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Developing Virtual TSO Networks based on the Experience with the Asian Nuclear Safety Network (ANSN)

International Conference on Challenges Faced by Technical and Scientific Support Organizations (TSOs) in Enhancing Nuclear Safety and Security
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Office of International Programs
Japan Nuclear Energy Safety Organization (JNES)

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Introduction

- In 1997, the EBP "the Safety of Nuclear Installations in South-East Asia, Pacific and Far East Countries" (EBA-Asia) started.
- In 2004, the Asian Nuclear Safety Network started full operation after success of a pilot project since 2002.
  - IT Networks connecting with National and IAEA Websites
  - Human Network through TG Activity
  - As phase 2 of EBP-Asia

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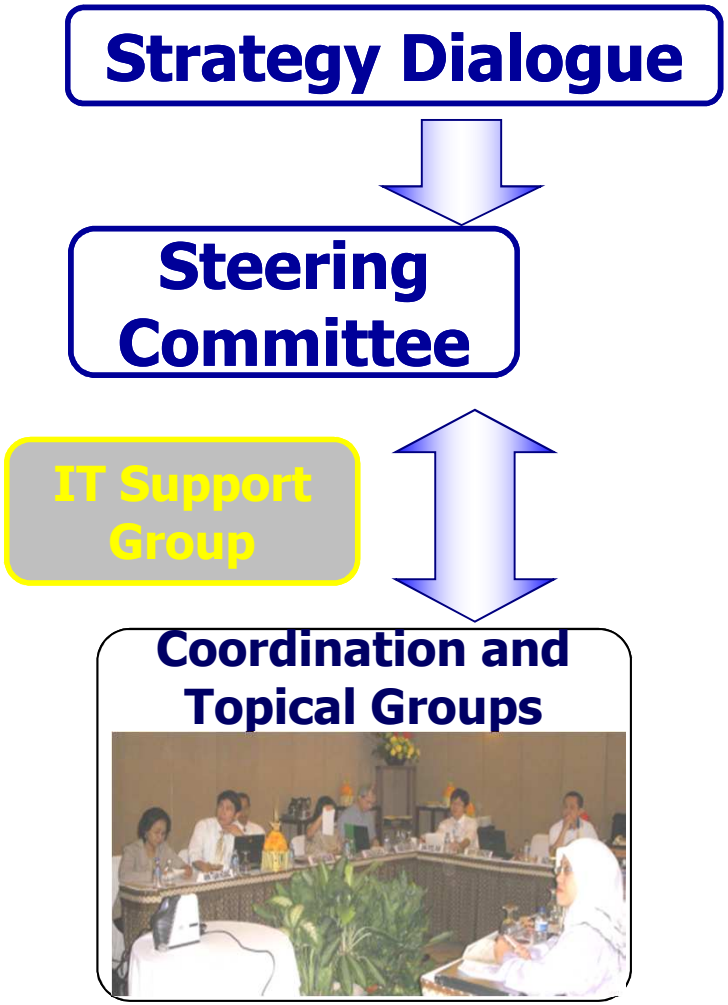
Introduction



Participating country:
Australia, China, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Thailand, Vietnam

Supporting country & Organization:
France, Germany, USA, EC

Observer country
Bangladesh, Kazakhstan

Associated country
Pakistan

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Introduction

- In April 2009, the 2nd Strategy Dialogue (SD) agreed on the recognition of the ANSN as a Capacity Building platform, commending Vision 2020.
  - Vision 2020: Capacity Building for countries embarking on nuclear power programmes for the first plant in commercial operation by 2020
- In October 2009, the 10th Steering Committee (SC) agreed on the establishment of Capacity Building Coordination Group (CBCG).

