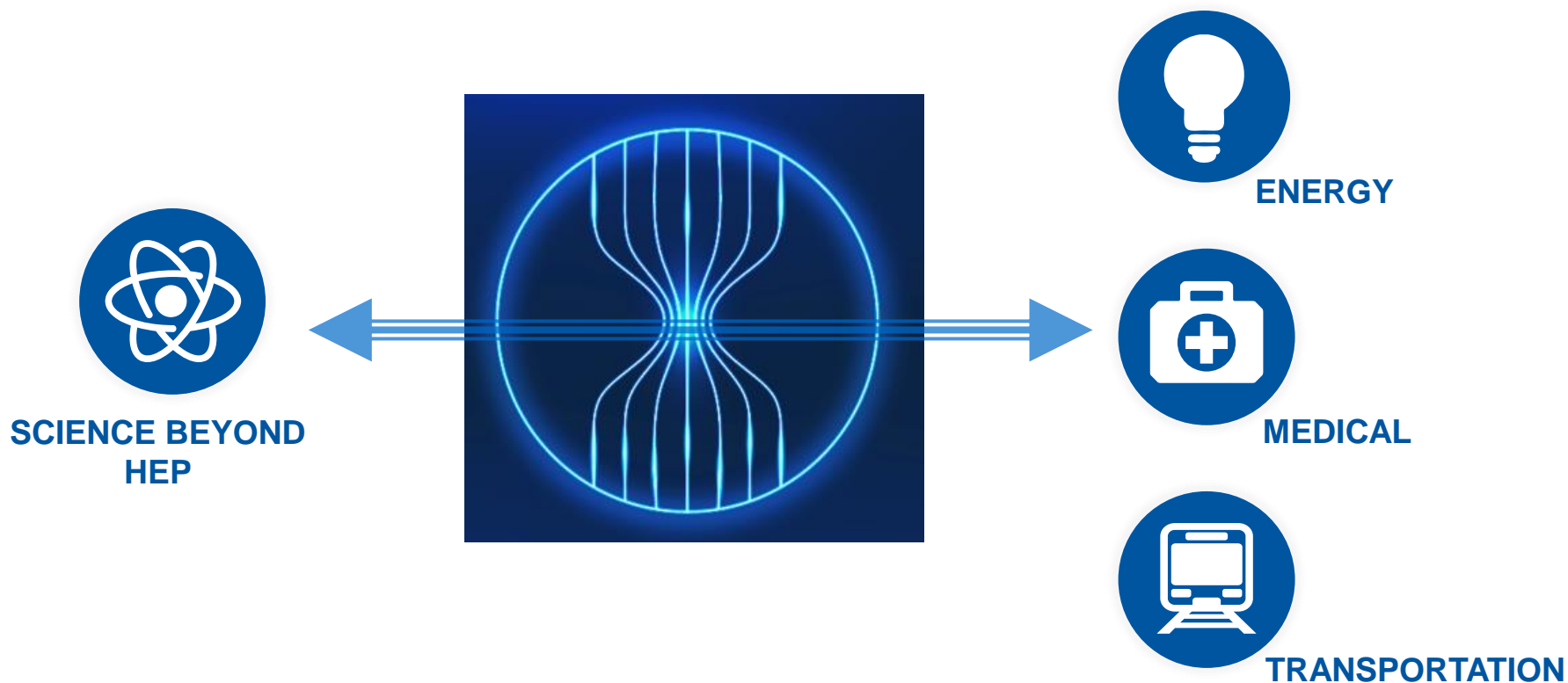


Goal of the RD Line / Work Package



GOAL

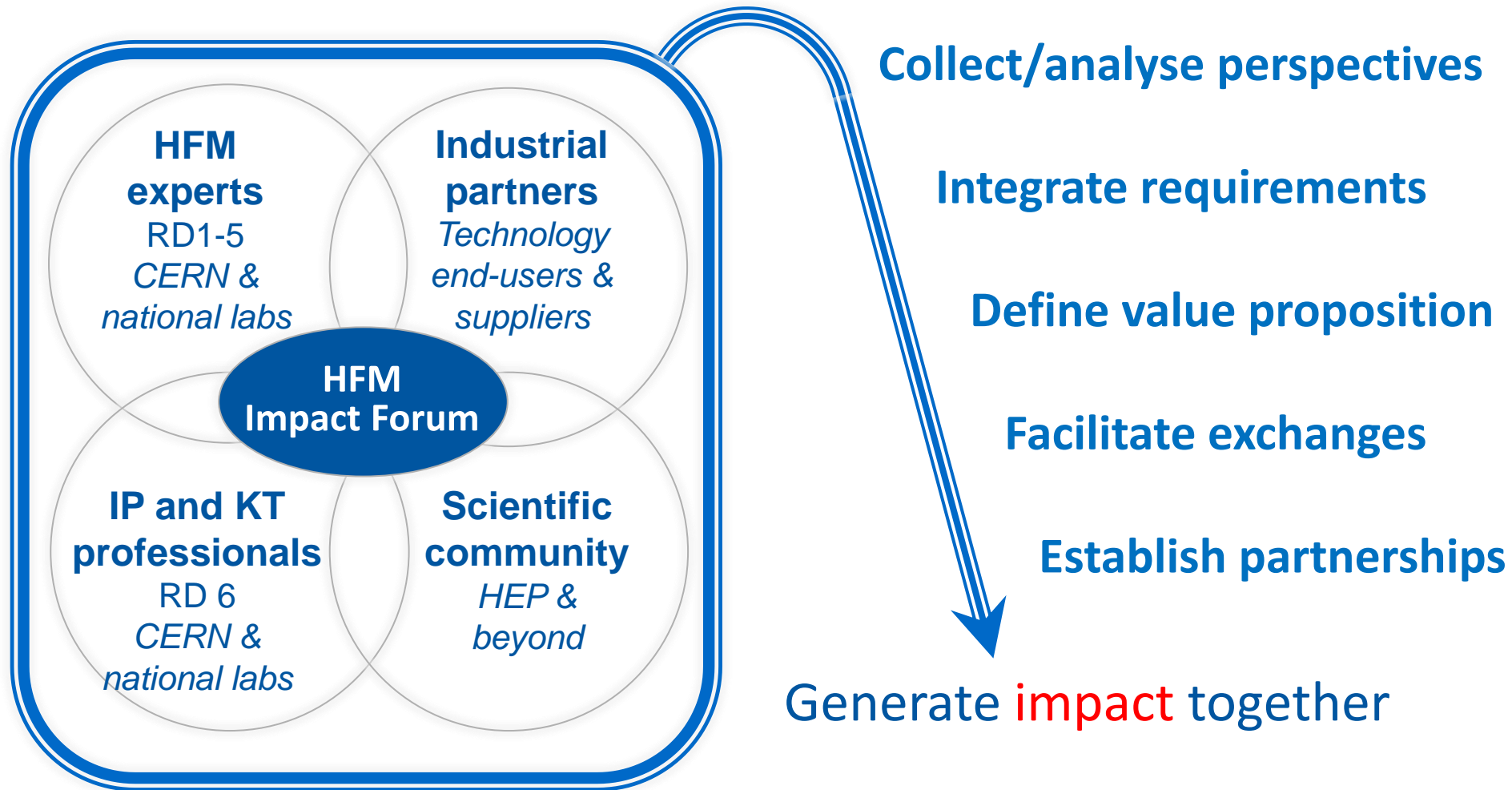
Maximize the *impact* of HFM programme on *society and science*, ensure *collaboration and synergies* among stakeholders and *dissemination* of results



