SECURE TECHNOLOGY ALLIANCE

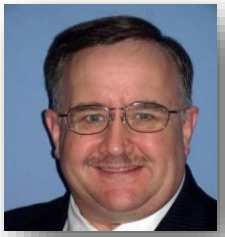
How to Plan, Procure & Deploy a PIV-Enabled PACS

Educational Institute & Access Control Council Webinar Series
Session Three: Establish The Project Scope

Introductions

Randy Vanderhoof, Secure Technology Alliance

Lars Suneborn, Secure Technology Alliance



Michael Kelley, Parsons Corp.

Mark Steffler, Quantum Secure

SECURE TECHNOLOGY ALLIANCE

Who We Are

The Secure Technology Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption and widespread application of secure solutions.

We provide, in a collaborative, member-driven environment, education and information on how smart cards, embedded chip technology, and related hardware and software can be adopted across all markets in the United States.

What We Do

- Bring together stakeholders to effectively collaborate on promoting secure solutions technology and addressing industry challenges
- Publish white papers, webinars, workshops, newsletters, position papers and web content
- Create conferences and events that focus on specific markets and technology
- Offer education programs, training and industry certifications
- Provide networking opportunities for professionals to share ideas and knowledge
- Produce strong industry communications through public relations, web resources and social media

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Our Focus

- Access Control
- Authentication
- Healthcare
- Identity Management
- Internet of Things
- Mobile
- Payments
- Transportation

Member Benefits

- Certification
- Council Participation
- Education
- Industry Outreach
- Networking
- Technology Trends

Access Control Council

… focuses on **accelerating** the widespread **acceptance, use, and application of secure technologies** in various form factors **for physical and logical access control**. The group brings together, in **an open forum**, leading users and technologists **from both the public and private sectors.**

COUNCIL RESOURCES

White Papers

- Commercial Identity Verification (CIV) Credential: Leveraging FIPS 201 and the PIV Card Standards
- A Comparison of PIV, PIV-I and CIV Credentials
- Federal Identity, Credential and Access Management (FICAM) Roadmap and Implementation Guidance Summary
- FIPS 201 and Physical Access Control: An Overview of the Impact of FIPS 201 on Federal Physical Access Control Systems
- FIPS 201 PIV II Card Use with Physical Access Control Systems: Recommendations to Optimize Transaction Time and User Experience
- Guide Specification for Architects and Engineers for Smart Card-based PACS Cards and Readers for Non-government PACS
- Personal Identity Verification Interoperability (PIV-I) for Non-Federal Issuers: Trusted Identities for Citizens across States, Counties, Cities and Businesses
- PIV Card/Reader Challenges with Physical Access Control Systems: A Field Troubleshooting Guide
- Smart Cards and Biometrics
- Strong Authentication Using Smart Card Technology for Logical Access
- Supporting the PIV Application in Mobile Devices with the UICC

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National Center for Advanced Payment and Identity Security

National Center for Advanced Payments and Identity Security

- **National Center for Advanced Payments and Identity Security** in Crystal City
- **Secure Technology Alliance Educational Institute** is part of the center.
- **Certifications Available**
  - **CSCIP**
  - **CSCIP/Payments**
  - **CSCIP/G**
  - **CSEIP**

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"Physical access controls systems, which include, for example, servers, databases, workstations and network appliances in either shared or isolated networks, are considered information systems." *OMB A-130, 2016*

Recap of Sessions 1 and 2

Session 1 was originally presented on 19 Oct 2017

- Webinar series introduction - How to Plan, Procure & Deploy a PIV-Enabled PACS
- Project stakeholders

Session 2 was originally presented on 30 Nov 2017

- Characterization of the facility
- Identification of risk to the facility and personnel

