



Development of Regional Collaboration and Secure Data Communication for Nuclear Nonproliferation

First Meeting of the Asia-Pacific Network (APSN)

Denpasar, Indonesia

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Apologies to any who are not listed



Outline

- Background
- Accomplishments
- Lessons Learned
- Summary





Background

Role of Regional Collaboration

A voluntary activity conducted between two or more States,

- it supplements but does not replace or obstruct IAEA safeguards agreements,
- increases understanding,
- provides transparency, and
- builds confidence among the participants as to the peaceful nature of their nuclear activities.



Background

History

JAEA's main efforts in regional collaboration:

- Cooperation focus –
 - Korea Institute for Nuclear Nonproliferation and Control (KINAC) - JAEA Collaboration
 - Hosting and participating in related activities
- Technology focus -
 - U.S. Department of Energy (DOE) and Japan Atomic Energy Agency (JAEA) cooperation agreement action sheet
 - Partnership with Sandia National Laboratories
 - Use of technology to enable collaboration activities



Accomplishments

- Regional Collaborations
- Workshops & Meetings
- Technology Demonstrations
- Web Portal





Accomplishments

JAEA – KINAC Collaboration (2006 – present)

- Informal collaboration
 - Several team meetings
 - Joint technical meetings





Accomplishments

U.S. DOE/JAEA Action Sheet

- “Development of Regional Collaboration, Transparency and Secure Data Communication for Nuclear Nonproliferation and Transparency”
 - Partnership with Sandia National Laboratories (SNL)
 - Develop a regional collaboration and transparency program
 - Investigate and demonstrate secure data communications technologies
 - Evaluate effectiveness
- Initiated on June 14, 2004, completed in 2010



Accomplishments

JAEA – KINAC Joint Technical Meeting

- 18 – 19 February 2009 Daejeon, Korea
- JAEA, KINAC, DOE/SNL
- “1st Joint Technical Meeting on Regional Cooperative Nuclear Nonproliferation Transparency”
 - Collaboration building strategies
 - Collaboration scope
 - Shared goals
 - Outreach
 - Engaging young professionals
 - Site tours
 - Enabling technologies
 - Remote monitoring
 - Data sharing





Accomplishments

JAEA – KINAC Technical Information Exchange

- 14 January 2010, Daejeon, Korea
- JAEA, KINAC
- “Technical Information Exchange” of Remote Monitoring Technologies
 - KINAC demonstration of remote monitoring for LWR/PWR safeguards
 - JAEA Joyo remote camera demonstration



Accomplishments

Int'l Workshop on Transparency Technology

- JAEA & Tokyo University, February 2008
- Japan, US, ROK, Indonesia, Vietnam, Australia, IAEA
- Transparency, regional cooperation, technology demonstrations
- Student and young professional involvement





