

GLOBAL THREAT REDUCTION INITIATIVE

Working to reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide. SAND2013-5489P

Module H

Alarm Communication and Display (AC&D)



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

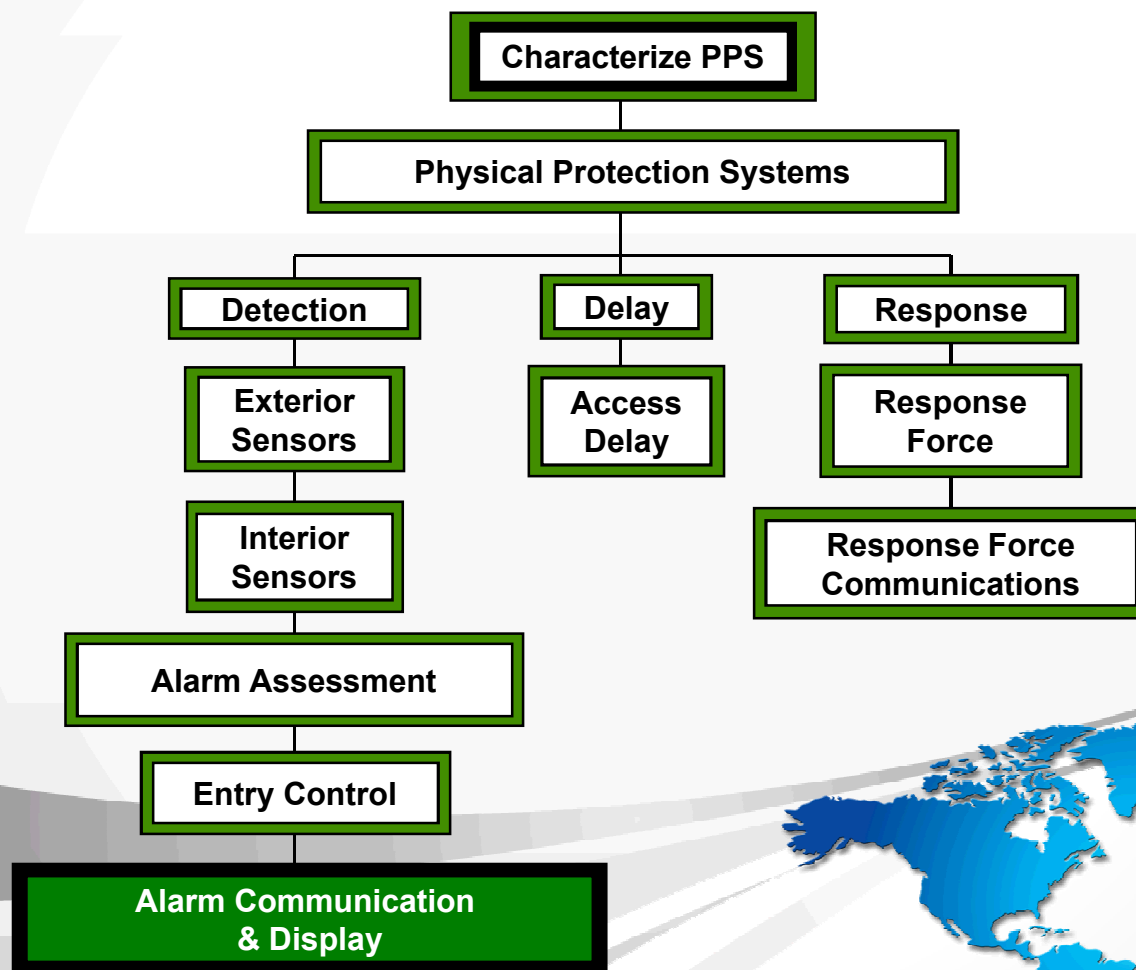


Module Objectives

- Provide an introduction to some important alarm communication system characteristics.
- Present a high-level overview of alarm reporting and display effectiveness, and system considerations.
- Understand that the AC&D system is a key element in the successful and timely response to a threat.