Both sessions can be viewed on demand at:
www.securetechnologyalliance.org/

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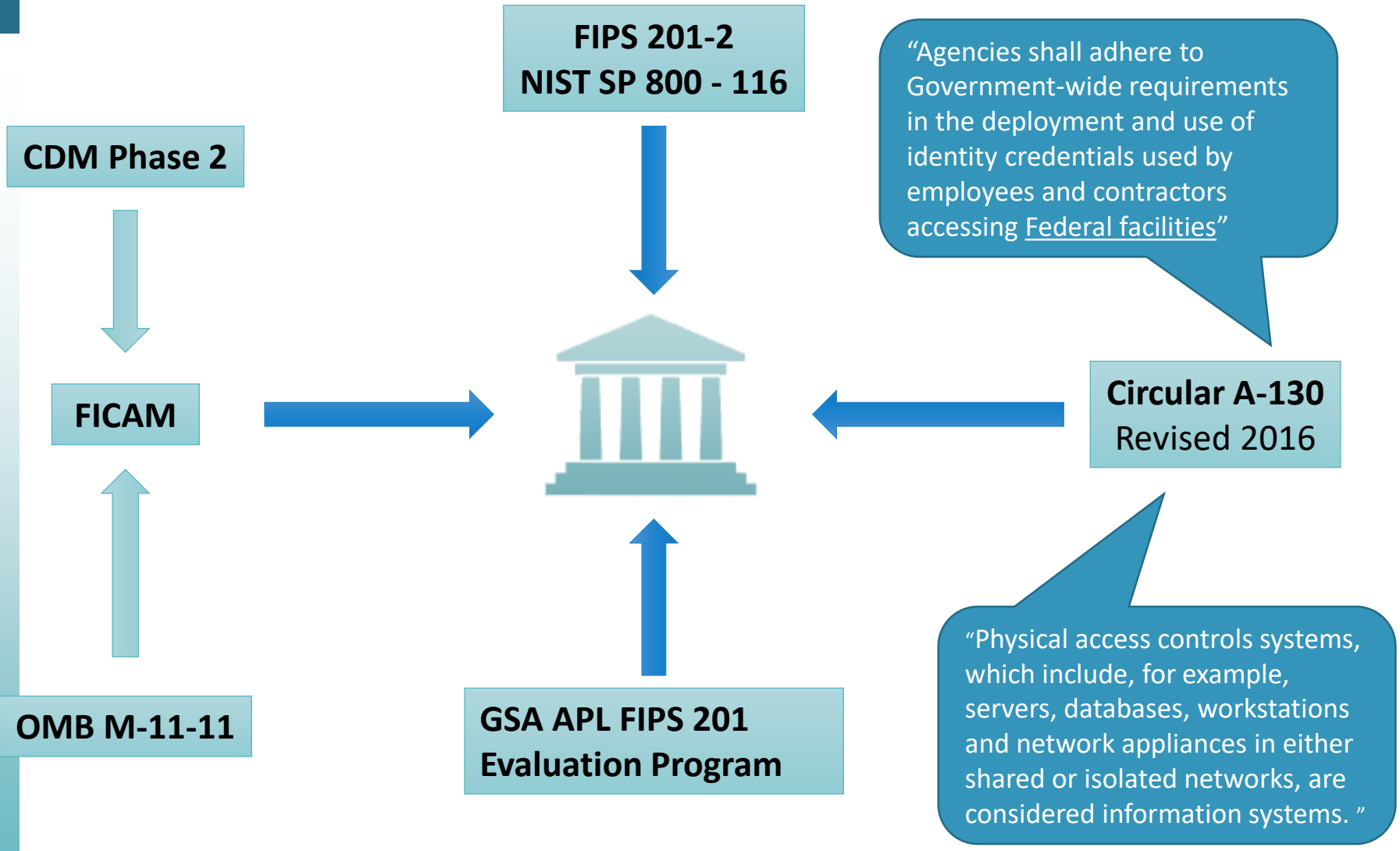
Session 3 Agenda: Developing Project Scope

- Capturing the context of the project
- Exploring the government's regulatory landscape
- Developing a solution for your Agency's needs
- Identifying overall solution provider qualifications
- Qualifying approved products

Identifying Government Regulatory Framework



PIV Authentication Mechanisms

- Defined in FIPS 201-2 Section 6.2
  - Cardholder Unique Identifier (CHUID) / Visual (VIS)
  - Card Authentication Certificate Credential (PKI-CAK)
  - Symmetric Card Authentication Key (SYM-CAK)
  - Unattended PIV Biometric (BIO)
  - Attended PIV Biometric (BIO-A)
  - On-Card Biometric Comparison (OCC-AUTH)
  - PIV Authentication Certificate (PKI-AUTH)

- Varying degrees of threat protection from SP800-116:
  - Identifier collisions
  - Terminated cards
  - Visual counterfeiting
  - Skimming
  - Sniffing
  - Electronic Cloning
  - Electronic counterfeiting

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PIV Assurance Levels OMB M 04-04 E- Authentication