Accomplishments

Technology Demonstrations

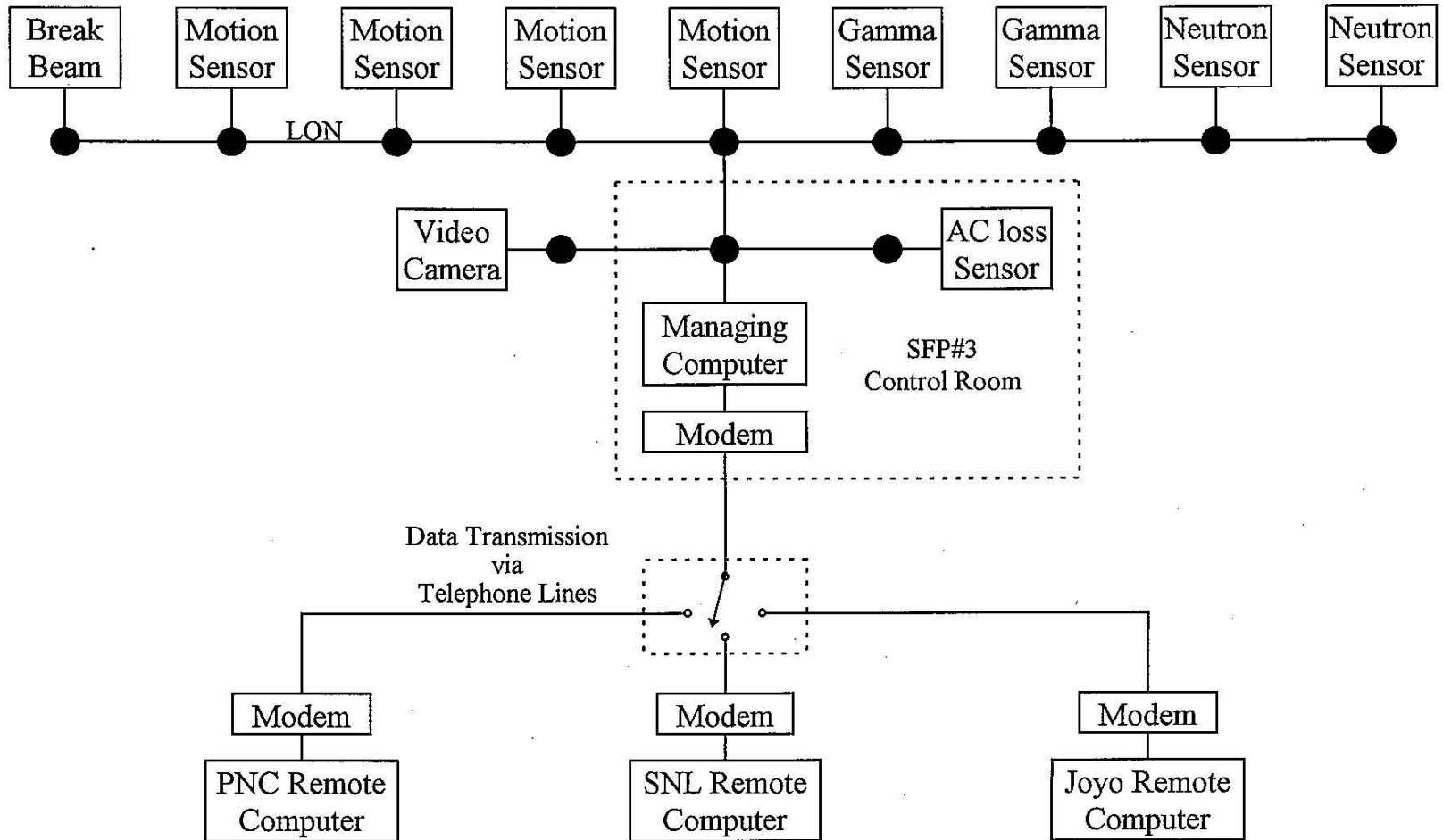
JAEA-USDOE/SNL

- Addressed and evolved many technical issues, especially information security
 - Security issues, i.e.,
 - Authentication and encryption
 - Specific IP address access
- Technologies and information security evolved with the times
 - Modems → Internet → VPN
 - Cameras: B&W → high resolution color
 - System configuration issues
 - Reliability
 - Usability
 - Sustainability



