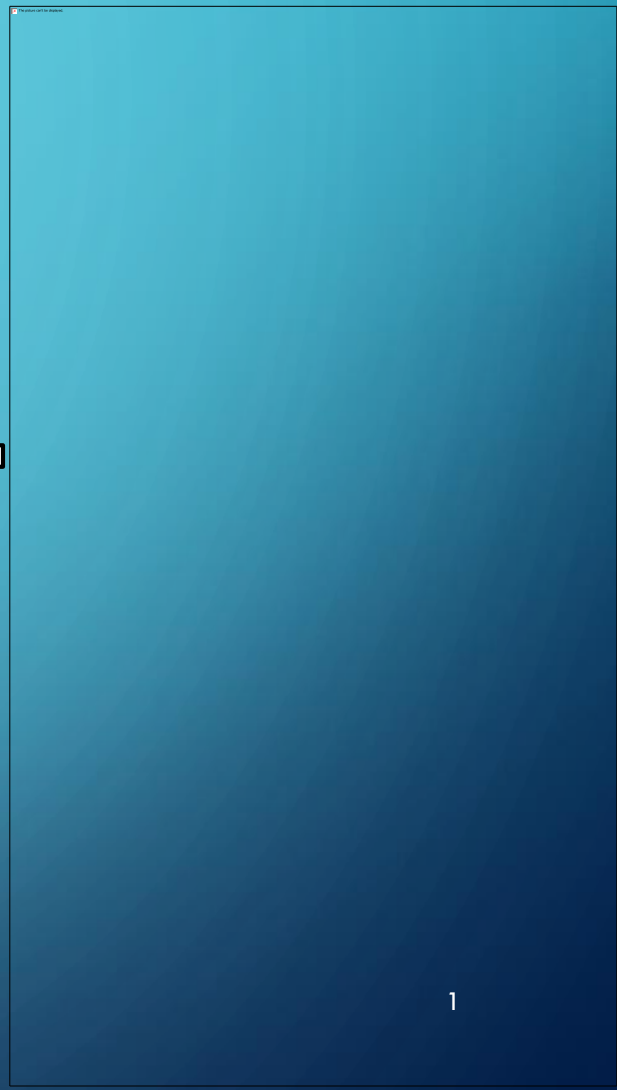
ENERGY CYBERSECURITY

WILLIAM L. SHELTON

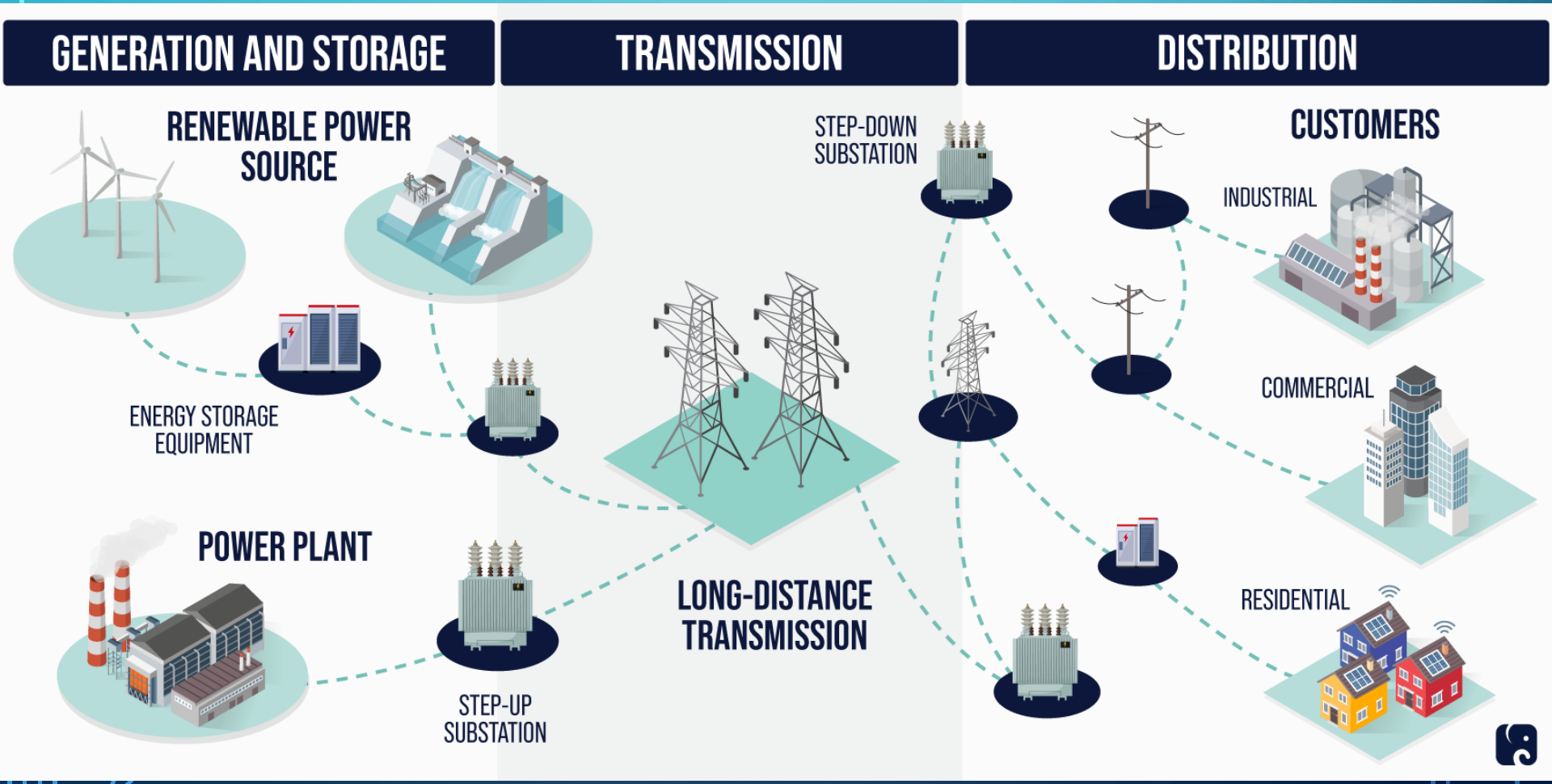
FORMER COMMANDER, AIR FORCE SPACE COMMAND



The Good

- **Diversity and resilience of the grid**

