

Operating System 2.0

Collaborating to Transform the Capital Projects Industry



Stephen P. Mulva, Ph.D.
Director, Construction Industry Institute (CII)
The University of Texas at Austin

Operating System 2.0 Defined

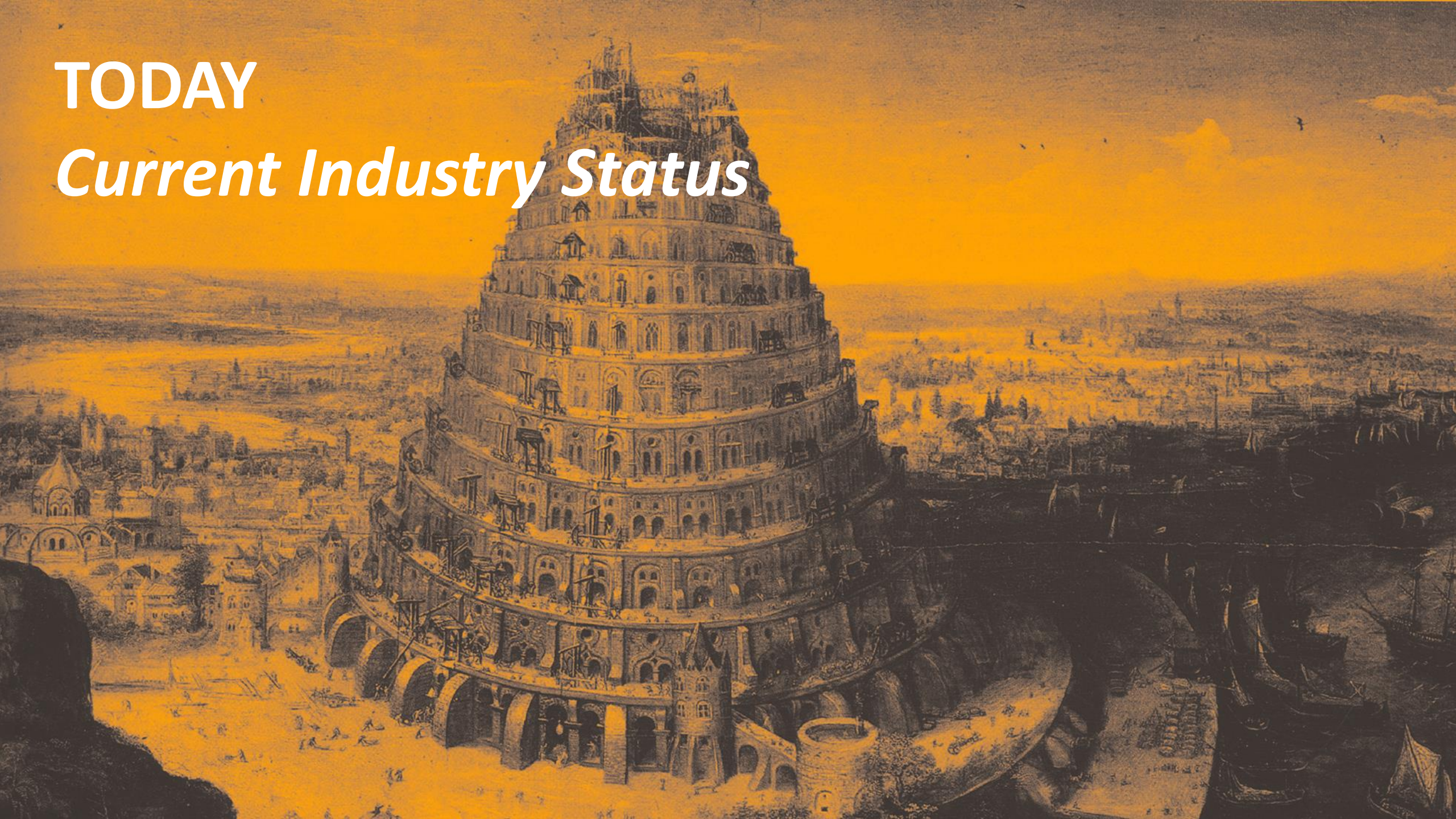
- OS2.0 is a new business and commercial model for the capital projects industry
 - “How can we use the capital project to enhance business outcomes?”
 - Owners: “How do we accelerate our organic growth by using our capital better?”
- OS2.0 will enhance the health and stability of the industry
 - Intelligent finance, accounting, tax, legal platform for a globally-distributed industry
 - Participating companies will leverage their own capital
- Key words: Distributed, Quick
 - Reverse the trends toward costly vertical integration (distributed risk, finance)
 - Create quick wins such as in leasing

Operating System 2.0 (OS2) will transform the global engineering and construction market in the way that facilities are conceived, evaluated, planned, delivered and operated (theories).

PrairieDog will implement the results of OS2 research & development through commercialization of innovative technology and services (platform).

TODAY

Current Industry Status



Industry Advancement?

- (CII) 94.5% of projects do not meet one or more of their business objectives.
- (CII) 70% of projects could not be completed within 10% of budgeted cost and schedule.
- (Bechtel) 98% of megaprojects experience overruns that average 80% over budget and 20 months late.
- (NTNU) Approximately 40% of the capital spending on any given project is “waste” due to non-value added transactional costs throughout the supply chain – contracts, risk, bonding, contingency, etc.
- (CII RT 191) Waste in Construction: 10% VA, 33% NVAR, 57% NVA (Waste)

1963



50 Years

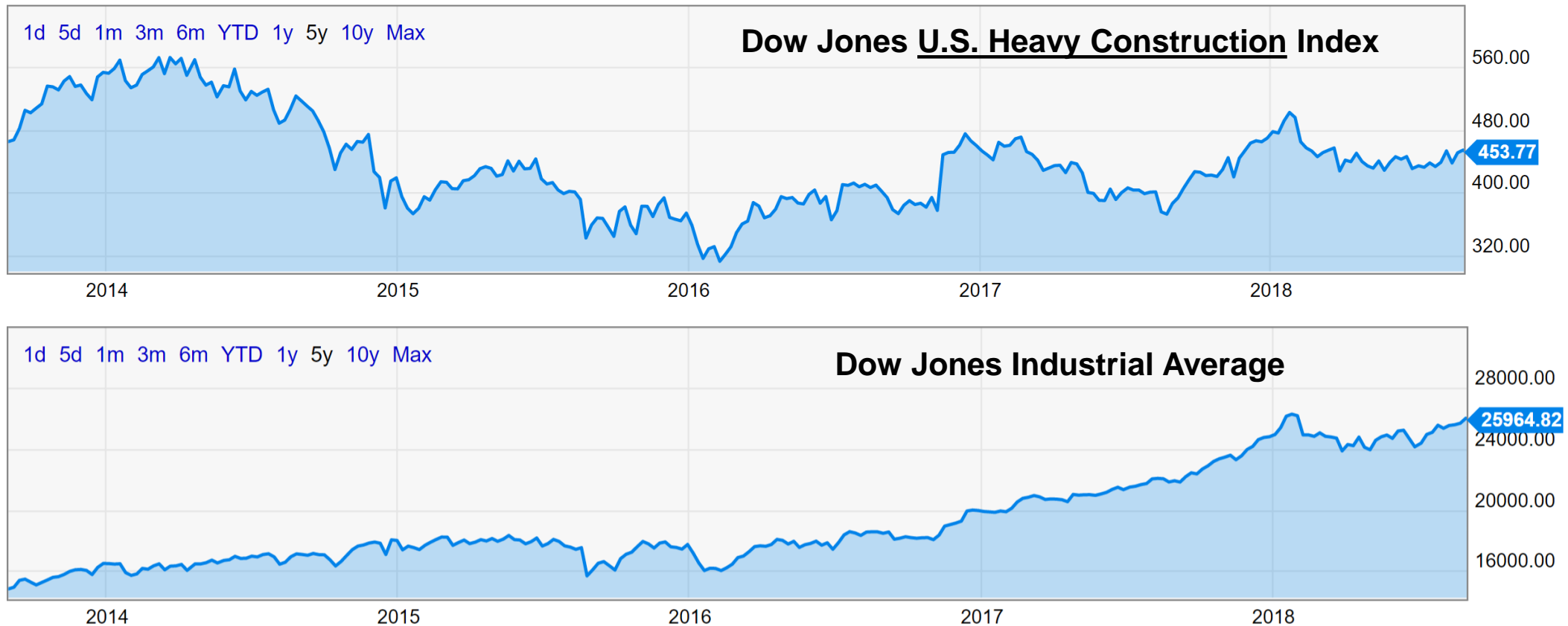


2013

What We Do is Incredibly Valuable...