Accomplishments

Technology Demonstration - I

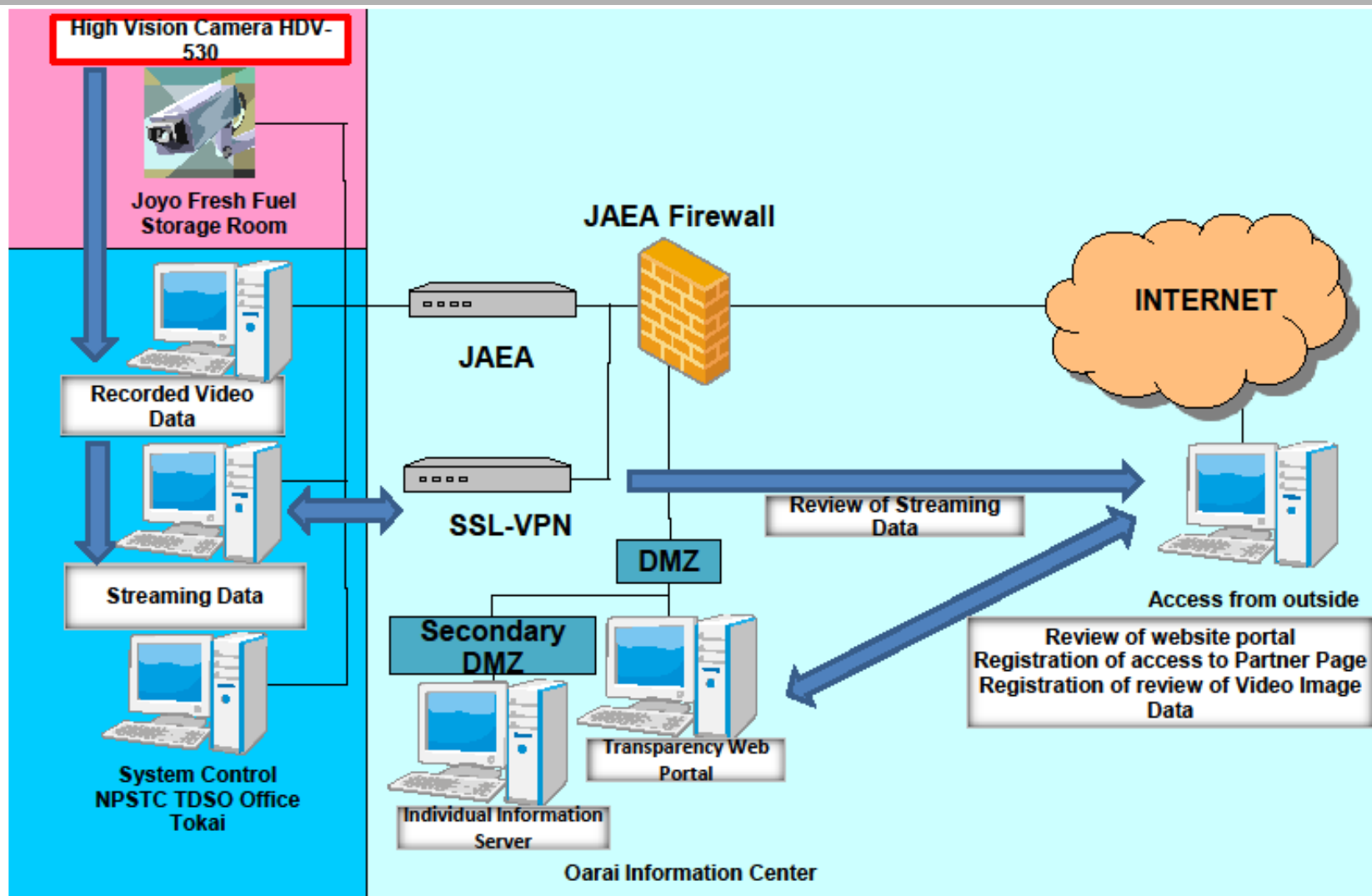


Joyo Remote Monitoring & Secure Communications (Spent Fuel Pond #3)