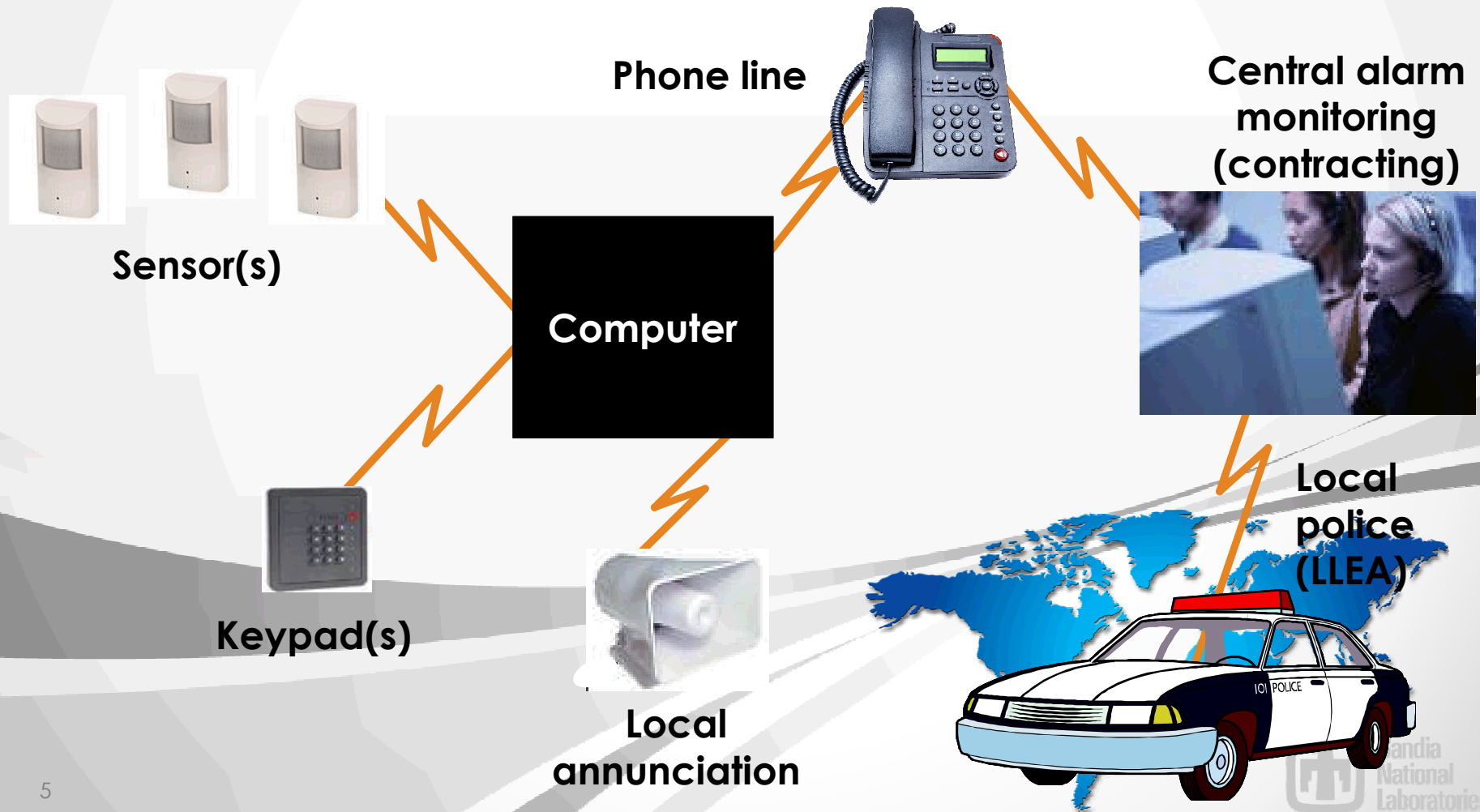
DEPO – AC&D



