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Safe Technologies and Sustainable Scenarios (FR13)
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Information Sharing Framework (ISF) for Facilitating Development of Fast Reactors and Fuel Cycles

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Outline



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3. Current Project

2. Requirements Development for ISF

3. Example Planning Based on the Requirements

4. Next Steps

5. Conclusion



Nuclear Transparency



“A cooperative process of providing information to all interested parties so that they can independently assess the safety, security, and legitimate management of nuclear materials”

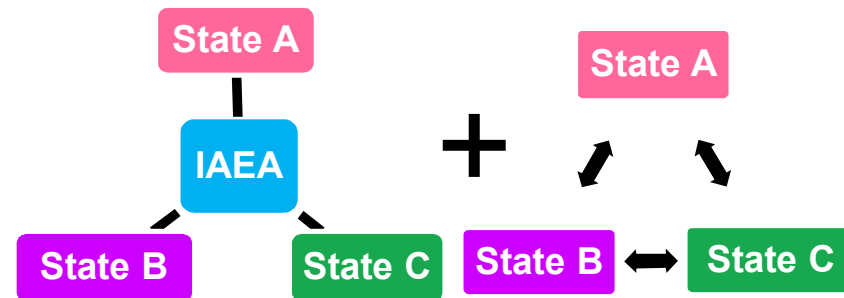
Nuclear Facility Transparency: Definitions and Concepts, Charles D. Harmon et al., Cooperative Monitoring Center Sandia National Laboratories (2000)

Features

- Transparency is one of **Confidence Building Measures** (CBMs)
- **Voluntary** process, more proactive than compliance-based activities

Benefit

- Promotes confidence building among states in the region
- Complements and reinforce IAEA safeguards



Overview of Japan Atomic Energy Agency's Regional Transparency Efforts, B.Hoffheins, et al., July 2011

“Sharing relevant information with interested parties has been the fundamental principle of transparency.”

Transparency and nonproliferation in the Asia-Pacific region: Enhancing transparency, strengthening the nonproliferation regime, Kazuko Hamada, Japan Atomic Energy Agency (2008)



1. Introduction

Objective



● Background

- ✓ FR cycle generally includes Pu utilization (re-cycle)
 - It could cause regional concerns from the viewpoint of nuclear nonproliferation(NP) and nuclear security(NS)
- ✓ Nuclear transparency is a key for avoiding/mitigating the regional NP/NS concerns
- ✓ ISF among NP/NS experts is beneficial for facilitating sustainable FR cycle development
 - GIF, INPRO: Mainly system design information, global framework
 - APSN: Political level

● Objective:

Present a systematic approach to establish and implement ISF for promoting confidence building among NP/NS experts and facilitating FR development

Current Project to Establish ISF

“An Information Sharing Framework (ISF) for Regional Nonproliferation Cooperation”

by JAEA, SNL, KINAC, and KAERI, July 2011~

Design a framework that enables the direct, transparent sharing of nonproliferation- relevant information among nonproliferation experts within selected organizations in the region

- ISF enables experts to exchange nonproliferation relevant information through **“Face-to-Face”** and **“Web-Based”** communication mechanisms
- ISF would cultivate **confidence building** among experts which can help **mitigate possible concerns about FR development**
- Current activity: development of **“requirements” for ISF**



Transparency Workshop: Establishment of ISF, Daejeon, ROK, December 2012



CMS website for information sharing among project partners, developed by SNL

- Requirements are needed for**
- Systematic establishment and implementation of ISF.
 - Clearly identifying the need for cooperation. ²
 - Identifying “steps” of how to establish a **sustainable** ISF

