Japan and Europe Network for Neutrino and Intensity Frontier Experimental Research

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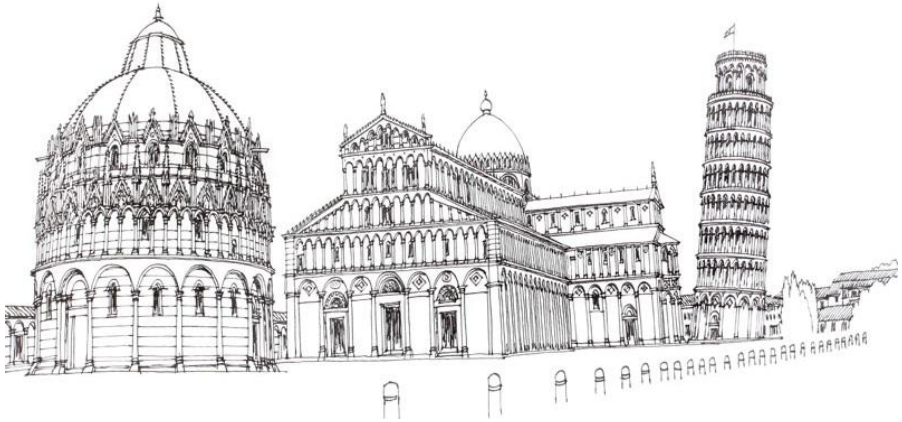
58 days left to the end of the project:

4th General Meeting



Pisa, April 3-4 2025

First of all:

A really big THANK YOU to Pisa collegues for organizing this meeting

Francesco Forti, Lucia Lilli, Claudia Tofani

Today's task:

- Review project outcome
- address yet un-produced deliverables
- Share status of secondment implementation
- Prepare for final report

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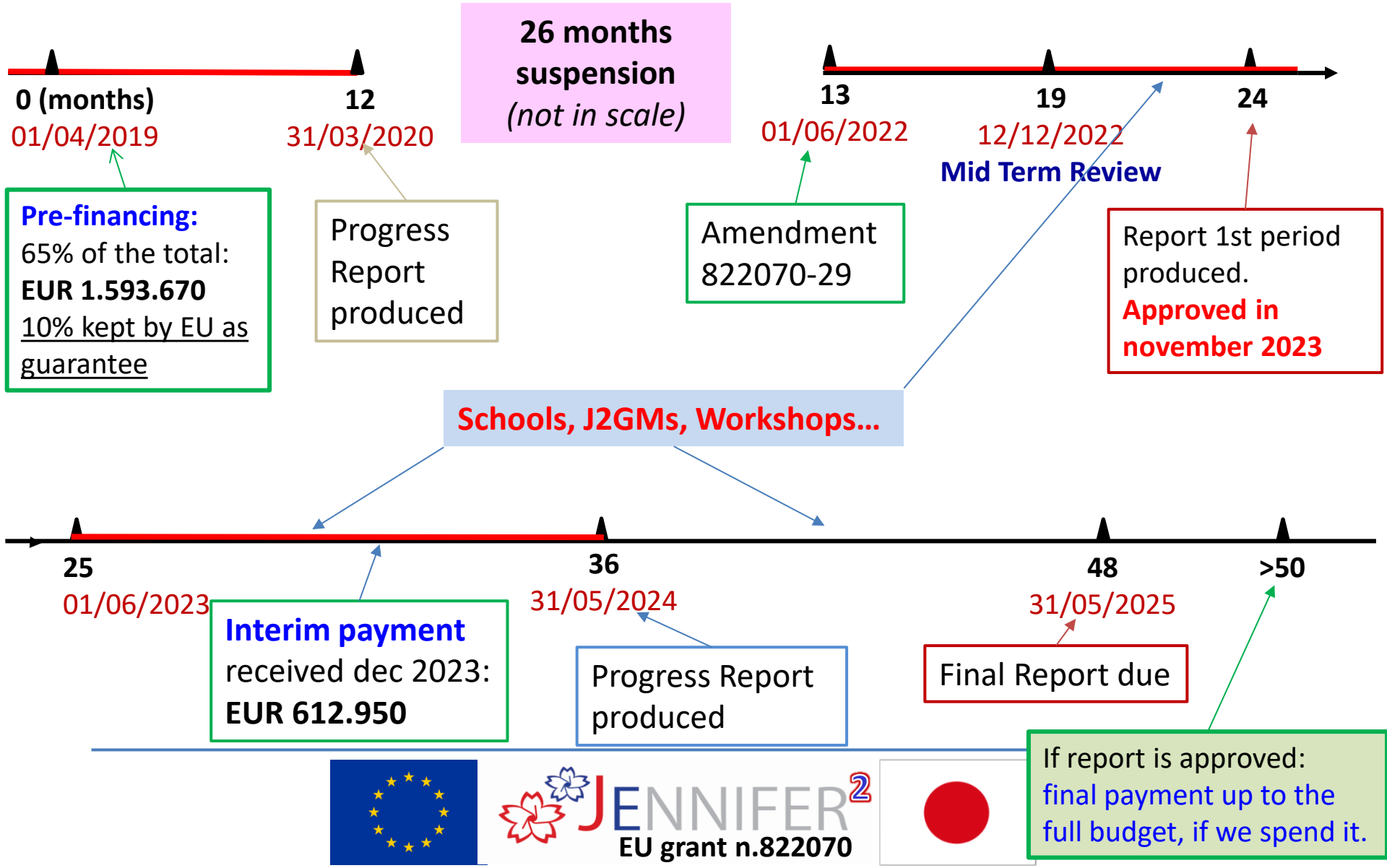
JENNIFER2 timeline



