Front End Management in the USA

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http://www.concept.ntnu.no/english/

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Front End Management in the United States

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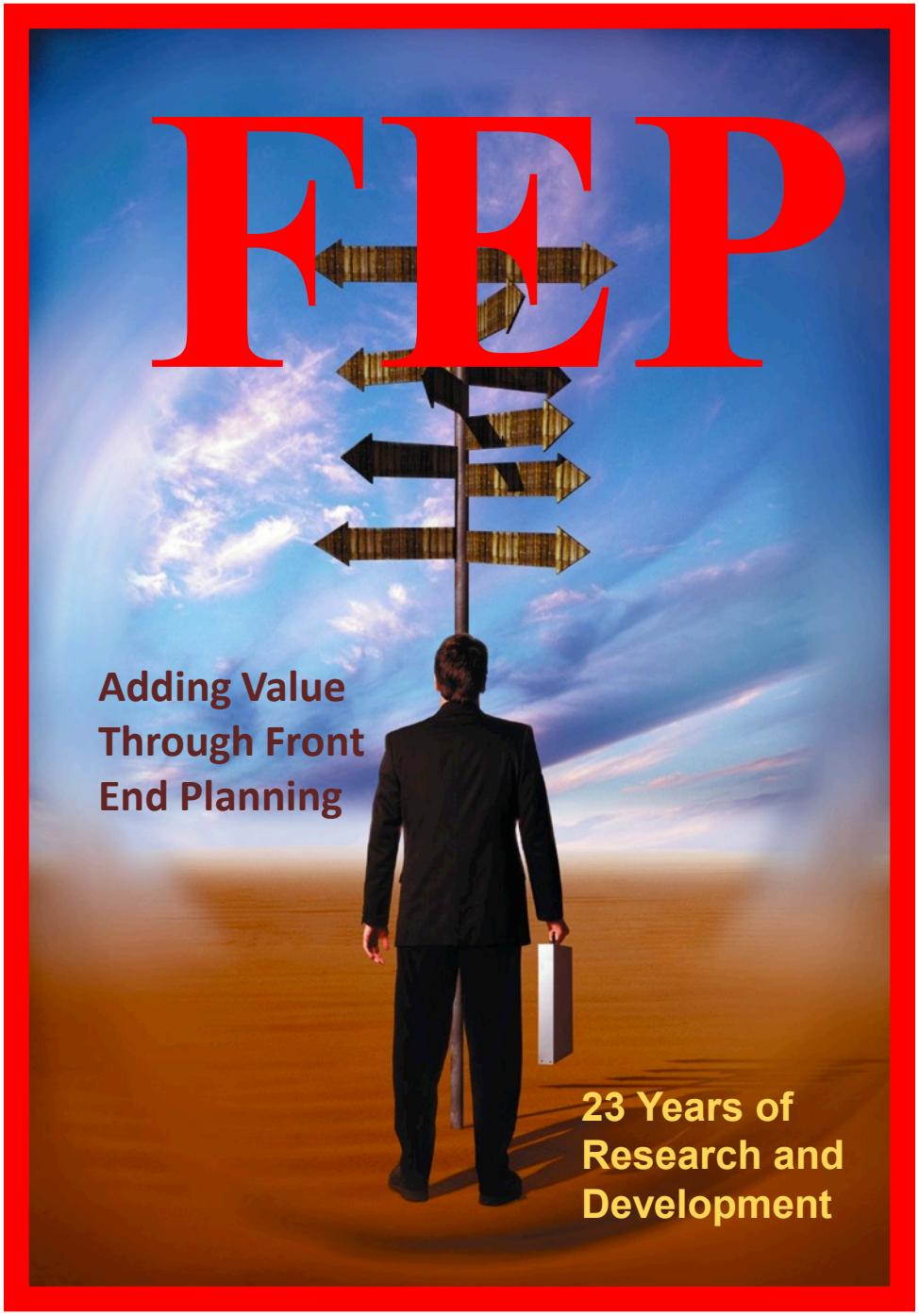

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Years of Front End Planning (FEP) research

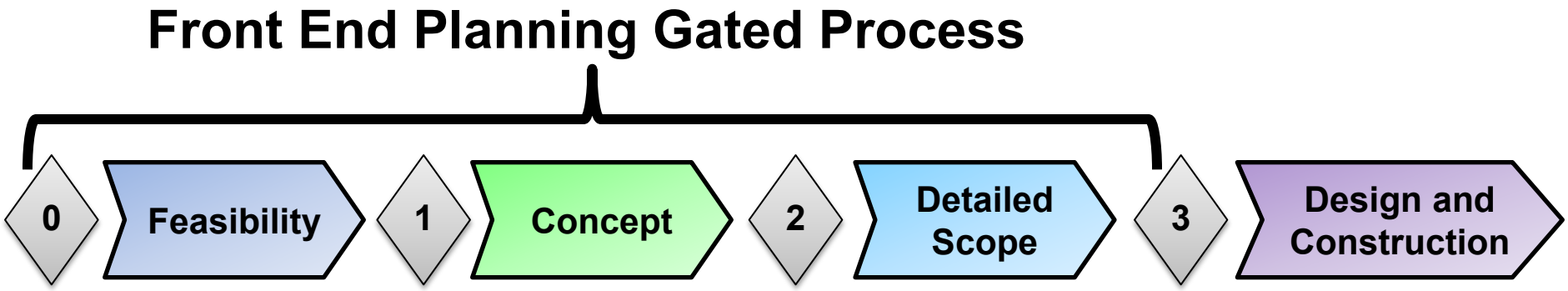
ASU Ira A. Fulton Schools of Engineering
ARIZONA STATE UNIVERSITY

