ICCC-7

“Systematic Application of the Common Criteria Methodology to Evaluation of IT Products and Systems Used in Automated Physical Protection Systems”

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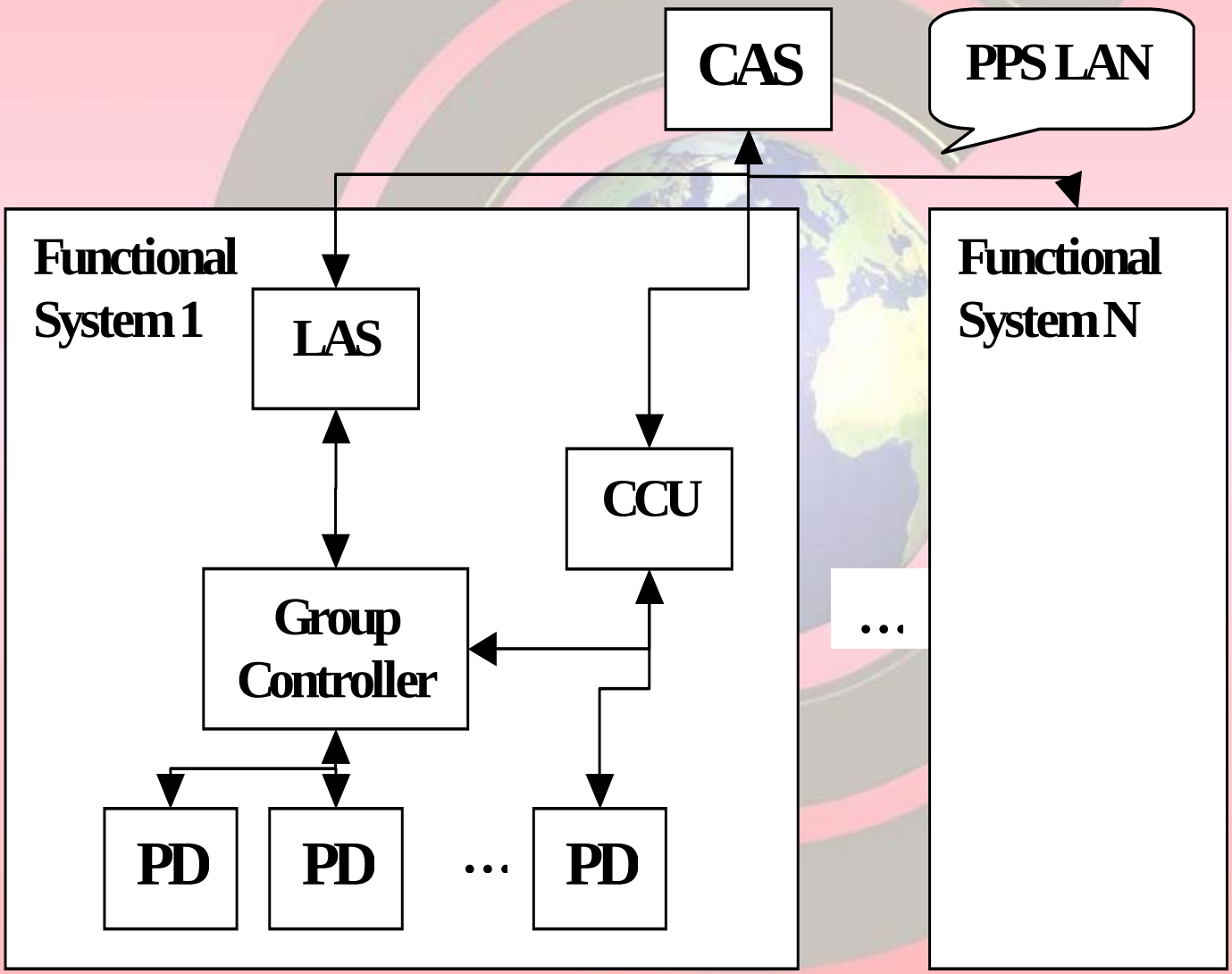
Content of the presentation

- Physical protection system (PPS) background
- IT security problems for Automated Physical Protection Systems (APPS)
- Technical regulations and certification of IT products
- Advantages of the Common Criteria methodology
- Development of protection profiles for APPS
- Current status and future plans

Physical Protection System Background

- Integrated sets of physical protection equipment are the basis for a PPS
- Hardware, software and firmware form a special class of IT products that may be used in an APPS
- Most Commonly Used Functional Subsystems:
  - Alarm Systems (AS)
  - Access Control Systems (ACS)
  - Video Surveillance Systems (VSS)
- Systems combining the requirements set for two or more subsystems = integrated systems (IS)
- Central alarm stations (CAS) and local/ secondary alarm stations (LAS/SAS)