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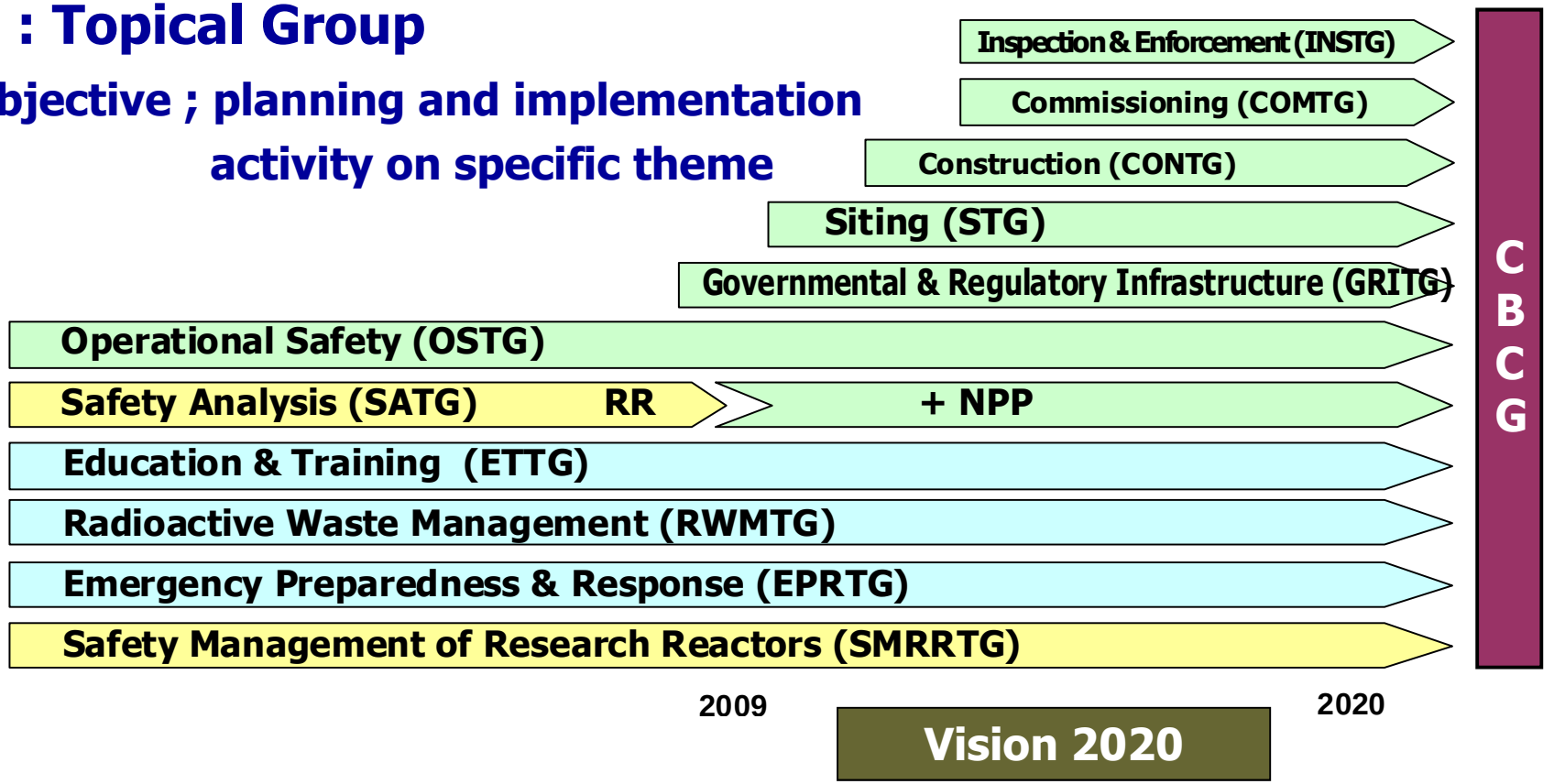
Introduction

CBCG : Capacity Building Coordination Group

Objective ; coordination of TG activities & planning and implementation of CB

TG : Topical Group

Objective ; planning and implementation activity on specific theme



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Capacity Building in ANSN

- **INSAG-22 "Nuclear Safety Infrastructure for a National Nuclear Power Programme supported by the IAEA fundamental Safety Principles"**
- **NG-G-3.1 "Milestone in the Development of a National Infrastructure for Nuclear Power"**
- **DS-424 "Establishing a Safety Infrastructure for a National Nuclear Power Programme**

