THE CONTROL SYSTEM LIFECYCLE AND PLANNING FOR SECURITY

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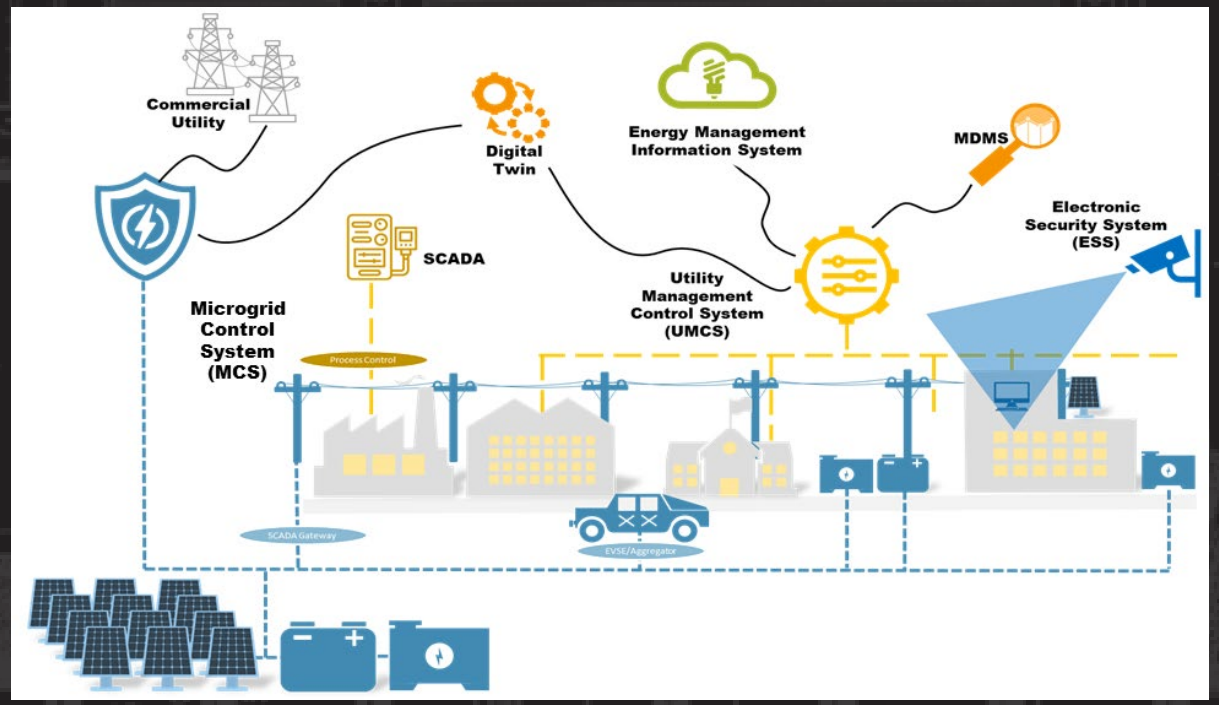

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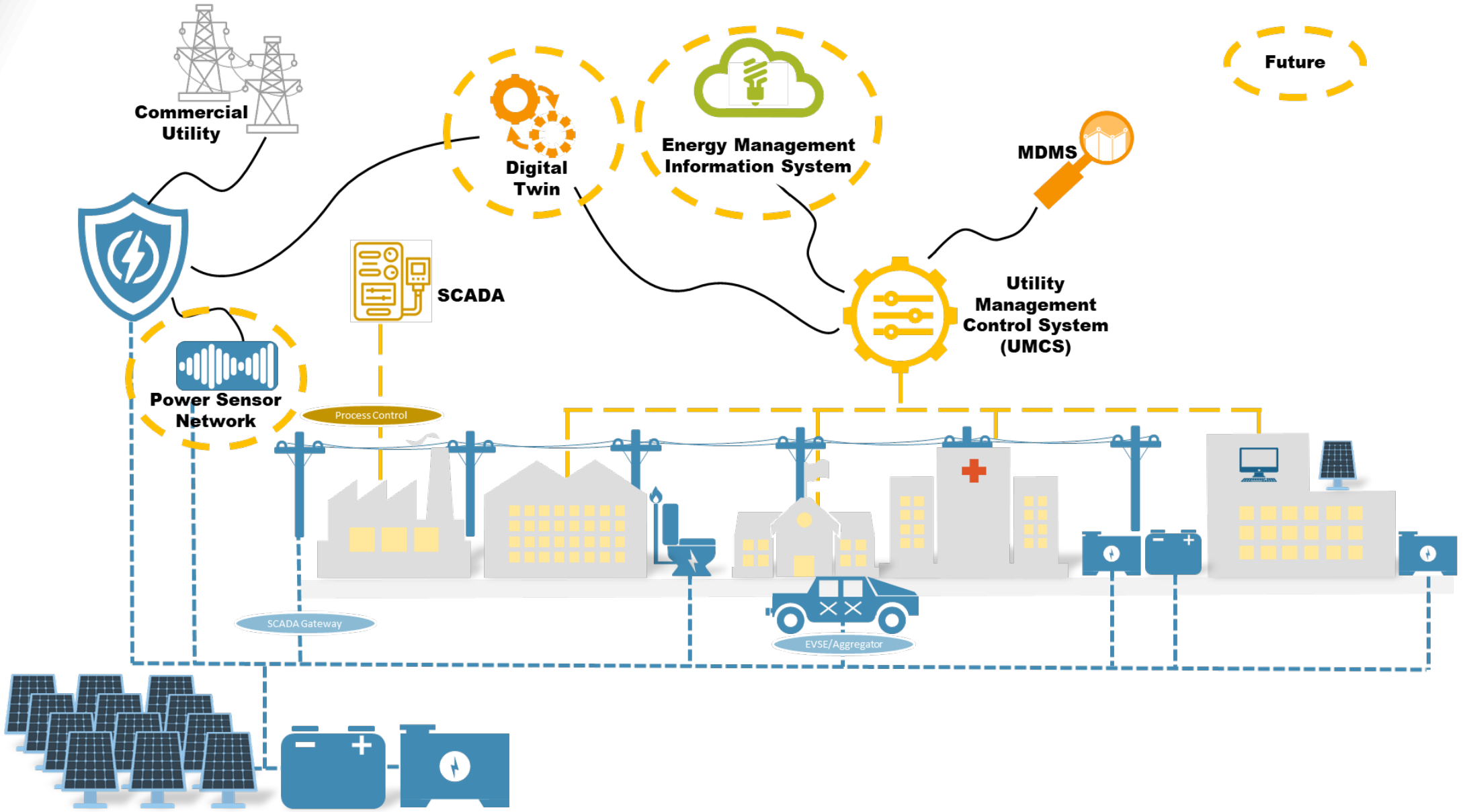
SCOPE OF DOD CONTROL SYSTEMS



