

NuPECC Long Range Plan 2017

Darmstadt, 11 January 2017 - NuPECC Town Meeting

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Università di Milano and INFN**

Outline

- NuPECC mission
- motivations for this long range plan
- the preparatory work during 2016
- issues in common among the WGs on specific topics
-comments in view of the final discussions on recommendations

**International
collaborations
Exchanges with
(mutual)**

- AnPHA (Asia)
- NSAC (USA)
- Canada
- ALAFNA
(south America)



**Joint Institute for
Nuclear Research
Dubna-
Recently joined**

21 countries – 31 Members



Mission and activities

Nuclear Physics European Collaboration Committee

founded **1988** by subscribing [national research councils](#), who nominate nuclear scientists as their representatives.

Objective of NuPECC:

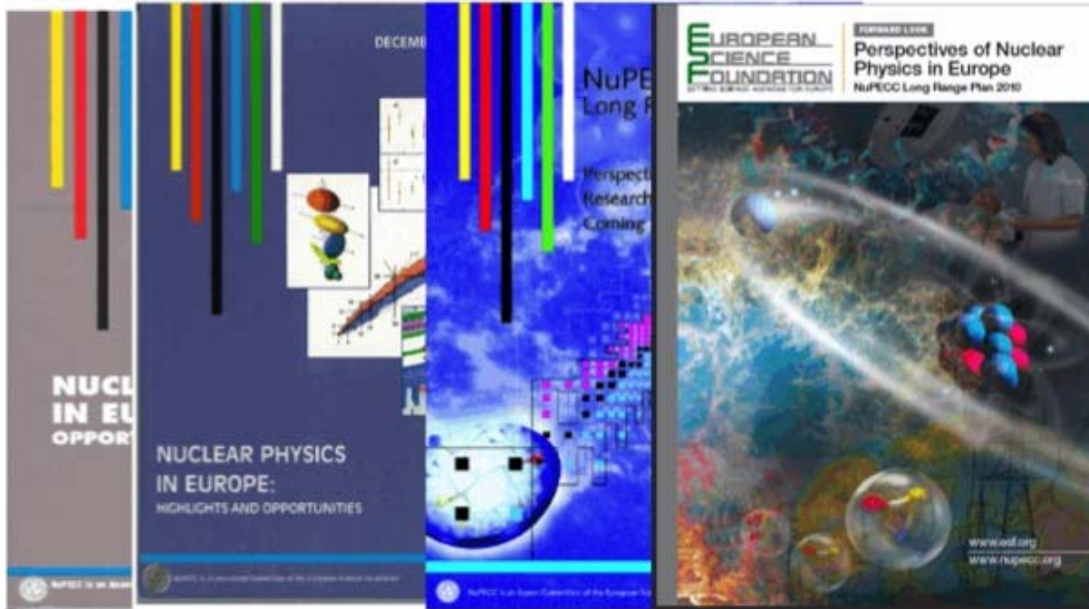
“To strengthen European collaboration in [nuclear science](#) through the promotion of [nuclear physics and its trans-disciplinary use and application](#) in collaborative ventures between research groups within Europe”

Activities

- Issue publications
- Perform surveys of human resources
- Identify key scientific issues
- Interact with funding agencies
- Launch Projects
- **Develop Long Range Plans**

NuPECC Perspectives of Nuclear Physics in Europe

1991 1997 2004 2010



- NuPECC has been always in phase with US in the preparation of the Long Range plan (issues in US in 2016)
- The global context (worldwide) for Nuclear Science is an important aspect in the preparation of the European Long Range Plan
- The progress in Nuclear science in Europe has been guided by LRP providing a framework for coordinated advances
- They put in evidence opportunities and priorities for the research in this field