1. Little or no confidence
2. Some confidence
3. High confidence
4. Very high confidence

Assurance Level	PIV Authentication Mechanism
Little or no confidence	VIS, CHUID
Some confidence	PKI-CAK, SYM-CAK
High confidence	BIO
Very high confidence	BIO-A, OCC-AUTH, PKI-AUTH

Factors of Authentication

Authentication Mechanism	Have	Know	Are	Number of Factors
CHUID & VIS [1]	♦			1
PKI-CAK	♦			1
SYM-CAK	♦			1
BIO			♦	1
BIO-A	♦		♦	2
OCC-AUTH	♦		♦	2
PKI-AUTH	♦	♦ [2]	♦ [3]	2
PKI-AUTH & BIO(-A)	♦	♦	♦	3
PKI-CAK & BIO(-A)	♦	♦	♦	3

[1] Use has been deprecated

[2] If the PIN is used to satisfy the security condition for use

[3] If OCC is used to satisfy the security condition for use

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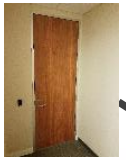

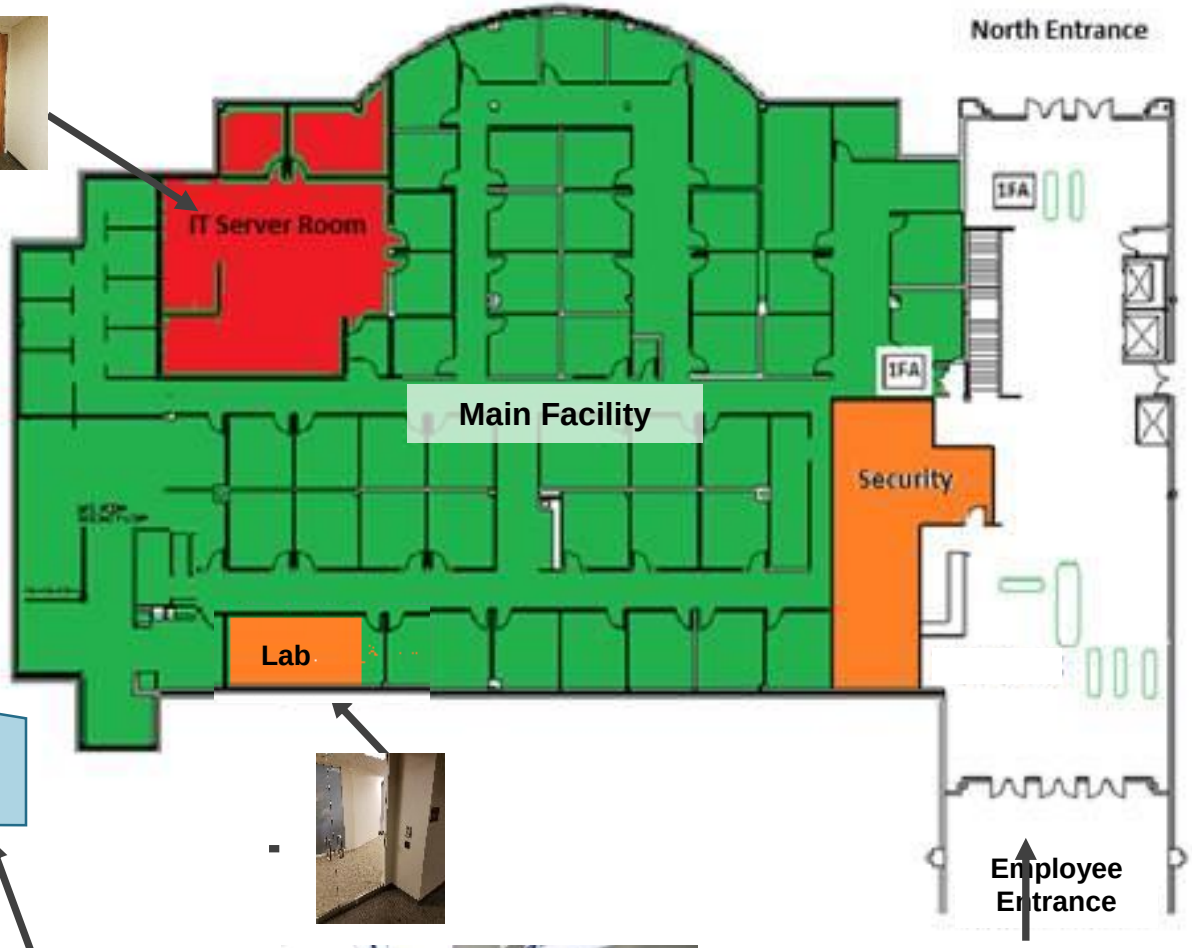
North Entrance
IT Server Room
1FA
1FA
Main Facility
Security
Lab
Parking Garage
Employee Entrance