Organizations in US that build facilities

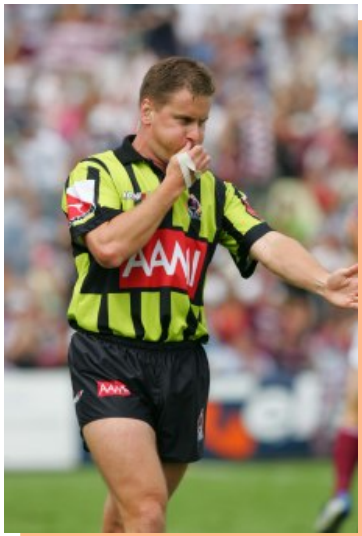
public and private

- ***27 US federal agencies***
- ***50 states (with similar number of agencies)***
- ***Over 19,000 cities***
- ***Over 3,100 counties***
- ***Over 1.5 million nonprofits***
- ***Over 160,000 businesses (>100 employees)***

Hence, what I will give you is basic information, but certainly not representative of all

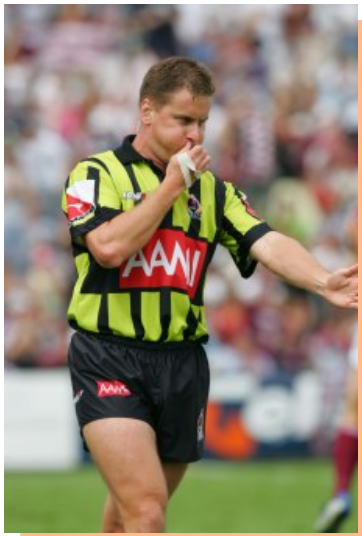

Front End Planning Gated Process
0
Feasibility
1
Concept
2
Detailed Scope
3
Design and Construction

Nine Rules of the Game



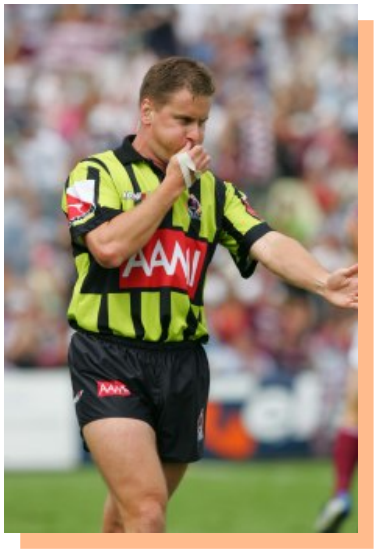
1. Defined Front End Planning process, including:
   - a structured process with approval gates
   - adequate planning resources
   - periodic status reviews
2. Use of scope definition tools
3. Adequate existing conditions definition
4. Correct acquisition/contracting strategy

Nine Rules of the Game, cont'd



5. Alignment, including adequate stakeholder involvement and good communication
6. Familiarity with project type, technology or location
7. Team building / teamwork
8. Experienced and capable personnel

The most important rule of all…
"Leadership at all Levels"



9. Leadership in the process
   - Executive
   - Project
     - Owner
     - Contractor

These rules must be applied in the context of the strategic focus of the organization