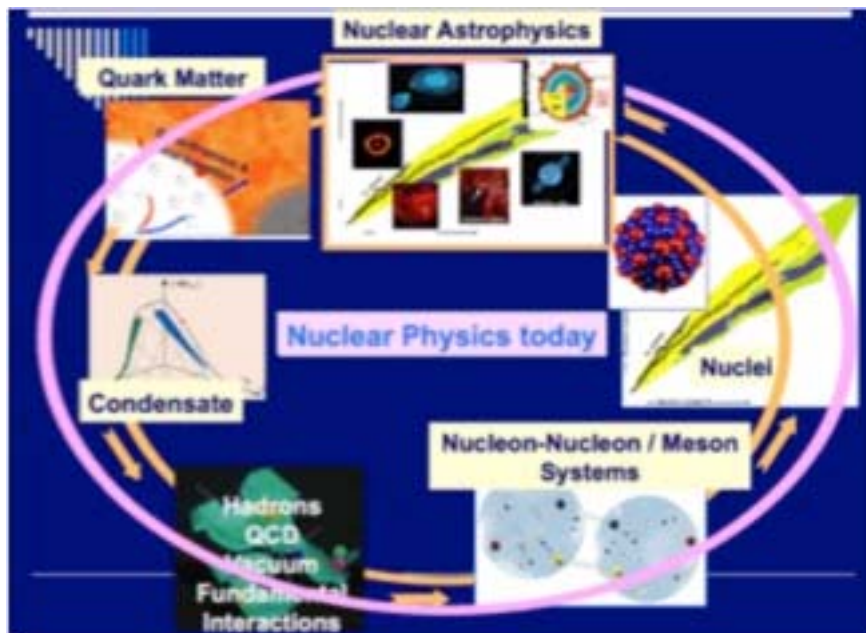
One needs urgently to :

- re-assess programmes at the present conditions and re-affirm the existing great interest on infrastructures under construction
- prepare the instrumentation (including theory) in view of the progress in science and of the present timeline

- **Review** status of the field
- Issue **recommendations** to advance the science and its applications
- Develop and share **action plans** for:
 - new large-scale Research Infrastructures
 - upgrade existing Nuclear Physics facilities**Collaborate** closely with smaller scale facilities
- Support **EU** projects
- Put European Nuclear Physics into **global context**

Contacts with : NSAC (DoE & NSF) in USA, ANPhA in Asia, ALAFNA in Latin America IUPAP and OECD Global Science Forum -

LRP 2017 - structure



6 chapters on the achievements and specific plans concerning these different themes

- 1) Hadron Physics**
- 2) Phases of Strongly Interacting Matter**
- 3) Nuclear Structure & Dynamics**
- 4) Nuclear Astrophysics**
- 5) Fundamental Interactions**
- 6) Nuclear Physics Tools & Applications**

- **Executive summary**
- **recommendations**
- **Facilities status**

- What are the main objectives ?
- What are the main topics defining the field of Nuclear Physics ?
- What are the main key questions to be addressed?
- Wide field....what are the common issues and the coherent actions that are needed?

The “fil rouge” of the different working groups is that :

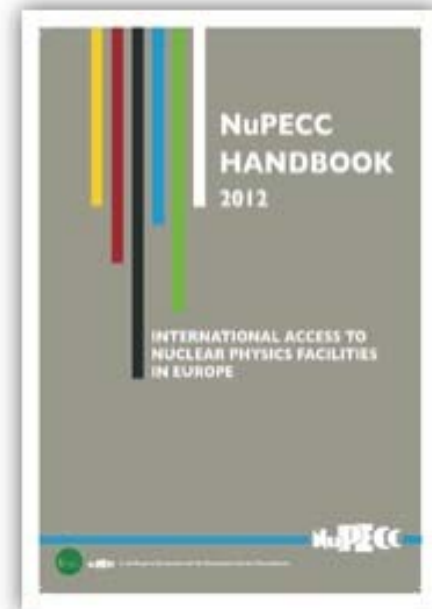
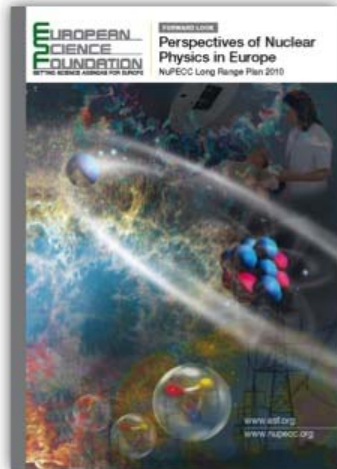
“the physics of nuclei is fundamental in our understanding of the universe and is intertwined in many different aspects of our lives”

- Several meetings and workshops were organized by the working group members appointed by NuPECC and by the NuPECC liaisons

The draft of their work was delivered and presented with oral presentation at the NuPECC meeting on October 7 in Vienna.

