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Next Generation Remote Monitoring Systems Program Development of the Secure Sensor Platform for International Safeguards

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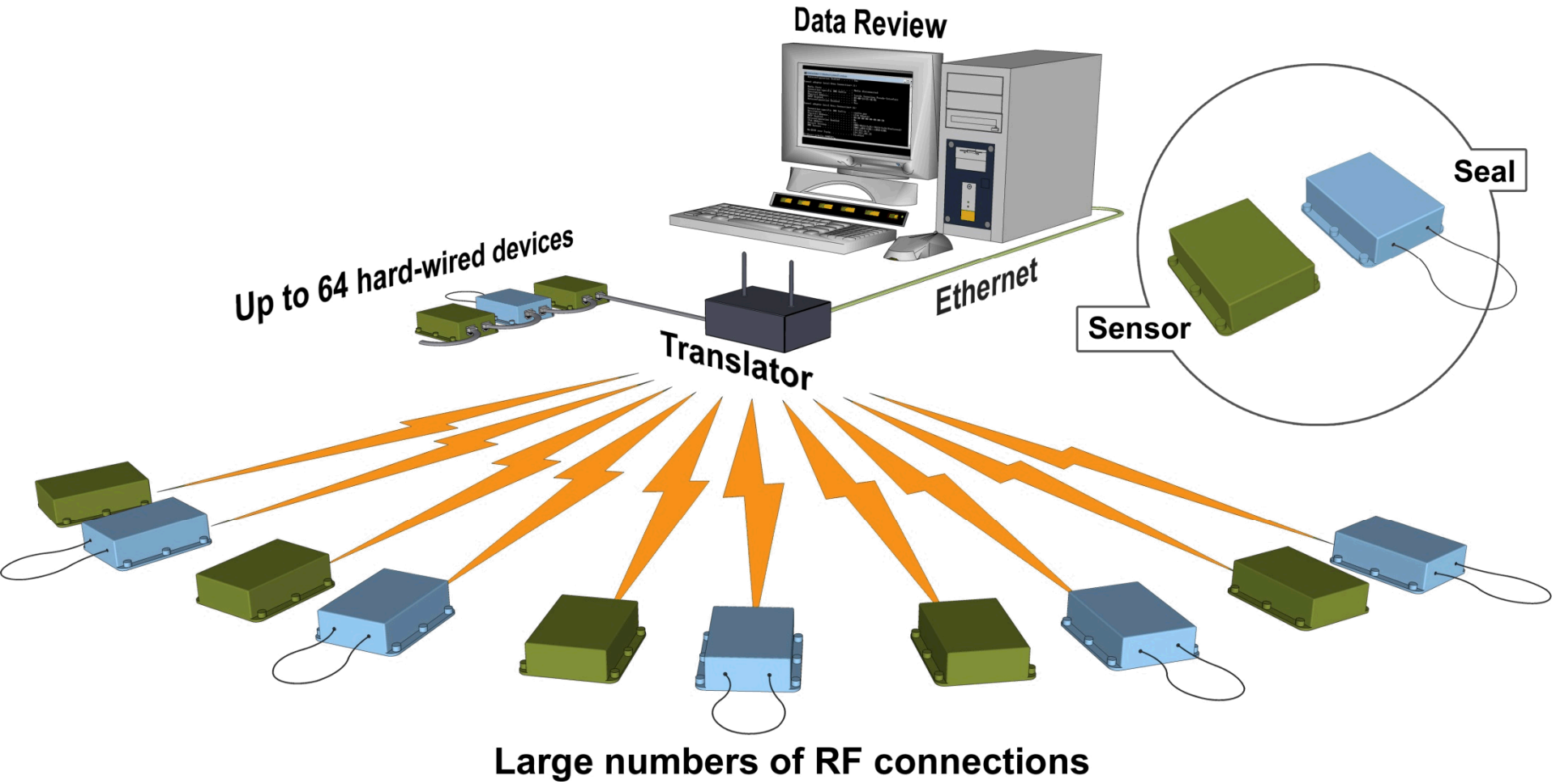
Goals of this Presentation

- Provide a high level understanding of the SSP technology
- Briefly discuss a specific application of SSP technology
- Briefly discuss future goals for SSP technology

