

# OPERATING SYSTEM 2.0

COLLABORATING TO REDEFINE THE  
CAPITAL PROJECTS INDUSTRY

# THE ISSUE

The Capital Projects Industry is **unsustainable** for many sectors of the global economy. Many capital projects either **lack new technology**, **effective management**, or both. Current processes are **not agile or flexible** enough to accommodate change and lack the foresight to envision the operating reality four years in the future. "plan the work, work the plan," doesn't work.



Our house  
is on fire.

-Brendan Bechtel  
CEO Bechtel Group



**RAPID**  
CHANGES IN  
**BUSINESS**



**OUTDATED**  
INDUSTRY  
PROCEDURES



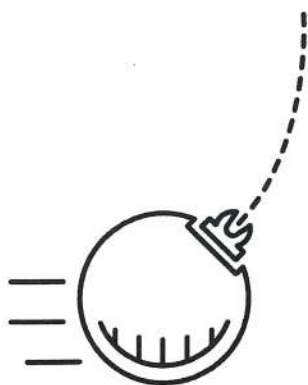
**FINANCIALLY**  
INFEASIBLE  
CAPITAL PROJECTS



**DIMINISHED**  
SHAREHOLDER  
**VALUE**

# THE SOLUTION

## O.S. 2.0



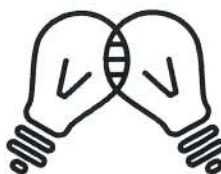
**FUNDAMENTAL**  
**SWEEPING**  
**CHANGE**

This change, known as Operating System 2.0 is a multi-industry spanning, collaborative, research supported, effort that aims to redesign industry procedures and standards with current technological advances in mind. The goal of OS 2.0 is to create a standardized, technology-enabled platform that accommodates future change and makes capital projects more financially viable and sustainable.

**RESEARCH**  
SUPPORTED  
REDESIGN



**JOINT**  
INDUSTRY  
VENTURE



**DESIGNED TO**  
**ACCOMMODATE**  
**CHANGE**





# THE 7 ELEMENTS

SEVEN CONTEMPLATED ELEMENTS OF OS2. THIS NEW APPROACH IS IN ITS BEGINNING STAGES OF FORMATION, RESEARCH AND DEVELOPMENT.

## 1 CORPORATE GOVERNANCE

- Aims to:
  - Make capital projects the lever of choice when growing shareholder value
  - Move away from the time-consuming and costly stage-gate approach
  - Shift priority away from mergers and acquisitions, towards capital projects and organic growth
  - increase earnings per share
- The benefits of program management are emphasized
- Integrate SBU and corporate processes, blend CAPEX and OPEX



## 2 COMMERCIAL MODEL

- Relational contracting with up to hundreds of entities
- "shared gain, shared pain." contracts
- Substantial reductions in transactional costs
- Encourages creative tension between shareholders, which drives innovation and eliminates non-value added activities
- Pays for innovation and base design instead of engineering hours
- Attracts new shareholders to capital projects, including financiers and regulatory agencies



## 3 DESIGN

- OS2 will take a close look at issues of:
  - design reuse
  - new process design
  - miniaturization for flexibility in a changing marketplace
  - supplier-led design
  - driving more production into a manufacturing environment in order to improve Quality and decrease development time
- Designing in parallel instead of in series
- Capitalize on moving digital designs into digital fabrication





## 4 PRODUCTION SYSTEMS

- Develop new forms of management science, based on the needs of the capital projects industry
- Create end-to-end product lifecycle requirements that:
  - Eliminate waste
  - Combat the introduction of counterfeit products
  - Eliminate estimating requirements, purchase orders, and wasted transactional costs related to inventories
  - Consider human, equipment, and financial resources first
- Aims to correct time requirement discrepancies and improve production management methods.



## 5 TECHNOLOGY & SYSTEMS

- Open-source system for use by all shareholders in a program or project.
- Leverages interoperability to help optimize energy use, inventory tracking, and overall lifecycle cost.
- Utilizes the technological advances of suppliers in order to:
  - Optimize project designs and manufacture of products
  - Provide lower project costs and faster deliveries
  - Revolutionize the business results possible for all shareholders in a capital project



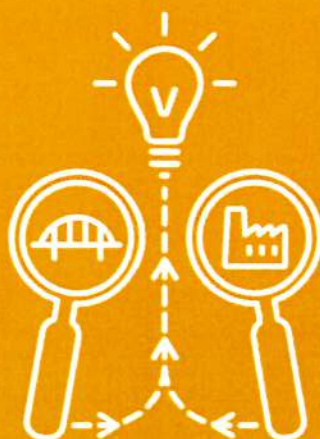
## 6 HUMAN RESOURCES

- Focus on recruiting and retaining employees with excellent skills in:
    - Leadership
    - Communication
    - Organization
- Which will be high demand as the number of globally-distributed projects with hundreds of involved shareholders continues to increase
- Create new training and enculturation methods



## 7 R & D JOINT VENTURE

- Approximately 30% of the composition of OS2 is already known and 70% is not
- A group of six leading industry groups are coming together to help lead the research and development for OS2
- R&D is anticipated to take \$16 million dollars and three years, beginning in the first quarter of 2018
- 75% of the funding will come from approximately eight companies
- OS2 is being established as its own entity
- A trustee-based governance model with a dedicated management team is coming together for the three-year duration of the R&D effort
- The U.S. tax code allows OS2 R&D entities to be tax-exempt





# MOVING FORWARD



The Construction Industry Institute (CII) has already begun work on a research project as a preface to the research and development for Operating System 2.0. Eventually, OS2 will become a platform for the development of capital projects through the commercialization of OS2-compliant products and services. CII has partnered with **leading researchers** from Texas A&M University, the University of Denver and Continuum Advisory Group to conduct **three visioning workshops** in different cities (Houston, San Francisco, and Detroit) during **summer 2017**. Specific individuals were invited to these workshops to help answer the essential question: **"In what ways might business value be generated through capital programs?"** The response to CII's invitation has been overwhelming. Clearly, there is pent-up demand for the capital projects industry to revolutionize its performance. **The time for Operating System 2.0 is here.**

## HAVE IDEAS TO CONTRIBUTE?

### HERE'S HOW TO GET INVOLVED



Stephen Mulva

[smulva@cii.utexas.edu](mailto:smulva@cii.utexas.edu)

(512) 232-3013