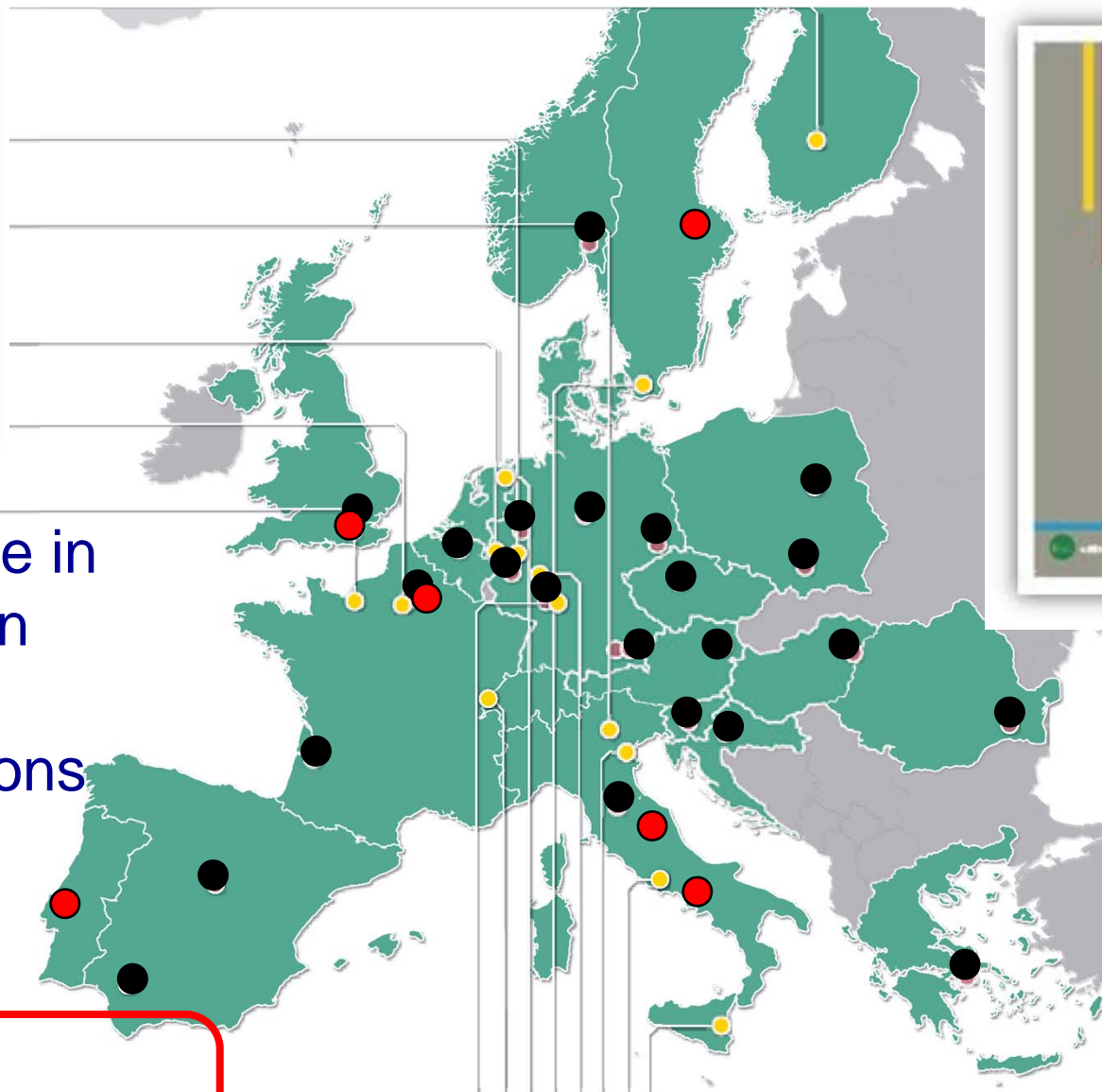
- 1) **Hadron Physics** *D Bettoni(Ferrara) + H. Wittig(Mainz)-*
 - 2) **Phases of Strongly Interacting Matter** *S Masciocchi(GSI) + F Gélis(CEA Saclay)...*
 - 3) **Nuclear Structure & Dynamics** *J Simpson (Daresbury) + E Khan (Orsay)*
 - 4) **Nuclear Astrophysics** *G Martinez Pinedo(TU Darmstadt) + A Laird (York)*
 - 5) **Fundamental Interactions** *K. Kirch (PSI) + K Blaum(MPI Heidelberg)*
 - 6) **Nuclear Physics Tools & Applications** *M Durante (TIFPA Trento) +D. Letournau (Saclay)*
- **NuPECC has organized a special meeting in January 2016 to discuss the status of European Facilities**