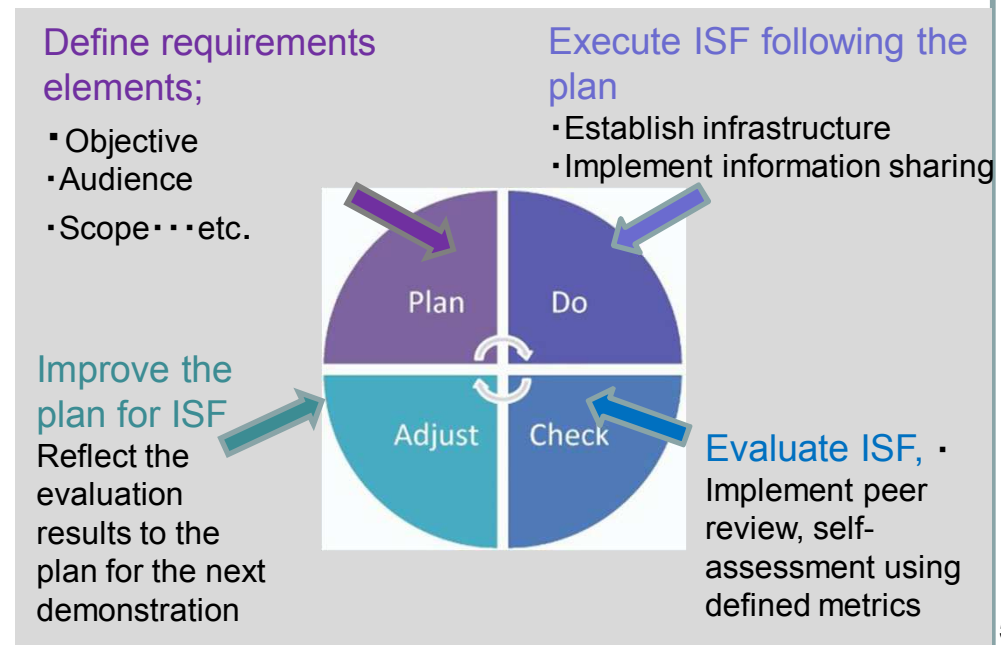
Requirements

“Implementing the *Plan-Do-Check-Adjust (PDCA) cycle* for each category of information to be shared. “Plan” consists of *defining the requirements elements.*”

Requirements Elements

- | | |
|---------------------|-------------------|
| 1. Objective | 5. Security and |
| 2. Audience | Credibility |
| 3. Scope | 6. Infrastructure |
| 4. Content | 7. Sustainability |
| a. Specific content | |
| b. Amount | |
| c. Frequency | |

**Identified through discussions among experts in the project*



Slide 6

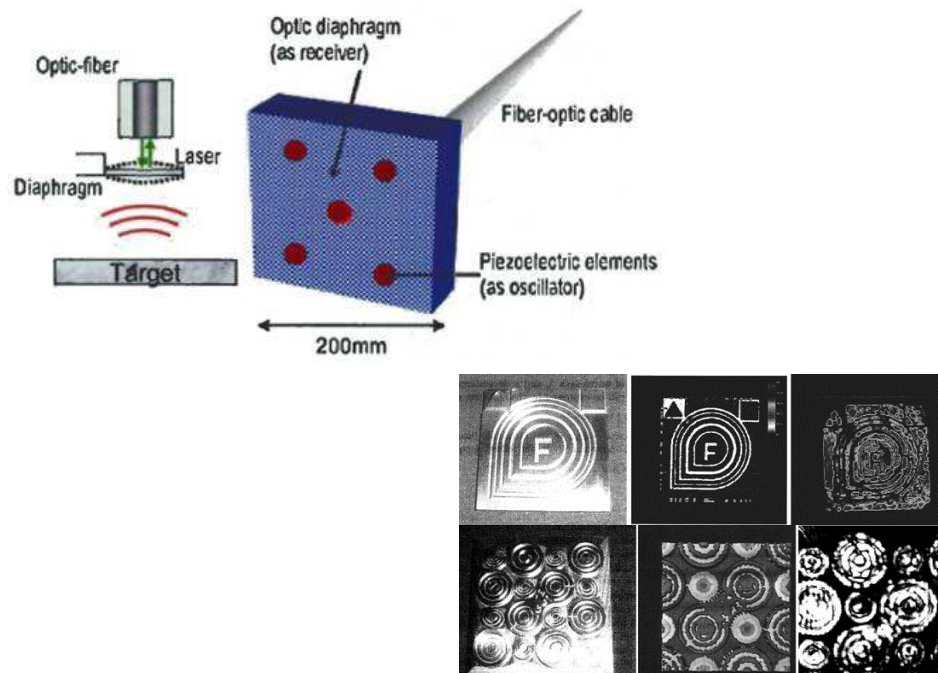
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This is important. The reason we are developing requirements is so that the need for information sharing is clear and understood by all stakeholders. If there is no need, why are we doing it?