PIV Authentication Mechanism Selection

Risk Level	Number of Authentication Factors
Controlled	1
Limited	2
Exclusion	3

- Other Selection Factors
  - Assurance level
  - Availability
  - Authentication speed

Topology, Infrastructure, Validation System & Readers

PACS Infrastructure

- PACS Application and Server(s)
- Database and Server
- Controllers
- Workstations

PACS Validation System

- Secure Controllers
- PKI Validation Software
- PKI Registration Software
- CRLs/OCSP Responders
- SCVP Server
- Caching Status Proxy Server (deprecated)

PACS PIV Reader

- Number of authentication factors
- Contact or contactless interface
- User feedback
- Keypad and biometric sensors

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"**PACS modernization** involves integrating PACS at the enterprise level, which helps an agency achieve cost savings and efficiencies while preserving local access control decisions.

Modernized PACS leverage user identity and credential data from authoritative sources and are supported by enterprise resource, privilege, and policy management processes."

-- CIO Council, *FICAM Roadmap PACS Brochure*

FICAM Insists that Logical and Physical Access Control Follow the Same Paradigm

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Modernizing Federal Physical Access Control Systems (PACS)

ONE SOURCE - ONE AUTHORITY · INTERAGENCY SECURITY COMMITTEE

Implementation of Enterprise PACS

PACS modernization involves integrating PACS at the enterprise level, which helps an agency achieve cost savings and efficiencies while preserving local access control decisions. Modernized PACS leverage user identity and credential data from authoritative sources and are supported by enterprise resource, privilege, and policy management processes. PACS modernization also includes use of the PIV card in order to gain physical access to a federally controlled facility, in accordance with HSPD-12.

Identity Management

PACS user accounts are provisioned from authoritative sources as part of the overall identity lifecycle management process.

Credential Management

PIV · PIV-I · Other accepted credentials

Modernized PACS are designed to electronically validate and interoperate with employee and visitor credentials.

Physical Access Control Systems

PACS can be used to control both routine employee and visitor access to federal campuses, facilities, and controlled interior areas.

Resource Management

- Facilities
- Data
- Systems
- Applications

Privilege Management

- Roles
- Entitlement Attributes

Policy Management

- Rules
- Transaction Context

Benefits of PACS Modernization

The design characteristics of a modernized PACS solution offer agencies a wide variety of benefits and increased efficiencies, as described below.

Increases security and privacy at your facility	• Utilizes stronger technology to validate cardholders • Electronic verification provides reliable information to assist the guard force in making access decisions
Reduces costs and increases efficiency	• Agency-wide approach eliminates redundant processes and investments • Enterprise integration enables reduced manual efforts
Promotes trust and interoperability	• Supports acceptance of PIV, PIV-I, and other trusted external credentials • User privileges can be shared across agency locations and with trusted external sites
Improves overall support for ICAM implementation	• Feeds user information from agency-wide identity sources • Enables sharing of access control log information with security monitoring tools • Shares data (as needed and permissible) with credentialing system

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Modernizing Federal Logical Access Control Systems (LACS)

Implementation of Enterprise LACS

LACS modernization involves integrating an agency's IT resources at the enterprise level, to control access in a streamlined and consistent manner. A modernized LACS standardizes on use of the PIV credential as the common means of validating the identity of a user and granting access to networks and information systems, in accordance with federal policies.

Identity Management

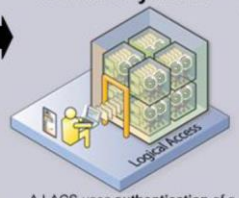
User accounts are provisioned from authoritative sources as part of the overall identity lifecycle management process.

Credential Management

PIV card · PIN · Biometric

Modernized LACS are designed to electronically validate an individual using the PIV card and entry of a PIN and/or biometric.

Logical Access Control Systems



A LACS uses **authentication** of a user's identity to make an **authorization** decision to grant or deny the user access to one or more computer system resources.