...however, the market doesn't value us.

Dow Jones Construction Index vs. DJIA (August 30, 2013 – August 30, 2018):



Why Fix Construction? Why Now?

- Need (Direct) Investment
- Make Industry Healthy Again (1.8%)
- Breakthrough vs. Continuous Improvement
 - Improve 2.5% per Year, but...
 - Industry Declines 3% per Year
- Mission of CII, CURT, EDRC, Others

Unlearning by doing

United States, gross value-added*
Per hour worked, 1947=100



Source: McKinsey Global Institute *At constant prices

Economist.com

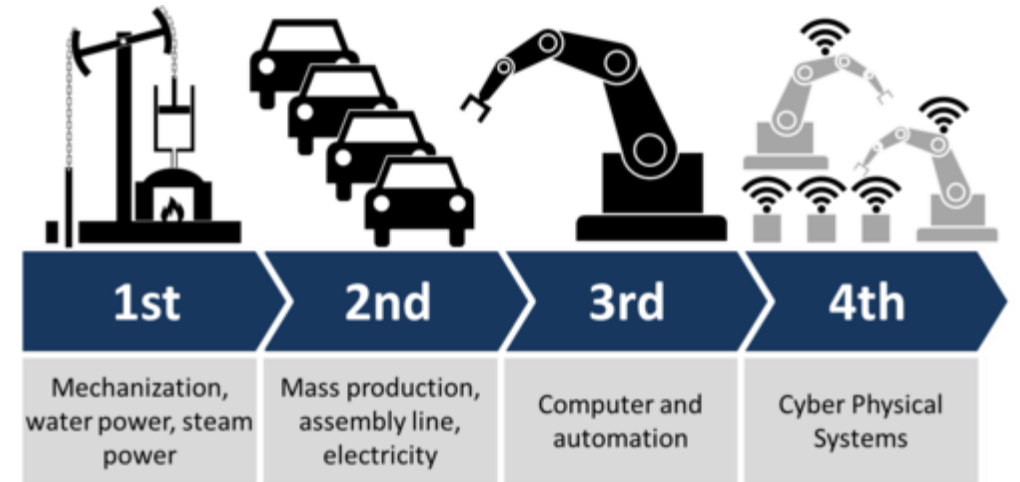
Best Practices

Processes or methods that, when executed effectively, lead to enhanced project performance. To qualify, a practice must be sufficiently proven through extensive industry use and/or validation. Predictable & Consistent *The Future?*

- Advanced Work Packaging
- Alignment
- Benchmarking & Metrics
- Change Management
- Constructability
- Disputes Resolution
- Front End Planning
- Implementation of CII Research
- Lessons Learned
- Materials Management
- Quality Management
- Owners Safety Blueprint (OSB)
- Partnering
- Planning for Modularization
- Planning for Start-up
- Project Risk Assessment
- Team Building
- Zero Accidents Techniques (ZAT)

New Business Model

- The capital projects industry is not economically viable for many sectors
 - ✓ “Our (industry’s) house is on fire”
- Brendan Bechtel
 - ✓ Stage Gate vs. Idea to Launch (Edgett/Cooper)
- Open-source platform – (IOS / Android)
- Operating System 2.0 encompasses
17 Transformational Concepts
- Primarily a Financial and Interface model



Industry 4.0 (manufacturing)

TOMORROW

Desired Future State of the Industry



Key Questions

“How can the project better enhance business value?”

“How can we make projects a preferred investment choice for the C-suite?”

“Can we eliminate significant transactional waste through better contracting & collaboration?”

“Can we procure materials and services based on ROI/ROCE instead of just initial cost?”

“Can we leverage advanced computing power to improve project outcomes?”

“Can we better take advantage of global trade & tax regulations?”

“Can leasing provide a better option for funding capital projects?”

“Can we improve the overall financial health of the industry?”

Project 13 (ICE UK)

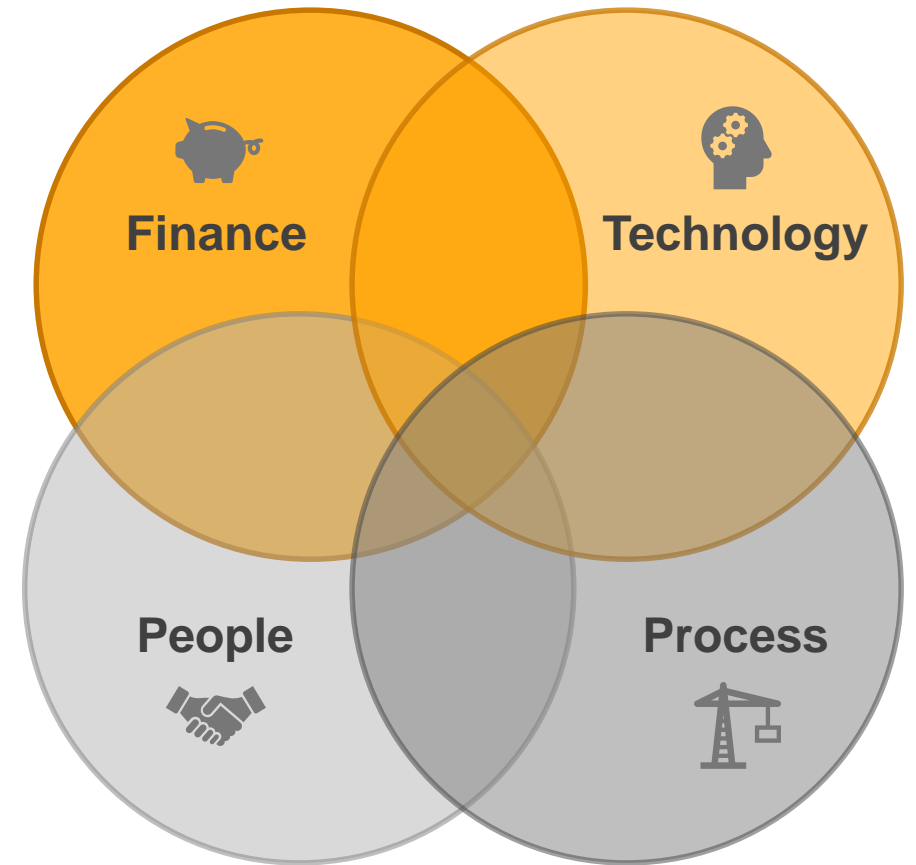
- Not concerned with project scope
- **Totally concerned with returns**
- Entities:
 - Investor
 - Owner
 - Advisor
 - Integrator
 - Supplier



OS2's "Big Ideas"



