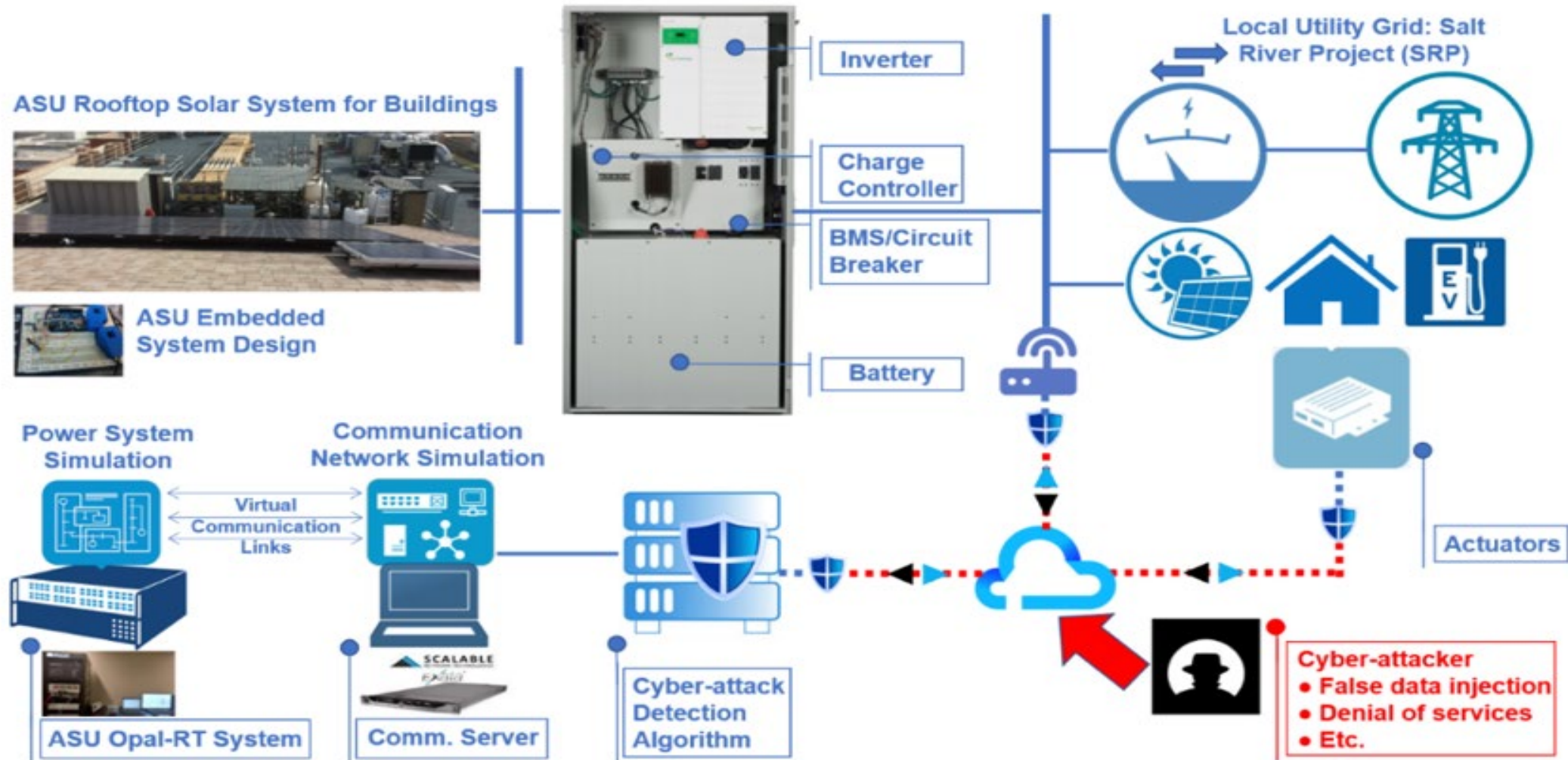


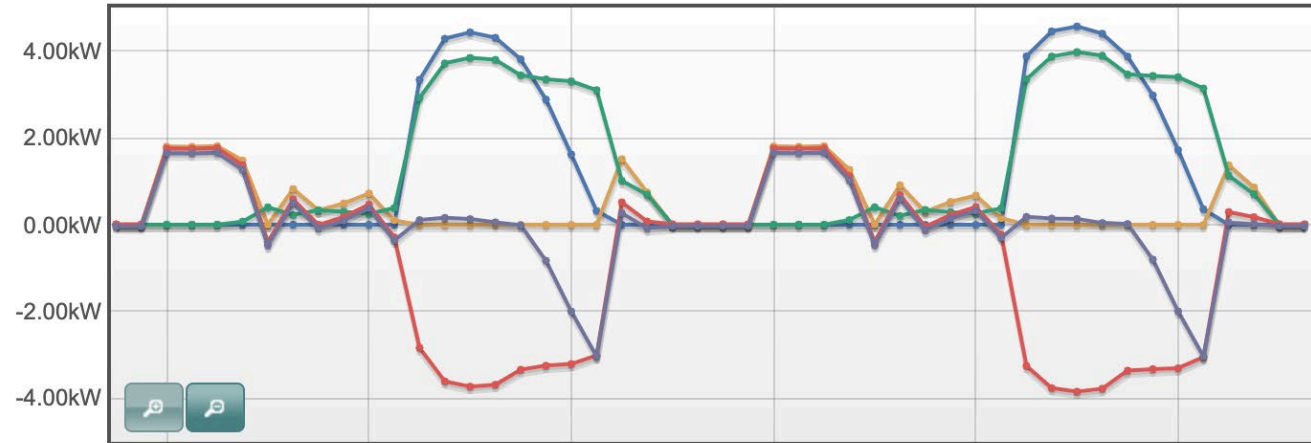
# Task 18: Hardware-in-the-Loop Validation



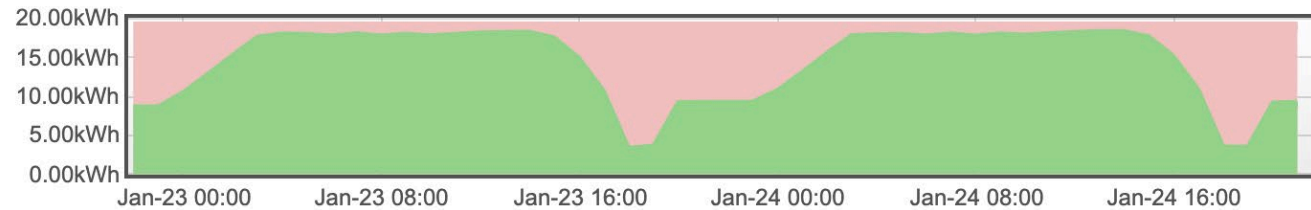
# Demo

## Dashboard

Two Day Chart



PV	0.00 kW
Grid In	0.00 kW
Out	0.00 kW
Site	0.01 kW
Battery	-0.03 kW



Capacity	19.40 kWh
Stored	9.31 kWh

## SIS Units

Overrides ▾ Programs ▾ Tags ▾ OpenADR ▾ Manage Groups File Upload									
<input type="checkbox"/>	Unit Name	Status	Control Mode	Battery (W)	Grid In (W)	PV (W)	Out (W)	Stored (kWh)	
<input type="checkbox"/>	<a href="#">SRP_ASU_Research</a>		24	-31.00	0.00	0.00	2.00	9.31	
Overrides ▾ Programs ▾ Tags ▾ OpenADR ▾ Manage Groups File Upload									

# Conclusion: Consortium Members

**US**

Arizona ● **ASU**

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Georgia ● **Georgia Tech**

---

Arizona ● **resource innovations**

---

Washington, DC ● **MITRE**

---

Tennessee ● **Delek**

---

Pennsylvania ● **DLC**  
DIVULSION LIGHT CO.