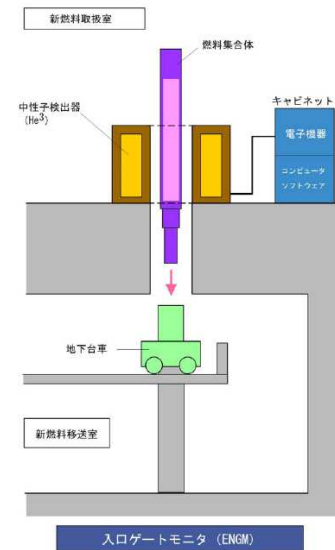
Mongiello, Risa, 2013-02-27

Example information category: “Safeguards R&D experiences and lessons learned”

i.e. R&D of Under-Sodium Viewing technology



i.e. R&D of flow monitor at FBR “Monju”





3. Example Planning

SG R&D experiences and lessons learned



1. Objective (Needs)

Define the objective of sharing the information by defining

(1) Receivers' needs

(2) Providers' expectations and benefits

(1) Improve R&D plan for SG, nuclear material management technologies by reflecting other organizations' experiences and lessons learned

(2) Obtain understanding of other organizations

- Facilitate IAEA SG by improving states' capability
- Confidence building among partners by knowing each other's willingness and commitment to transparency



3. Example Planning

SG R&D experiences and lessons learned



2. Information Receivers/Providers (Audience)

*Identify and characterize **information receivers / providers** (audience in case of web-based) based on objective*

- Entities: R&D laboratories in the region such as SNL, JAEA, KINAC, KAERI
- Level within the entity: Experts engaged in R&D of SG and nuclear material management technologies

3. Scope

Define the boundaries within which the effort will be implemented

- R&D experiences for safeguards and nuclear material management and accountancy
- Unclassified information
 - ✓ Published papers, authorized papers and materials, documented reports, oral presentations

4. Content

Select content; security, IP issues, and other concerns should be taken into account

(a) Specific *content*

(b) *The amount* of information

(c) *Frequency* of sharing information

(a) Papers, reports, and other materials presented at international conferences i.e. INMM annual meeting, APSN, FR etc. about

- R&D of NDA equipment and remote monitoring (RM) system
- Best practices and lessons learned from R&D activities

(b) Recent paper list of INMM, APSN, other mtg. (ex. 2pages list)
PPT presented at recent international conferences (ex. 1MB × 20 files)
Links to the related websites (Int'l conferences, training, education, etc.)

(C) Update accordingly, Annual review

5. Security and Credibility

Define *how to ensure security and credibility* to address both providers and receivers' concerns;

Providers: Security, protection

Receivers: Authentication, credibility

● Web-Based:

- ✓ On-line library should be designed with a care for IP issues
- ✓ Website should be designed and established to consistently follow all the participating organizations' security policies
- ✓ Published papers or such are credible as they are authorized by each organization

● Face-to-face:

- ✓ Meetings among the NP/NS experts authorized by their organizations

6. Infrastructure

Select *effective and efficient infrastructure (face-to-face and/or web-based)* considering limitation of cost and resources, access control, types and security level of information, and audience.

- Define appropriate organization agreement for setting infrastructure
- Web-based
 - ✓ Develop website with on-line library for information sharing
 - ✓ Upload contents to the website(links) and online library (published papers, reports, etc.)
- Face-to-face
 - ✓ Hold face-to-face meeting regularly (1~2/year) and share relevant information (Presentations and discussions)

7. Sustainability

Evaluate the ISF for the evaluation to ensure that ISF is active and viable

(a) Define *metrics*

(b) Define *methodologies*

(a) Metrics :

Web-Based) Frequency of visits, usability, user-friendliness, satisfaction with content, workload for maintenance

Face-to-Face) The number of the meetings, satisfaction level with content

(b) Methodologies: Self-assessment by the participating organizations, peer review

- Requirements for ISF to be finalized in the near future.
- After the requirements are finalized:
 - *Identify several categories of information that each entity can be engaged with*
 - *“Plan” will be developed for each category of information*
 - *Demonstrate ISF following “Do”, “Check”, and “Adjust” (Implement 1st PDCA cycle)*
- In the long-term, ISF can be expanded by inviting other entities and include other information areas