*17 Transformational
Concepts*



Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	

Research & Development Thrust Areas

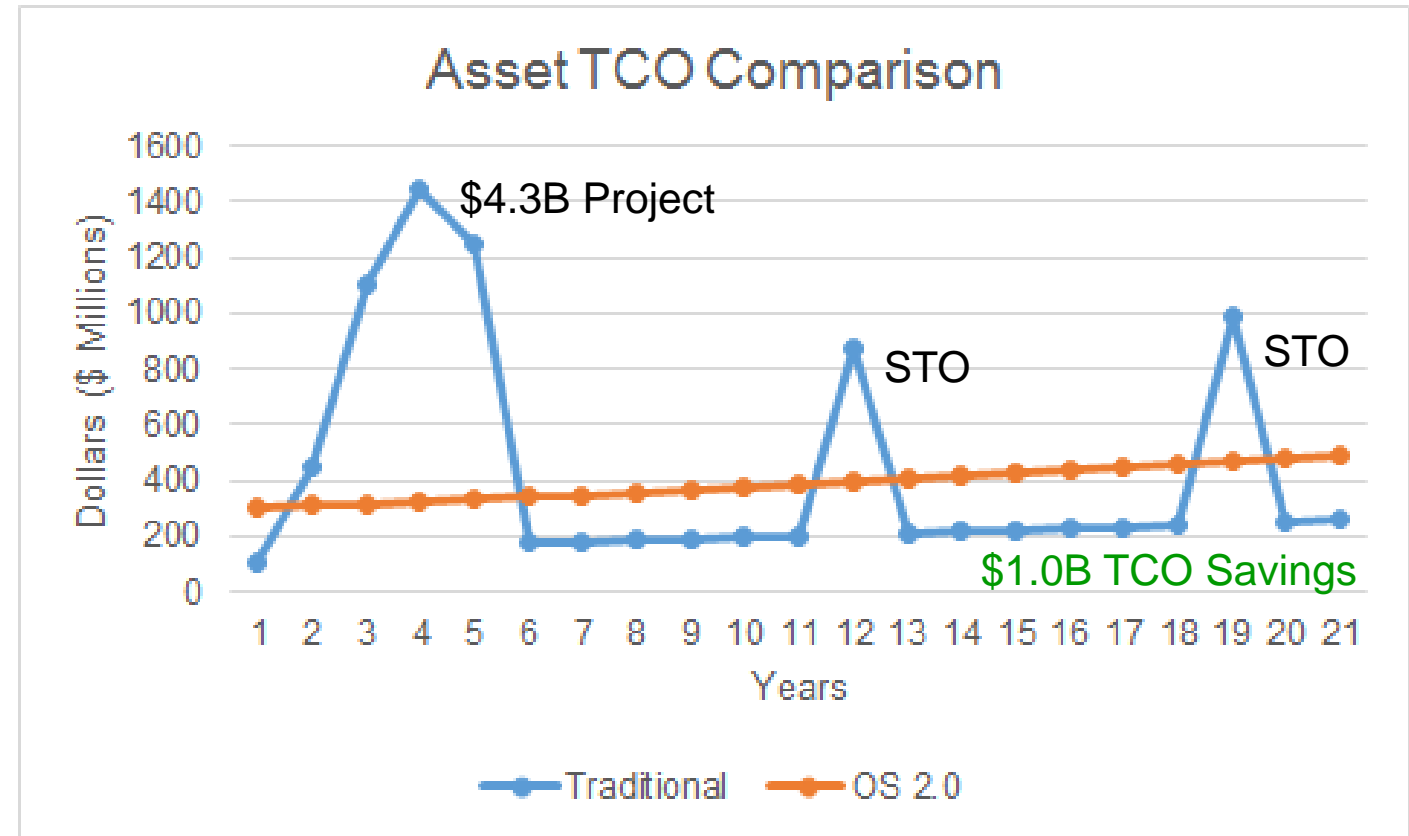
	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	



Flexible Approach to Capital Markets and Investment

• Leasing Model

- Financial markets prefer to spread risk by making many small loans
- Initial capital requirements vs. over time
- Commercial finance vs. investment banking
- Equity participation (improve quality, ROI)





Leasing Primer

- Improves the health of the industry (grows supplier, provider assets)
- Up to 85% reduction in owner's capital requirements
- Borrowing rates of 4.5%, not 11.8%

	Analogy	Balance Sheet	Ownership	Bargain Purchase Option?	Term	NPV	Risks	Accounting	Tax
Capital Lease	Loan	On	Transfer to Lessee	Yes	75+% of Life	>90% of Value	Transfer to Lessee	Lease is an Asset	Lessee Depreciates
Operating Lease	Renting	Off*	Retained by Lessor	No	<75% of Life	<90% of Value	Retained by Lessor	Payments in Operating Expenses	Lessor Depreciates

***FASB Lease Accounting Standard ASC 842 (January 2019)**

(Operating leases going onto balance sheet)

(Sale-leaseback considerations changing significantly)

Flexible Approach to Capital Markets and Investment

- Can we better align market analyses and production projections for a new asset with its development and operation?
 - Build more facilities, each with less capacity and continually re-analyze those decisions in real-time?
 - Initial build = ~40% of forecast capacity
- Take advantage of tax laws, tariffs, domiciles, and depreciation
- Lifecycle Asset Class (MACRS)



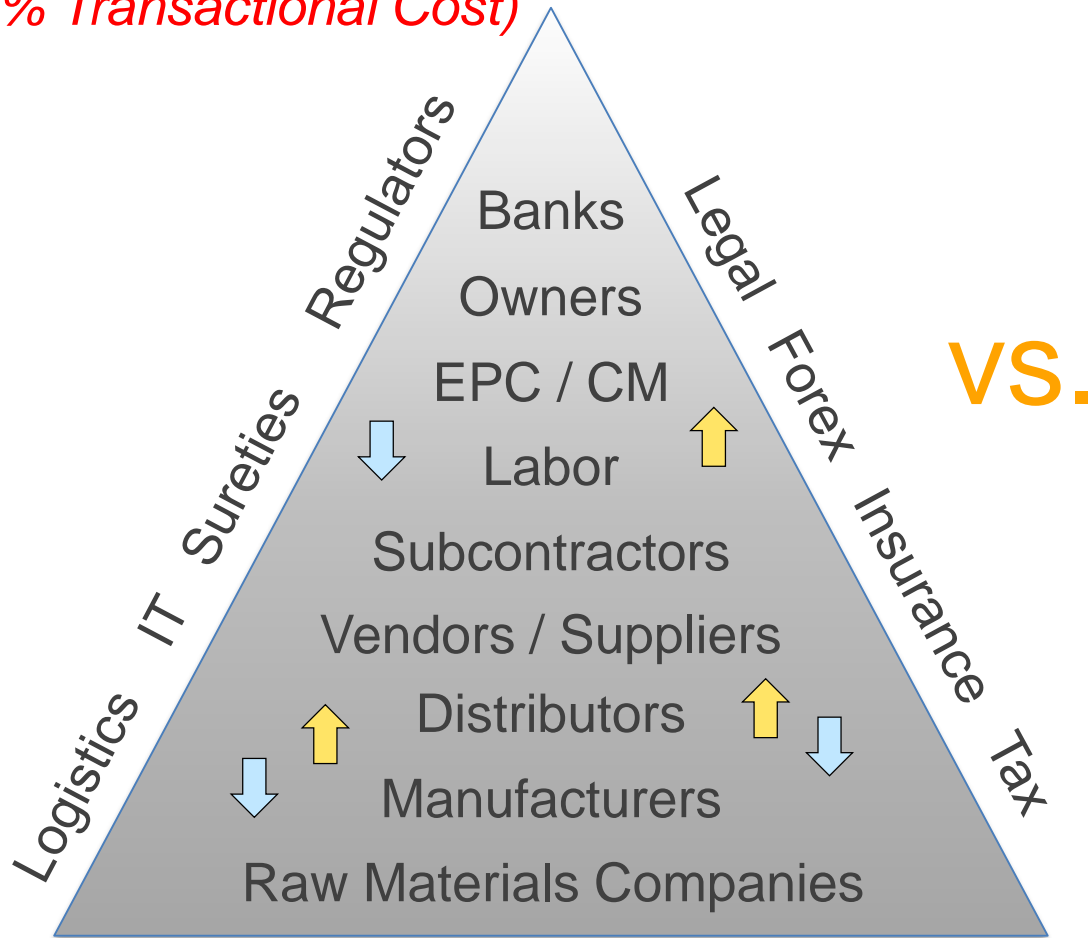
Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	



Cloud-Enabled, Thin Platform

(40% Transactional Cost)



VS.

