



Collaborative Project Planning and Life Cycle Safety

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Senior Project Manager**

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Founded on Values

Established in 1946 by three engineers and a professor, CH2M HILL operated from its very beginning on four simple values: take care of clients, deliver great work, do right by employees, and stay true to our integrity and honesty.

Holly Cornell



James Howland



Burke Hayes



Fred Merryfield



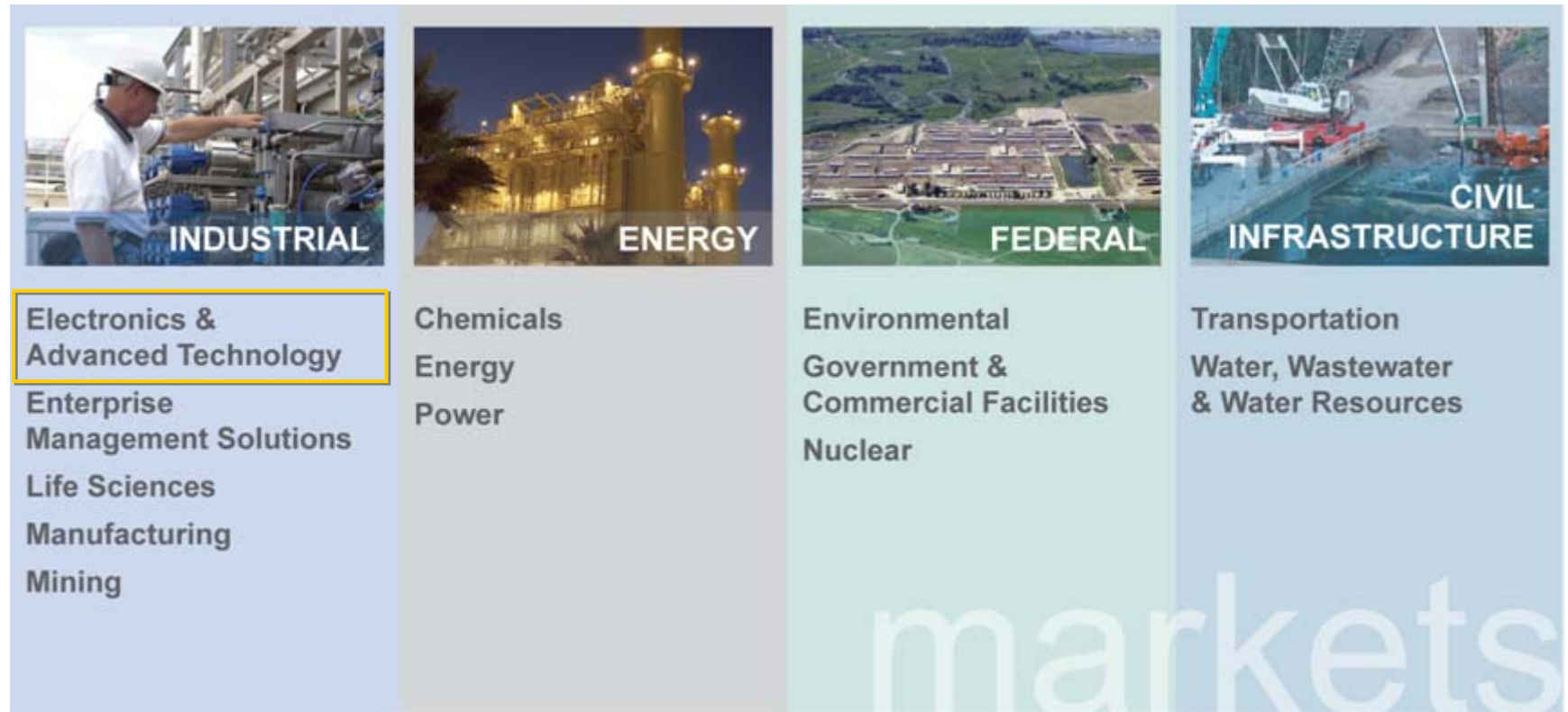
Clair Hill



CH2MHILL



Electronics & Advanced Technology (E&AT)



CH2M HILL leverages its expertise across all business sectors to deliver the most innovative, practical, and sustainable solutions possible.