Key Electrical Grid Components



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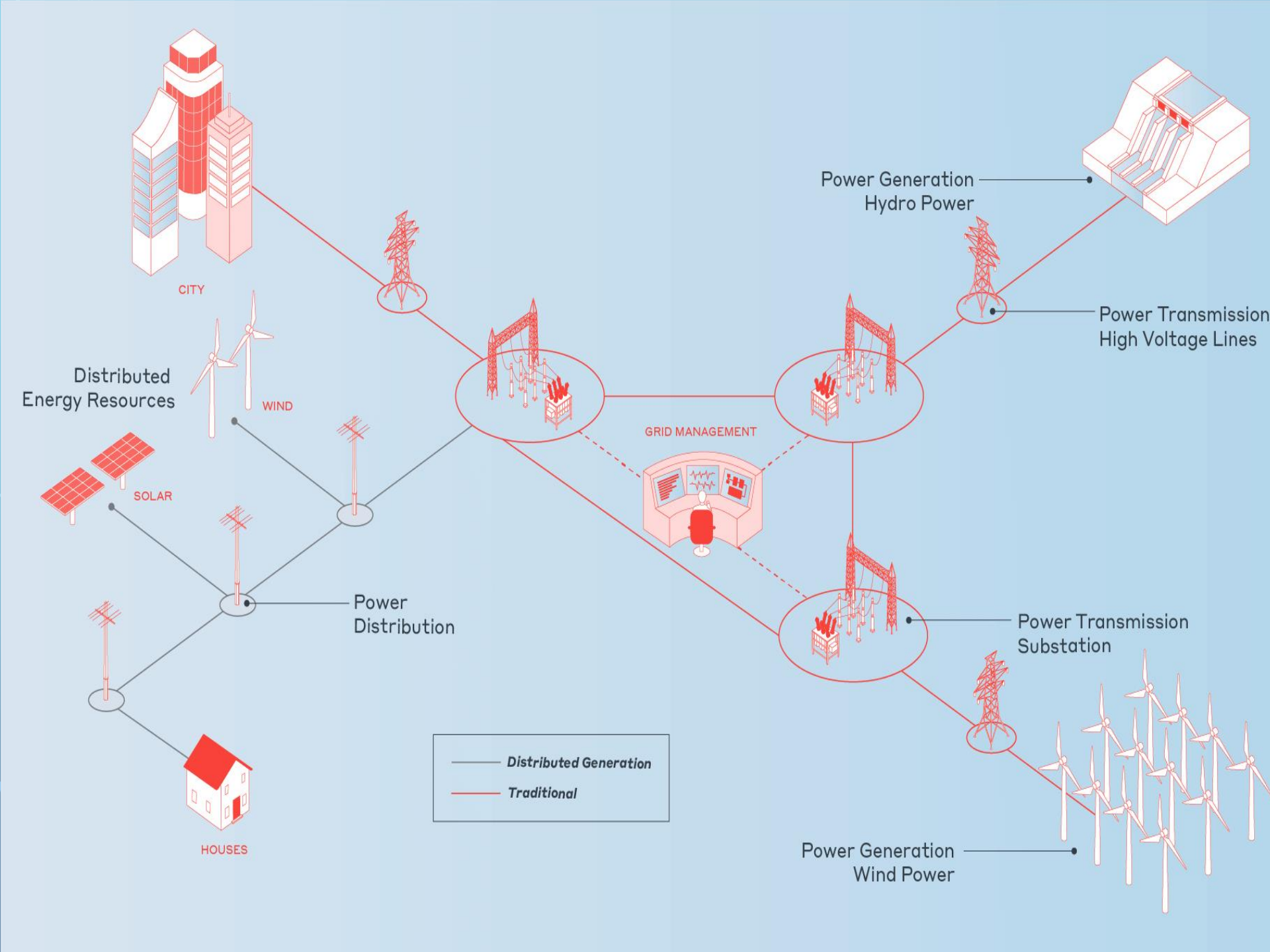
- Recognition of the problem
- Vast improvements over the last decade
- **Strong regulatory framework**