Capital Markets

(Owners, Private Equity, Bonds, MLP's, Syndicates)

(Open Source, Cloud-Enabled Thin Platform)

Commercial Finance Integrator (IT) Tax

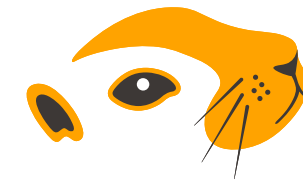
CM
Labor
Licensors
Engineering
Regulators
Manufacturers
Raw Materials Cos.
Contractors
Large Risk Mgmt.
Logistics
MRO

(4% Transactional Cost)

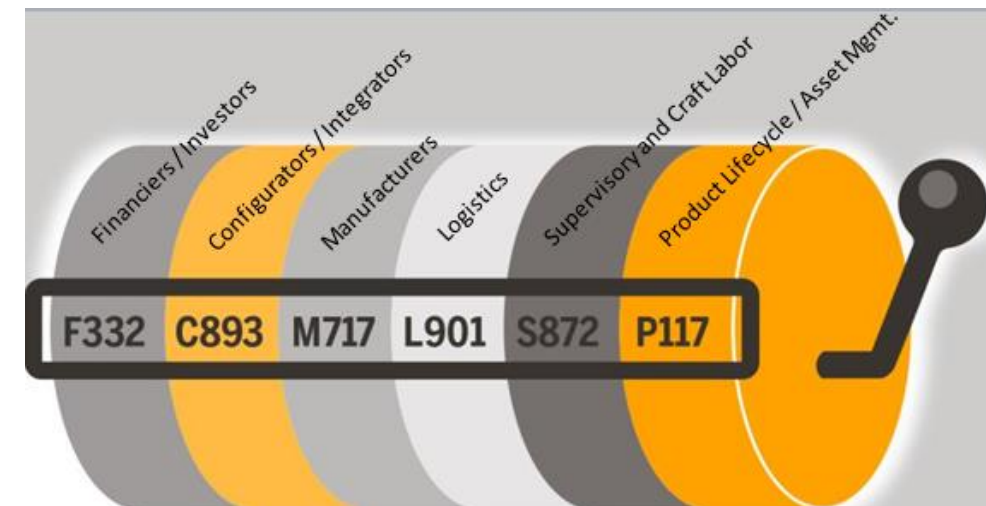


Optimal, Real-Time Selection and Integration

- Pockets of innovation today, but most proprietary and sector-specific
 - There is no business platform for the industry
- Use the project to improve business performance (ROI / ROCE)
- Unleash data from being controlled by the “project team”
 - Dramatic ↑ in information flow and awareness
 - Vastly speed up the project
 - Better, faster decision-making
 - PrairieDog will be the *Selector and Integrator*
- Mine data to enhance business knowledge & profitability
- Open API philosophy



PRAIRIEDOG



Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	



Risk, Insurance, Surety and Bonding



- Lack of trust = protectionist schemes
 - Unfair allocation of risk is common
 - Can we engineer trust back into the system?
- Duplicative insurance (400% excess insurance is common)
- Entire cost centers may be unnecessary



Supply Chain Rationalization



- Historical reasons for the industry's current (massive) purchasing and distribution networks (and inventories)
- Modern economy enables factory-direct sourcing
- Need to rationalize supply chain against an objective function that looks at life cycle value contribution (ROI/ROCE), not just initial cost
- Enabling technologies:
 - Logistics software, Blockchain, cognitive computing



Contracts and Commercial Management

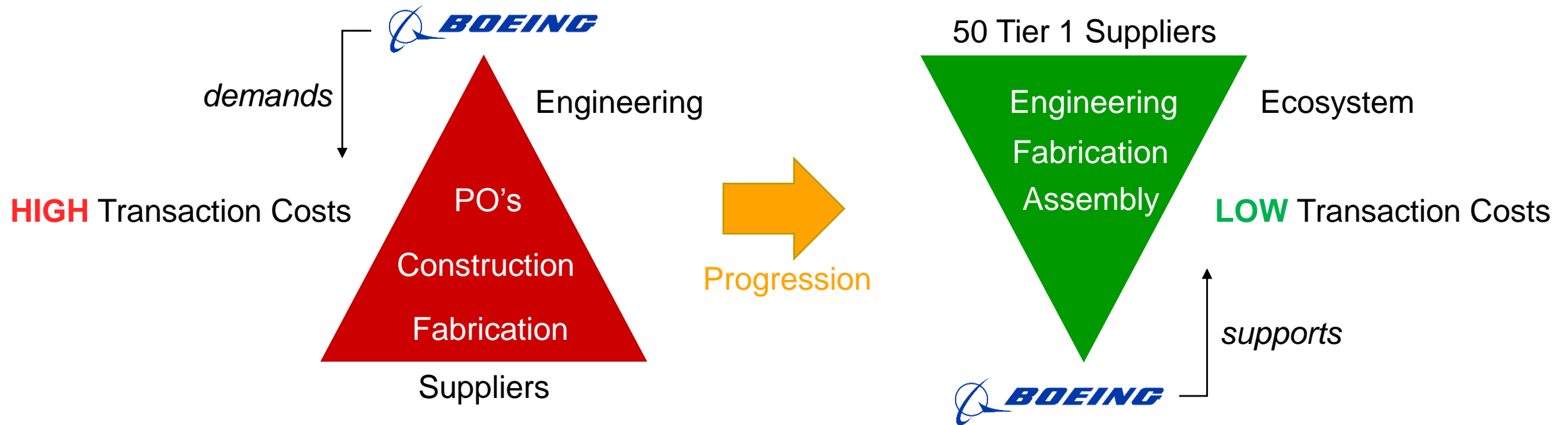
- Relational contracting (not roll-up, M&A)
- New industry compensation models (hour-based billing, ROI/ROCE)
- Global sourcing and transfer pricing
 - Elimination of RFPs and POs
 - Cognitive computing
- Two contracts for a project?
 - Investors and providers
 - C/R and LS = transactional costs





Supplier-Led Design

- B787 Development Cost: From \$10B to \$6B (-40%)
- B787 Development Time: From 6 Years to 4 Years (-33%)



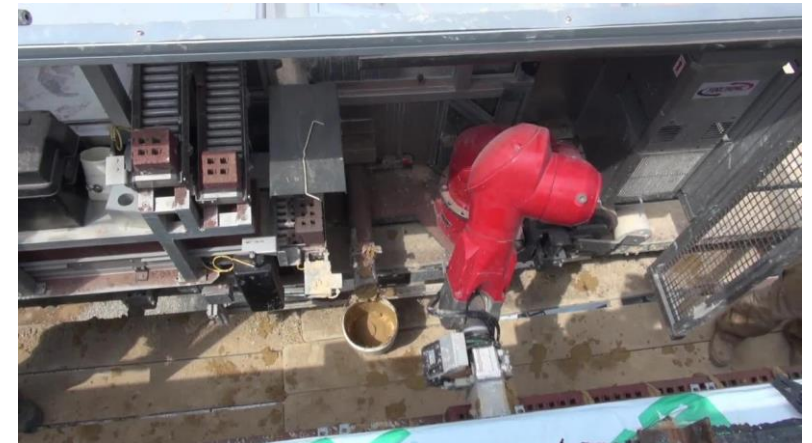
Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	



