

# Coordinating Vital Commissioning Details and Scheduling: New Technology is Emerging to Help

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**#ENRTech**

# JE Dunn, Established 1924

Construction management services, design-build,  
and integrated project delivery contractor

**13<sup>TH</sup>**

LARGEST GC

**\$6B**

IN REVENUE

**26**

US OFFICES

**ENR**

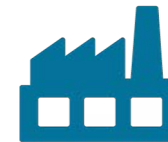
TOP CONTRACTOR  
as ranked by ENR

# Challenges



# Owner Situation

- Current commissioning solution to be deprecated
- New solution provided opportunities to alleviate legacy pain points
  - Platform inconsistencies campus-to-campus, each used its platform of choice
  - No standardized work processes across global portfolio
  - Need for alignment of owner and GC requirements (e.g., item masters)
  - Lack of optimal project management across all campuses including GCs



**FORTUNE-50**  
semiconductor  
manufacturer



**GLOBAL PORTFOLIO**  
7 US, 2 international

# Goals: Standardization and Collaboration



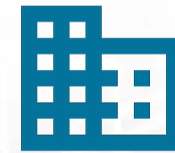
**ONE PLATFORM**  
worldwide for GCs,  
subs, owner



**STANDARDIZE**  
processes across  
all locations and  
teams



**INCREASE**  
workforce  
efficiency



**CONFIGURE**  
for enterprise; adapt  
to campus needs



# Solutioning



# Strategy Development

**1** Identify key stakeholders and champions within owner and GC (JE Dunn)

**2** Document current process  
▼  
Target >90% process alignment

**3** Discovered campus-specific requirements much higher than 10%

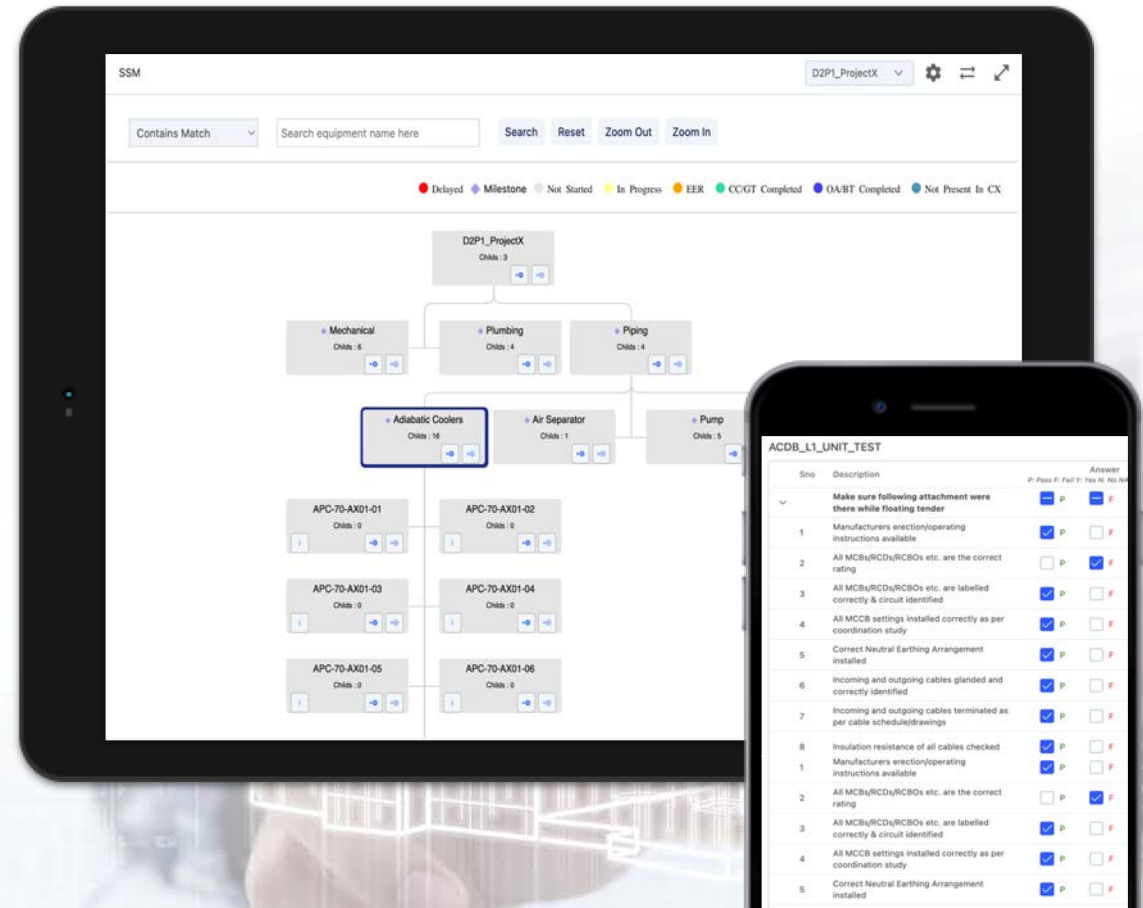
**4** Iterate and align processes and define a common solution