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JENNIFER2 structure

	Person months:
WP1: Belle II data analysis.	**220**
WP2: T2K upgrade and data analysis.	**138**
WP3: Towards HyperK.	**85**
WP4: Photodetectors R&D.	**34**
WP5: Computing and common techniques.	**56**
WP6: Communication and outreach	**0**
WP7: Management	**0**

Total: 533 p.m.

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JENNIFER2 Budget

Beneficiary	grant amount from GA	number of person months	Redistribution nov.2024
INFN	€ 731.400,00	159	+2
DESY	€ 372.600,00	81	
OEAW	€ 101.200,00	22	+3
JSI	€ 128.800,00	28	-1
CNRS	€ 184.000,00	40	+1
CEA	€ 96.600,00	21	
KCL	€ 207.000,00	45+21	
UKRI	€ 151.800,00	33-21	
UKP	€ 41.400,00	9	-3
IFJ PAN	€ 82.800,00	18	
NCBJ	€ 115.000,00	25	-2
TAU	€ 27.600,00	6	
METU	€ 27.600,00	6	
UNIGE	€ 110.400,00	24	
IFAE	€ 55.200,00	12	+2
FBK	€ 4.600,00	1	
CAEN	€ 13.800,00	3	-2
Total	€ 2.451.800,00	€ 533,00	

Status of secondments

Istitution	Days total	months	planned	Adjusted	fraction done
INFN	4629	154,3	159	2	95,8%
DESY	2472	82,4	81		101,7%
OEAW-HEPHY	827	27,6	22	3	110,3%
IFJ-PAN	452	15,1	18		83,7%
UKP	55	1,8	9	-3	30,6%
JSI	822	27,4	28	-1	101,5%
METU	152	5,1	6		84,4%
TAU	173	5,8	6		96,1%
LAL-CNRS	1224	40,8	40	1	99,5%
CEA	572	19,1	21		90,8%
IFAE	408	13,6	12	2	97,1%
UNIGE	488	16,3	24		67,8%
NCBJ	691	23,0	25	-2	100,1%
KCL (Qmul)	1098	36,6	66,25		55,2%
UKRI	150	5,0	11,75		42,6%
CAEN	14	0,5	3	-2	46,7%
FBK	0	0,0	1		0,0%
Total	14227	474,2	533,0	0,0	89,0%

We are going to leave unused part of the budget: i.e. will not get full final payment.

Missing secondments data??

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secondments per WP:

WP	Days total	months	planned	fraction done
WP1	7335	244,5	221	110,6%
WP2	3603	120,1	139	86,4%
WP3	1793	59,8	85	70,3%
WP4	564	18,8	32	58,8%
WP5	932	31,1	56	55,5%
Grand Total	14227	474,2	533,0	89,0%

Not really relevant as there is flexibility in the budget distributions among WPs

Anyeway there has been compensation between WP1 and WP4-WP5.