Consolidated into 15 Items and identified 10 Items as ANSN matters

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Capacity Building in ANSN

No.	CB Item	Responsible Entity	Responsible TG
1.	National Policy	*Government*	
2.	**Legislative Framework**	**ANSN**	**GRITG**
3.	**Regulatory Framework**		
3.1	**Regulatory Process (excluding inspection)**	**ANSN**	**GRITG**
3.2	**Inspection Process**	**ANSN**	INSTG
4.	Electric Grid Connection	*Licensee*	
5.	**Siting**	**ANSN**	**STG**
6.	Funding	*Licensee*	
7.	**Human Resource Development**		
7.1	**Regulator Upbringing**	**ANSN**	**ETTG**
7.2	Licensee Personnel Upbringing	*Licensee*	
7.3	Engineer Personnel Upbringing	*Vendor*	

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Capacity Building in ANSN

No.	CB Item	Responsible Entity	Responsible TG
8.	**Nuclear Safety Technology**		
8.1	**Safety Analysis**	**ANSN**	**SATG**
8.2	Engineering	*Vendor*	
8.3	**Construction**	**ANSN**	CONTG
8.4	**Commissioning**	**ANSN**	COMTG
8.5	**Operation & Maintenance**	**ANSN**	**OSTG**
8.6	**Inspection**	**ANSN**	INSTG
8.7	**Safety Management (safety culture, etc.)**	**ANSN**	**OSTG**
9.	**Stakeholder Involvement**	**ANSN**	**All TGs**

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Capacity Building in ANSN

No.	CB Item	Responsible Entity	Responsible TG
10.	**Environmental Protection**	**ANSN**	**STG**
11.	**Emergency Planning**	**ANSN**	**EPRTG**
12.	**Radioactive Waste Management & Spent Fuel**	**ANSN**	**RWMTG**
13.	Nuclear Material Management	*Government*	
14.	Radiation Protection	*ANSN (Collaboration with FNCA)*	
15.	Procurement	*Licensee*	

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Virtual TSO

- **IAEA Safety Fundamentals SF-1 states that,**
  - **the government is responsible for the adoption within its national legal system of such legislation, regulations, and other standards and measures as may be necessary to fulfill all its national responsibilities and international obligations effectively, and for the establishment of an independent regulatory body (3.8)**
  - **the regulatory body must have adequate legal authority, technical and managerial competence, and human and financial resources to fulfill its responsibilities (3.10).**

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Virtual TSO

- To satisfy the provisions in SF-1, many nuclear power countries provide functions to have the in-house capability or outside organizations for scientific and technical support (TSO).
- For a new comer country that might be sometimes not so easy to establish the TSO.
- The ANSN is promoting the Vision 2020 by providing the Virtual TSO, a cooperative operation of services.
- The Virtual TSO is compared with the Real TSO in the next slide.

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Comparison of Real and Virtual TSO (1/2)

Item	Real TSO	Virtual TSO
Form	Real Entity existing in some nuclear power countries	Cyber Community on the network
Operation	Operated by the TSO itself	Cooperatively operated by a group of organizations
Main customer	Fixed customer - typically a domestic regulatory body Bilateral relationship between the TSO and the regulatory body	Not fixed – regulatory bodies in new comer countries Multilateral relationship between the TSO and its customers

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Comparison of Real and Virtual TSO (2/2)

Item	Real TSO	Virtual TSO
Services provided	Direct services through actual work (note) Services provided under the fixed relation between the TSO and the regulatory body	Services via the Internet Services provided under the flexible relation between a receiver and provider(s)
Responsibility for service	Sole responsibility of the TSO providing service	Shared responsibility of providers or Receivers
Resources	Concentrated	Distributed

(note) The services described are those for nuclear safety regulation, and may not be limited to them in real situation.

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Function of Virtual TSO

Item	Function	Status
e-library	Wiki-based digital library containing documents including TG activities Lectures/training videos (planning).	Trail operation completed Step-by-step service starting in 2011
Solution Support Service	Questions and answers among experts on the network to solve problems	Trail operation started Full-scale service starting in 2012
e-learning	Remote learning on the network Quizzes for evaluating the performance of trainees	Operation started

IT infrastructures, Expert Pool Database, Internet Video Conference System, and On-Line Planning System, are also developed.