Approach & Implementation

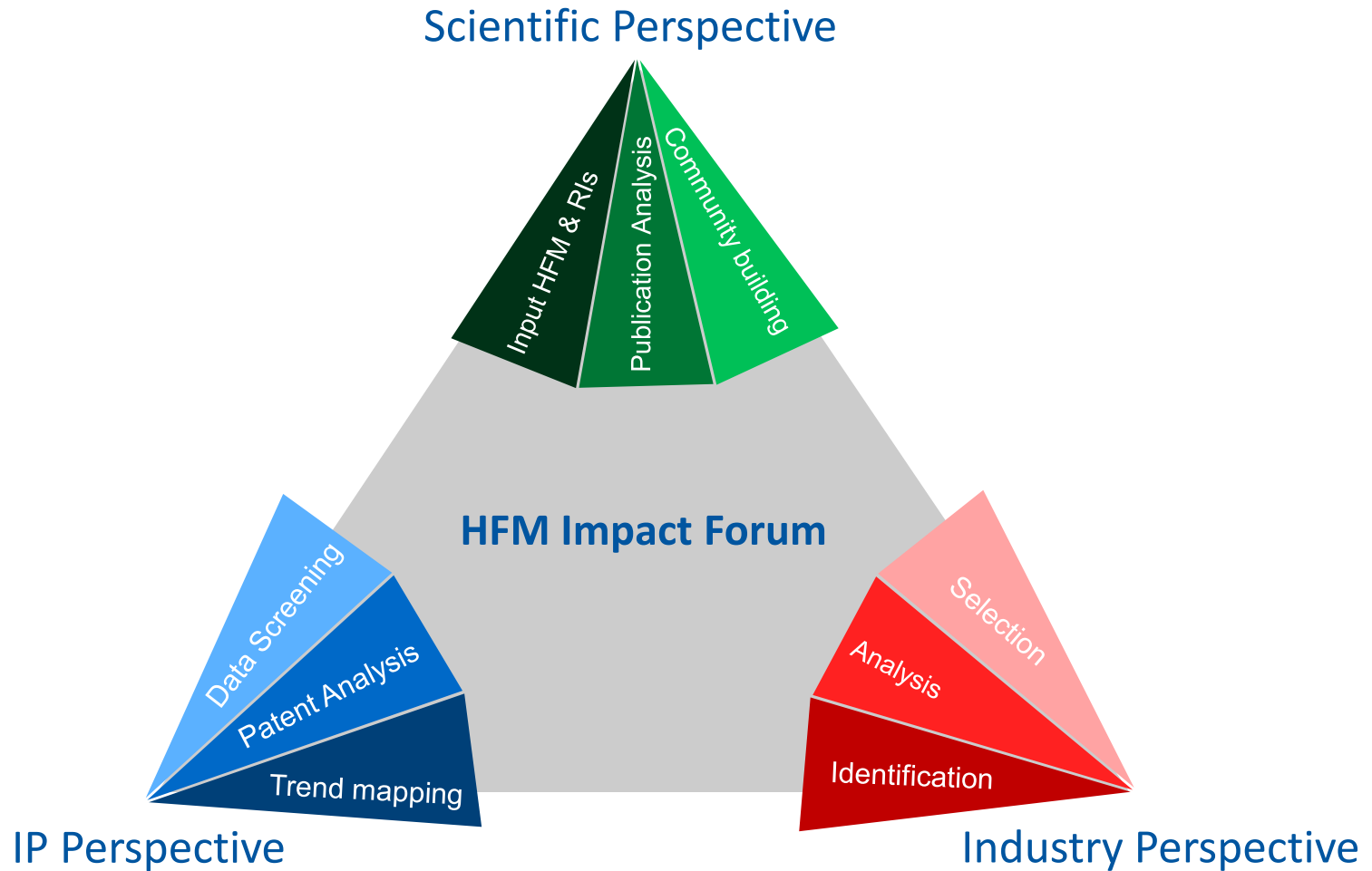


GENERAL APPROACH

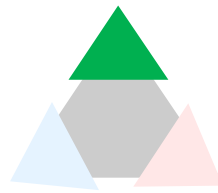


IMPLEMENTATION

Triangulation of knowledge sources enables a holistic overview



Scientific Perspective



Goal: Define HFM value proposition & target use cases



Liaising with HFM
RD line
coordinators

- Continuous exchange with HFM experts
 - For example, input on key words, value proposition & identified industry needs



Publication
Analysis

- Screening of scientific publications
- Identification of state-of-the-art topics