Accomplishments

Technology Demonstration IV

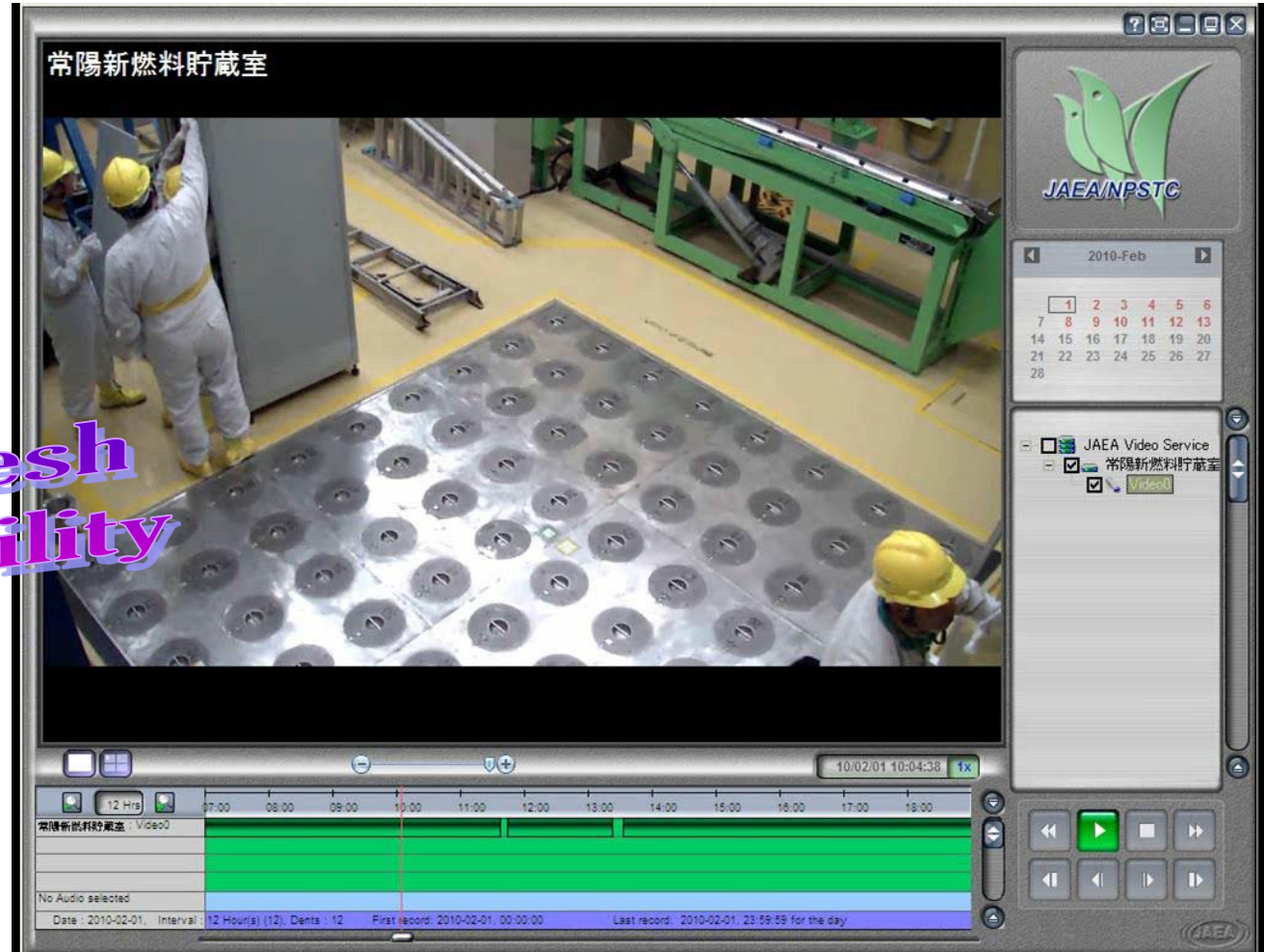




Accomplishments

Technology Demonstration - IV

Joyo Fresh
Fuel Facility



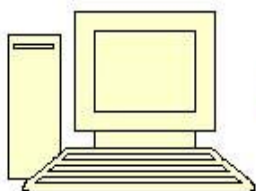
Remote Camera View and Control Panel



Accomplishments

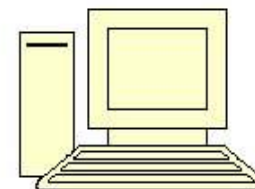
Generalized Network Scheme

KINAC: KAERI
ACPF Data

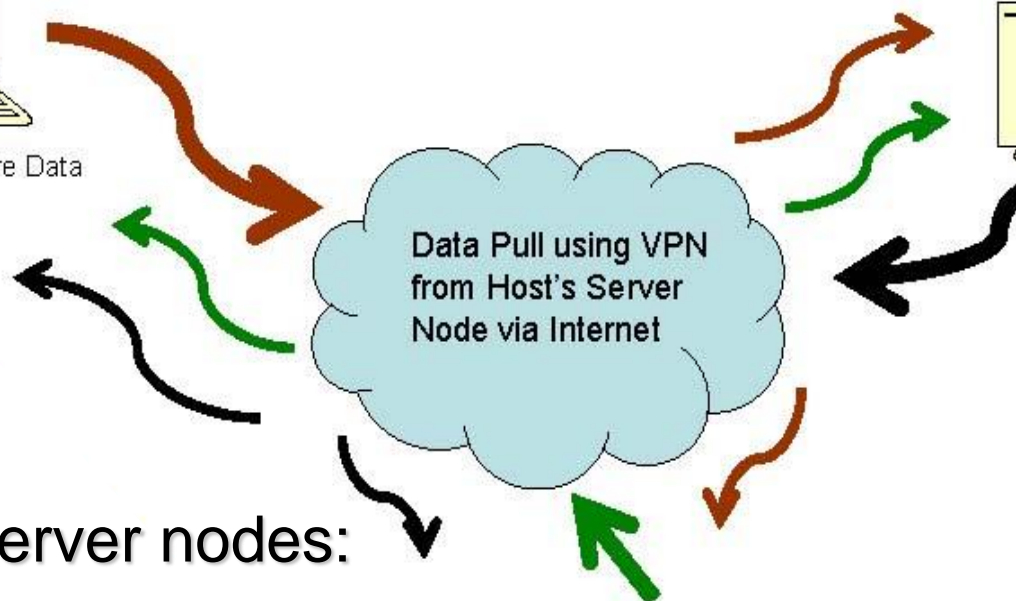


Host Node, Secure Data Server, VPN

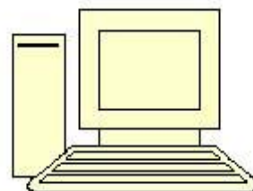
JAEA: Joyo
FFR Data



Host Node, Secure Data Server, VPN



SNL: INL Data



Host Node, Secure Data Server, VPN

Network of server nodes:

- Secure data, VPN access
- Post your own data
- Invite partners

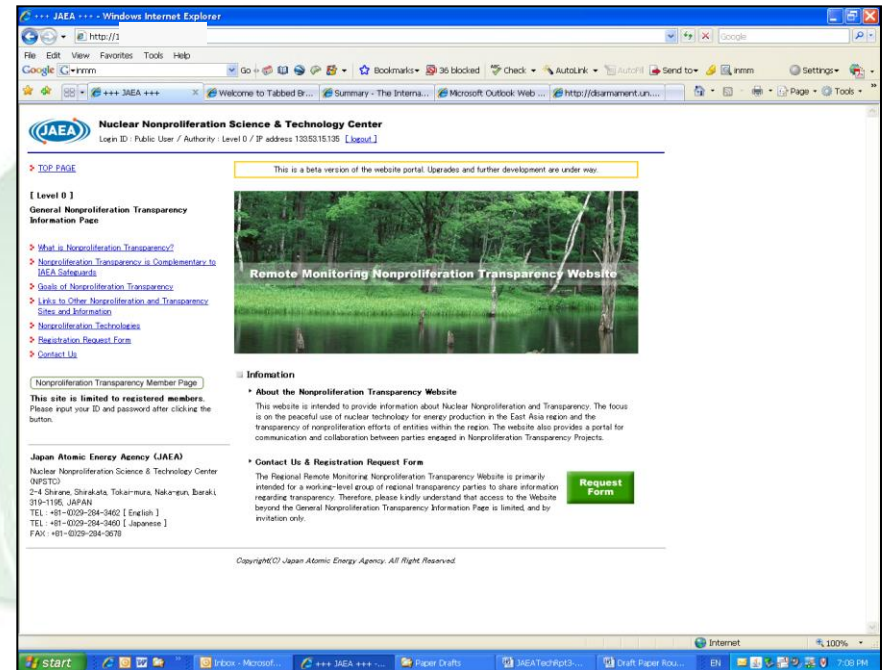


Accomplishments

Web Portal Prototype

- Established Spring 2007
- Designed to:
 - Promote regional cooperation in East Asia
 - Highlight regional nonproliferation efforts
 - Facilitate communication exchange, report sharing, and collaborations

<http://np-transparency.jaea.go.jp/>



General access level &
Secure, members only levels

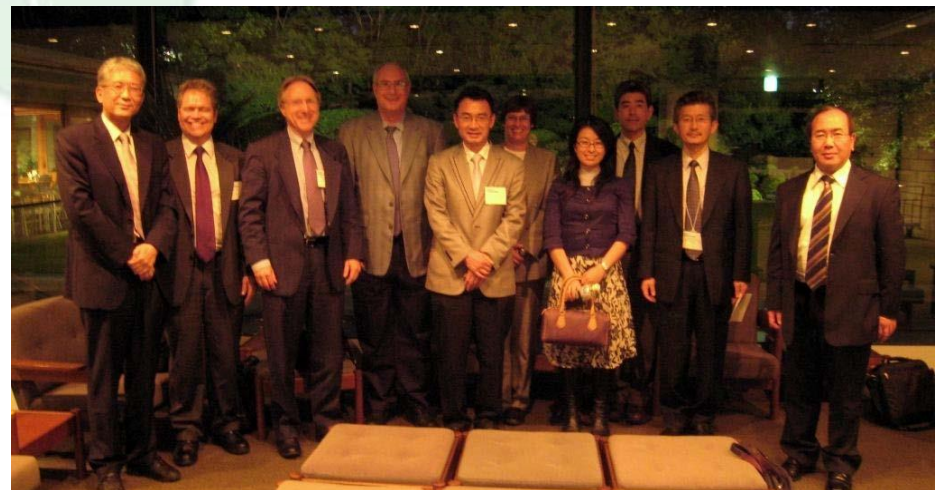




Lessons Learned

Regional Collaboration

- Establish goals of the relationship
- Define terms of exchange
- Interact frequently
- Coordinate at the proper levels
- Jointly develop projects
- Use technology to enable interactions and information exchange
- Maintain transparency with key stakeholders, e.g., IAEA



Lessons Learned

Sharing Information

- Clearly define terms of reference: e.g., what is transparency, confidence building, collaboration?
- Identify information to share and not share
- Communication and security tools can enable information sharing and preserve its integrity
- Remote access (camera) – increases safety and security, saves time and money





Summary

Regional Collaboration

- Regional Collaborations
 - Are voluntary and supplemental to IAEA safeguards
 - Can increase confidence in IAEA results.
 - Success depends on commitment and regular interaction
- The US-JAEA and KINAC collaborations successfully
 - Progressed regional collaboration principles and practices, and
 - Demonstrated secure communication and remote monitoring as enabling technologies.
- Technical platforms are useful for information exchange: sharing data, training, etc., but they must be carefully specified and used.