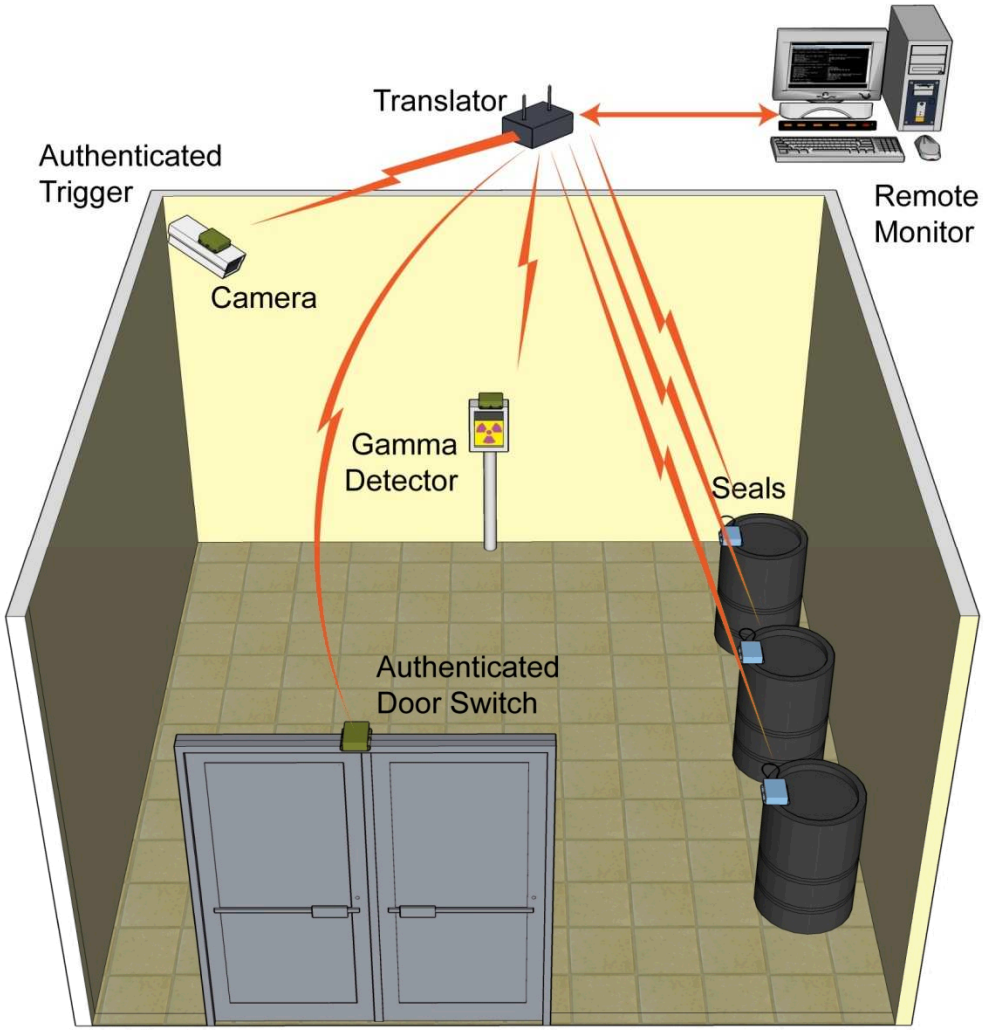
Secure Sensor Platform (SSP) - A Definition

- The SSP is a technology structure that provides for common security, communication, and cryptography capabilities.
- These capabilities are designed to be versatile for monitoring a wide variety of sensors on an application specific platform which provides secure collection and reporting of sensor data.