The Numbers Behind the Discussion

10

Front end planning research studies

3

Industry sectors studied with front end planning research

280+

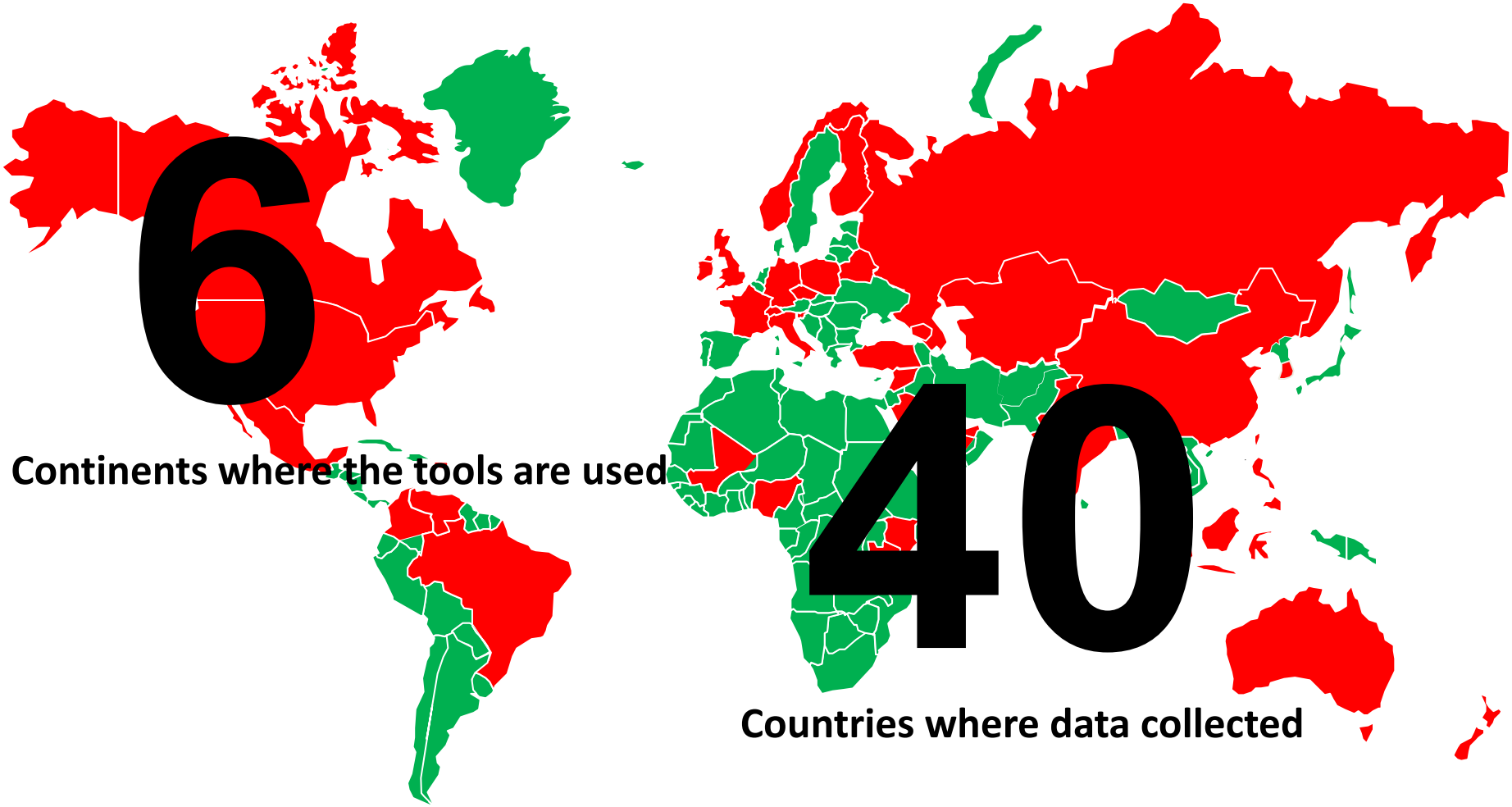
Organizations contributing to research

>$100B

Total value

>1100

Projects studied



6

Continents where the tools are used

40

Countries where data collected

In 1994

CII's Pre-P ect Pla ing Research Team sta d t t:

"Front e plann g is p edominantly a owner f on."

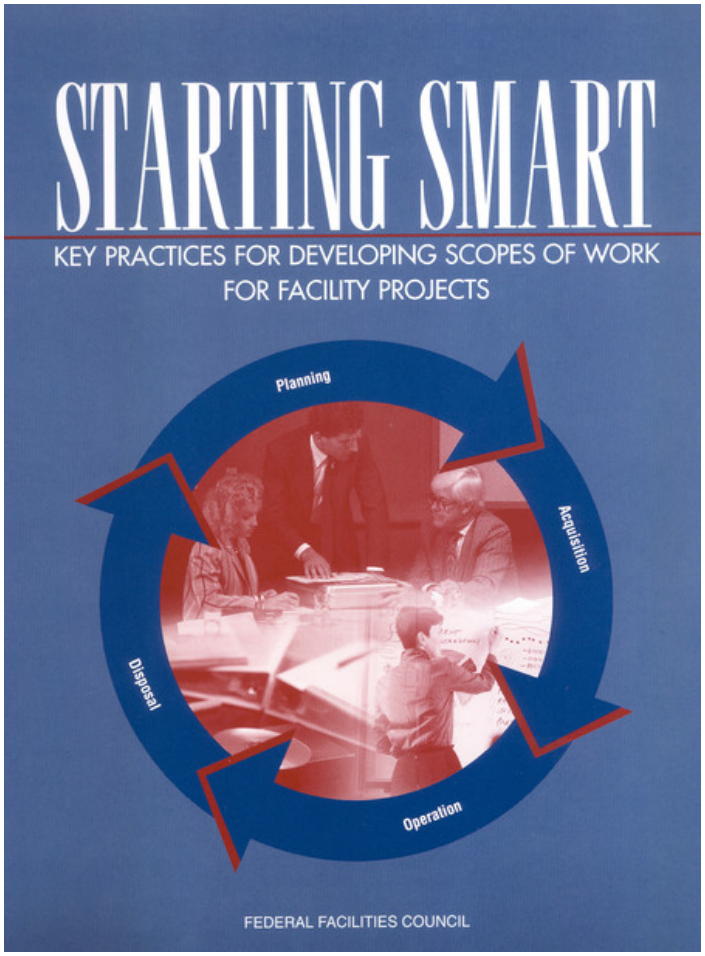
What has changed since 1994?

