



Status Update:

Risk and Safety Working Group

Ryodai Nakai
RSWG Co-Chair

8th GIF-INPRO Interface Meeting
Vienna, Austria
4-5 March 2014

RSWG - Purpose

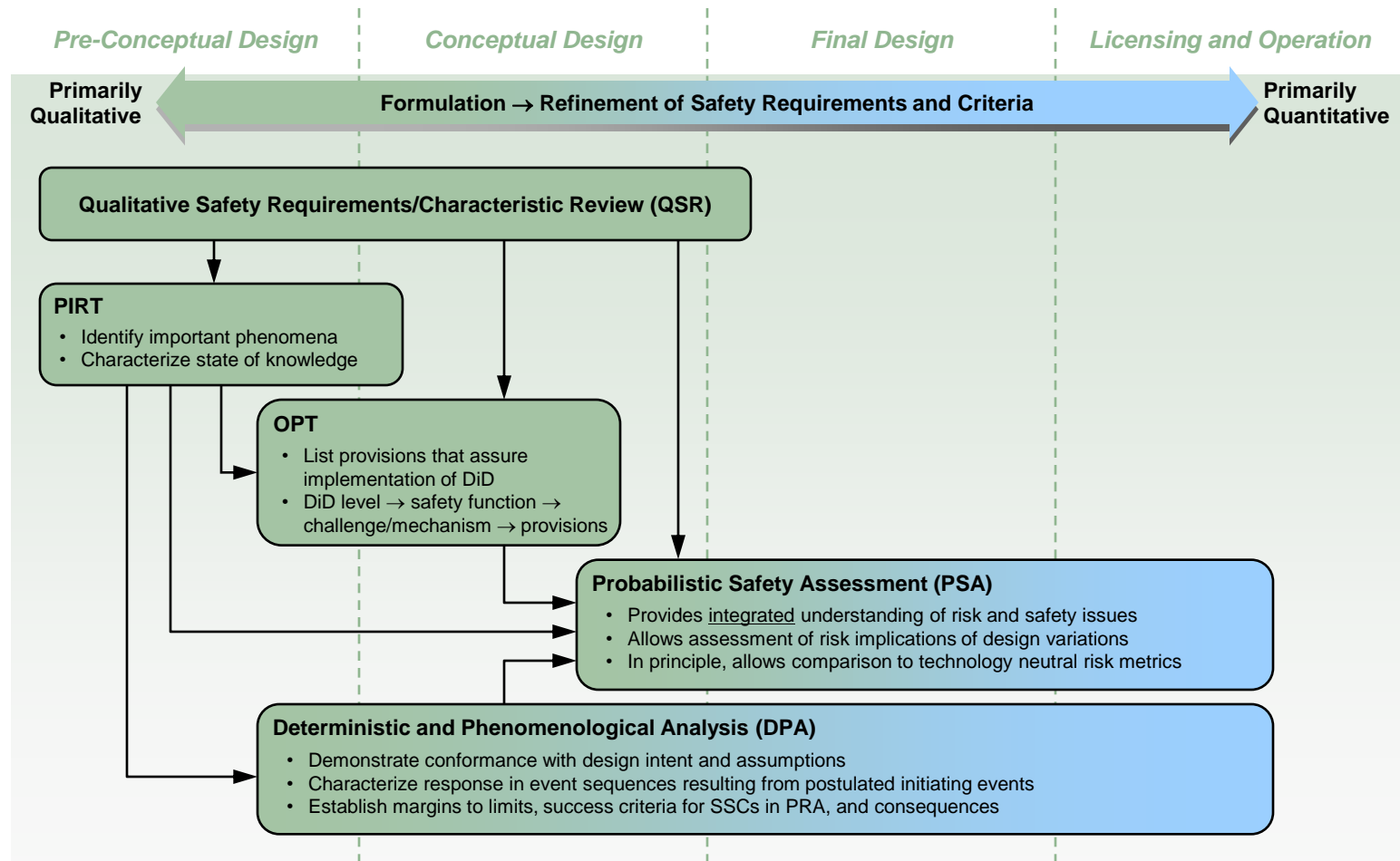
- ***Primary objective – promote consistent approach on risk, safety, and regulatory issues between Generation IV systems***
- ***Elements of Work Scope***
 - ***Propose safety principles, objectives, and attributes based on Gen IV safety goals to guide R&D plans***
 - ***Propose a technology-neutral framework of safety criteria and assessment methodologies***
 - ***Test and demonstrate the applicability of the framework and assessment methodologies***
 - ***Provide consultative support to System Steering Committees and other Gen IV entities***
 - ***Undertake appropriate interactions with regulators, IAEA, and other stakeholders***