Workforce of the Future

- **Effective leadership** (financial, decision-making)
- Organizational engineering (project team dynamics)
- Communications and information flow
- Recruitment, retention, training
- **Human / technology / digital interface**
- 1/6th workers at site (shift workers to manufacturing setting)



Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	

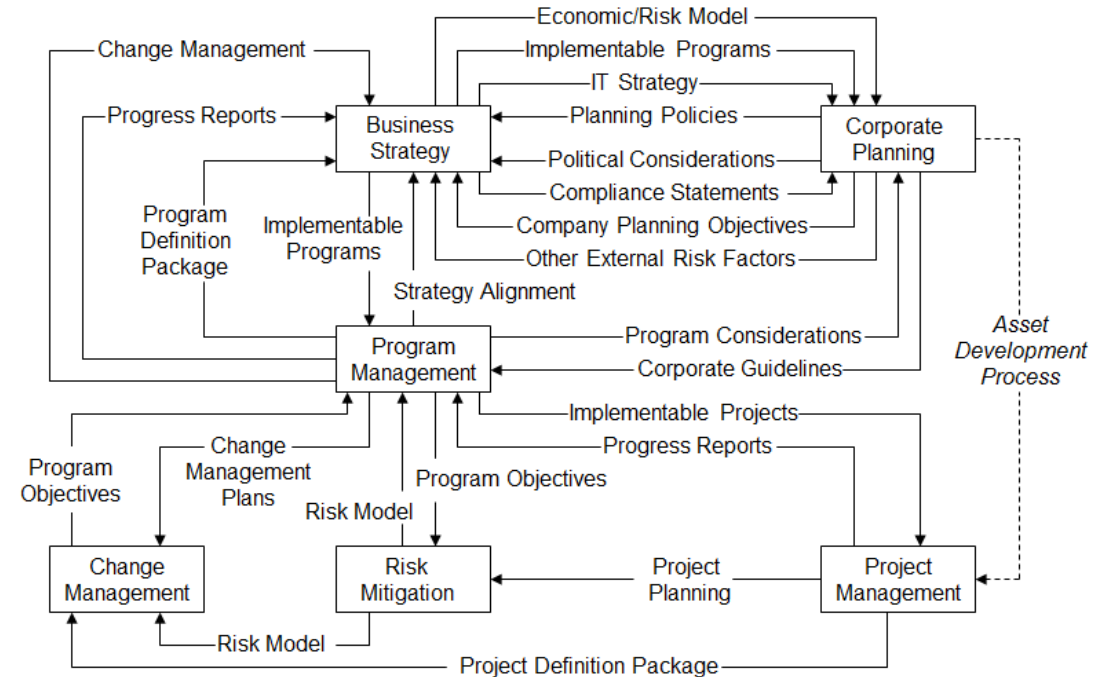
Owner Transformation

Use the project to enhance business value.

- Better align Enterprise, Program, Project (change, risk)
- Corporate (business strategy, long-range planning, capital budgeting, finance, commercial, legal, accounting, government relations, investor relations, tax, regulatory, and operations)
- CAPEX and OPEX (integration)

PRIORITY

5



Make projects a preferred choice of the C-suite.

New Sources of Capital

- Owners do three things:
 - ✓ Idea
 - ✓ Capital (can come from anywhere)
 - ✓ Operations (can be contracted)
- Crowdsourcing capital?
- Listing projects on stock exchange?
- Leverage capital from supply community (facilitated by leasing)
- New credit options for suppliers



Research & Development Thrust Areas

	Research & Development Thrust Area	Priority	Finance	Technology	Process	People
1	Leasing Model	1	✓			
2	Equity Participation in Asset Development	1	✓			
3	Depreciation / Tax Advantages	1	✓			
4	New Accounting Methods	1	✓			
5	Cloud-Enabled Thin Platform	2		✓		
6	Optimal / Real-time Partner Selection	2		✓		
7	Risk, Insurance, Surety, Bonding	3			✓	
8	Supply Chain Rationalization	3			✓	
9	Sourcing Globally / Buying / Transfer Pricing	3			✓	
10	Contract Simplification	3			✓	
11	Work Force of the Future, HR, Training, Safety, Skills, Qualifications	4				✓
12	Flexible Approach Capital Markets / Investment	5	✓			
13	New Credit Facilities	5	✓			
14	Asset Crowdsourcing (Different Owner Models)	5	✓			
15	Agile Planning & Generative Design	6			✓	
16	Design Modularization & Re-Use / Process Simplification	6			✓	
17	Modular Production Methods / Miniaturization	6			✓	



Generative Design & Miniaturization

- Modularization AND Miniaturization
- Preassemblies (mass customization)
- Design reuse and improvement
- Supplier-led design
- Digital twin technology
- Process Intensification (MCPI)



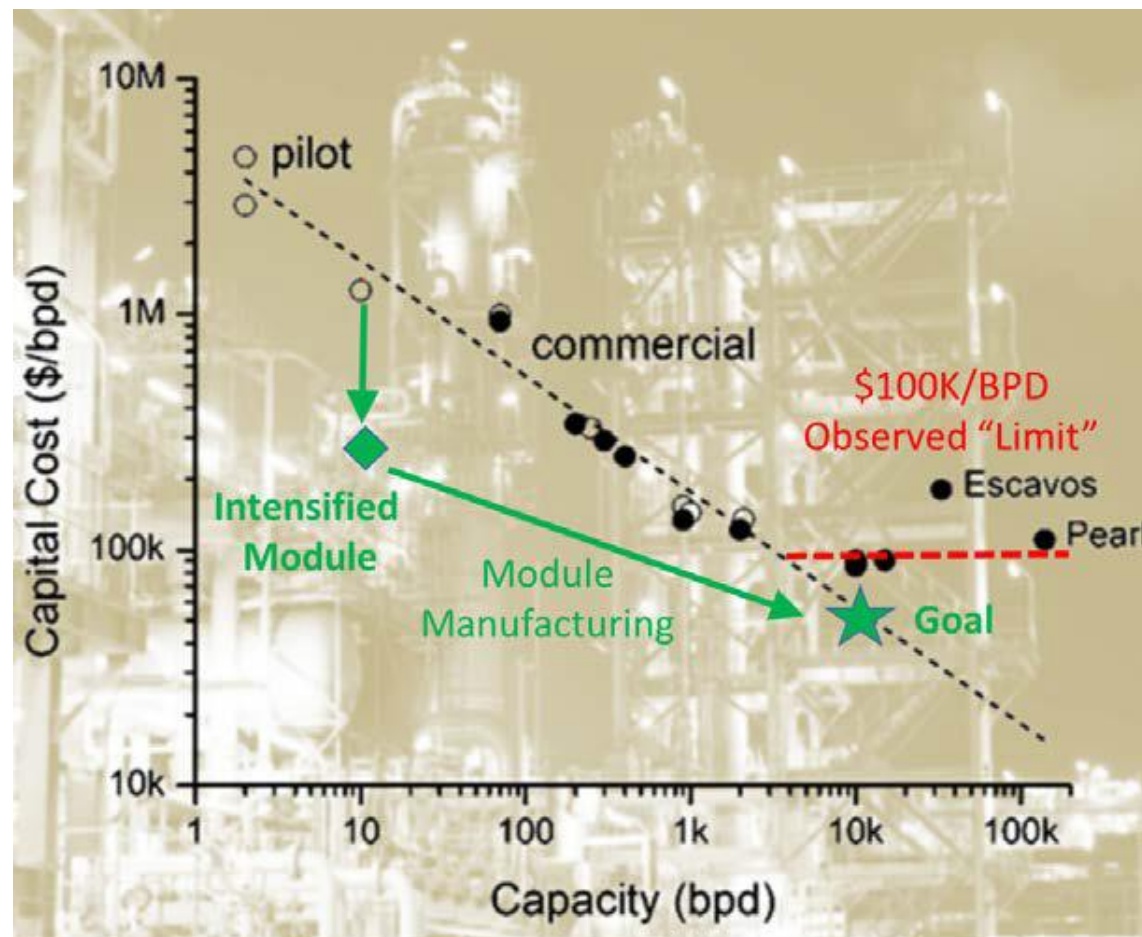
NuScale's combined
containment vessel
and reactor system