CH2M HILL E&AT's Journey

Safety in
Design



Integrated
Project
Delivery

Safety In Design

- Relied on Designers knowledge
 - Utilized standard checklists
 - Focus was on operational safety and accessibility
 - Considering Construction worker Safety was a liability

PROJECT



**SAFETY IN
DESIGN**



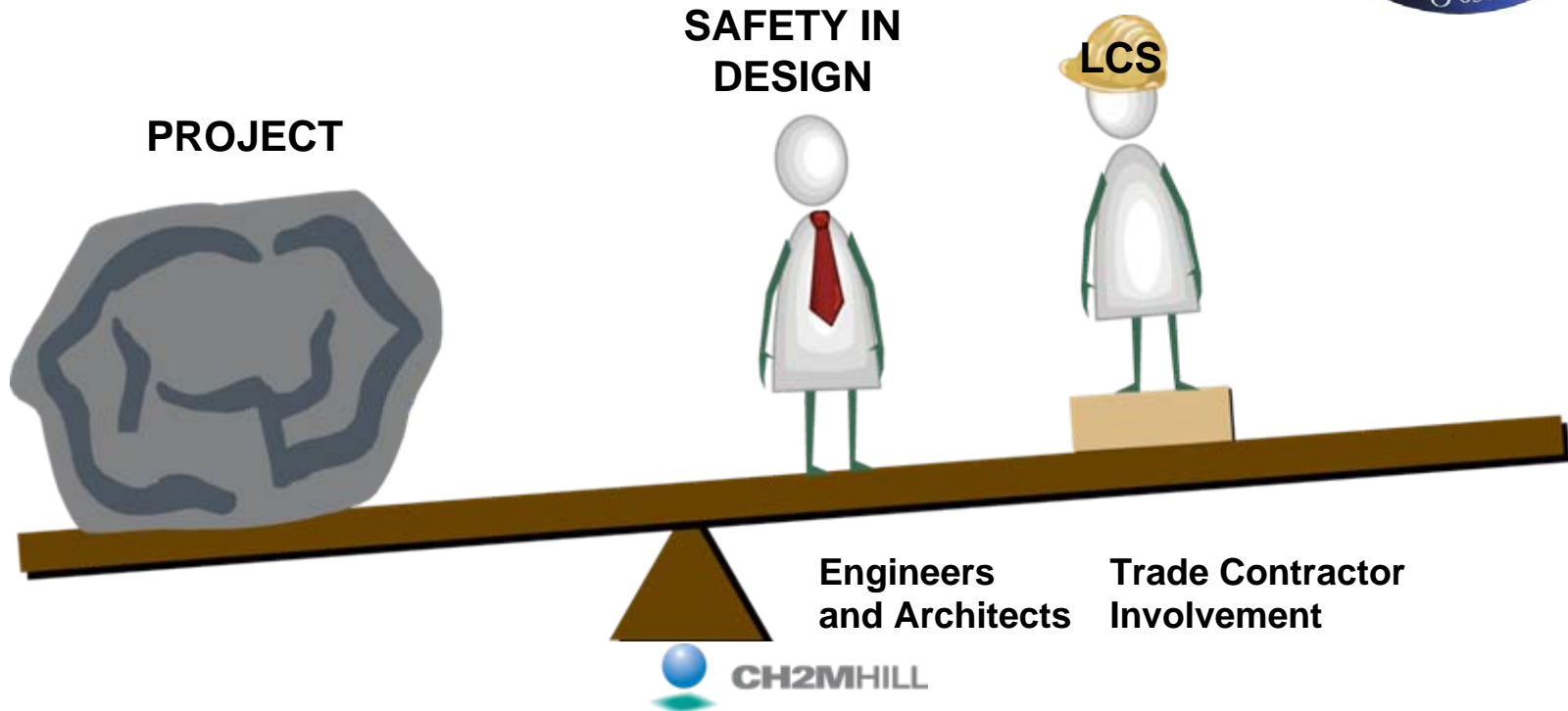
**Engineers
and Architects**

Life Cycle Safety

- Safety In Design Task Force
 - Mission - Develop a breakthrough process to maximize “Safety in Design”
- Recognized that no matter how good a designer is, he would never be as good as the person who operates or constructs every day
- Needed to leverage the contracting community during the design process