Challenges of Virtual TSO

- **In the course of development, issues regarding cyber conditions, such as security, response speed etc. should be resolved.**
- **Other managerial issues should be also resolved before the full-fledged operation starts;**
  - **Are some services compensational? If paid, what type of service is paid for?**
  - **How do we reconcile with enhanced cyber security and user's convenience to construct the optimum system?**
  - **Is the responsibility utilizing services rest on the provider or the receiver? If voluntary, is it still on the provider? If paid services by several providers, how is it shared among the providers?**

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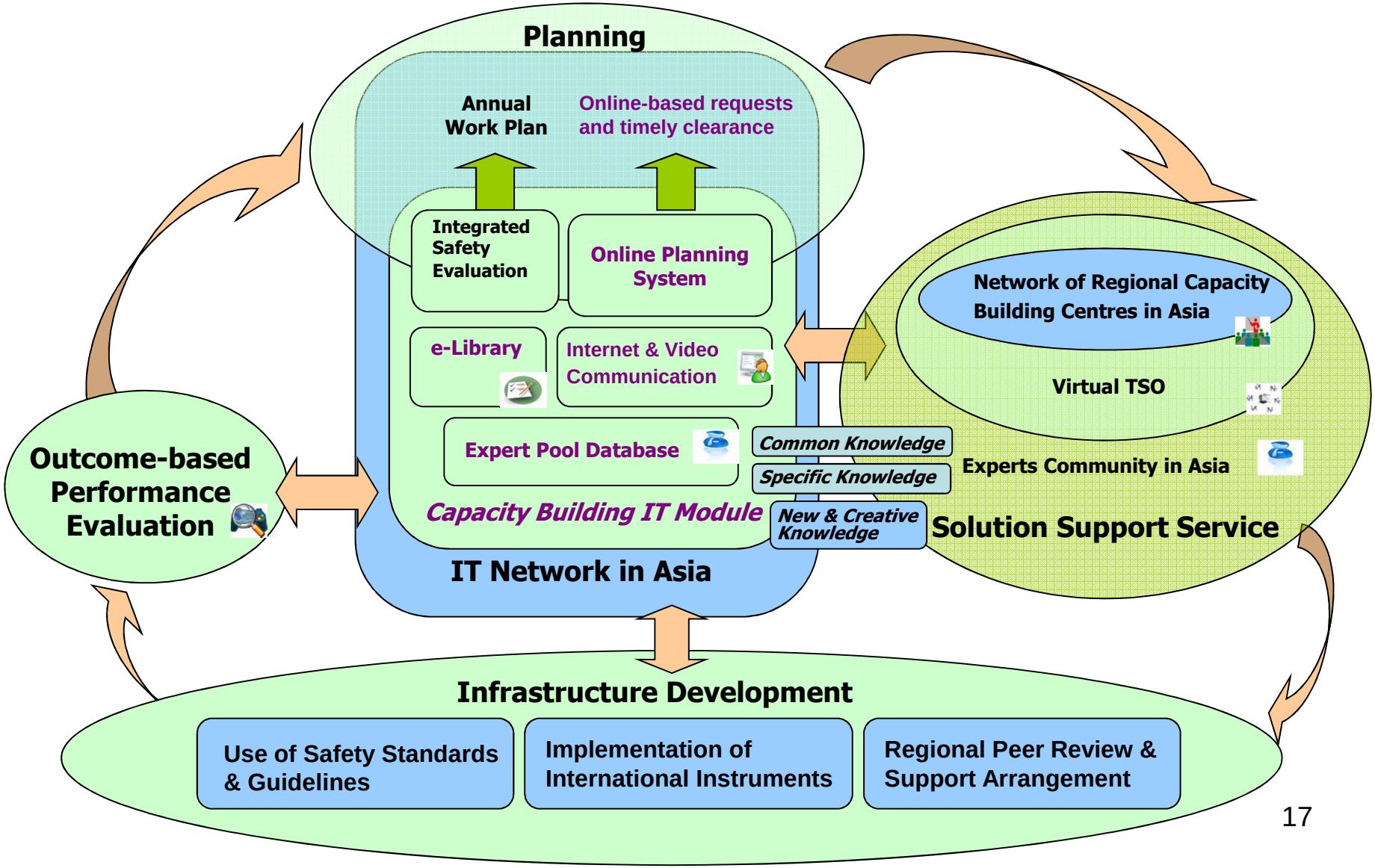
Capacity Building System with Virtual TSO