- Importance of theory and computational facilities
- Importance of education and training in this strategic field (small facilities also play a role)
- Importance of data evaluation (e.g. see IAEA work)
- **Importance of R&D and EU funding for it**



Specific role in

- Education
- R&D
- Applications

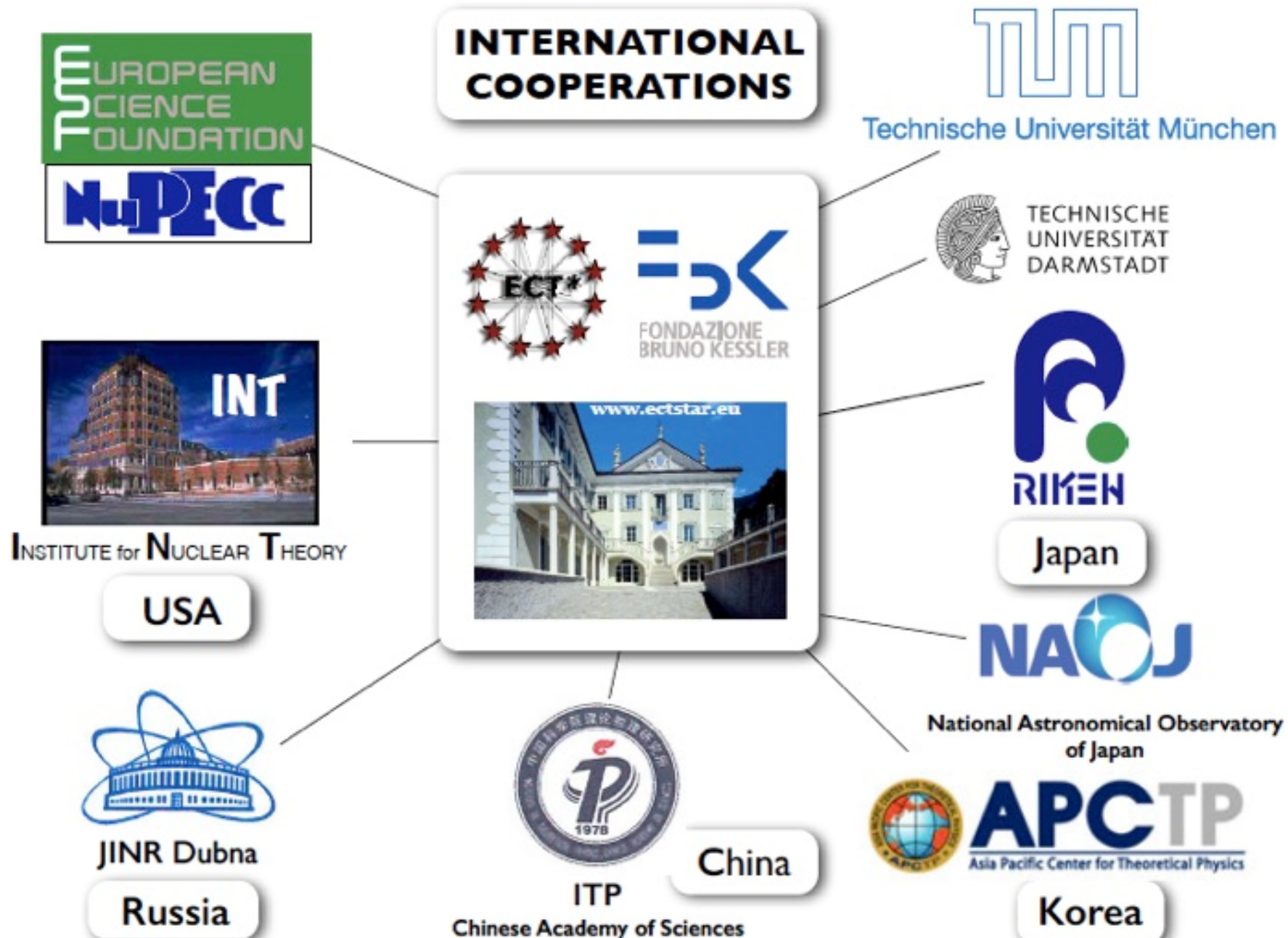


European Network
Accelerator

ENSAR 2

30 small scale facilities

Theory and ECT*



Major steps in the next years for nuclear physics need **new large facilities** in an international environment

This long range plan, based on a bottom – up approach, will surely push for **such major enterprises**

..... many constructive and fruitful discussions in these three days

At the end of this meeting we will say more on our future ...