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CONTROL SYSTEM LIFECYCLE

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Plan to implement new technology

Design technology use case to solve problems

Build and test technology

Effectively operate technology and sustain system

Replace or reuse with latest technology

Planning	Design and Engineering	Construction and Testing	Operations and Maintenance	Decommissioning

Plan to secure new technology

Design in Security for new technology

Test to verify properly secured

Monitor and patch vulnerabilities
Sustain system to latest requirements

Ensure replacement system is secured

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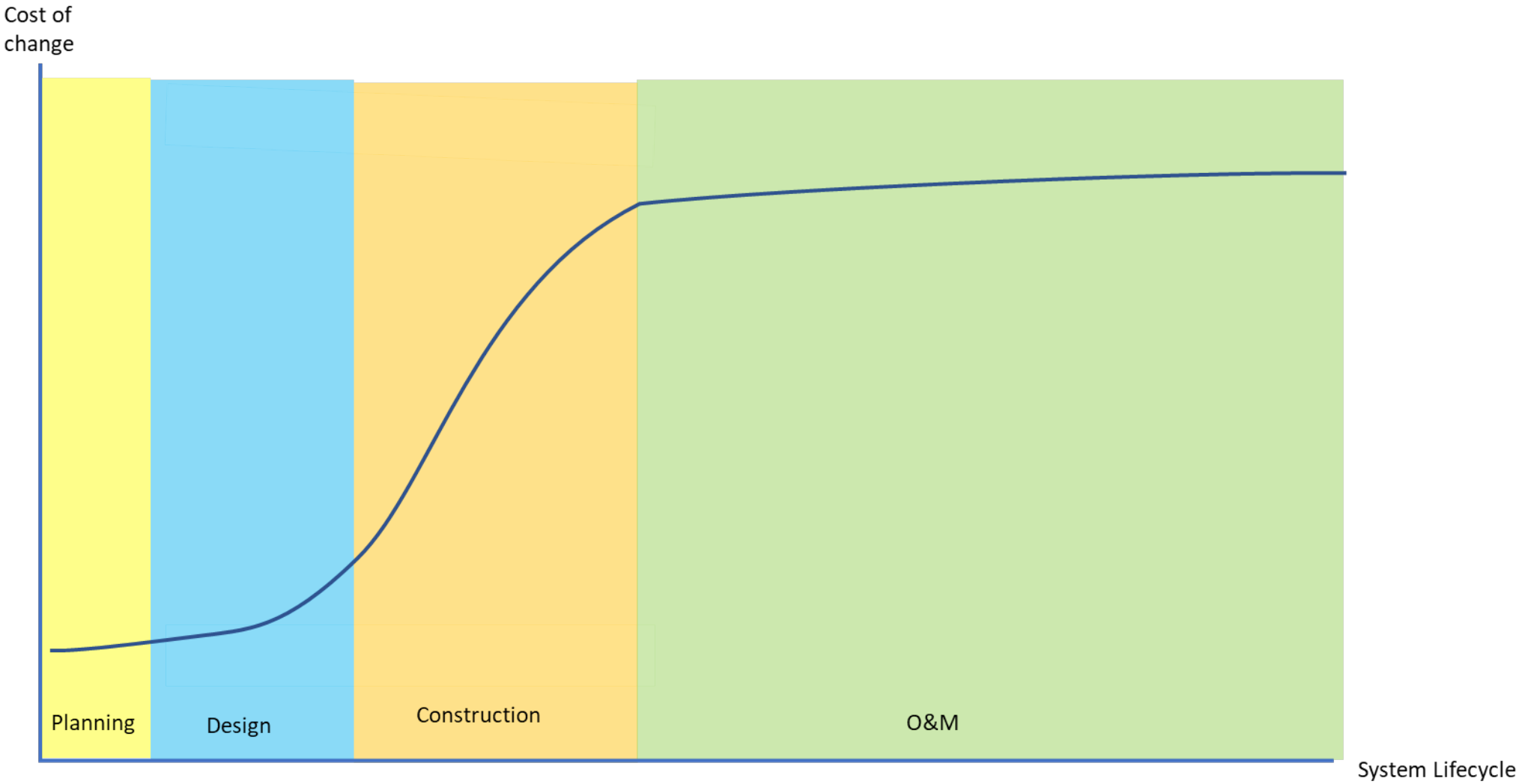
4