- Requirements for ISF is currently under development by JAEA, SNL, KINAC and KAERI
- Requirements seek to help implement information sharing following PDCA cycle
- Requirements development is still underway, but expected to be finalized in near future
- Demonstration of ISF will be implemented as the next step
- ISF is expected to facilitate FR avoiding regional NP/NS concerns in a sustainable manner



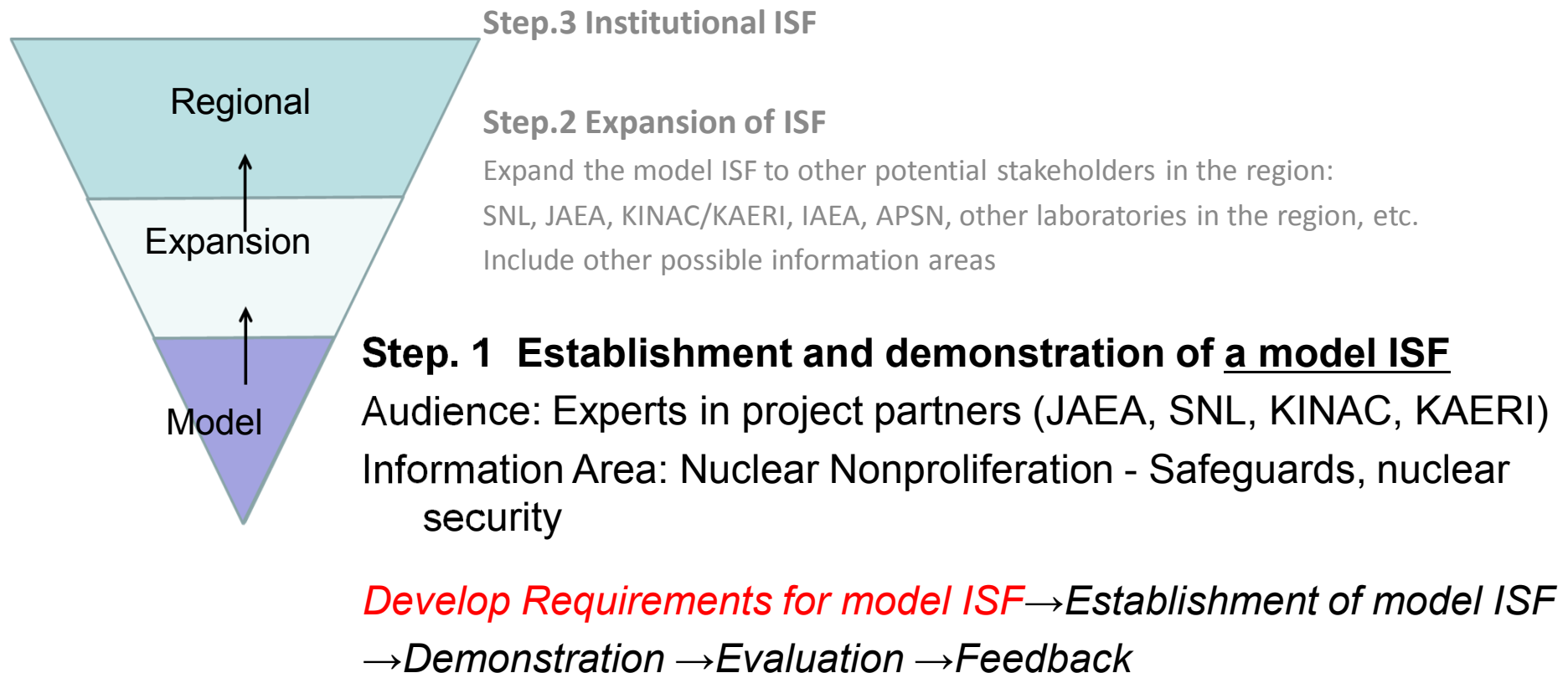
JAEA/STNM



Back-up slides