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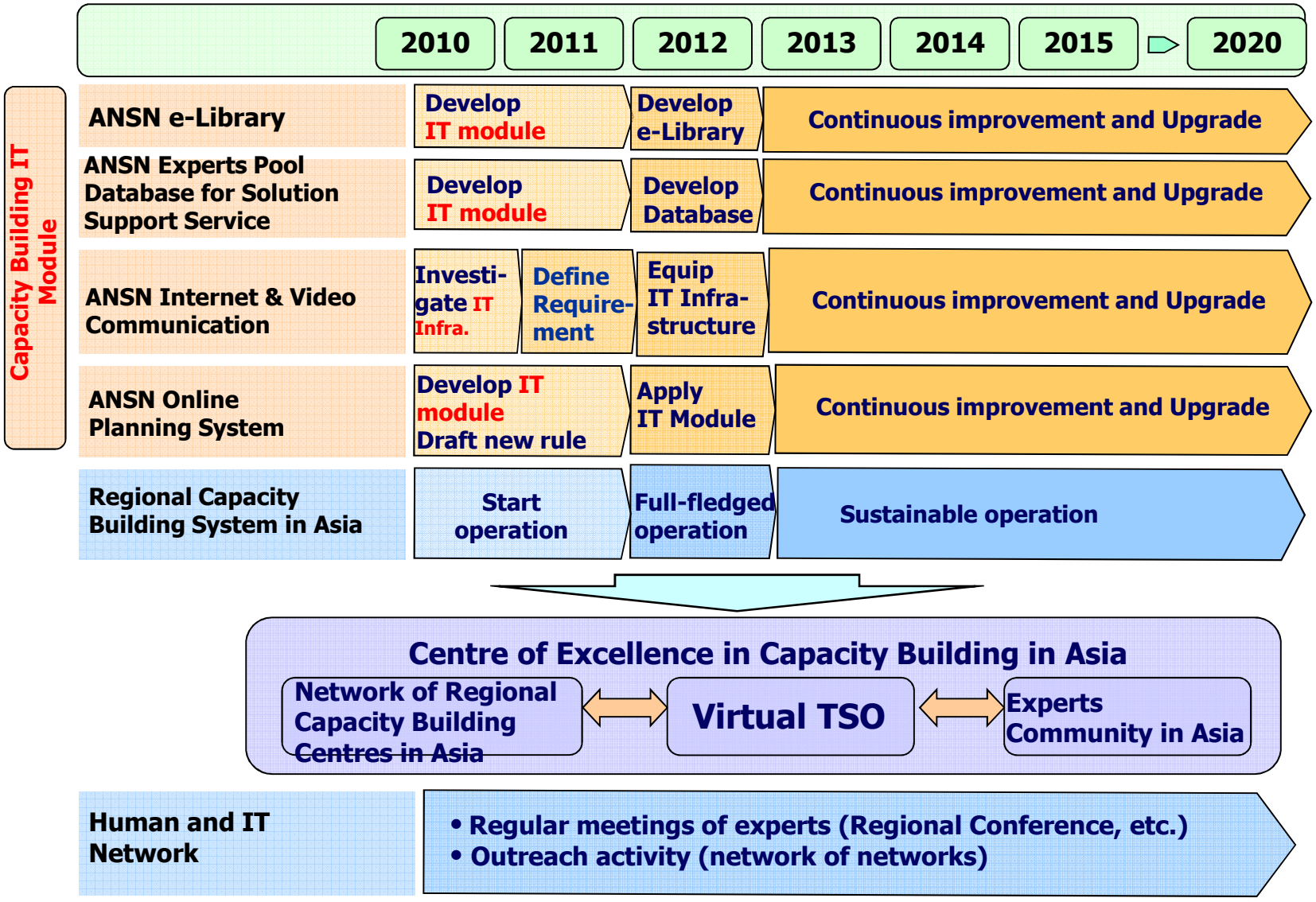
Schedule of Virtual TSO Development



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Conclusion

- The ANSN has been elaborating to ensure safety of nuclear facilities in Asia. Now it has matured to support the new comer countries in developing and enhancing safety infrastructure and human resources.
- The Virtual TSO is the first attempt for capacity building through a cyber community.
- But issues come up one after another as the project progresses into practical implementation.
- We are ready for sharing experiences, extending cooperation and asking for views and comments. We are now moving forward toward realizing the Virtual TSO by overcoming the challenges, expecting to grow in collaboration with other regional networks.

Thank you for your Attention !