Final remarks....

Nuclear Physics is in general a very vital field

The **new facilities under constructions** for nuclear physics will engage the community for several years-

LRP: it will make clear that the community is pushing for the realization of the new planned facilities and is updating and reformulating (or re-orienting) the scientific objectives (when needed)

NuPECC LRP (to be published in late spring)

This will play a role in giving to Nuclear Physics the deserved visibility towards the funding agencies and towards other communities in the international general landscape (e.g. ESFRI)

Preliminary Programme

Wednesday, January 11, 2017	Thursday, January 12, 2017	Friday, January 13, 2017
8:00-8:45 Registration		
8:45-9:00 Welcome	9:00-9:45 (Chair: Adam Maj) WG3: Nuclear Structure & Reaction Dynamics <i>Elias Khan, John Simpson</i>	9:00-10:45 (Chair: Jens J. Gaardhøje) International Context NSAC: <i>Don Geesaman</i> ANPhA: <i>Kazuhiro Tanaka</i> CERN: <i>Eckhart Elsen</i>
9:00-9:30 Outline LRP2017: <i>Angela Bracco</i>	9:45-10:30 Discussion WG3	
9:30-10:00 Coffee Break	10:30-11:00 Coffee Break	10:45-11:15 Coffee Break
10:00-12:20 (Chair: Karlheinz Langanke) Future Large-Scale Facilities FAIR: <i>Paolo Giubellino</i> EURISOL-DF: <i>Marek Lewitowicz</i> - Spiral2: <i>Marek Lewitowicz</i> - HIE-ISOLDE: <i>Maria Borge</i> - SPES: <i>Gianfranco Prete</i> ELI-NP: <i>Sydney Galès</i> Dubna: <i>Mikhail Itkis</i>	11:00-11:45 (Chair: Alex Murphy) WG4: Nuclear Astrophysics <i>Gabriel Martinez Pinedo, Alison Laird</i>	11:15-11:30 (Chair: Sotir. Harissopulos) Introduction to Panel Discussion <i>Angela Bracco</i>
		11:30-12:30 Panel discussion of overall recommendations, priorities & roadmap <i>LRP2017 Steering Committee</i>
	11:45-12:30 Discussion WG4	12:30-12:45 Summary and Conclusion: <i>Angela Bracco</i>
12:20-13:45 Lunch	12:30-14:00 Lunch	
13:45-14:45 (Chair: Faïçal Azaiez) European Context ESFRI: <i>Giorgio Rossi</i> ENSAR2: <i>Muhsin N. Harakeh</i>	14:00-15:15 (Chair: Eberh. Widmann) WG5: Symmetries & Fundamental Interaction <i>Klaus Kirch, Klaus Blaum</i>	
14:45-15:30 (Chair: Bernd Krusche) WG1: Hadron Physics <i>Diego Bettoni, Hartmut Wittig</i>		
15:30-16:15 Discussion WG1	15:15-16:00 Discussion WG5	
16:15-16:45 Coffee Break	16:00-16:30 Coffee Break	
16:45-17:30 (Chair: Eugenio Nappi) WG2: Properties of Strong-Interaction Matter <i>Silvia Masciocchi, François Gélis</i>	16:30-17:15 (Chair: Nicolas Alamanos) WG6: Applications & Societal Benefits <i>Marco Durante, Alain Letourneau</i>	
17:30-18:15 Discussion WG2	17:15-18:00 Discussion WG6	
18:15-20:00 Welcome Reception		

Exciting
discussions
Triggered and
Conducted
by you!!

Ready to work

Thanks to the
organizers

Thanks to the local organizers :

Karlheinz Langanke

Karin Füssel

Klaus-Dieter Groß

Sandra Schecker

Sabine Shaw

and

Gabriele-Elisabeth Körner

and all the participants