On the other hand WP2 and WP3 have underperformed:

- Clarify the situation in UK (maybe WP3 has done much better)
- We will have to motivate the incomplete implementation: reduced T2K beam time? Delayed HK construction?.....

Review of JENNIFER2 tasks and deliverables

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WP1 (C.Schwanda)

Belle II

Task 1.1: Detector performance

Task 1.2: CP violation

Task 1.3: LFV

Task 1.4: Dark sector

Task 1.5: Quarkonium

All tasks are covered in Belle II. Available data sample allows to perform some measurement in all tasks.

Hardware activity for LS1 has been included during the Mid-term Review

There is plenty of choice between Belle II papers to meet the physics deliverables, a performance paper is also needed.

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WP1

Milestones: all at month24 -> REACHED.

Deliverables: all at month 48 -> may 2025

D1.1	Publication on detector Performance	1 - INFN	Report	Public	48
D1.2	Publication on CPV	3 - OEAW	Report	Public	48
D1.3	Publication on LFV and LFUV	2 - DESY	Report	Public	48
D1.4	Publication on dark sector	3 - OEAW	Report	Public	48
D1.5	Publication on Spectroscopy	4 - JSI	Report	Public	48

Attach a paper or a document to each deliverable.

Be careful in definition of deliverable level of confidentiality:

- «Public» means that it will be availale on EU project public DB. So, should point to an approved document, but don't need to be a published one.
- However if the deliverable id named «publication» it should at least be on arxiv

Work Package 2 (E.Radicioni)

T2K

Task 2.1: Construction and Commissioning of Near Detector ND280

Task 2.2: Construction and Commissioning of Super FGD

Task 2.3: Neutrino cross section measurement

All milestones reached

Task 2.4: Oscillation analysis

Deliverables: all expected in may 2025. Situation similar to WP1.

D2.1	Paper on the upgraded ND280	1 - INFN	Report	Public	48
D2.2	Report on neutrino cross section on Carbon and Oxygen	15 - IFAE	Report	Public	48
D2.3	Report on electron neutrino cross section	1 - INFN	Report	Public	48
D2.4	Report on CP violation phase sensitivity	5 - CNRS	Report	Public	48

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WP3 (F.Di Lodovico)

HyperK

Task 3.1: Gadolinium doped WC study

Task 3.2: WC calibration system

Task 3.3: HK outer detector design

Task 3.4: Low noise FE for large area PMTs

Task 3.5: HK simulation

Tasks 1,2,3,5 more or less evolving as declared in the proposal.
Substantial reshaping of task 3.4 agreed one year ago in Periodic Report 1:
design and test the underwater services (the data processing module and LV and HV supply units) is now also part of the task. Milestone and deliverable re-defined accordingly

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WP3 deliverables

We missed month 30 deadline: we should fix the holes in time for month 36 progress report !

Deliverables

D3.1	Decision on UV system to measure Gd concentration	8 - UKRI	Report **DONE**	Confidential, only for members of the consortium (including the Commission Services)	30
D3.2	Technical note on Outer Detector	7 - ~~QMUL~~ **KCL**	Report **DONE**	Public	36
D3.3	Final report on low noise front end electronics and underwater electronics	14 - ~~UNIGE~~ **INFN-NCBJ**	Report	Public	48
D3.4	Full simulation and analysis with final photosensors	7 - ~~QMUL~~ **KCL**	Report	Confidential, only for members of the consortium (including the Commission Services)	48

Only one milestone for WP3: not yet reached !

3.1	Report on waveform digitizers and underwater electronics	3	~~UGE~~ **INFN-NCBJ**	30	Internal Report

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WP4 (R.Pestotnik)

Photodetectors

Task 4.1: SiPM in neutron irradiated areas (R.Pestotnik) + FBK

Task 4.2: Long lived MicroChannelPlate PMTs (E.Torassa)

Task 4.3: Multi PMTs for large WC detector (E.Berardi, HyperK)

Task 4.4: Organic photosensors R&D (A.Aloisio, P.Branchini)