$$\begin{aligned}\text{Cost of Facility A} &= \text{Cost of Facility B} * \left(\frac{\text{Capacity of Facility A}}{\text{Capacity of Facility B}} \right)^X \\ &= \$2 \text{ Billion} * \left(\frac{300,000 \text{ BOED}}{150,000 \text{ BOED}} \right)^{0.6} \\ &= \$3.03 \text{ Billion}\end{aligned}$$

Production Economics

- Modular Chemical Process Intensification (MCPI) can drastically reduce per unit cost
 - Microwaves
 - Combined reaction and separation
- Scale-up by “numbering up” through economics of mass production of modules





New Production Methods

- New Management Science (*AGILE* planning, lean, project controls, estimating, etc.)
- Modeling and simulation (Lego path of construction)
- Modular, Miniature (no STO – CAPEX / OPEX)
- Economies of scale and repetition
- Computer-aided, factory-based production





Technology and Systems

- Digital mapping, GPS, BIM, collaboration / connectivity
- Integrated transaction platform (cognitive computing – IBM Watson, GE Predix)
- Data-centric IoT (lifecycle monitoring, inventory tracking, etc.)
- Multi-functional equipment, disposable (recyclable)
- Automation and robotics



Multi-functional & Disposable Equipment
(Biotechnology Manufacturing)

RESULTS

Expected Impact

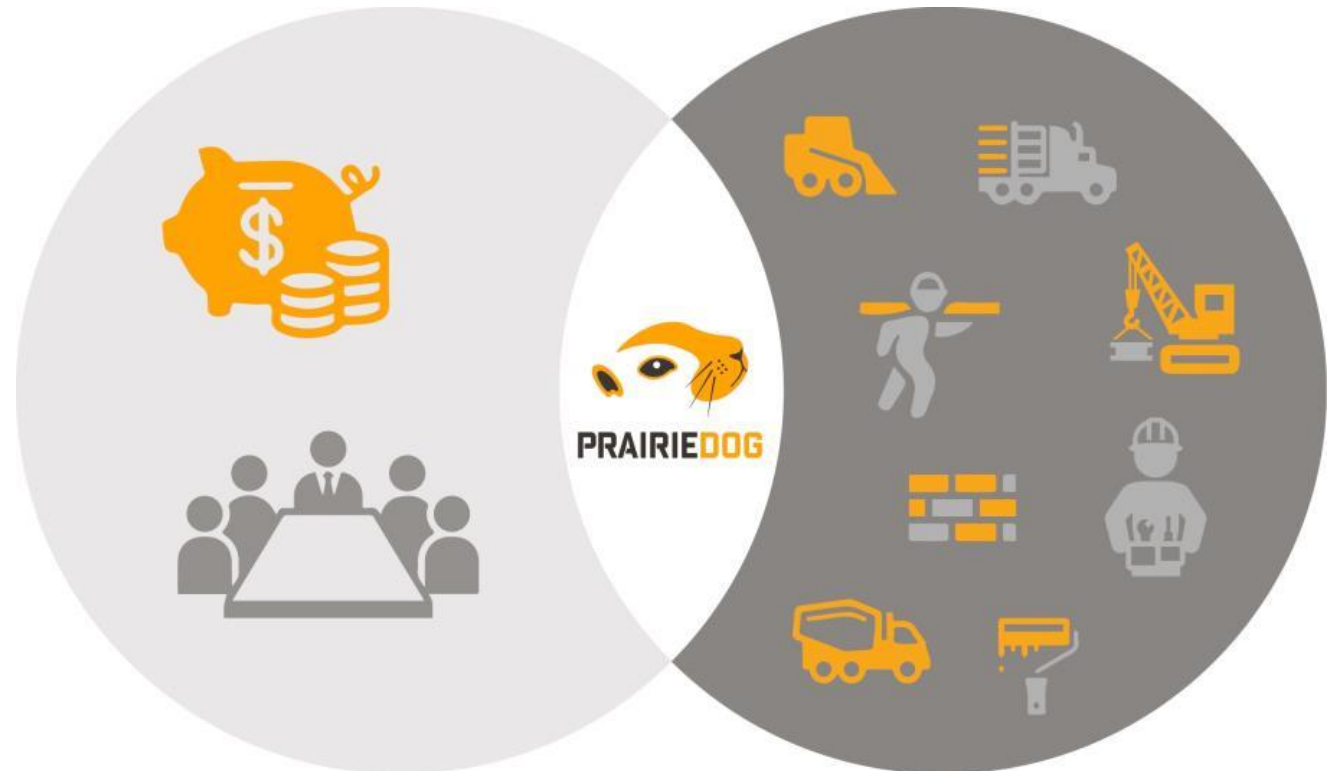


Owner's Total Cost of Ownership (TCO) Impact

- **35%** cost reduction
- **50%** cycle time reduction
- **60%** better ROCE
- **250%** more projects

Plus...

- **300%** more profit for OS2 providers





PRAIRIEDOG





Construction Industry Marketplace and Communication Nexus

Development Plan

Initial 3-Year Term



PrairieDog Product Development Road Map

	2H 2018	1H 2019	2H 2019	1H 2020	2H 2020	1H 2021
Milestone	<ul style="list-style-type: none"> Summit / Launch IAP 		<ul style="list-style-type: none"> Report RT progress at CURT and CII Annual Conferences 		<ul style="list-style-type: none"> Platform "Live" testing Launch Announcements PrairieDog "presence" at industry events 	
Research	<ul style="list-style-type: none"> Fund PD and IAP Set research priorities 	<ul style="list-style-type: none"> Add RTs and topics Launch first RTs 	<ul style="list-style-type: none"> Active RTs in all four research thrust areas 	<ul style="list-style-type: none"> RTs publish Update research priorities 	<ul style="list-style-type: none"> Expand and continue research 	<ul style="list-style-type: none"> Expand and continue research Update research priorities
Funding	<ul style="list-style-type: none"> Initial IAP-PD member commitments 	<ul style="list-style-type: none"> Increase membership and IAP-PD funding 	<ul style="list-style-type: none"> IAP-PD new member recruiting and funding 	<ul style="list-style-type: none"> IAP-PD new member recruiting and funding 	<ul style="list-style-type: none"> IAP-PD new member recruiting and funding 	<ul style="list-style-type: none"> IAP-PD new member recruiting and funding
Organization	<ul style="list-style-type: none"> Stewardship of PD Partial professional leadership of PD 	<ul style="list-style-type: none"> PD recruiting and hiring Grow RTs Create partnerships 	<ul style="list-style-type: none"> Full professional leadership at PD 	<ul style="list-style-type: none"> Technical team growth Product sales team growth 	<ul style="list-style-type: none"> Full organizational capability 	<ul style="list-style-type: none"> Growth organization Partnering, allied organizations 
Platform	<ul style="list-style-type: none"> Investigate platforms and technology boundaries 	<ul style="list-style-type: none"> Research essentials Develop Functional Requirements Document (FRD) 	<ul style="list-style-type: none"> Initial platform testing (Alpha) Evolve FRD 	<ul style="list-style-type: none"> User testing (Beta) First test project Feature development 	<ul style="list-style-type: none"> Go "Live" PD Platform 	<ul style="list-style-type: none"> Industry capability development 