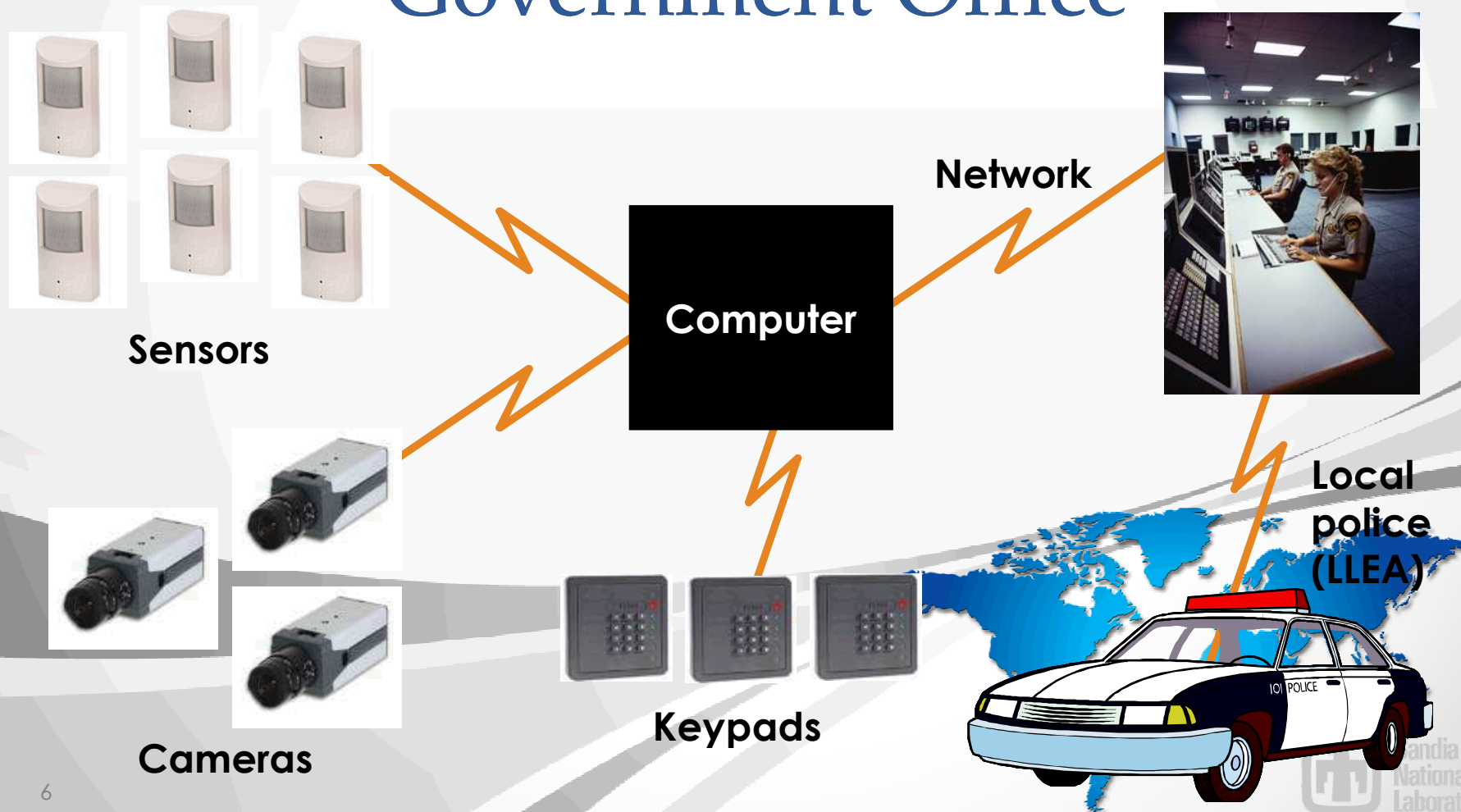
**A very old and rudimentary
alarm system**