Resource Management

- Data
- Systems
- Applications

Privilege Management

- Roles
- Entitlement Attributes

Policy Management

- Rules
- Transaction Context

Benefits of LACS Modernization

A modernized LACS solution offers agencies a wide variety of benefits and increased efficiencies, as described below.

Improved Security. Provides high assurance of user identity and strong authentication for users accessing agency resources. Securely authenticates remote users while leveraging existing infrastructure.

Reduced Administrative Burden and Cost. Requires less effort on the part of resource owners and administrators to manage user accounts and access privileges, resulting in lower life-cycle costs.

Increased Compliance. Enables detection and remediation of conflicting access privileges within and across resources (e.g., segregation of duties).

Increased Customer Satisfaction and Convenience. Provides consumers ease of use with the ability to access multiple applications using a single credential.

Support for Encryption/Digital Signature Services. Supports additional security functionality to encrypt and digitally sign data using the PIV card.

Key Target State Metrics

1 digital identity per user

100% of employees and contractors have PIV credentials

100% of applications are accessible to employees and contractors using PIV cards

100% of externally-facing applications are enabled to accept third-party credentials

100% of applications are integrated with an automated provisioning workflow

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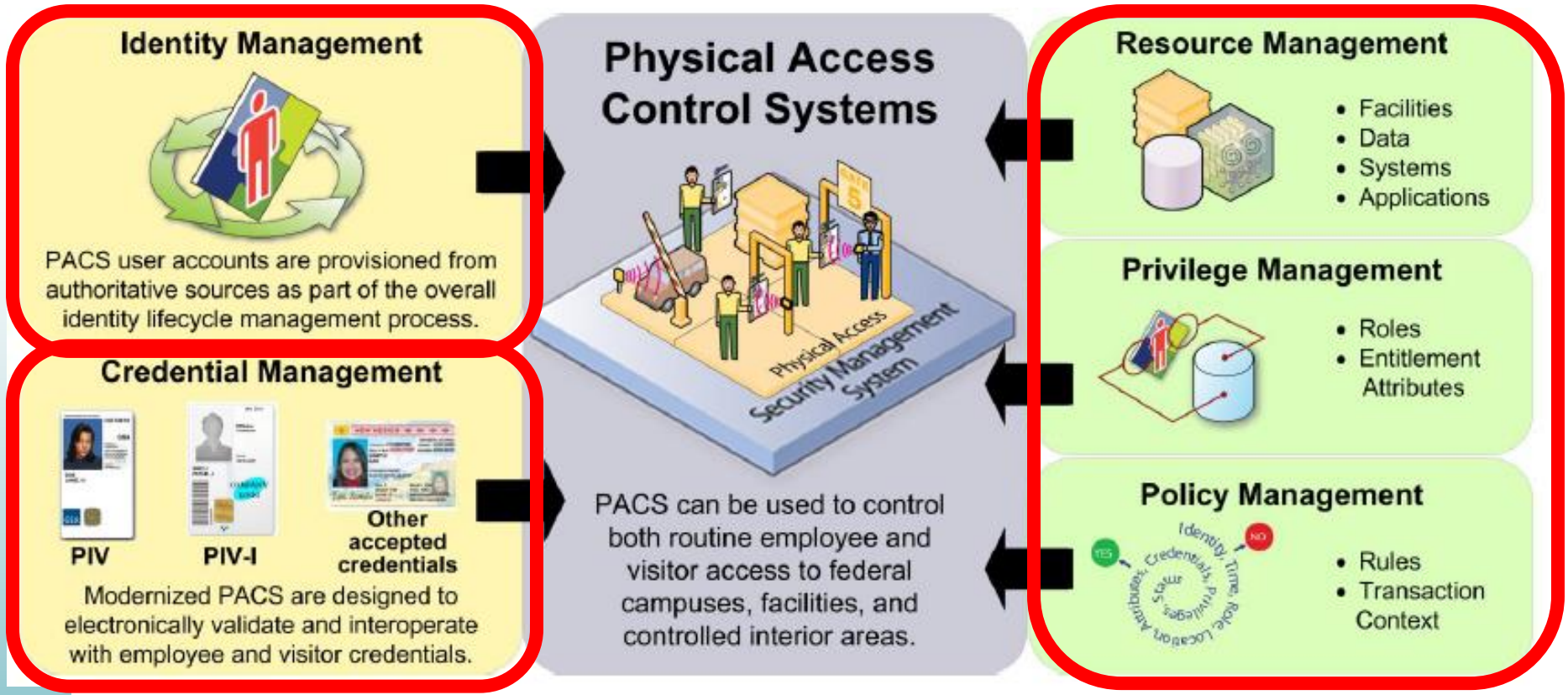
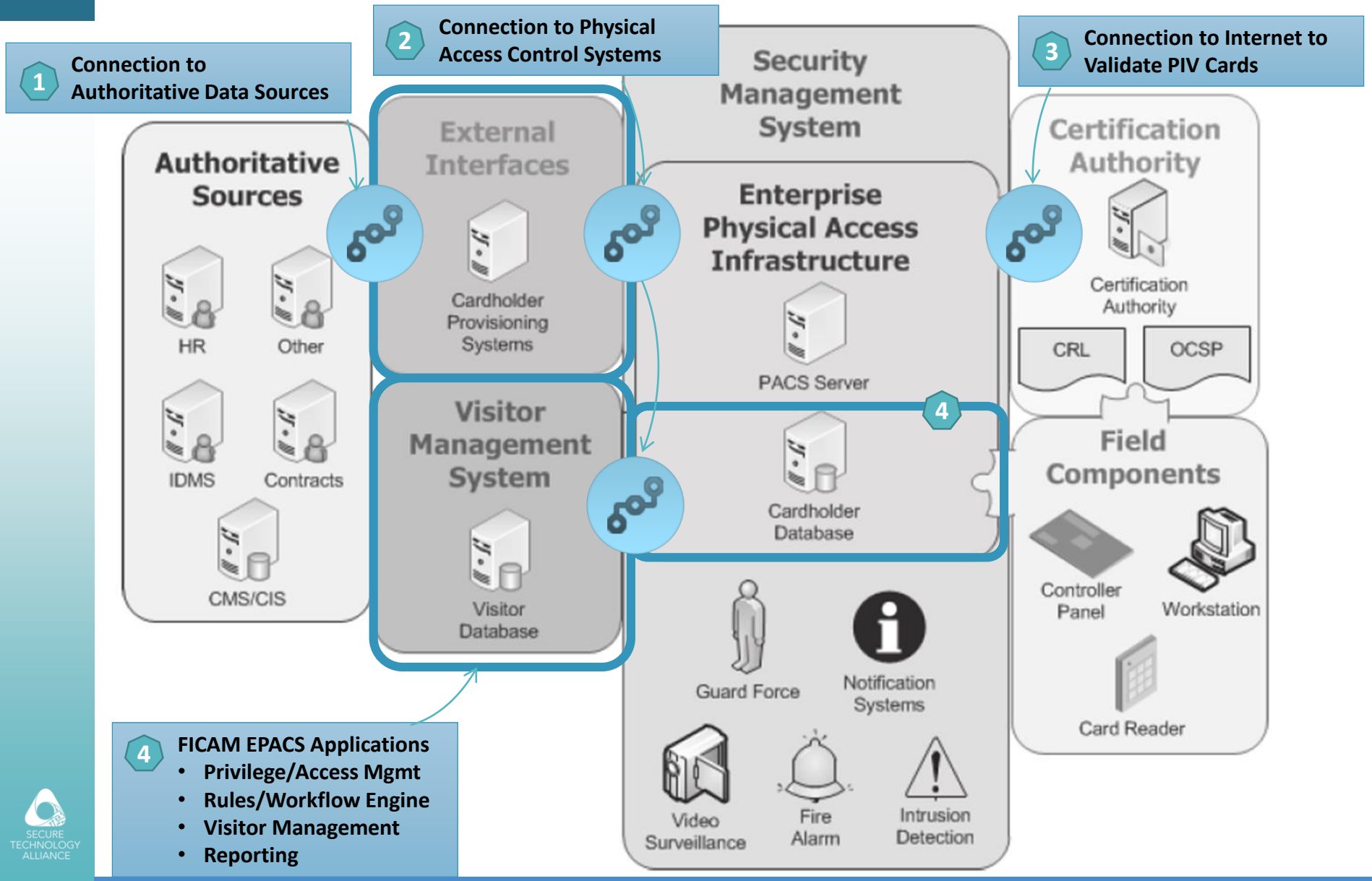
Both Physical and Logical Access Controls are held to the Same Standard