Community
Building

- Gather input beyond HFM community
- Establish HFM network across various research institutes



Intellectual Property Perspective



Goal: Determination of patent landscape and mapping of activities

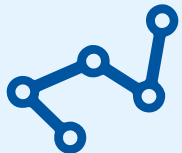


Data Screening

- Identify data bases
- Define key words
- Screen relevant longitudinal dataset



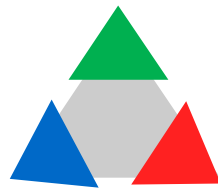
Patent Analysis



Trend mapping

- Visualization of patenting activity by
 - company/classification/year/...
- Identification of topic trends & clusters

Industry Perspective



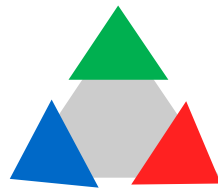
Goal: Understand industry requirements & join forces to push HFM technology



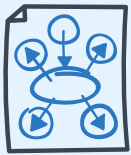
Identification & analysis of critical industrial sectors

- Identification of key players of each industry
- Determine main challenges and needs
- Support multilateral exchange between industry & HFM program





Goal: Connecting the dots between all stakeholders



Dissemination
Planning

- Determine dissemination strategy with KT representatives of other institutes to reach all stakeholders



Communication
Activities

- Create visibility through events, e.g. conferences & workshops
- Publications (e.g. Value proposition & industry requirement reports)



Establishment
of Partnerships

- Identify topics and interested parties to initiate collaboration projects

Preliminary outcomes



Overview collective intelligence gathering (WP6-T1-D1)



**~50
participants**



SURVEY *“Setting the scene”*

- ✓ Gathering of input from experts
- ✓ Survey design
- ✓ Distribution within ESAS community
- ✓ Data analysis
- ✓ Identification of key areas & industries

Key industries



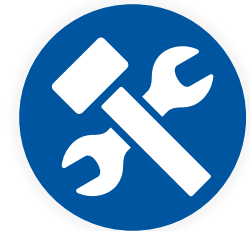
TRANSPORTATION



ENERGY



MEDICAL



SUPPLIERS



Survey Outcomes (WP6-T1-D1)

14%

of HFM experts mention **FUSION**
as most promising application

What do you believe will be the trend of financial investment in HFM technologies over the next 10 years?