- Owner organizations
- Speed to market
- Project delivery methods
- Global sourcing
- Sustainability and security
- Information technology

Result: Owners must regain capabilities to front end plan.

Result: Designers and contractors must be more aggressive in front end planning for and with owners.

Study for US Federal Facilities Council, 2003



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Background

- US Federal facilities projects >$40 billion/year
- At least 27 Agencies oversee this process
- Each has to develop the design basis and communicate that basis to the designer

Interviewed Organizations

- Department of Defense
- Department of Energy
- Department of State
- Department of Veterans Affairs
- General Services Administration
- Indian Health Service
- International Broadcasting Bureau
- NASA

Interviewed Organizations (cont'd)

- Naval Facilities Engineering Command
- Smithsonian Institution
- U.S. Air Force Air Combat Command
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- Consultants

Findings – *process*

1. Agencies need to ensure they are pursuing the right project.
2. Planning excellence exists in pockets, but is not widespread.
3. Planning efforts need to be tailored to the specific project.
4. An adequate scope of work requires significant effort.
5. Project scope verification with key stakeholders is critical.

Findings – *process*

6. Structured identification and management of risk – prior to “locking in” to a budget – is vital.
7. Few use risk quantification tools prior to requesting detailed design funds.
8. Performance measurement is generally lacking.
9. Planning efforts appear to be limited to major projects.

Findings – *resources*

10. Effective planning requires 1.5-5% of total project cost.
11. Planning funds are sometimes shifted to more urgent operational priorities.
12. Planning is not taken seriously enough, and needs can change, during the federal budget cycle (length).
13. Few agencies adequately train their staffs on planning issues.

Findings – *resources*

14. Training and hiring is needed to counter the loss of personnel and expertise through attrition.
15. The project manager should be involved early in the scope development process.

Adding Value

“reaping the benefits”

6 - 25%

Average cost savings through effective front end planning

6 - 39%

Average schedule savings through effective front end planning

For example, 2006 study

- Sample: 609 projects, $36 billion
- Effective front end planning:
  - Cost: 10 percent less
  - Schedule: 7 percent shorter delivery
  - Changes: 5 percent fewer

1.5 - 5%

Average cost of effective front end planning depending on type and complexity (in relation to total project cost)

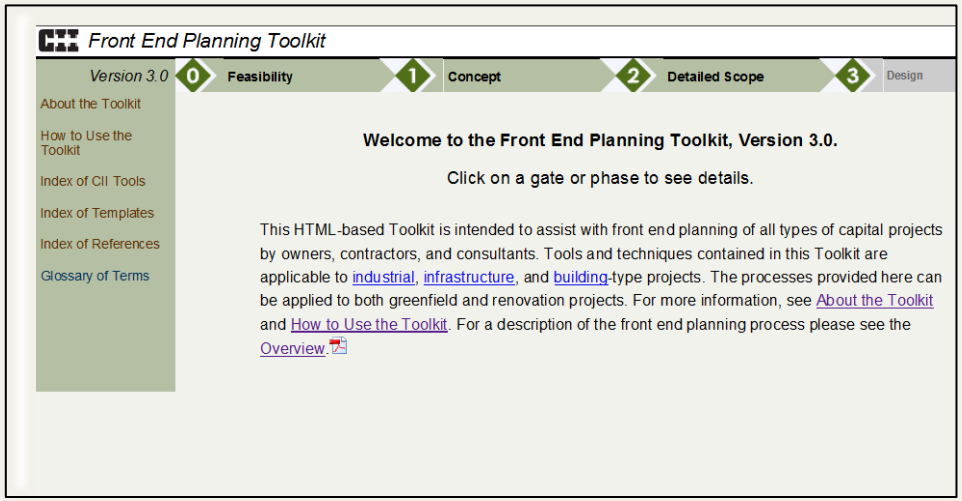
3 - 10:1

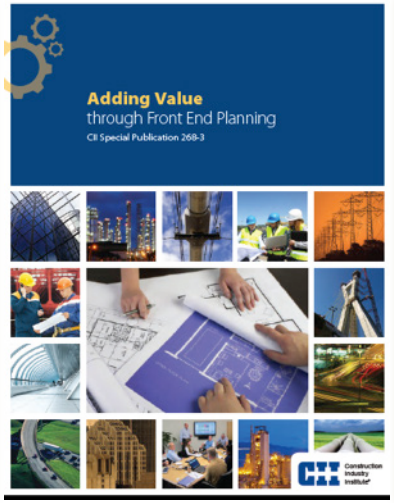
Average return through effective front end planning