FICAM Enterprise PACS Modernization

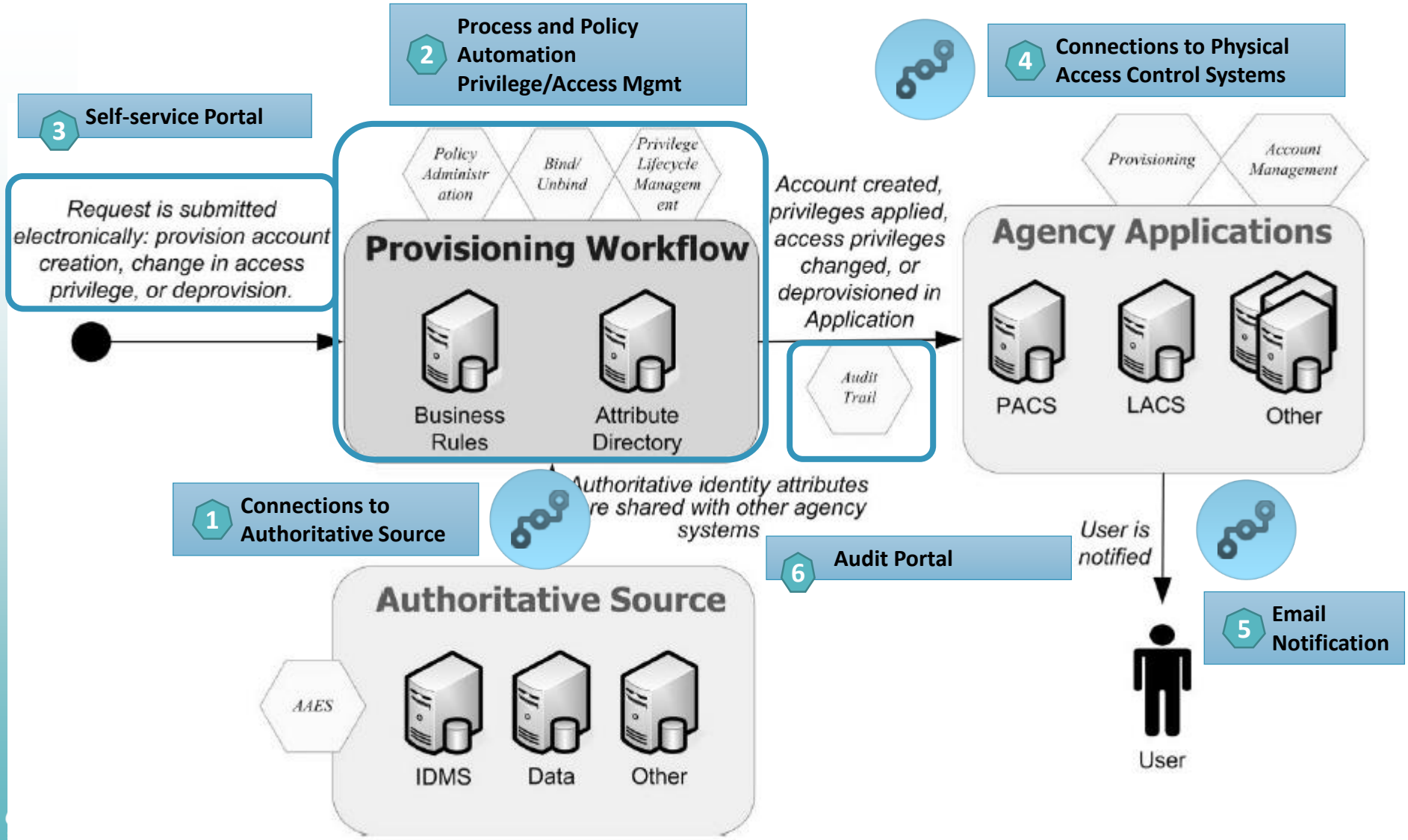


Source: CIO Council FICAM Roadmap Modernized PACS Brochure - 2011

FICAM Directed Enterprise PACS Modernization: Figure 108



FICAM EPACS Privilege Management Process Flow



Risks Mitigated by Applying EPACS Best Practices

1. Only assured identities sourced from an agency authoritative source are provisioned into PACS.
2. Only valid PIV cards are provisioned into PACS.
3. PIV cards that become invalid (expired, placed on CRL, etc.) are immediately terminated for access into all PACS simultaneously.
4. Any identity terminated in the authoritative source causes immediate termination of any access privileges in all PACS simultaneously.
5. Any elevated (privileged) access is immediately revoked when a qualifying identity attribute ceases to be in compliance.
6. Ability to perform audit at any time across all PACS simultaneously
7. 100% PII protection by removing PII from PACS endpoints