---

Washington, DC ● **SEL**

---

Michigan ● **OPAL-RT TECHNOLOGIES**

---

Massachusetts ○ **GE**

---

Colorado ○ **NREL**

---

Arizona ○ **SNP** ○ **aps**

---

Arizona ○ **ARIZONA ISRAEL TECHNOLOGY ALLIANCE**

---

Massachusetts ○ **FovaEnergy**



- Core Team Member
- Team Member (Volunteering Work)
- Advisory Board

**Israel**

● **Ben-Gurion University of the Negev**

---

● **OTORIO**

---

● **RAD**

---

● **ARAVA POWER**

---

● **SIGA**  
OT Solutions

---

● **meptagon**  
head for a better process

---

● **DK INNOVATION**

---

● **MRC**  
ALON TAVOR POWER

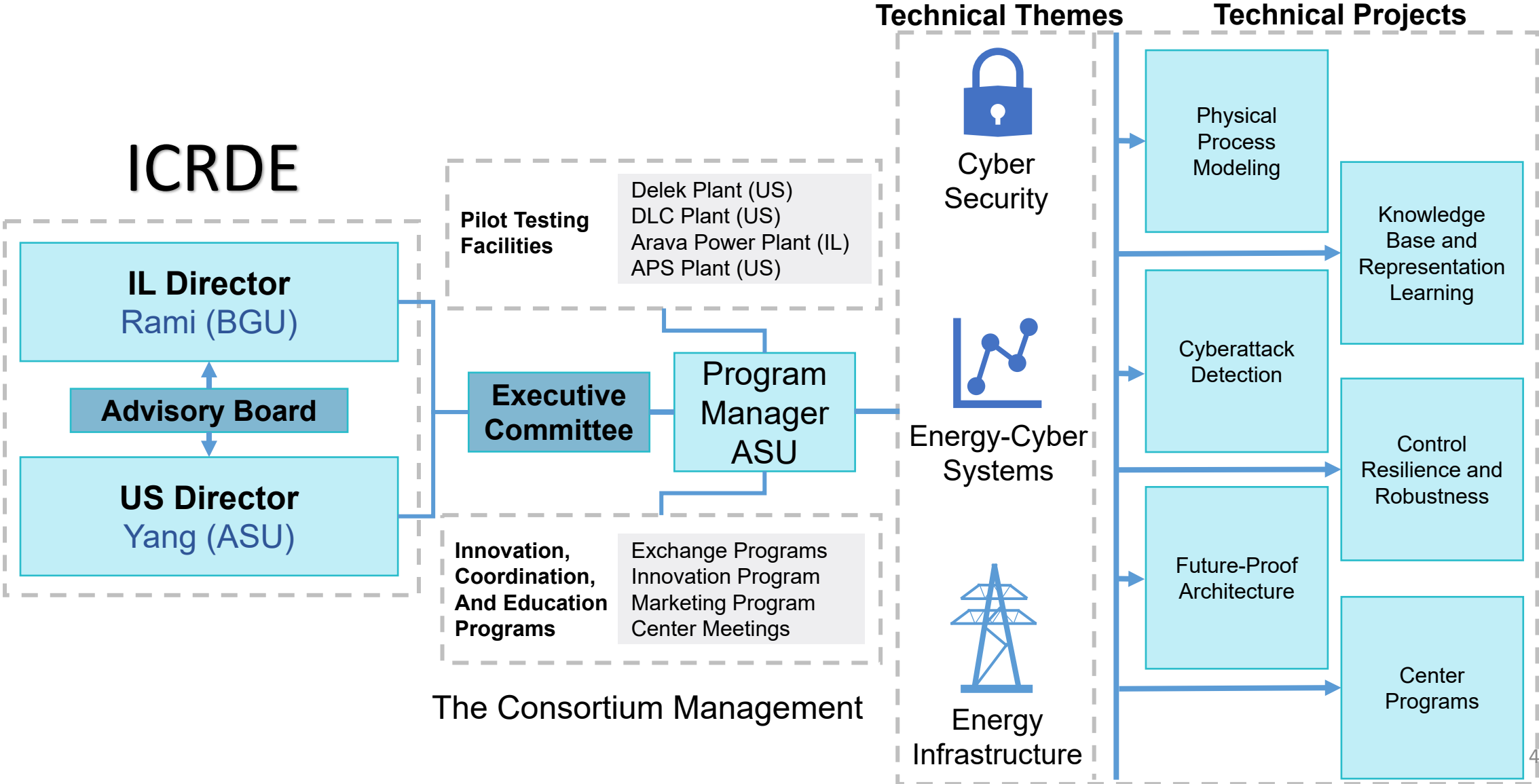
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○ **cybereason**