Research Team Composition (Financial Thrust Area 1)

Example

Other participants include:

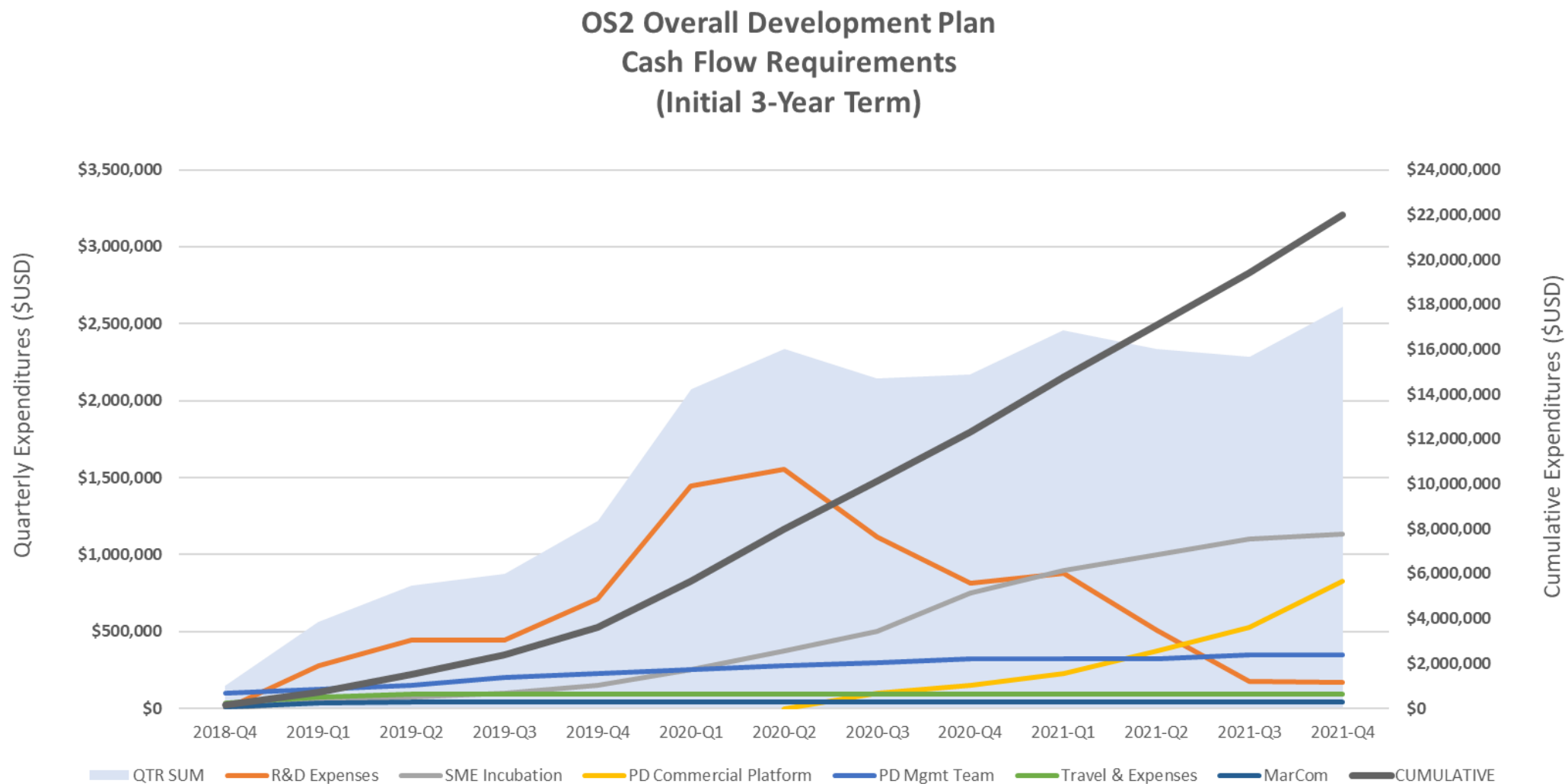
- IT consultant
- Accounting firm
- Others as required

Qty.	Expertise	Sector
1	PDVP Liaison / Lead	PDVP
1	Administration	PDVP
1-2	SME – Accounting	Industry
1-2	SME – Finance	Industry
1-2	SME – Legal	Industry
1-2	SME – Engineering / Construction	Industry
1	Academic – Accounting	University
1	Academic – Finance	University
1	Academic – Legal	University
1	Academic – Engineering / Construction	University
3	Research Assistants	University
≈15		

Start-Up Budget ≈ \$22 Million (Initial 3-Year Term)

	2019	2020	2021	Total
R&D and Incubation	\$2.3M	\$6.8M	\$5.9M	\$14.9M
PDVP Management & Staffing	\$0.8M	\$1.2M	\$1.3M	\$3.3M
Commercial Platform Development	\$0	\$0.3M	\$1.9M	\$2.2M
Travel / Legal / Insurance / Other	\$0.3M	\$0.4M	\$0.4M	\$1.1M
Marketing / Communications	\$0.1M	\$0.2M	\$0.2M	\$0.5M
Total	\$3.5M	\$8.9M	\$9.7M	\$22M

Overall Cash Flow Forecast (Initial 3-Year Term)



Declaration of Commitment



Companies & Consortiums Interested / Supporting OS2

OS2 Consortiums

- 1 ABC
- 2 AGC
- 3 AIA
- 4 BRE
- 5 CII
- 6 COAA
- 7 CPF
- 8 CURT
- 9 ECI / CE (EU)
- 10 ECITB (UK)
- 11 EDRC (RSK)
- 12 IMPACT
- 13 LCI
- 14 NAC
- 15 NCCER
- 16 PPI
- 17 Project Norway
- 18 RAPID (DoE/AICHe)

OS2 Companies

- | | | |
|----------------------------|--------------------------|--------------------------------|
| 1 Air Products & Chemicals | 23 ExxonMobil | 45 Mitsubishi Heavy Industries |
| 2 Alberici | 24 General Electric | 46 Odebrecht |
| 3 Andeavor | 25 General Motors | 47 Oneok |
| 4 Autodesk | 26 Gray Construction | 48 Petronas |
| 5 Baker Concrete | 27 Fluor | 49 Pillsbury Law |
| 6 Barton Malow | 28 Hargrove | 50 Procter & Gamble |
| 7 BASF | 29 Haskell | 51 Pioneer |
| 8 Bechtel | 30 Hatch | 52 Praxair |
| 9 Bentley | 31 Hexagon | 53 PTAG |
| 10 BHP | 32 Honeywell | 54 Rockefeller Group |
| 11 Black & Veatch | 33 IBM | 55 Roeslein |
| 12 BMW Constructors | 34 Intellwave | 56 Rosendin Electric |
| 13 BP | 35 Jacobs | 57 SABIC |
| 14 Brick & Mortar Ventures | 36 Kajima | 58 Saudi Aramco |
| 15 Burns & McDonnell | 37 KBR | 59 Shell |
| 16 Cenovus | 38 Kiewit | 60 Skanska |
| 17 Concord Technologies | 39 LyondellBasell | 61 Southern Company |
| 18 Day and Zimmerman | 40 Mammot Canada Western | 62 Suncor |
| 19 Dow | 41 Matrix Service Co. | 63 Stevens Engineering |
| 20 Duke Energy | 42 McKinsey | 64 Technimont SpA |
| 21 DuPont | 43 Metrolinx | 65 Victaulic |
| 22 Enbridge | 44 Milestone Capital | 66 WorleyParsons |
| | | 67 Zurich |