# From Work Management to Commissioning

Exto began as a work management tool later enhanced with:

- Schedule integration and task logic
- Integrated multi-level issue tracking
- Document turnover management
- Enhanced controls for multiple contractors



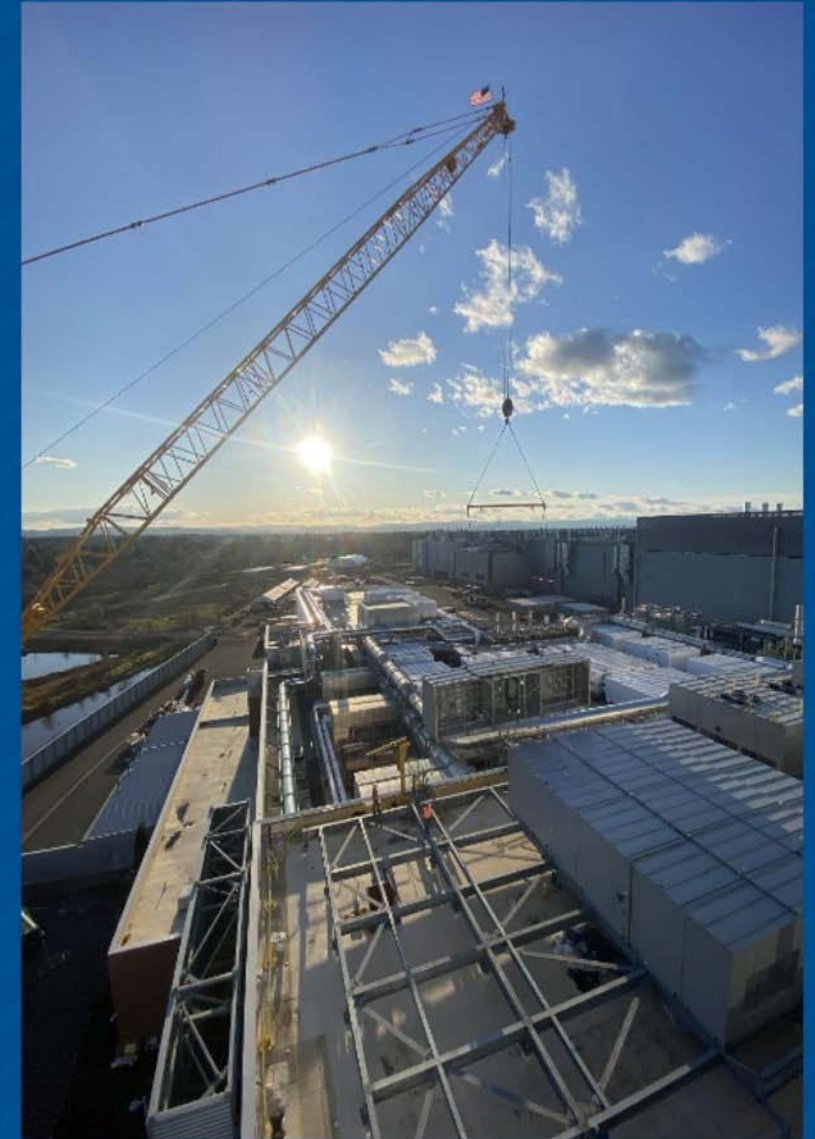


# Deployment



# Oregon Campus

- \$500-million project
- 6 buildings
- 16 disciplines
- 64 systems
- 1,000+ checklists tracking 18,000 items
- 9-month schedule
- 2-million job hours
- 400+ users



# Checklists Challenge

- Mandatory gating checklists
- Operational acceptance test / functional
- Acceptance tests: specs
- Mandatory document uploads
- Mandatory issues: punchlist
- Mandatory serial#, model#, drawing rev#



# Exto Checklist

F1-AHU 1 / HVAC-AHU/FCU-L1 / AHU\_FCU/1

[Create Issue](#) [Workflow Action](#) [Save as Draft](#) [Close](#) ⋮

### AHU FCU Installation Checklist

AHU\_FCU\_L1

Sno	Description	Answer			Notes
		<i>P: Pass F: Fail Y: Yes N: No NA: Not Applicable</i>			
∨	<b>Installation</b>	<input type="checkbox"/> P	<input checked="" type="checkbox"/> F	<input checked="" type="checkbox"/> NA	
1	Drawings on site are the latest issue	<input type="checkbox"/> P	<input type="checkbox"/> F	<input checked="" type="checkbox"/> NA	<input type="text"/> <span>👤</span> <span>📎</span> <span>🛡️</span> <span>+</span>
2	AHU/FCUs are installed in correct location as per approved drawings and equipment schedule	<input type="checkbox"/> P	<input checked="" type="checkbox"/> F	<input type="checkbox"/> NA	<input type="text"/> <span>👤</span> <span>📎</span> <span>1</span> <span>🛡️</span> <span>+</span>