Structure of an Integrated APPS System



Access Control System

- **An ACS structure in particular includes:**
  - **Access blocking equipment (booths, turnstiles, etc.) installed at the access control points**
  - **Equipment for input of identification attributes (readers, keypads, biometric scanners, etc.)**
  - **Peripheral devices (PD)**
  - **Controllers and Group Controllers**
  - **Central control units (CCU)**
  - **Workstations of operators and administrators**
  - **Database servers**
  - **Badge printing workstations**

Personnel having contact with ACS

- **The following personnel may be considered as having contact with ACS:**
  - **Nuclear site personnel, physical protection personnel or visiting specialists (ACS users)**
  - **ACS operators**
  - **ACS administrators**
  - **ACS security administrator**
- **Various categories of personnel have different authorization for access to secure areas and information**
- **ACS users do not have contact with workstations, servers and group controllers**
- **ACS operators, administrators and security administrator have access to sensitive information and systems**

The IT Security Problem for an APPS

- Primary factors related to APPS information security:
  - Information assets of the APPS
  - List of assumed threats to the information assets
  - Potential threat agent model
  - Location, condition of use and potential accessibility of the APPS information assets
- Protected, Internal, Vital and Limited Access Areas of PPS for a nuclear site
- Security problems for APPS and the extent of APPS integration
- Unauthorized disclosure or modification of information and denial of access

Technical Regulations

- Development of technical regulations must consider:
  - Up-to-date technical requirements
  - APPS development lifecycle
- Current Russian regulatory documents are incomplete and based on an out-of-date methodology
- Late 90's APPS information security requirements did not take into account categorization or new approaches of the CC
- Categorization of Access Control Systems
  - Autonomous
  - Centralized (networked)
  - Universal

Certification of IT products

- IT products used in APPS must be certified to meet IT security requirements
- Software of some ACS has been certified within the framework of the Russian certification system
  - Zirconi-M, Eleron enterprise, Russia
  - ASSaD-32 Software, Algont Ltd, Russia
  - Advantage Suite for Networks (ASN), “Advantor” Corp.
- Globalization of IT based products results in need to develop new regulatory documents based on international standards

Advantages of the Common Criteria

- Advantages of the CC Approach:
  - Requirements are defined for specific products or systems
  - Rationale for requirements explicitly identified
  - Justification of requirements in PP's and ST's support their selection
  - Requirements do not require additional interpretation
  - Mandatory independent evaluation of PP's and ST's increases their level of correctness
- Flexibility of the CC structure gives opportunity to replace the current IT requirements with PP's
- Use of PP's for APPS in different countries will facilitate better understanding of consumer's needs by developers

Development of PP's for APPS

- **Factors for characterizing the family of PP's include:**
  - **Functionality of the Physical Protection subsystems**
  - **Architecture of APPS (*Autonomous, Centralized, Universal*)**
  - **Zoning of PPS (*Protected, Internal, Vital Areas*)**
  - **Security level, and**
  - **Level of integration**

Conceptual Approach

- Systematic, top-down analysis
- Identification of:
  - Information assets
  - Threats (agent, method & attack Path) directed toward the Information assets
  - Vulnerabilities of assets to threats
  - Countermeasures to counter threats
- Hierarchical decomposition
  - System protection profile
  - Subsystem protection profiles
  - Component protection profiles

Initial Protection Profile Development

- ACS is first PP subsystem selected for protection profile development
  - Most common subsystem
  - Relatively more complex
  - Functionality can be expanded
- Scope of this protection profile includes logical IT security functions for software of LAN nodes and other devices
- Security functions of general purpose SW (OS, DBMS, etc.) may be used to implement security functions in application programs and firmware
- Security target must map between the statement of security function requirements in the protection profile and implementation of those functions in the product

Summary

- IT security requirements should be based on application of Common Criteria
- Family of PP's are defined based on:
  - Analysis of APPS Functional Subsystems
  - APPS IT products
  - Conditions of use and
  - Level of integration
- Initial efforts are focused on developing the ACS protection profile

Future Plans

- Future Plans include:
  - Complete development of PP's, evaluate and certify it and develop the list of additional PP's for use in APPS
  - Develop a system protection profile of an APPS as a whole
  - Evaluate and certify IT products and systems for APPS
- By using CC methodology, these PP's can be recognized and used by interested parties all over the world