RSWG Membership

- *Thambiayah NITHEANANDAN (Canada)*
- *Hongtao QIAN , Yizhe LIU, Wenjun HUN, Wei SONG (China)*
- *Pascal ANZIEU, Bernard Carluec, **Jean François SAUVAGE***, Patrick MARITEAU** (France)*
- *Ryodai NAKAI, Yasushi OKANO (Japan)*
- ***Sang Hoon HAN***, Joon-Eon YANG**, Namduk SUH (Korea)*
- *Yury SHVETSOV (Russian Federation)*
- *Reiner MAILANDER (Switzerland)*
- ***Jane BOWIE***, Dave WATSON** (UK)*
- *Robart BARI, **Tanju Sofu*** (USA)*
- *Luca AMMIRABILE, Vesselina RANGUELOVA** (EU)*
- *Javier YLLERA (IAEA)*
- *Javier REIG, **Getachew Tesfaye*** (OECD/NEA)*

An Integrated Safety Assessment Methodology (ISAM) for Generation IV Nuclear Systems – 2011

- Describes recommended methodology for Gen IV safety assessment



Development of Guidance Document for ISAM

- ***To provide a step-by-step description on how to apply ISAM:***
 - ✓ ***to identify the inputs and outputs of the different tools;***
 - ✓ ***to explain the flow from one step to another;***
 - ✓ ***to elaborate a flow chart in support.***
- ***To illustrate a pilot application of ISAM to a specific system or part of system as example.***
- ***Draft of Guidance was prepared for the review from the other GIF groups***

Development of RSWG White Paper

- ***Strengthen and maintain interfaces with SSCs – Joint RSWG/SSC system White Papers development***
 - ***Facilitate to clarify the system’s safety characteristics and system specific safety issues***
 - ***Accelerate to use ISAM***
 - ***And enhance the relationship between RSWG and each system SSC/PMBs***
- ***Preparation Status of White Paper on each system***
 - ***SFR system – completed***
 - ***VHTR system – prepared & under review***
 - ***GFR & LFR – templates prepared, led by EU***

Future RSWG Activities

- ***Interaction with SFR SDC TF***
 - ***Review on the SDC Report and SDG, especially related to the Gen-IV safety goals and technology neutral safety approach***
- ***Revisit the Gen-IV original safety & reliability goals***
 - ***More detailed & clarified “interpretation” of Gen-IV safety & reliability goals***
- ***Continued interfaces with INPRO, IAEA, MDEP, PRPP, and others interested in advanced reactor safety and security***
 - ***GIF-INPRO Interface Meeting***
 - ***Joint WS with PRPP***



Status Update:

Safety Design Criteria Task Force

Ryodai Nakai
SDC TF Chair

8th GIF-INPRO Interface Meeting
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International reviews on Safety Design Criteria (SDC)

- ***SFR SDC Phase 1 Report***
 - ***Approved by GIF PG (2013 May)***
- ***Review requests for the SDC Report***
 - ***Reviews by external organizations (regulatory bodies)***
 - ***Sent the report (ca. July 2013) to***
 - » ***International organizations***
IAEA, MDEP, OECD/NEA/CNRA
 - » ***National regulatory agencies***
China (NNSA), Euratom (ENSREG), France (ASN),
Japan (NRA), Republic of Korea (NSSC),
Russia (Rostekhnadzor), USA (NRC)

Responses of SDC review

- **OECD/NEA/CNRA**
 - **Response letter from CNRA Chair (Jan. 17, 2014)**
 - » **Support initiatives to promote interactions of GIF with international regulatory community**
- **MDEP**
 - **Discussed Gen-IV SFR's safety approaches in MDEP Steering Technical Committee meeting (Jan. 30, 2014).**
- **IAEA**
 - **GIF-INPRO SFR Safety workshop (June 2014):**
 - » **SDC harmonization with national & international design criteria**
 - » **Status of the SFR SDG development effort**
 - » **Engineering solutions to address specific SFR design criteria**
 - **Seek for Collaboration on Development of IAEA Safety Standard for Gen-IV SFR**

Responses of SDC review

- ***NRC (USA)***
 - ***NRC Review on the SDC (No. ML13183A294, Jan. 30, 2014)***
 - » ***“Staff F REVIEW OF GENERATION IV INTERNATIONAL FORUM SAFETY DESIGN CRITERIA FOR SODIUM FAST REACTORS”***
- ***NNSA (China)***
 - ***Letter including six comments (Oct. 10, 2013)***
 - ***Additional letter to clarify the NNSA position (Jan. 16, 2014)***

GIF SDC TF (Phase 2) Status

- **SFR SDC TF Phase 2:**
 - **Governed by the Terms of Reference (approved by PG in May 2013)**
 - **Develop more detailed criteria for the application of the SDC and summarize as “Safety Design Guidelines [SDG]”**
 - **GIF-SDC-TF: China, EU, France, Japan, Korea, Russia, USA, IAEA**
 - **The first meeting in September 10-11, 2013 at the CEA**
 - **The second meeting in February 18-19, 2014 at the ANL/DC**

- **Final goal of Phase II SDC TF**
 - **SDG on “Safety Approach & Design Conditions” (by 2014)**
 - » *Incl. functional requirements & set of design conditions of the issues on reactivity & loss of heat removal with quantification*
 - **SDG on “Key Structures, Systems and Components” (by 2016)**
 - » *Incl. functional requirements & set of design conditions specific to key SSCs [shutdown, cooling, containment] with design examples*