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WP4 deadlines

Deliverables

D4.1	Training pn photodetectors at NDIP	4 - JSI	Other	Public	DONE	18
D4.2	Report on MCP-PMT lifetime optimization	1 - INFN	Report	Public	DONE	24
D4.3	Realization of a mPMT prototype module	1 - INFN	Demonstrator	Public	DONE	24
D4.4	Report on SIPM prototype tests as single photon counters	4 - JSI	Report	Public	DONE	35
D4.5	Resport on organic photodetectors	1 - INFN	Report	Confidential, only for members of the consortium (including the Commission Services)		48

Milestones

4.1	Report on acrylic vessel	4	INFN	12	Internal Report
4.2	Photo-transistor electrical characterizatiom	4	INFN	24	Internal Report

REACHED

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WP5 (S.Bolognesi, Saclay)

Common

Each task has 2 convenors: one from Belle II and one from the neutrino community

Task 5.1: Common Computing and data handling (S.Pardi, S. King)

Task 5.2: Common DAQ and remote controls issues (S.Lange, B.Richards)

Task 5.3: Statistical methods for analysis combination (D.Tonelli, S.Bolognesi)

Task 5.4: Generators and phenomenology (E.Kou, G.Ricciardi)

A lot of work has been done in each task, strong coordination between Belle II and neutrino groups exist mainly in task 1 (2 joint workshops organized).
For the other tasks efforts have been done and still have to be done to share ideas and activities.

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WP5 deadlines

Deliverables

D5.1	Common Cloud Computing demonstrator	~~2 - DESY~~ INFN-KCL	Demonstrator DONE	Confidential, only for members of the consortium (including the Commission Services)	36
D5.2	Joint workshop on real time techniques	~~7 - QMUL~~ DESY	Other DONE	Public	36
D5.3	Reference Statistical Report	6 - CEA Belle II part missing !	Report	Public	36
D5.4	Common Physics Workshop	5 - CNRS TODAY !!!	Other	Public	48

5.1	Flavour and neutrino internal physics workshops	5 REACHED	CNRS	36	Workshops

WP6 (Z.Dolezal)

Outreach

Task 6.1: Masterclasses both flavour and neutrino physics

Task 6.2: Summer students at KEK

Task 6.3: Coordination of outreach to general public

Task 6.4: PhD co-supervision

- Belle II masterclasses very strong. Neutrino masterclasses still being wished…
- Summer school, after 2 virtual editions, support to KEKSSP 2024.
- Only few cases of PhD co-supervision. Long stays of students in Japan implemented: reference japanese scientists can be quoted even if they are not co-supervisors.
- Task 3 essentially failed: no real interest to have a common EU portal for outreach, but maybe other similar things to be exploited?

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WP6 deadlines

Deliverables

D6.1	T2K Masterclasses	1 - INFN	Other	Public	48
D6.2	Summer School	12 - TAU **DONE**	Other	Public	24
D6.3	Outreach Portal Exploit Belle II Masterclasses portal ?	1 - INFN	Websites, patents filling, etc.	Public	24
D6.4	PhD students co-supervision	5 - CNRS	Other	Public	48

- For T2K masterclasses look at Minerva and Nova examples. Deliverable not reached? Can exploit some Belle2 masterclass where neutrino behaviour is addressed?

- Poll started in beneficiaries about PhD stuidents stays in Japan: first report today

JENNIFER2 impact

- **Careers of young researchers and success stories**

  We have many examples, we have to collect infos in each beneficiary and make a summary for the final report.

- **Dissemination of results to:**
  - Scientific community: publications
  - General society: outreach, schools, PhD opportunities

- **Added value for non-academic organizations**,

  i.e. companies in the project (or around it)