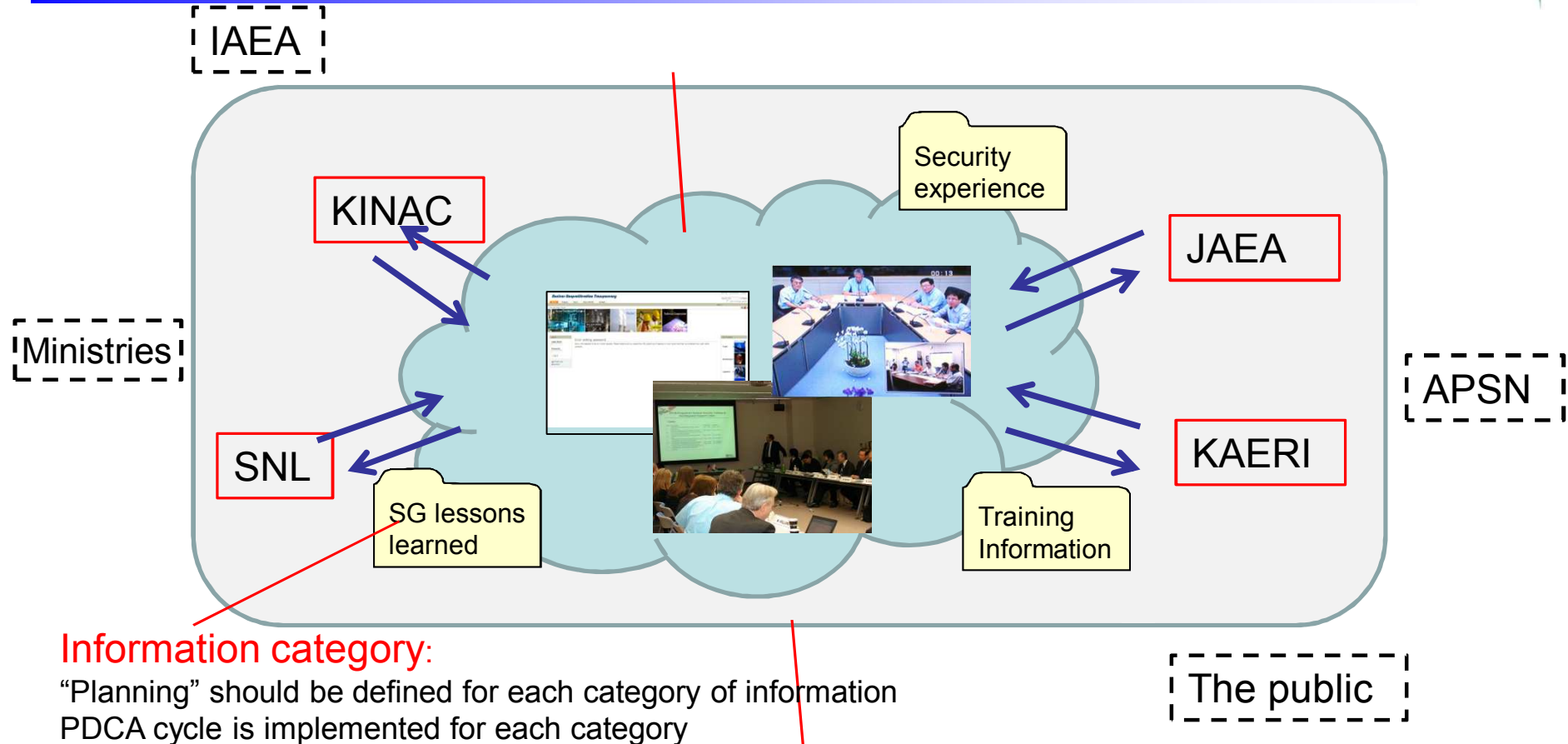
➤ **Step-by-Step approach**

In order to make a tangible progress, the project take “step-by-step” approach



1. Background

– Cooperative Project to Establish ISF



Information category:

“Planning” should be defined for each category of information
 PDCA cycle is implemented for each category

(Model) Information Sharing Framework (ISF)

: shares non-proliferation information among experts in JAEA, SNL, KINAC and KERI