***“By the industry,
for the industry”***

Operating System 2.0 Opportunity

- Participate as an investor
 - ✓ *Cost: \$0.50M or \$0.25M/year for 3 years (or more as desired)*
 - ✓ *Royalty-free use of PrairieDog platform and related solutions*
 - ✓ *Potential to earn a return based on performance of the PrairieDog business*
 - ✓ *Owner benefit: 35% lower cost, 50% cycle time reduction, 60% improved ROCE*
 - ✓ *Provider benefit: 250% more volume, 300% improved profitability*
- Participate in R&D efforts
- Pilot projects

Owner Summit #1 – September 13, 2018 (Chicago, IL)

Operating System 2.0 – A Declaration of Commitment

The leaders of the built environment recognize a need to revolutionize the way our industry delivers capital projects and programs. As the custodians of society's infrastructure, we have a responsibility to drive massive improvements in cost, schedule, quality, and safety performance which support the needs of our citizens. This must be done in way that creates value rather than erodes it.

Our choice is simple: achieve these results in a way that delivers greater value, or face value migration from external forces. To thrive in a dynamic and changing world, our industry must be more adaptable, agile, and responsive to the complex challenges it faces.

We declare these beliefs and intentions:

- ***We will reduce the organizational layers and information gaps between the end user and those delivering the asset.***
- ***We will deploy new financial vehicles to maximize financial and societal benefit.***
- ***We will focus on the total cost of facility ownership.***
- ***We will embrace true collaboration with better risk management that builds trust.***
- ***We will value the innovation, creativity, and inventiveness of people to meet the challenges in our built environment.***

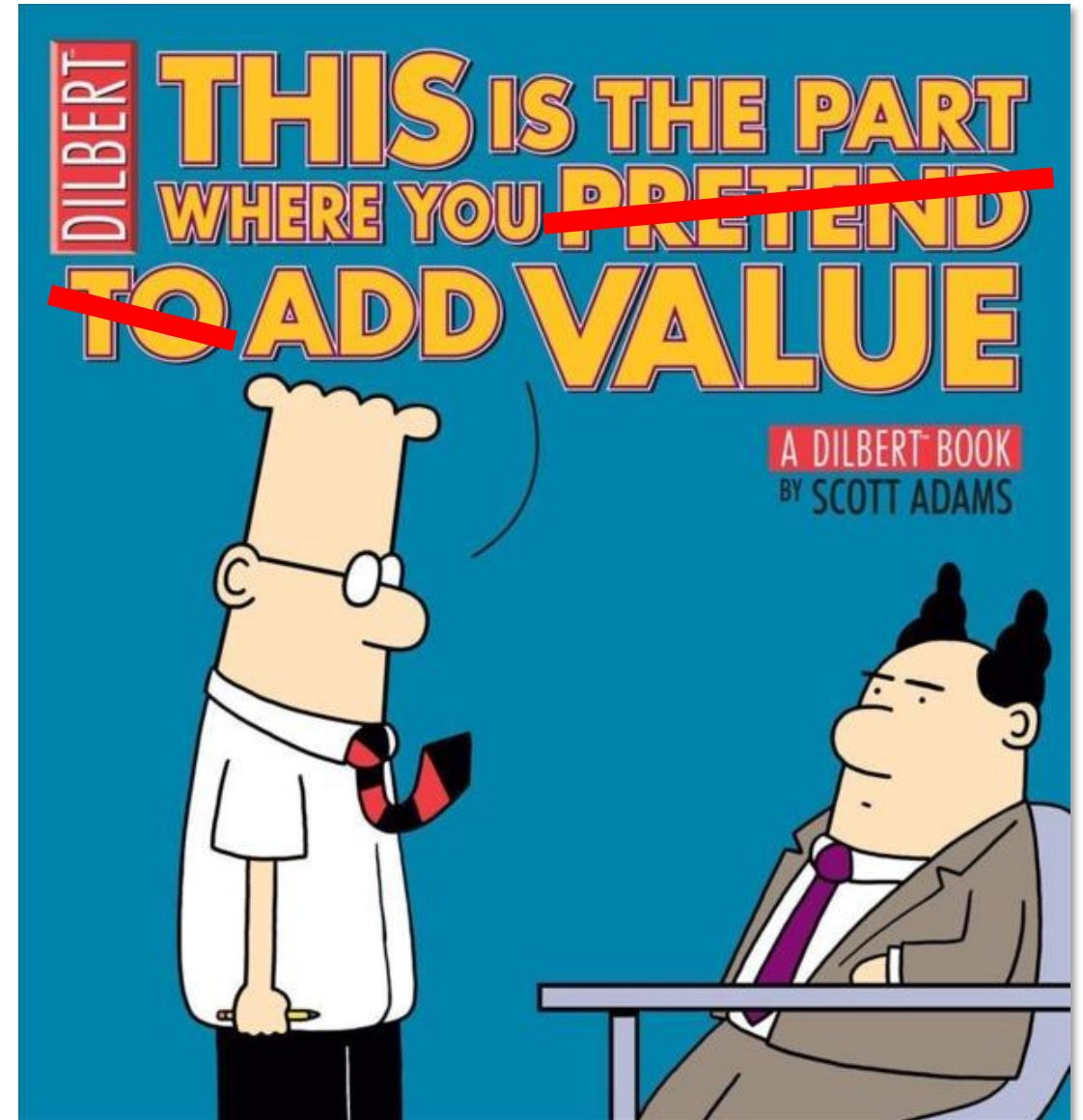
We, the undersigned, firmly stand by this declaration and are committed to lead and bring about this change in our industry through Operating System 2.0 (dba PrairieDog).

Further, the undersigned organizations intend to support these goals and bring them to fruition by investing in PrairieDog Venture Partners directly or by contributing to the related Industrial Affiliate Program (IAP) research at the University of Texas at Austin.

Call to Action (Get Involved)!

Questions?

Stephen Mulva, Ph.D.
Director, CII
smulva@cii.utexas.edu
(512) 232-3013



Break-Out Session



Break-Out Session Questions

- Are we directionally correct with OS2 and its the 17 “Big Ideas”?
- What are we missing? How can we improve the OS2 vision?
- Where will we run into challenges and/or meet resistance?
- Who can we engage to help us along the OS2 journey?
- Is OS2 of specific interest to your company(ies)?
- Do you want to learn more? Do you want to get involved?

Break-Out Session Topics: Group 1

- Leasing Model
- Equity Participation in Asset Development
- Depreciation / Tax Advantages
- New Accounting Methods
- Flexible Approach Capital Markets / Investment
- New Credit Facilities
- Asset Crowdsourcing (Different Owner Models)



Break-Out Session Topics: Group 2

- Cloud-Enabled Thin Platform
- Optimal / Real-time Partner Selection



Break-Out Session Topics: Group 3

- Risk, Insurance, Surety, Bonding
- Supply Chain Rationalization
- Sourcing Globally / Buying / Transfer Pricing
- Contract Simplification



Break-Out Session Topics: Group 4

- Work Force of the Future:
HR, Training, Safety, Skills, Qualifications



Break-Out Session Topics: Group 5

- Agile Planning & Generative Design
- Design Modularization & Re-Use / Process Simplification
- Modular Production Methods / Miniaturization