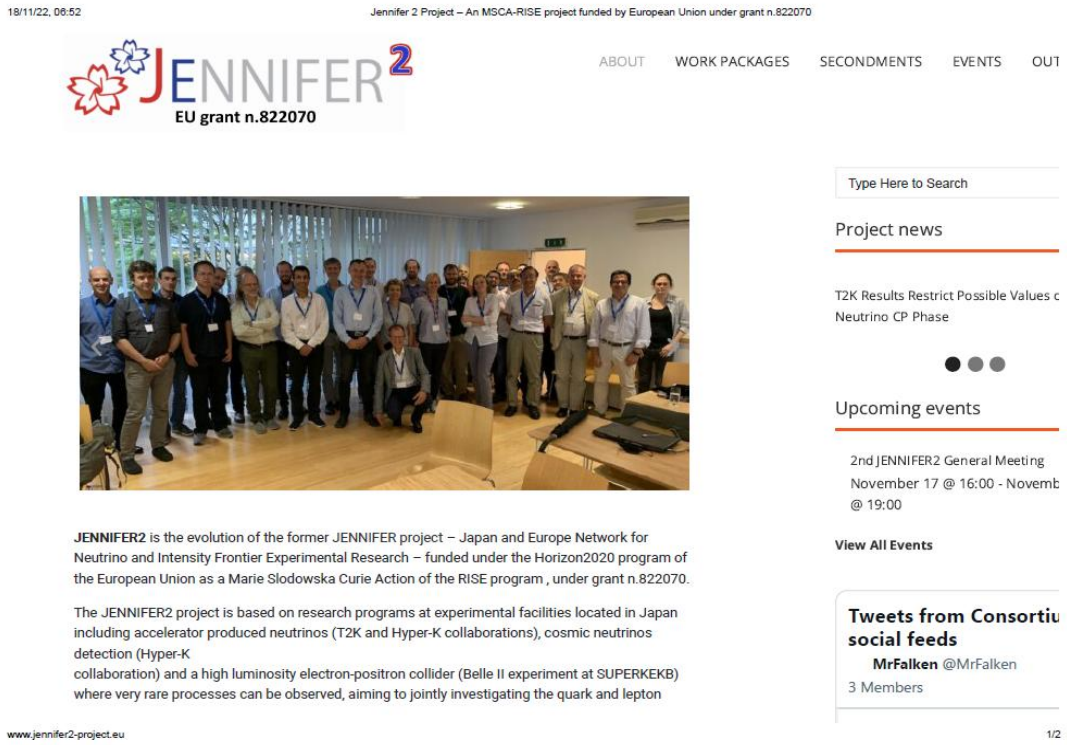
  CAEN could complete at least 1 month if a lost week in 2019 can be accounted. Will ask REA.

  FBK (not really non-academic): no secondments, but anyway colaboration.