SSP – System Perspective



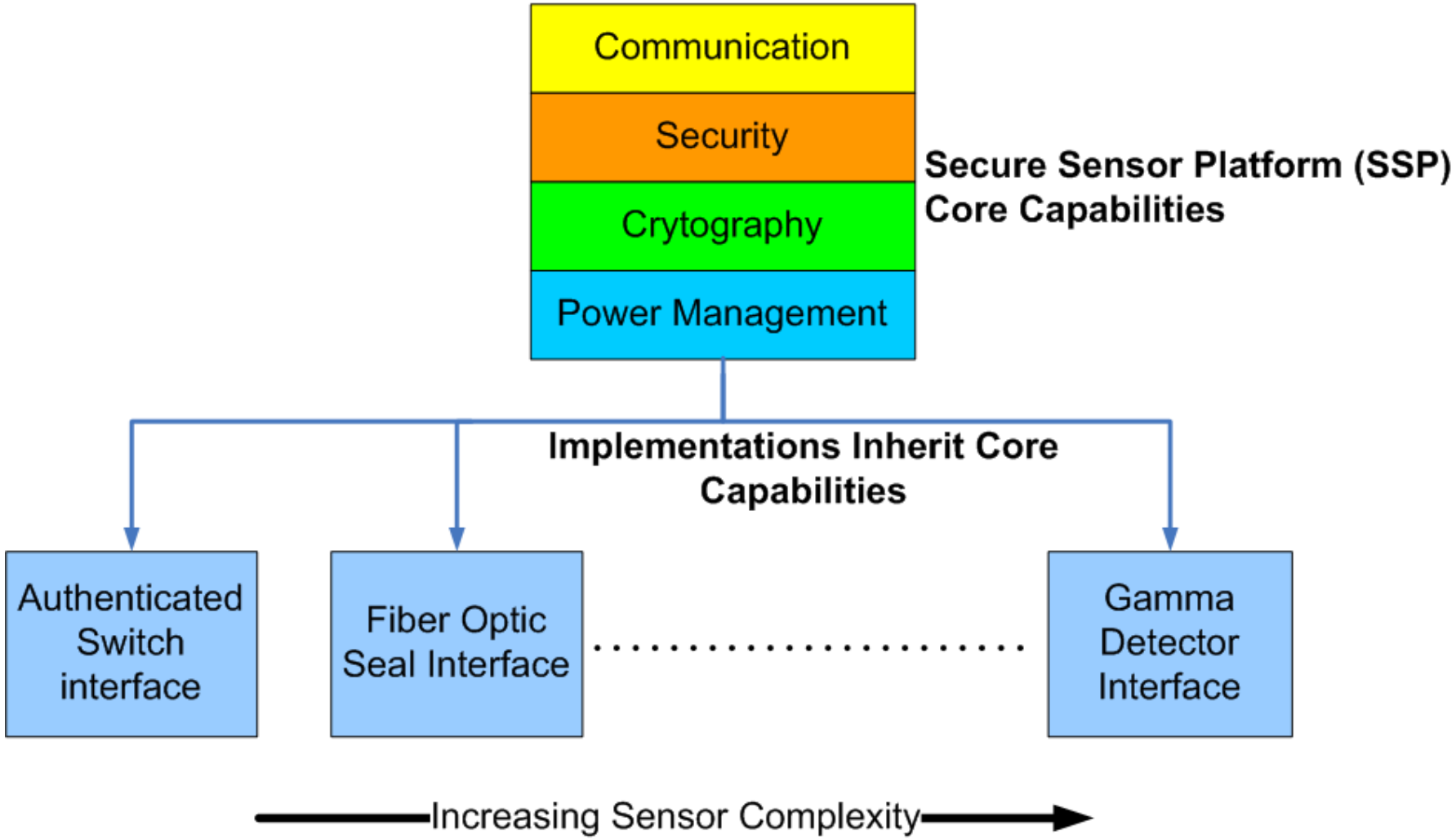
SSP Based Deployment



SSP - Core Capabilities

- Communications
  - Sensor protocol stack that supports hardwire and RF
  - Versatile data representation
- Security
  - Active/passive/intrinsic tamper with crypto key protection for sensors
  - Time variants and strict message format
- Cryptography
  - Authentication and encryption based upon NIST standards
- Sensor Power Management
  - MCU and peripheral sleep
  - Multiplexed sensors
  - High energy density battery technologies
  - Wake on radio features

SSP Capability and Implementation Relation Diagram for Sensors



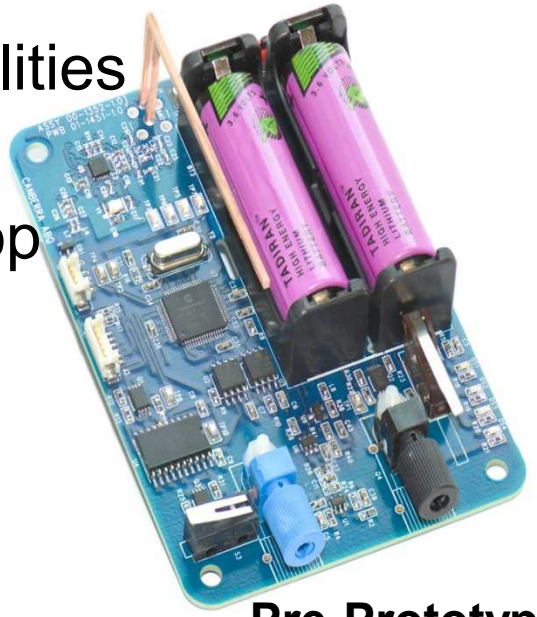
SSP Concept Advantages

- Shorten design cycle for new sensor types
- Easily add new data types
- Interoperability of SSP based sensors
- Common components
- Vulnerability assessments can be shortened
- Interface options – Hardwire or low-power RF
- Cost effective security implementations