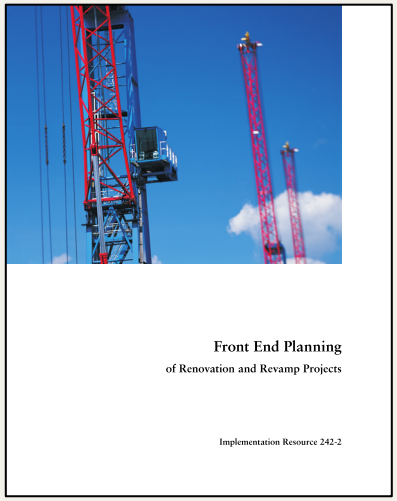
7

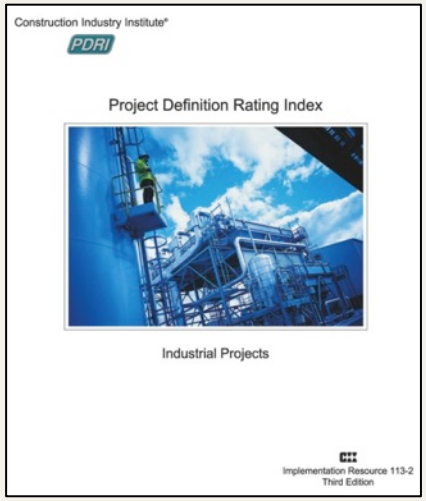
Number of CII front end planning tools

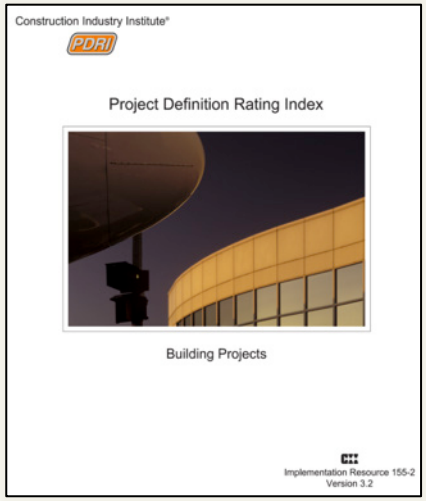
CII Suite of FEP Management Tools Available

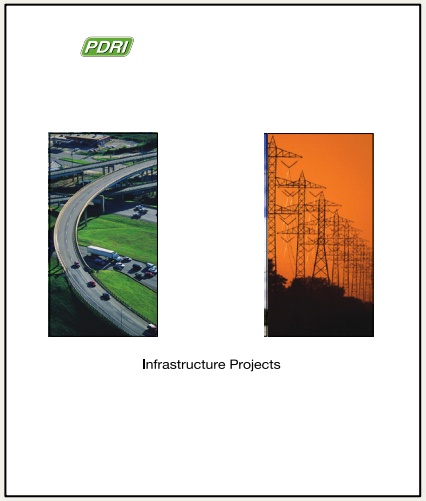


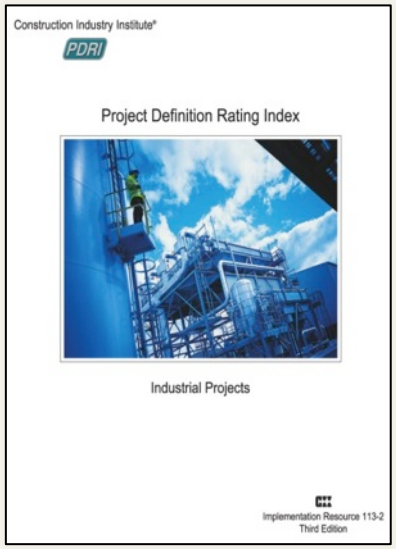


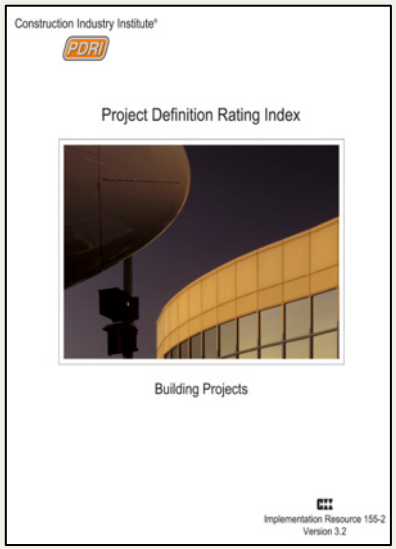









Construction Industry Institute®
PDRI
Project Definition Rating Index
Industrial Projects
Implementation Resource 113-2
Third Edition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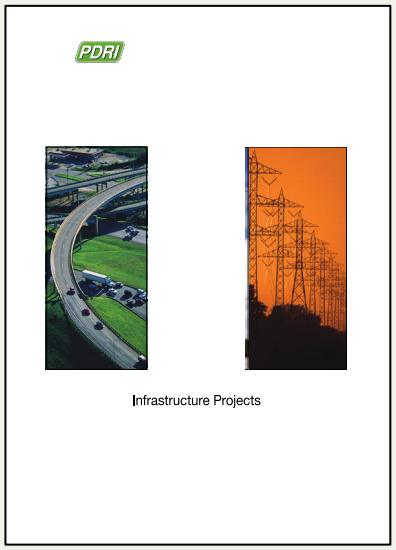