Basic Modern Alarm System for Home or Very Small Business

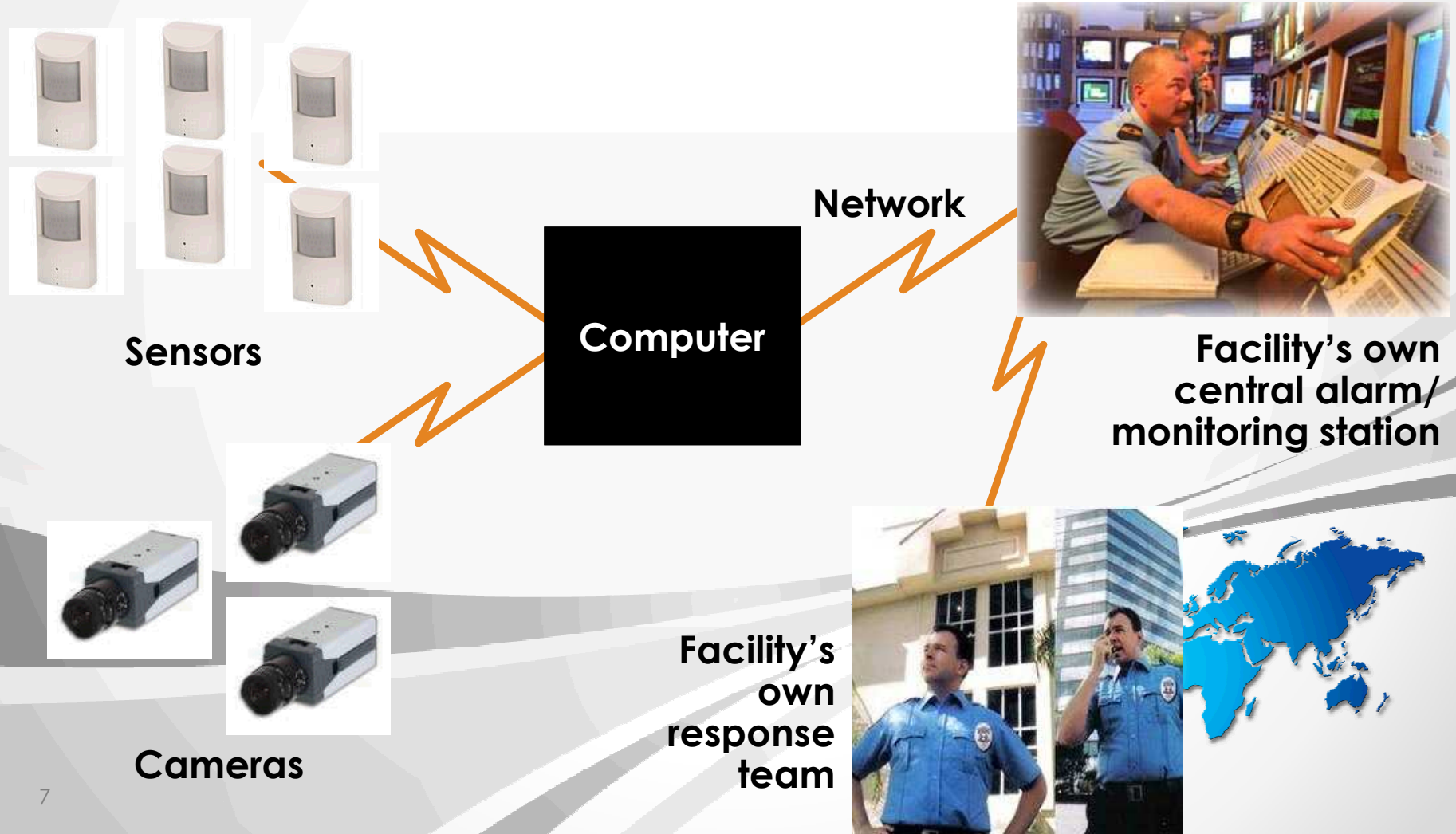


Alarm System for Small/Medium-Sized Business or Government Office



GLOBAL THREAT REDUCTION INITIATIVE

Alarm System for Large Business or Government Facility



Is this an Effective AC&D System?



Important Features of an Alarm Communication System

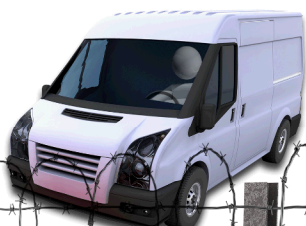
- Fast and reliable.
- Should continue working after a component failure.
- Should have line supervision to detect.
 - Broken or short-circuited lines
 - Tampering to read the data or to insert false data
- Alarm communication time should be a small fraction of total assessment time.
- Easy to expand.
- A good AC&D system is costly \$\$\$.



Types of Alarm Recording

Pre-alarm recording

Only made feasible with introduction of digital recording.



Time-of-alarm recording



Post-alarm recording



Typical Operator Functions

- Open and close buildings
- Set individual sensors into access or secure state
- Display system status
- Request procedural instructions
- Assign any CCTV camera to any video monitor
- Examine system log / report



System Issues

- Operator procedures and principles:
 - Train the operators
 - Do not overload operators with extra duties
 - Do not ignore or “lose” alarms
 - Keep control of the system
- Security considerations.
- Backup equipment and power supply (UPS).
- Maintenance.



Maintenance

- **All** AC&D systems will require maintenance, both routine and when problems occur.
- Maintainers must be well trained.
- A system that is not maintained will become useless in a few years (or worse, it will create a false sense of security).
- Maintenance costs \$\$\$.



Security Considerations

- System Administrators have full control – they are **the ultimate insider**.
- Protect the system using procedures.
 - Two-person control
 - Configuration management
 - Password control
- Restrict operator privileges.
- Provide physical protection for equipment.



AC&D Summary

An Alarm Communications & Display System:

- Collects and processes information, and then presents it to the operator quickly & clearly.
- Reduces the load on human operators and enhances their performance during a malevolent event.



Questions?