The Bad

- **Broad attack surface**

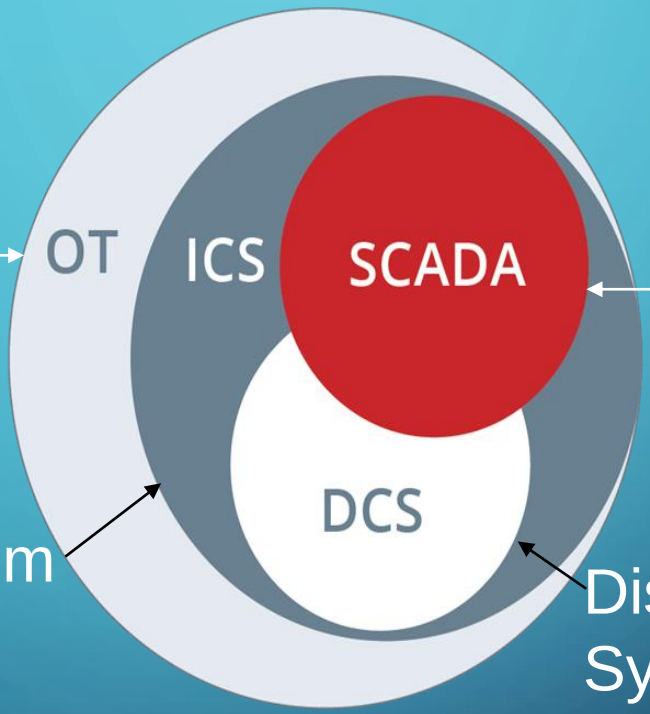

CITY
Distributed
Energy Resources
WIND
SOLAR
HOUSES
Power
Distribution
GRID MANAGEMENT
Power Generation
Hydro Power
Power Transmission
High Voltage Lines
Power Transmission
Substation
Power Generation
Wind Power
Distributed Generation
Traditional