PDRI
Infrastructure Projects

3

PDRI Tools

Weighted Score Sheet (Example)

SECTION I - BASIS OF PROJECT DECISION								
CATEGORY Element		Definition Level 0	1	2	3	4	5	Score
A. PROJECT STRATEGY (Maximum = 112)								
A.1	Need & Purpose Documentation	0	2	13	24	35	44	
A.2	Investment Studies & Alternatives Assessments	0	1	8	15	22	28	
A.3	Key Team Member Coordination	0	1	6	11	16	19	
A.4	Public Involvement	0	1	6	11	16	21	
							CATEGORY A TOTAL	
B. OWNER/OPERATOR PHILOSOPHIES (Maximum = 67)								
B.1	Design Philosophy	0	2	7	12	17	22	
B.2	Operating Philosophy	0	1	5	9	13	16	
B.3	Maintenance Philosophy	0	1	4	7	10	12	
B.4	Future Expansion & Alteration Considerations	0	1	5	9	13	17	
							CATEGORY B TOTAL	
C. PROJECT FUNDING AND TIMING (Maximum = 70)								
C.1	Funding & Programming	0	1	6	11	16	21	
C.2	Preliminary Project Schedule	0	2	7	12	17	22	
C.3	Contingencies	0	2	8	14	20	27	
							CATEGORY C TOTAL	
D. PROJECT REQUIREMENTS (Maximum = 143)								
D.1	Project Objectives Statement	0	1	6	11	16	19	
D.2	Functional Classification & Use	0	1	6	11	16	19	
D.3	Evaluation of Compliance Requirements	0	1	6	11	16	22	
D.4	Existing Environmental Conditions	0	1	6	11	16	22	
D.5	Site Characteristics Available vs. Required	0	1	5	9	13	18	
D.6	Dismantling & Demolition Requirements	0	1	4	7	10	11	
D.7	Determination of Utility Impacts	0	1	6	11	16	19	
D.8	Lead/Discipline Scope of Work	0	1	4	7	10	13	
							CATEGORY D TOTAL	
E. VALUE ANALYSIS (Maximum = 45)								
E.1	Value Engineering Procedures	0	1	3	5	7	10	
E.2	Design Simplification	0	0	3	6	9	11	
E.3	Material Alternatives Considered	0	1	3	5	7	9	
E.4	Constructability Procedures	0	1	5	9	13	15	
							CATEGORY E TOTAL	

Definition Levels

0 = Not Applicable

1 = Complete Definition

2 = Minor Deficiencies

3 = Some Deficiencies

4 = Major Deficiencies

5 = Incomplete or Poor Definition

PDRI Element Descriptions (Example)

A.1 Need & Purpose Documentation

The need for a project may be identified in many ways, including suggestions from operations and maintenance personnel, engineers, planners, local elected officials, developers, and the public. These projects may also be determined by current market needs or future growth. This process typically includes site visits and seeking input from individuals and/or agencies with relevant knowledge. Documentation should result in assessing the need and purpose of a potential project based on factual evidence of current and future conditions, including why the project is being pursued. It will eventually serve as the basis for identifying, comparing, and selecting alternatives. Issues may include:

- ❑ High-level project scope and definition
- ❑ Capacity improvement needs:
  - ❑ Existing levels of service
  - ❑ Modeling of future demands
  - ❑ Trend analysis and forecasted growth
- ❑ Profitability or benefit analysis
- ❑ Facility multi-modal or other multi-use capabilities, including interface options
- ❑ Current and future economic development needs
- ❑ Community concerns and critical issues, such as impact on cultural resources, adjacent facilities, land use, traffic, visual and so on
- ❑ Environmental and/or sustainability drivers
- ❑ Mitigation and remediation issues
- ❑ Constraints such as geographic, institutional, political, or technical
- ❑ Conformance with current geometric, general owner, or other jurisdictional standards
- ❑ Existing infrastructure conditions
- ❑ Safety improvements needs and expectations (including event frequency, severity, and hazards mitigation, as well as compliance requirements)
- ❑ Vulnerability assessment
- ❑ Input into any required planning documents such as a "Need & Purpose Statement" or other
- ❑ Other user defined