SNL, KINAC, KAERI, JAEA: **Project Partners**

APSN, IAEA, ministries, other labs: **Stakeholders/ Audience**



2. Requirements Development for ISF – Needs

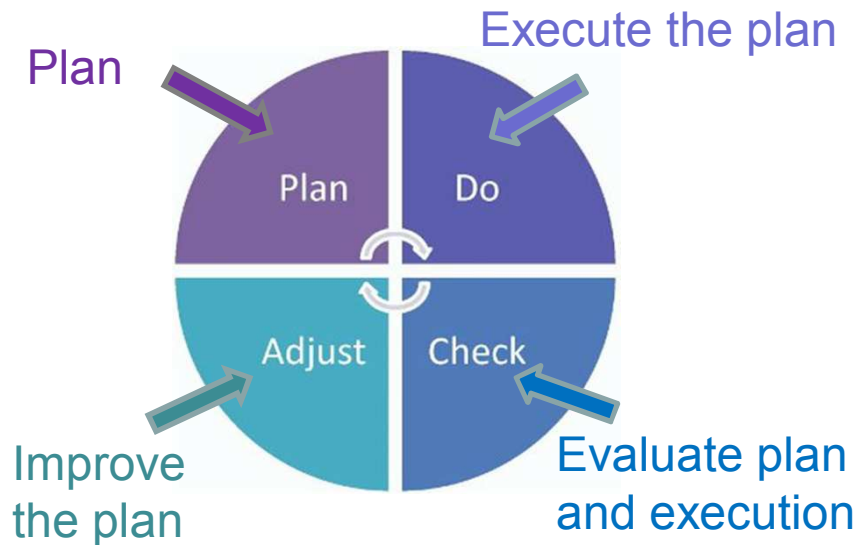


- Need for Maintaining Sustainability
 - *Voluntary nature of transparency undertaking*
 - *Tempting target of cost/human capital cutting*
- Need for Identifying Clear Steps
 - *Many “What” to share discussions but not describing “how”*
 - *Concerns/ benefits should be clearly understood in the stage of planning*

Requirements

would show **clear steps** how to establish a mechanism for **sustainable** information sharing framework (ISF)

Plan, Do, Check, Adjust (PDCA)



The PDCA cycle is a concept

(1) to plan for what you need to do for your products and processes to achieve the goal, then

(2) to execute the plan,

(3) to check the results to the effectiveness of your plan and execution

(4) to take actions on the non-conformances.

“Planning” is the basis for the cycle

PDCA cycle:

'systematic', 'comprehensive', 'consistent' and 'continuously improved'.

As the cycle repeats, the performance will continuously improved which ensures the sustainability of the system

Plan : Develop a plan by defining essential features of ISF (Requirements Elements) for each category of information.



Requirements elements are;

1. Objective
2. Audience
3. Scope
4. Content
5. Security and Credibility
6. Infrastructure
7. Sustainability

“Do, Check, and Adjust” should be included in the plan so that the ISF implementation can automatically follow the PDCA cycle

Do: Demonstrate the ISF as defined in the plan



Establish the infrastructure and share information among partners along with the plan;

- Upload information to the Plone site
- Hold face-to-face meetings for sharing information, tele-conference etc.

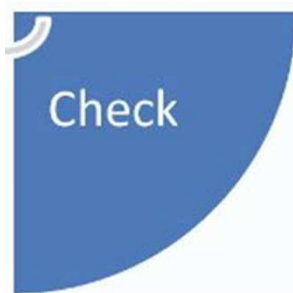




2. Requirements Development for ISF – Primary Requirements



Check: Evaluate the effectiveness, activeness, usability, etc. of the “Plan” and “Do”



- Evaluate the demonstration of ISF ex)
- At annual face-to-face workshop
- Self assessment among partners
 - Peer review by observers



2. Requirements Development for ISF – Primary Requirements



Adjust: Reflect on the findings from the “Check” to the “Plan” steps to encourage continuous improvement

- The information content was viable to achieve your objective?
Yes⇒Continue sharing, Updating the information
No⇒Stop sharing it, find other areas of information
- Communication tool was effective and efficient?
Yes⇒Keep the way
No⇒Improve the infrastructure
- Is there any other stakeholders to become our partners?
Yes⇒Invite them to the ISF
- Is there any other interested areas of information to share?
Yes⇒Add them to the ISF



⇒Reflect these findings to the Plan (Adjust→Plan)
⇒Demonstration based on the Revised Plan (Do)
⇒Evaluate the demonstration(Check)⇒... PDCA cycle