COST OF CHANGES



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CYBER INFORMED ENGINEERING

5

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6

PLANNING

Ask stakeholders project-specific questions:

- What is it being used for?
- What parts of it is critical, if any?
- What happens if it fails?
- What are the available operational resources?

Ask stakeholders organizational questions:

- What standards do we have?
- What procedures do we have?
- Do we need to create anything new?

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CONSTRUCTION AND TESTING

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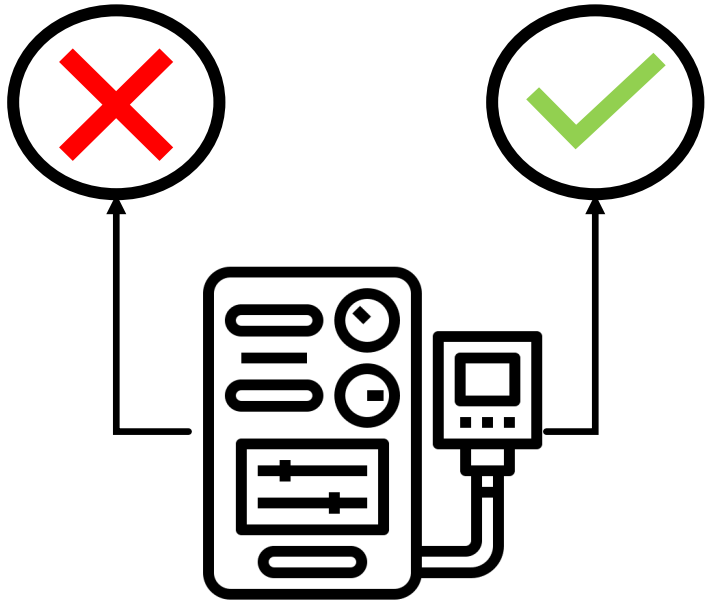
How to ensure things are being built properly?

- Quality assurance vs quality control
- Review of workers' experience and qualifications
- 3rd party inspectors

How can we test the system to make sure it meets our needs?

- Thorough testing procedures
- Documented acceptance



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OPERATIONS AND MAINTENANCE

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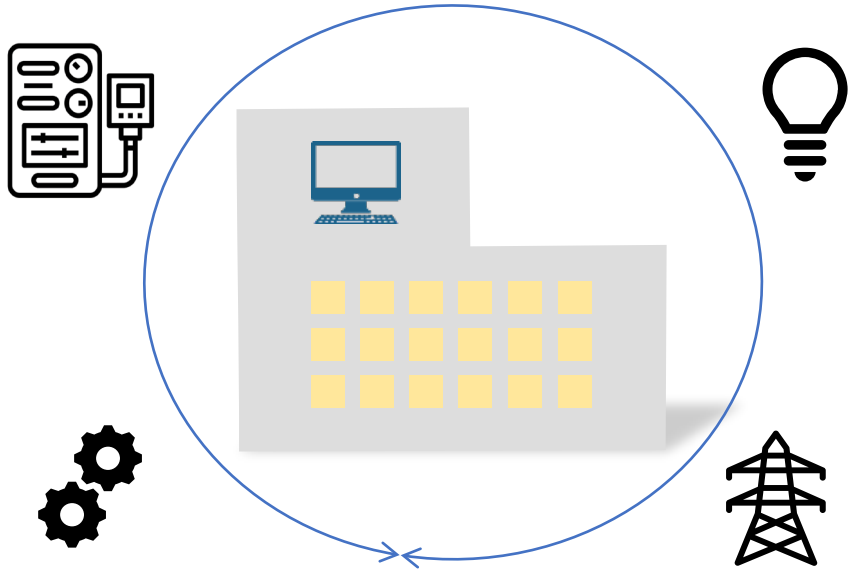
Are people trained?

- Standard operating procedures
- Technical skills for their job

Is there adequate resources for sustainment and repair?

- Redundant equipment
- On-site replacements
- Off-the-shelf replacements
- Accurate as-builts and live data

Standard operating procedures for anticipated issues



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QUESTIONS?