JENNIFER2 Website

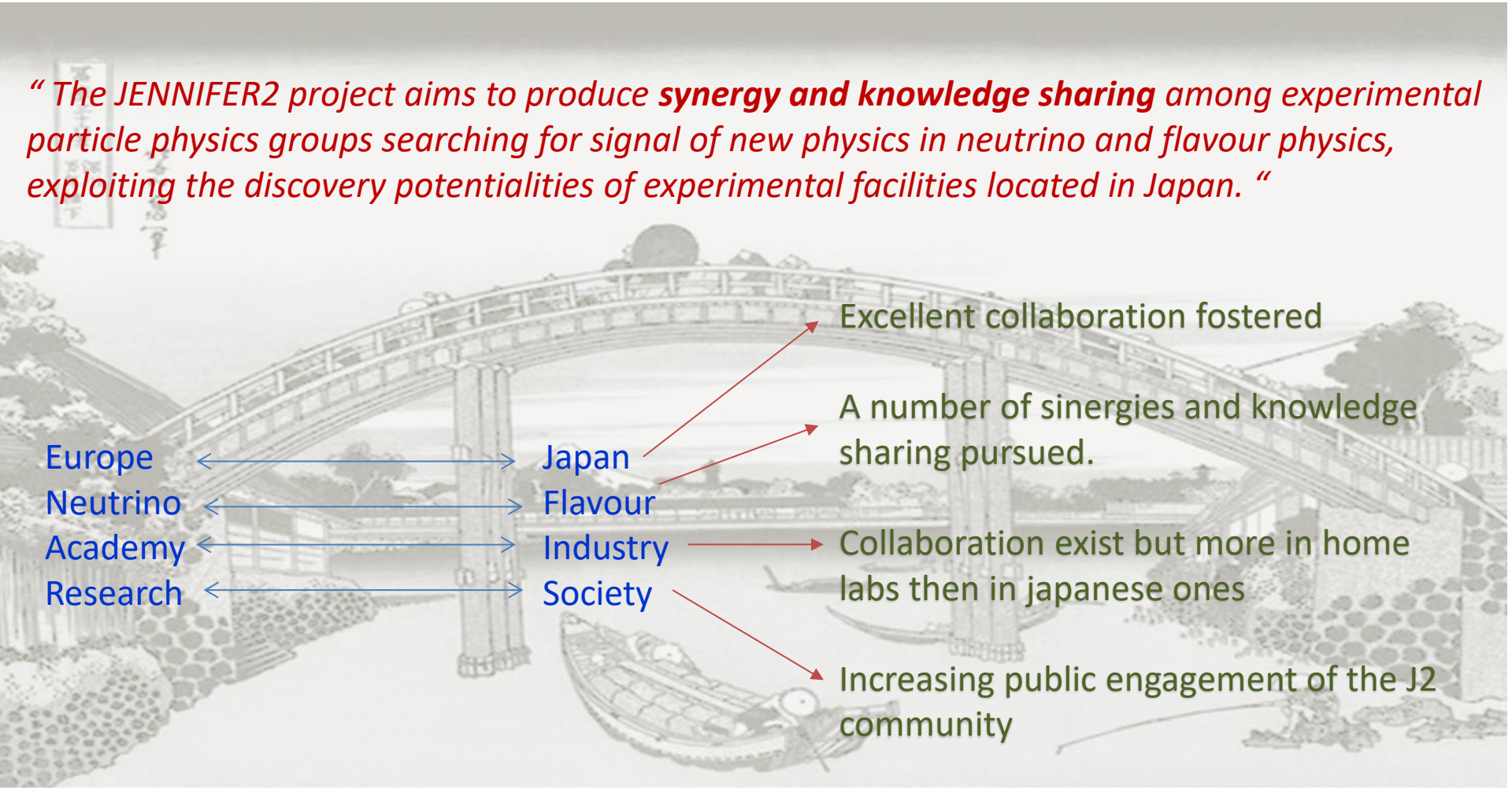
http://www.jennifer2-project.eu/

Getting old-fashion and not anymore maintained!
Found a new web provider, very interested also for following JENNIFER3 website.
Discussion is going on, hope to get an updated website for the fall



How we accomplished our mission ?

*" The JENNIFER2 project aims to produce **synergy and knowledge sharing** among experimental particle physics groups searching for signal of new physics in neutrino and flavour physics, exploiting the discovery potentialities of experimental facilities located in Japan. "*