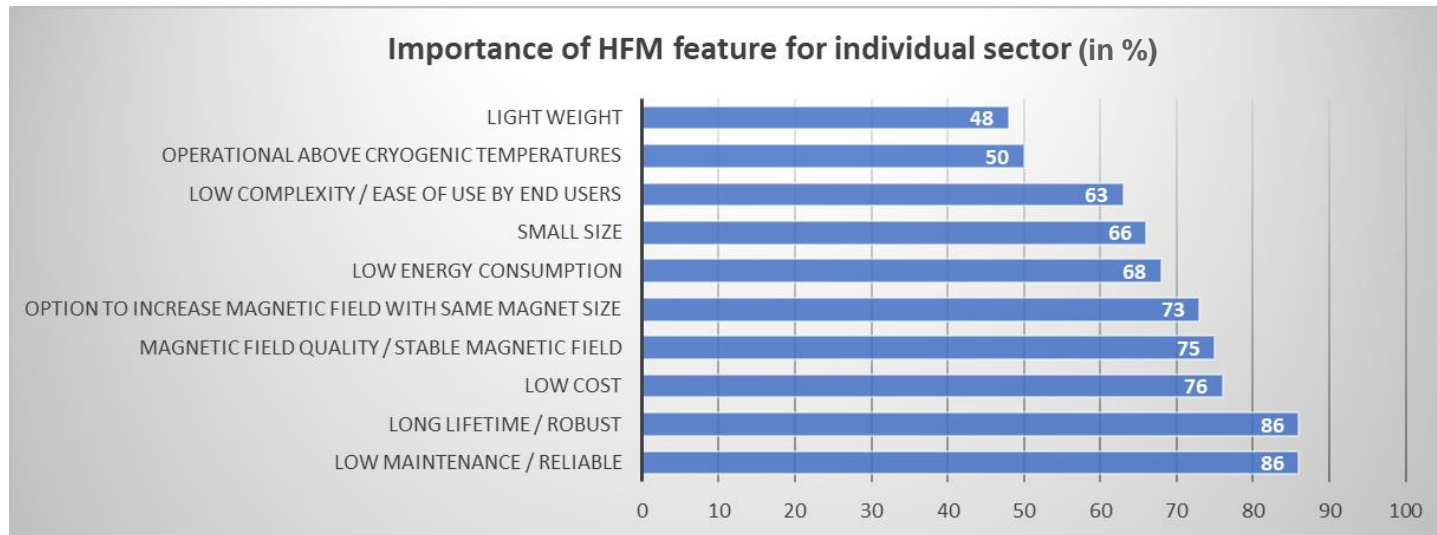
52%



14%



5%



RD lines dialogue (WP6-T1-D3, ongoing)

- Expert discussions with RD Line coordinators and selected WP leaders (in coordination with HFM management) within and outside CERN
- Dialogue provides us with a comprehensive insight into the experts' work & their views on the societal impact of their work
- Possibility to support in fostering information exchange within HFM community
- 6 areas to explore:



RD lines dialogue (WP6-T1-D3, ongoing)

FINALIZED

- ✓ Input collected from initial expert discussions with coordinators from HFM RD lines 1, 2 & 3

Thank you for your valuable input!

NEXT STEPS

- Collection of more input from HFM experts in coordination with HFM management
- Summary of key findings to be shared with HFM community



Work in progress



IP landscape analysis (WP6-T1-D2, ongoing)



IP DATA BASES

Nb3Sn AND windings

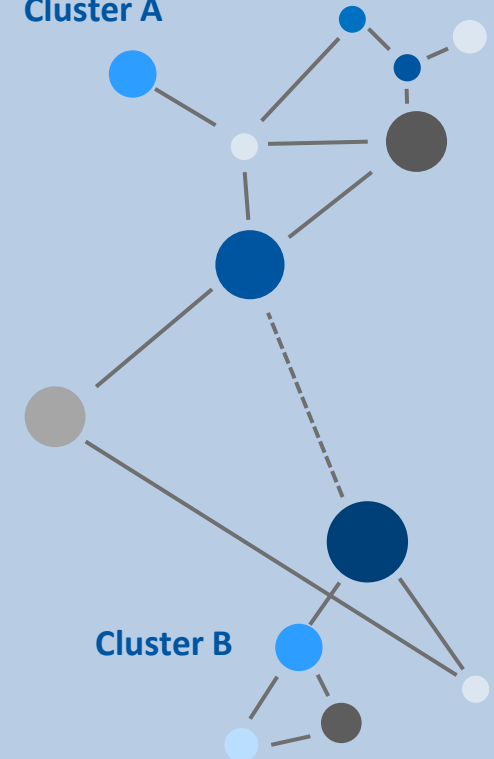


1,067 results

Countries	Applicants	IPC code	Publication Dates
United States of America	MEVION MEDICAL SYSTEMS INC 85	H01F 354	2013 45
European Patent Office	HITACHI LTD 54	H01L 349	2014 48
PCT	GENERAL ELECTRIC COMPANY 45	H01B 252	2015 41
United Kingdom	SIEMENS AG 45	G01R 165	2016 63
Canada	SIEMENS AG 45	H05H 125	2017 53
Canada	MASSACHUSETTS INSTITUTE OF TECH 29	H02K 99	2018 40
China	BRUKER BIOSPIN GMBH 28	A61N 97	2019 29
Australia	BRUKER BIOSPIN GMBH 28	C22C 47	2020 39
India	AMERICAN SUPERCONDUCTOR CO 27	G01V 46	2021 45
Israel	AMERICAN SUPERCONDUCTOR CO 27	A61B 35	2022 25
Japan	GEN ELECTRIC 26		
	BRUKER BIOSPIN AG 19		
	FONAR CO 17		

DATA ANALYSIS

Cluster A



RESULTS



Thank you!

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