3	AHU/FCUs are installed with approved vibration isolation from the structure on which they are mounted and with approved isolation from the duct work connected to it	<input type="checkbox"/> P	<input type="checkbox"/> F	<input checked="" type="checkbox"/> NA	<input type="text"/> <span>👤</span> <span>📎</span> <span>🛡️</span> <span>+</span>



# Item Master Challenges

- Establish equipment hierarchy
- Ability to reverse hierarchy (one lines)
- Determine Cx steps and determine issue type per step
- Must be reconfigurable, locked



# Takeaways

- **Train the trainer works (TTT)**  
Role-based: owner, trades, A&E, superintendents, GC, PE, GC PM, GC engineer, GC administrators
  - **Build in process flexibility**  
Work with stakeholders on general requirements (virtual factory not always compatible for each campus)
  - **Digitizing requires planning**  
Understand the effects of massive amount of data
  - **Critical-path scheduling in commissioning is complex**  
Detailed task sequencing and issue tracking require specialized solutions
- 

# Outcome



# Process Improvements

## JE Dunn (GC)

- Consolidated test, specs, safety, design verification documentation
- QA/QC issue tracking
- Digital owner sign-offs
- Reporting

## Owner

- Real-time Cx progress by project, system, campus
- Improved schedule accuracy
- Reduced standby time
- Improved process governance





# Key Metrics



**3K**

users  
(as of May 2023)



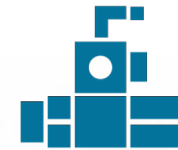
**1K**

checklist forms  
digitized



**18K**

checklist items  
digitized



**30K**

pieces of  
equipment

# Coming Up

- CAPEX to OPEX handoff
- Integrations: BIM, schedule, documents
- Predictive analytics on issues
- Workflow-driven closeout



# ENR FutureTech

Engineering News-Record

CONSTRUCTION'S LEADING TECHNOLOGY FORUM

HILTON UNION SQUARE  
SAN FRANCISCO