** Additional items to consider for Renovation & Revamp projects **

- ❑ Renovation & revamp project's compatibility with existing facilities

78%

Of CII members using at least one front end planning tool

2011 survey

96%

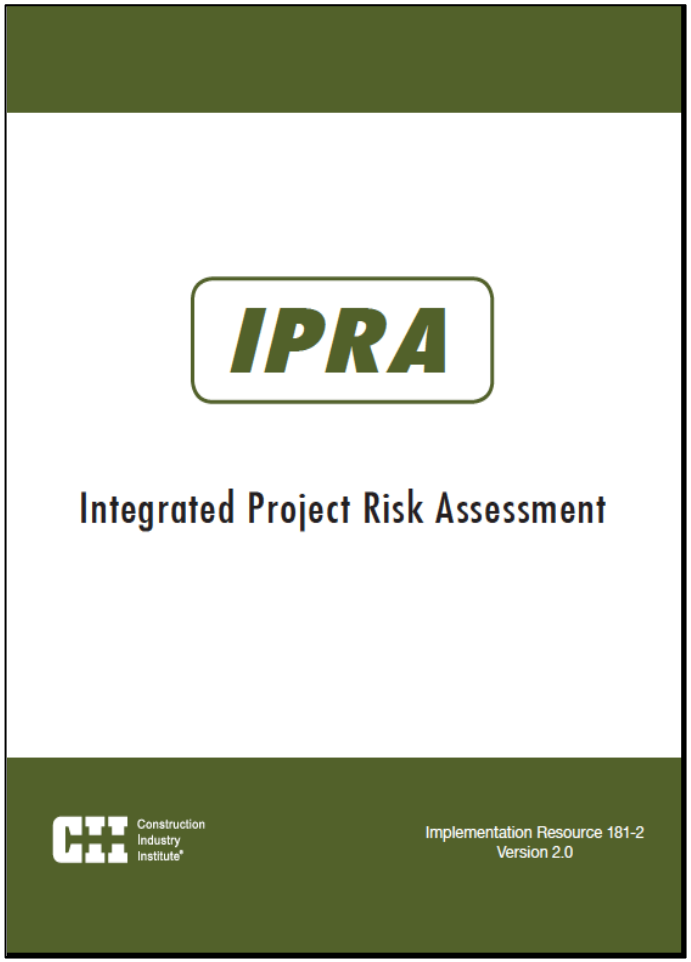
Of members finding value in CII front end planning tools

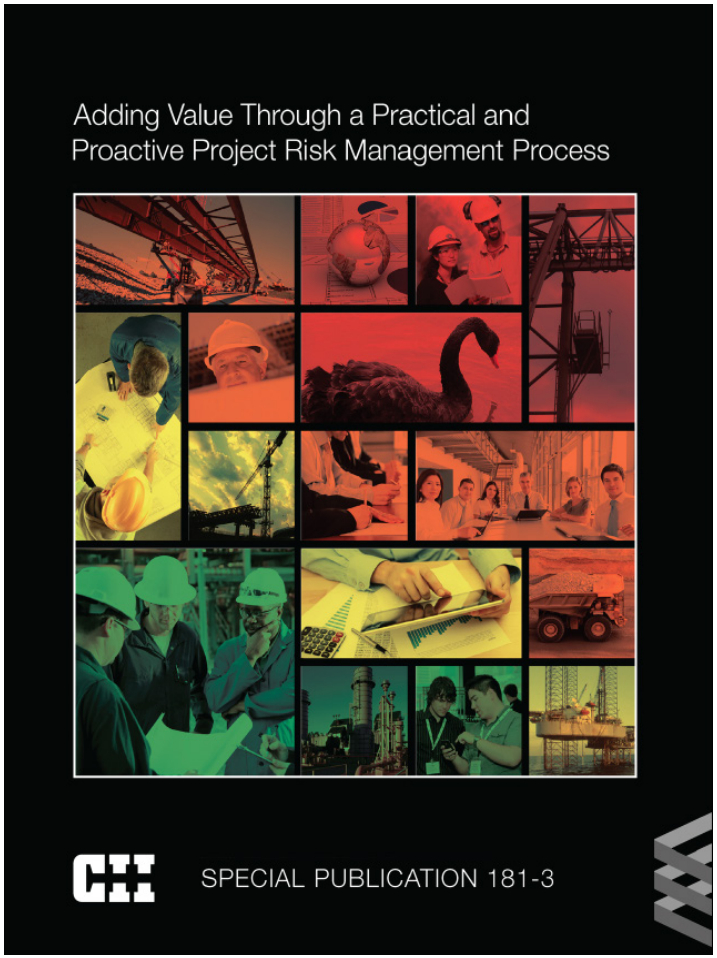
2011 Survey

1

Other critical process for Front end planning

CII Suite of New Risk Management Tools





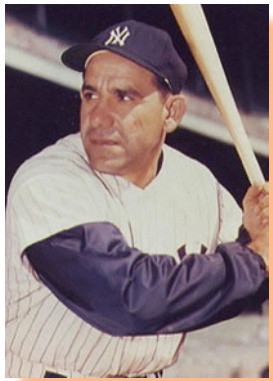
In Summary, in 2014…..


Why?
What?
When?
How?