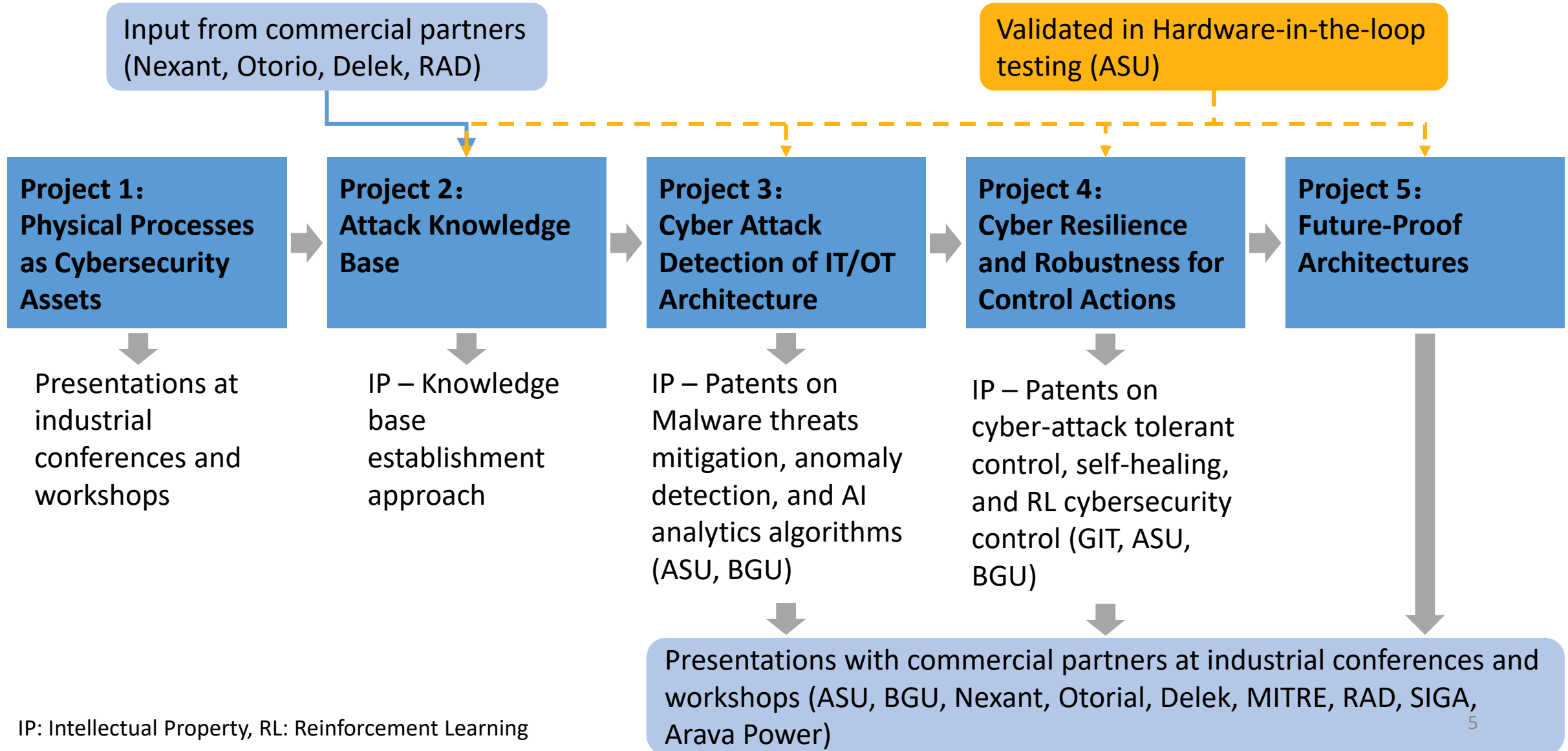
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○ **CONTEL TECHNOLOGIES**  
for Smart Manufacturing