Marie Slodowska Curie – Research and Innovation Staff Exchange

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Conclusions

JENNIFER2 activities in good shape, going toward the end of the project

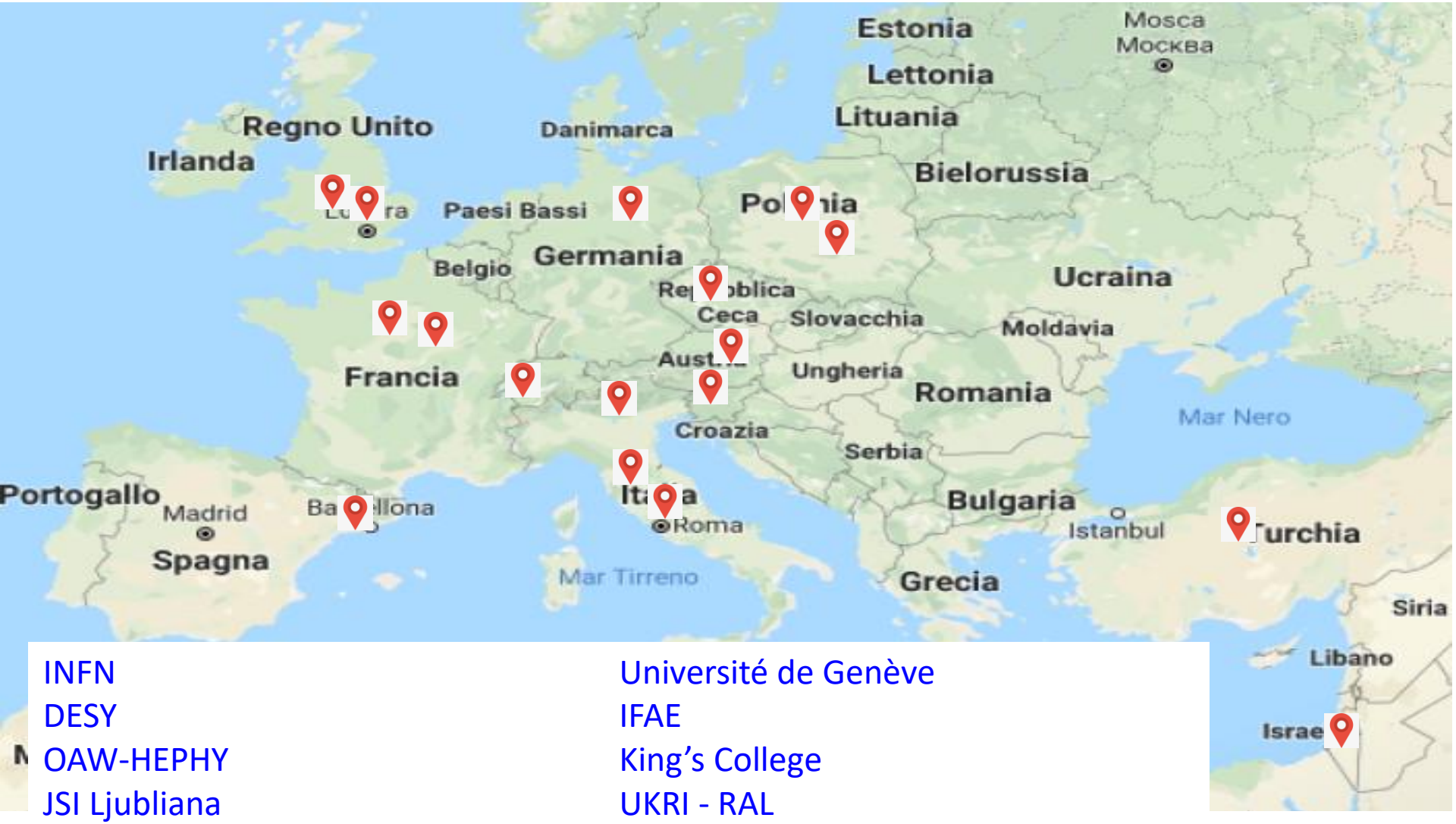
Last deliverables to be produced: will review case by case, effort is needed.

We underperform in secondments implementation. Not much can be still done to mitigate the loss.

Project impact very valuable, we should “measure” it and promote it.

Backup

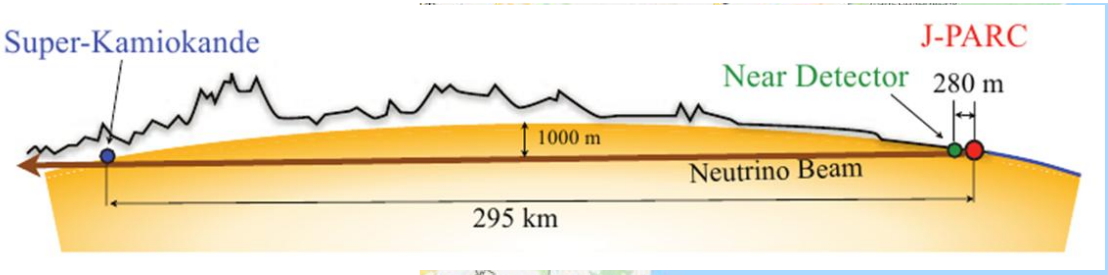
Who we are: from Europe…..



INFN
DESY
OAW-HEPHY
JSI Ljubliana
IFJ-PAN
NCBJ
UKP Prague
CNRS

Université de Genève
IFAE
King's College
UKRI - RAL
Tel Aviv University
METU Ankara
CAEN
Fondazione Bruno Kessler