“When you come to a fork in the road, take it.”

-Yogi Berra

Baseball Hall of Fame



Front End Management in the US

- Much inconsistency in US
- Pockets of excellence exist in many organizations
- Organizations that have standard processes with disciplined capital budgeting regimes (strategic intent) are most successful

Summary-- management

- Develop and implement a standardized (yet flexible) front end planning process
  - Experienced, proficient personnel
  - Adequate resources
  - Gateway checks
  - Owners lead the effort

Summary - management

- Measure and continuously improve front end planning
- Develop an effective execution strategy
  - Acquisition strategy
  - Realistic project control baselines

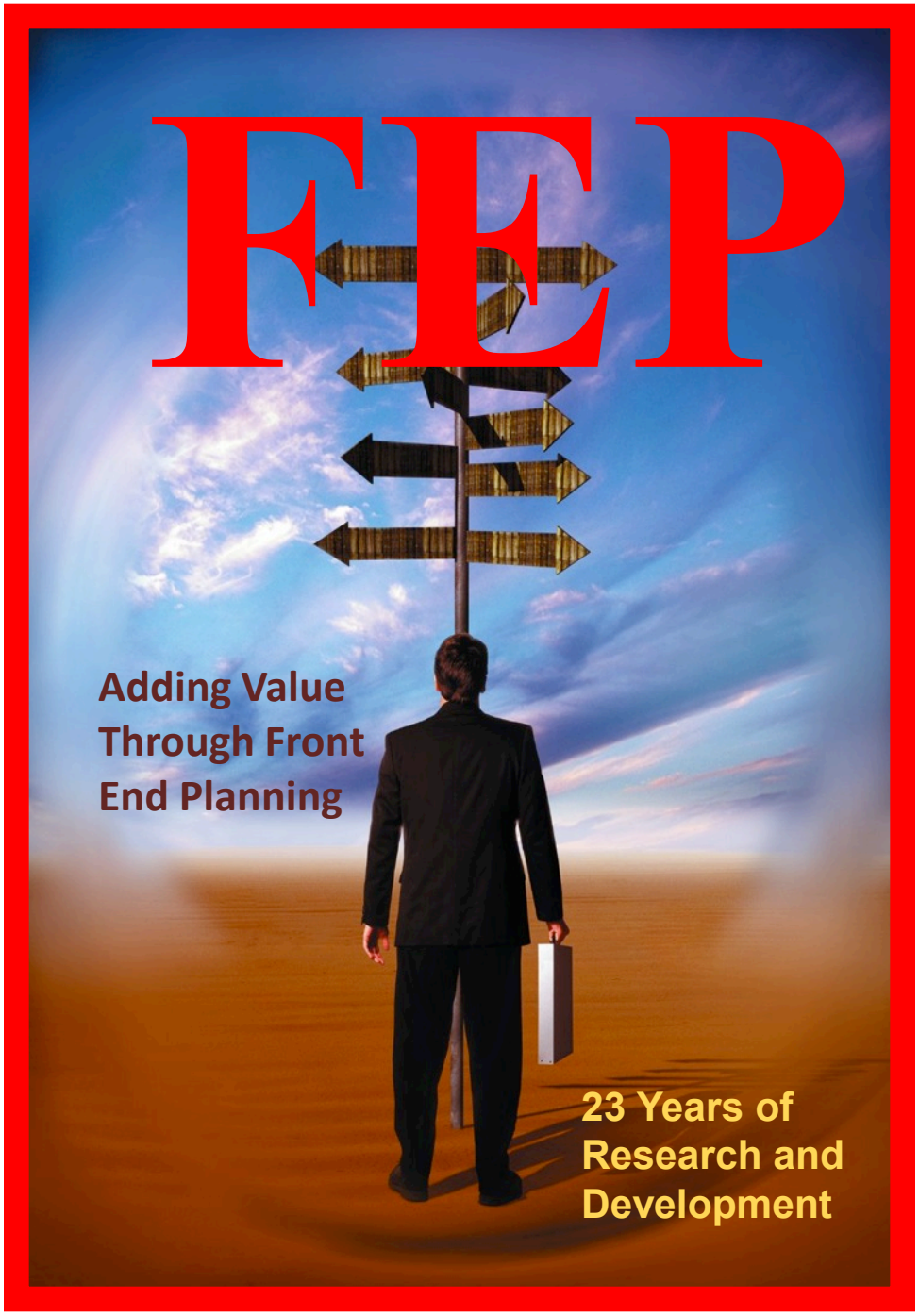
Summary - management

- Pursue the right projects
  - Stakeholder involvement
  - Team alignment
- Standardized project scope of work communication process
  - Contract requirements
  - Transition meetings
- Move away from “not invented here” syndrome

Summary - management

- Perform effective risk management
- Long-term strategy – requires process and cultural changes
- Commitment from senior management

"By God, gentlemen, I believe we've found it—the Fountain of Funding!"



Questions?

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Years of Front End Planning (FEP) research