Example SSP Application

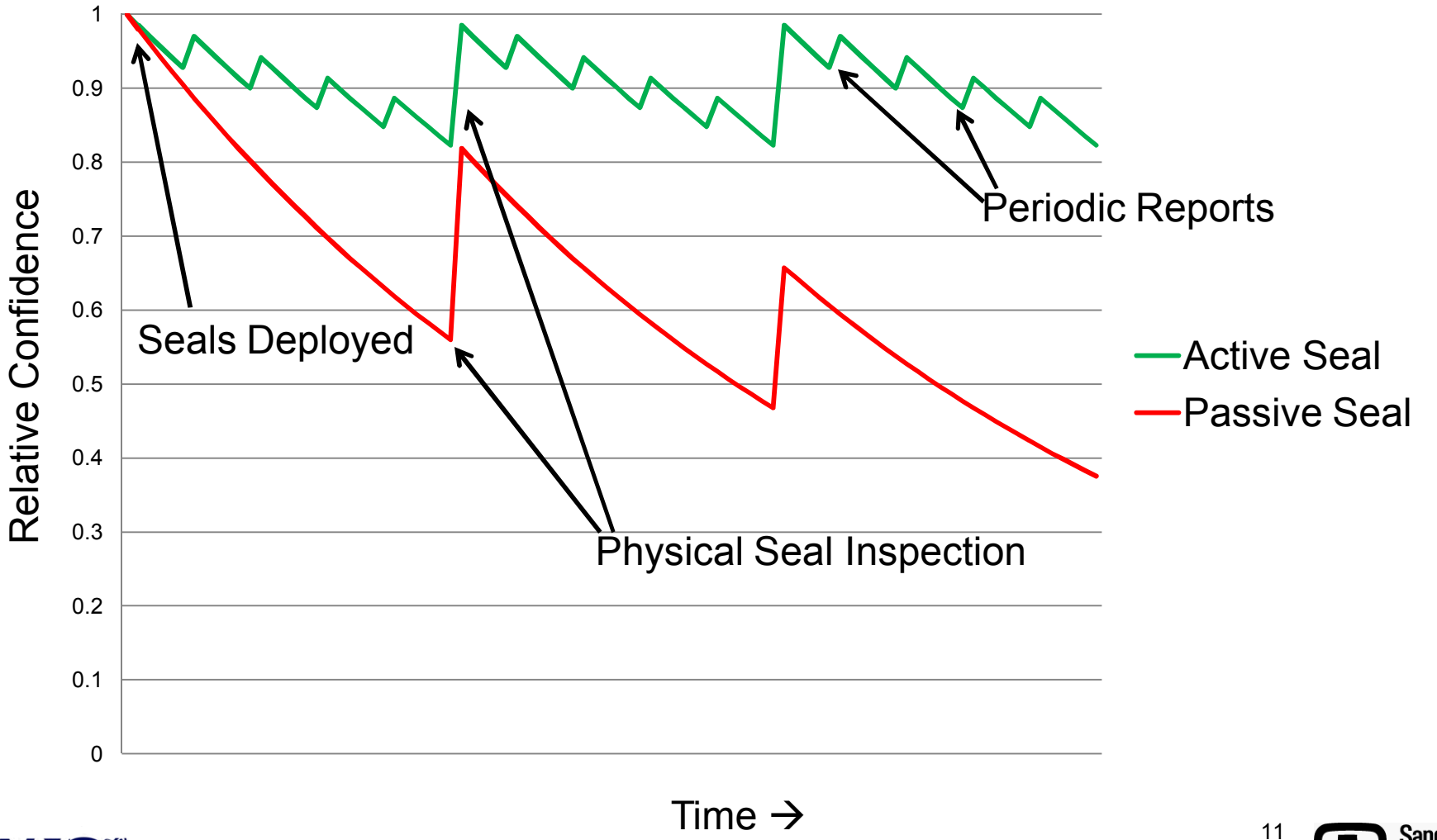
Remotely Monitored Sealing Array

- Provides all of the SSP core capabilities
- Fiber optic seal sensor
- Up to 50 meter length of sealing loop
- Low cost seal (low life-cycle costs)
- Up to 4 year battery life
- Fiber can be cut to length
- Parametric fiber monitoring
- RF communication only
- Years of message storage (typical app.)



Pre-Prototype Development Board

Relative Confidence of Integrity Active vs. Passive Seal



Future Goals of the SSP Project

- Stronger cryptography and reduced key management loads,
- Higher confidence of detection of tamper while still maintaining low cost for wide deployment,
- Longer autonomous operation,
- More sensor technologies supported by the SSP concept, and
- More user interfaces to provide choices for monitoring and review platforms.