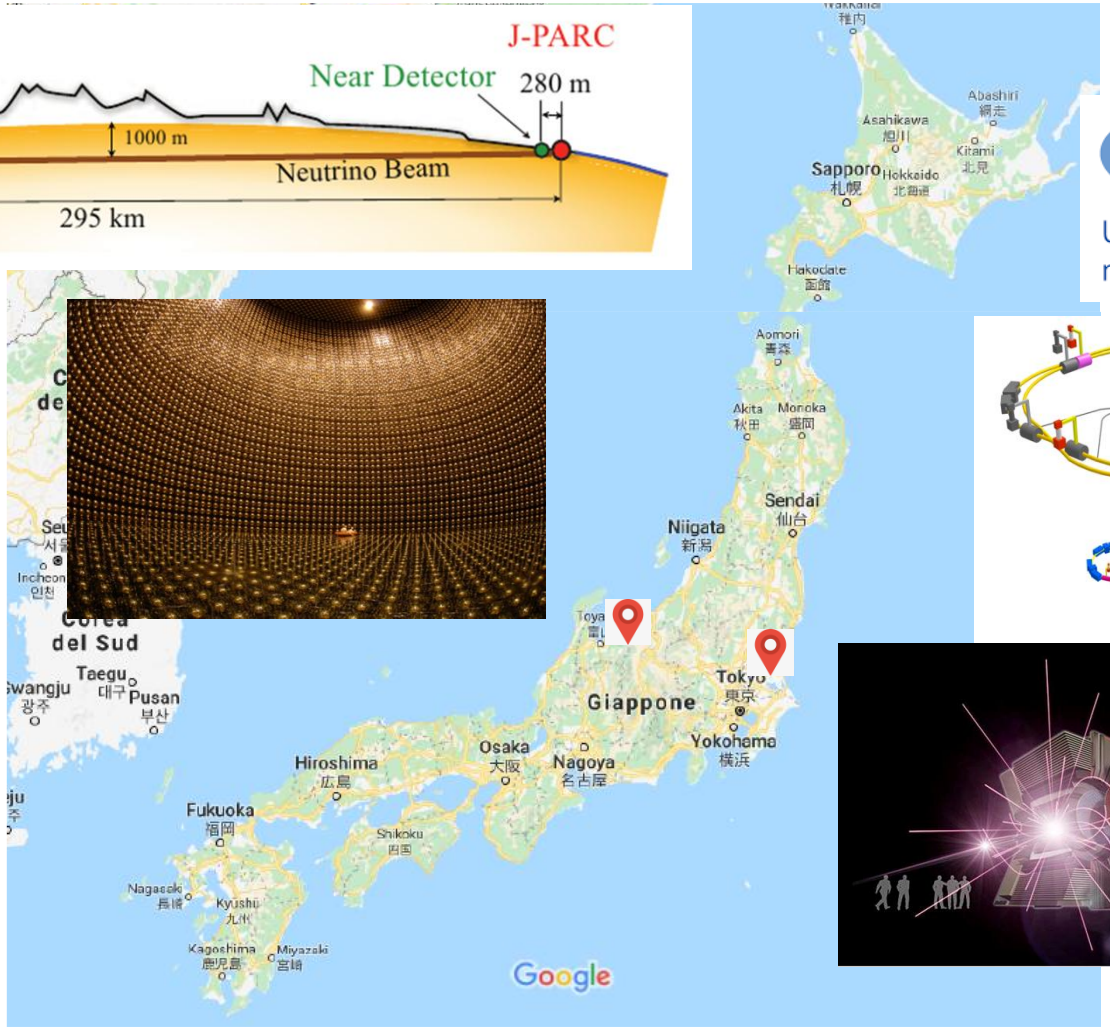
….to Japan

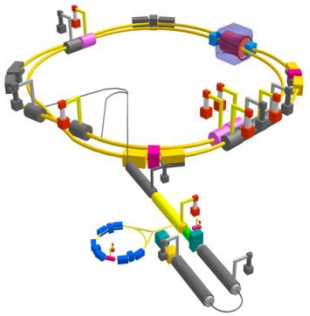


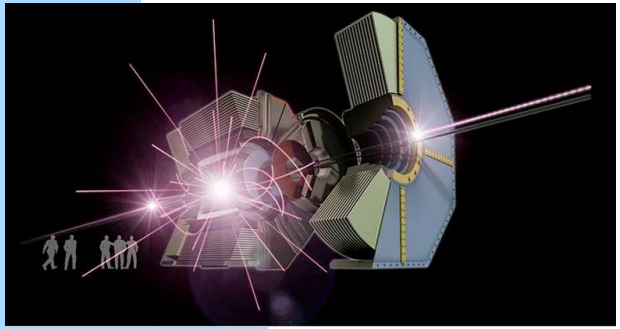
KEK
Unravelling the mysteries of matter, life and the universe.

KAMIOKA OBSERVATORY

東京大学 THE UNIVERSITY OF TOKYO







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