The Bad

- Broad attack surface
- Increasing overlap of IT and ICS

Hardware and Software Challenges

Operational Technology

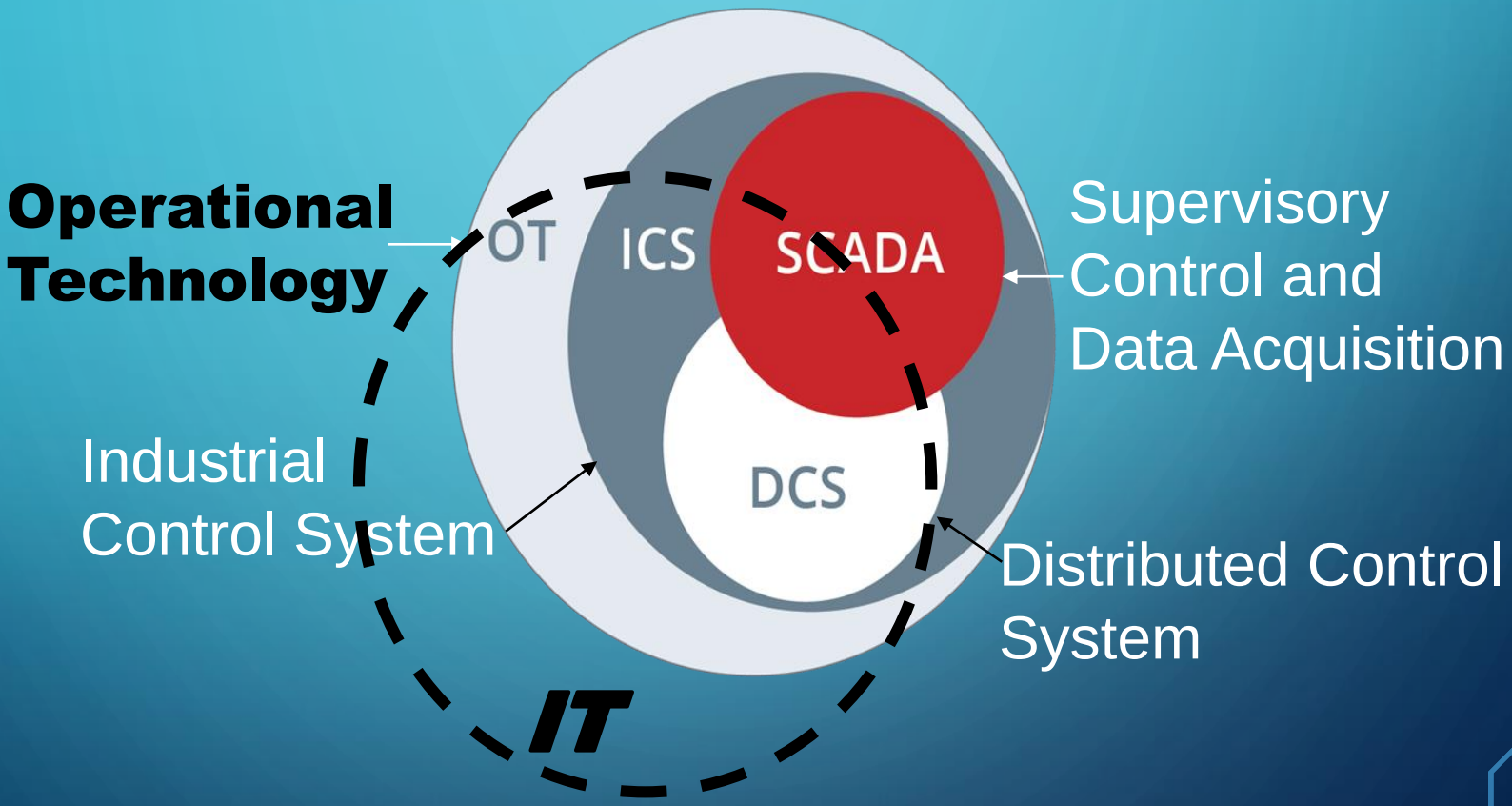


Supervisory Control and Data Acquisition

Industrial Control System

Distributed Control System

Hardware and Software Challenges



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- **Improvements ⇨ Costs ⇨ Rate increases**

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- **Intelligence sharing difficulties**

The Ugly

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- Inconsistent legislation
- "Russia, China, North Korea and Iran can shut down the grid."
- **Decisions causing capacity shortfalls**

First rule of wing walking:
“Never let go of what you’ve got until you’ve got hold of something else”

The Ugly

- Inconsistent legislation
- "Russia, China, North Korea and Iran can shut down the grid."
- Decisions causing capacity shortfalls
- **Dichotomy: > efficiency = increased automation, which creates > cyber vulnerability**

Final Thoughts

- Focus should be on rapid recovery
- Culture of mutual assistance
- Continuous research and development
- Cyber experts in high demand


BRACE YOURSELVES!
NOT
THE SKY IS FALLING!
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