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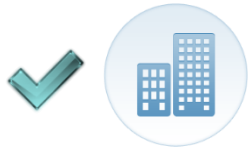
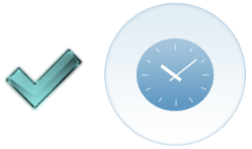
Result of Applying EPACS Best Practices

Right Physical IDs



Right Access

Right Reasons



Right Times

Physical identity and access management (PIAM) technologies provide authentication, authorization and provisioning services in order to efficiently streamline the lifecycle of a physical identity within a global organization.

PIAM ensures the right physical IDs – i.e., employees, visitors, contractors, vendors are properly authenticated and have the right access to the right areas, for the right reasons for a specified duration of time.

"Physical identity and access management (PIAM) deployments are increasing due to technology and product development, compliance mandates, a greater desire to manage alternative user populations such as on-premises visitors and contractors, and a sharp emphasis on timely and secure access"[1]

Gartner®

[1]Gartner Research; Physical Identity and Access Management; Feb 2012

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Gap Analysis

Gap Analysis

- New installation, replacement or upgrade
  - Compatibility
  - Physical and logical transition strategies

- Reader, panel and card holder locations and quantities
  - Software licenses
  - Storage requirements

- Infrastructure requirements
  - Bi-directional reader communication
  - Network communication
  - System availability
  - External system integration
  - Environmental factors

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Complete Project Scope

- Addressed and accepted risks
- Cost and schedule estimates
- Roles and responsibilities
  - Self perform vs. contract
  - Well defined
  - Commitment
- System specification
- Alternatives
  - Prioritize areas that deliver greatest risk reduction
  - PIV Implementation Maturity Model (PIMM)
  - Self-perform vs. contract
- Executive sponsor acceptance

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Identify Solutions Providers & Products

Identifying Overall Solutions Providers

- Capability to support full scope of project
- Ability to partner with experts in certain areas of implementation
- Experience & skill set
  - VAR relationship with manufacturers
  - Prior history for similar deployments
  - System design (architecture)
  - Project management
  - Communication
- Certifications required
  - Certified System Engineers ICAM PACS
  - CISSP or other information assurance

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Qualifying Hardware and Software Products

"A. Requirement to use federally approved products and services – To ensure government-wide interoperability, all departments and agencies must acquire products and services that are approved to be compliant with the Standard and included on the approved products list.

--OMB Memorandum M-05-24.

PACS Components Defined by GSA FIPS 201 Evaluation Program

Product	Approving Governance	Implementation	Comments
PACS Card Readers	GSA APL	Hardware and firmware	Contact PIV readers Contactless PIV Readers (with or without biometrics)
PACS Validation System	GSA APL	Hardware and/or software	PACS Panels and/or servers
PACS Infrastructure	GSA APL	Software	PACS Headend Server
https://www.idmanagement.gov/approved-products-list-pacs-products/			

Enterprise PACS Software

Product	Approving Governance	Implementation	Comments
Enterprise PACS Software/Visitor Management	GSA/DHS CDM APL Phase 2 for BOUND-P (GSA Schedule 70, SIN 132-44 designation)	Software	SP800-116 has enumerated requirements and the FICAM Roadmap delineates "Solution Characteristics" for three relevant categories: PACS, Automated Provisioning and Visitor Management
https://interact.gsa.gov/document/gsa-it-schedule-70-incorporate-continuous-diagnostics-and-mitigation-cdm-tools-special-item			

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Upcoming Sessions

Stakeholders	Session 1 10/19/2017	Session 2 11/30/2017	Session 3 1/11/2018	Session 4 2/22/2018	Session 5 3/15/2018	Session 6 4/19/2018
Acquisition	♦		♦	♦		♦
Budget	♦		♦	♦		♦
Customers / Tenants	♦	♦	♦		♦	♦
Engineering	♦				♦	♦
Executive Sponsors	♦	♦	♦	♦	♦	♦
Facility Management	♦	♦	♦		♦	♦
Information Technology	♦		♦		♦	♦
Legal	♦	♦		♦		♦
Personnel	♦		♦		♦	♦
Physical Security	♦	♦	♦	♦	♦	♦
Safety	♦	♦			♦	♦

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Q & A

Resources and Contacts

http://www.securetechalliance.org

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