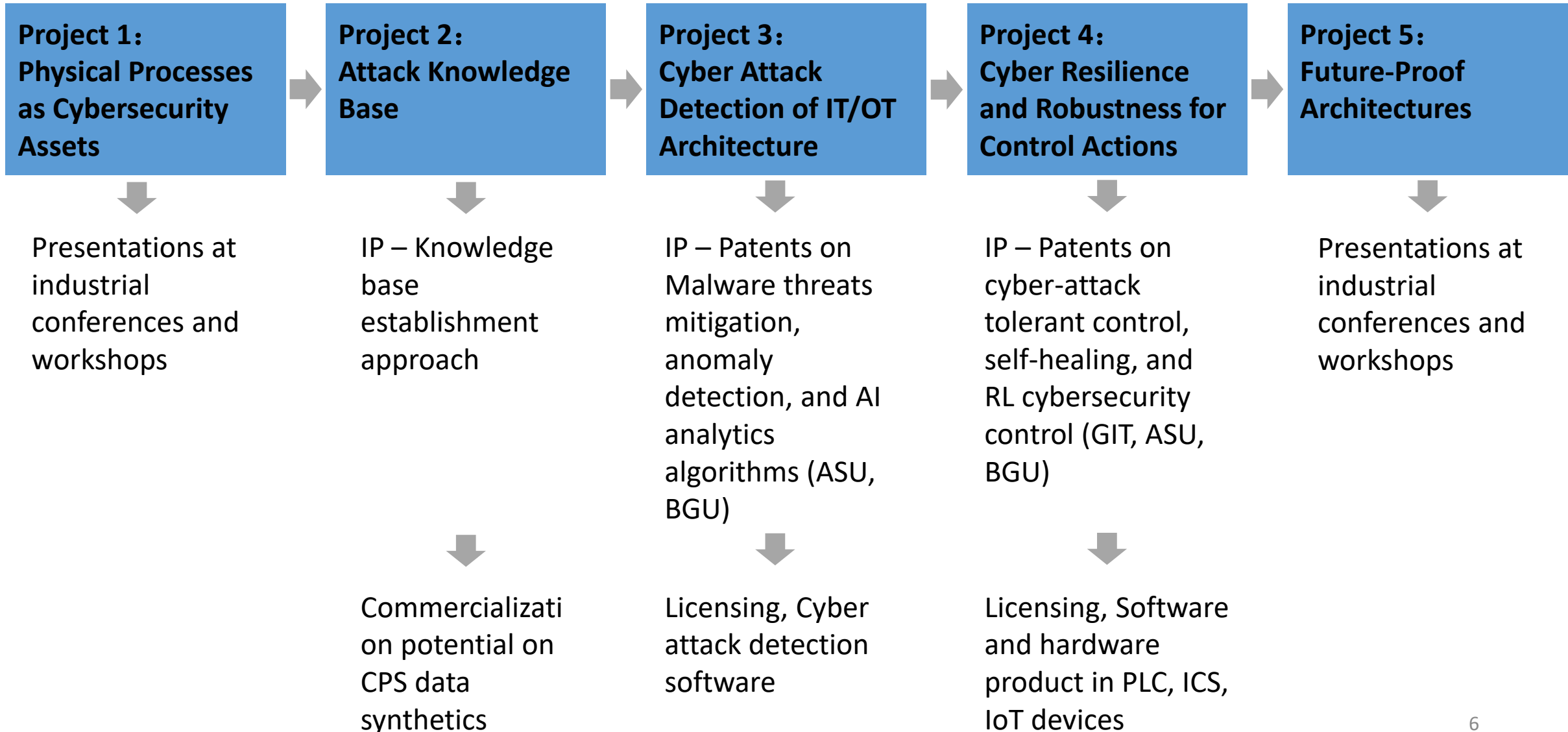
# Organization and Management Plan



# Commercialization Route



# Commercialization Route



# Tech to Market Plan and IAB - Nexant



- **Technical approach**

- Six primary markets: (1) Energy Management Systems (EMS), (2) Distribution Management Systems (DMS), (3) Supervisory Control and Data Acquisition (SCADA), (4) Programmable Logic Controller (PLC), (5) Industrial Control Systems (ICS)/Cyber-Physical Systems (CPS), and (6) IoT devices
- Integration/add on of new technology without need for wholesale replacement of systems/devices

- **Commercialization approach**

- Licensing mechanism is preferred

- **Market segments**

- EMS/DMS/SCADA: IOU T&D utilities, municipal utilities and cooperatives in North America, T&D utilities in rest of the world
- PLC/ICS/CPS/IoT: many potential applications

- **Key commercial partners, customers/advisors**

- Form Industry Advisory Board (IAB)
- Leverage eco-system of utilities, vendors, and system integrators
- Composition of IAB will be utility personnel, vendors, system integrators, and academics
- IAB will provide feedback/validation of our proposed approach and market strategy
- Executed successfully for DOE ARPA-E Sensor Enabled Modeling of Future Distribution Systems with DER and other projects

- **Upcoming commercial activities**

- Promotion of technology and preliminary outreach to potential customers
- Publication of results obtained during project - journals, white papers, conferences, etc.

# Content



- Executive Summary
  - Objective, Market, Challenges, Our Team
  - Proposed R&D Projects, Budget
- Proposed R&D Programs
  - Theme 1: CPS Data Preparation: Project 1 and Project 2
  - Theme 2: Data Analytics for Monitoring: Project 3 and Project 4
  - Theme 3: Control and Validation: Project 5
- Management and Conclusion
  - Management, Commercialization, and Risk Analysis
  - Innovation, Education, Coordination, and Marketing Programs