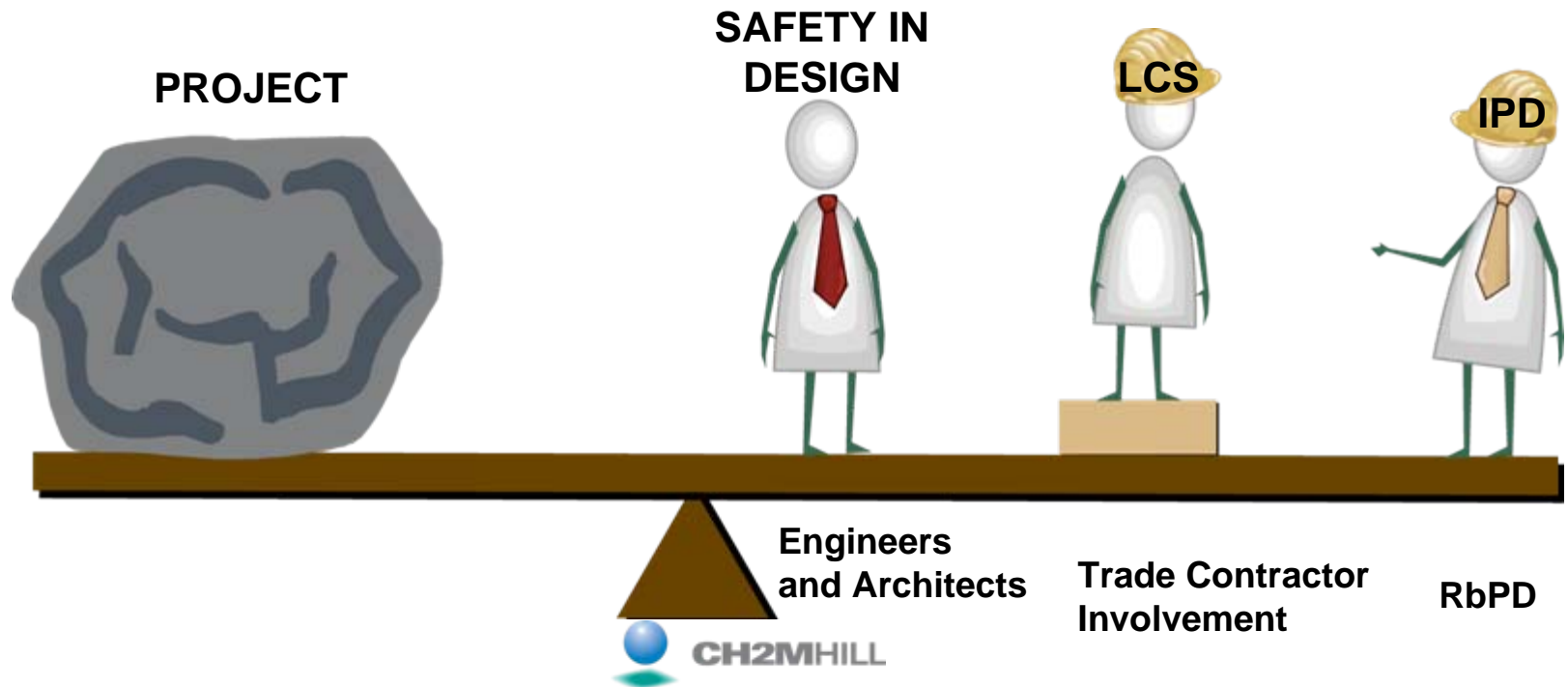
Life Cycle Safety

- Based on Safety In Design
- Consideration of all phases of facility life
- “Trade Contractor Involvement”*

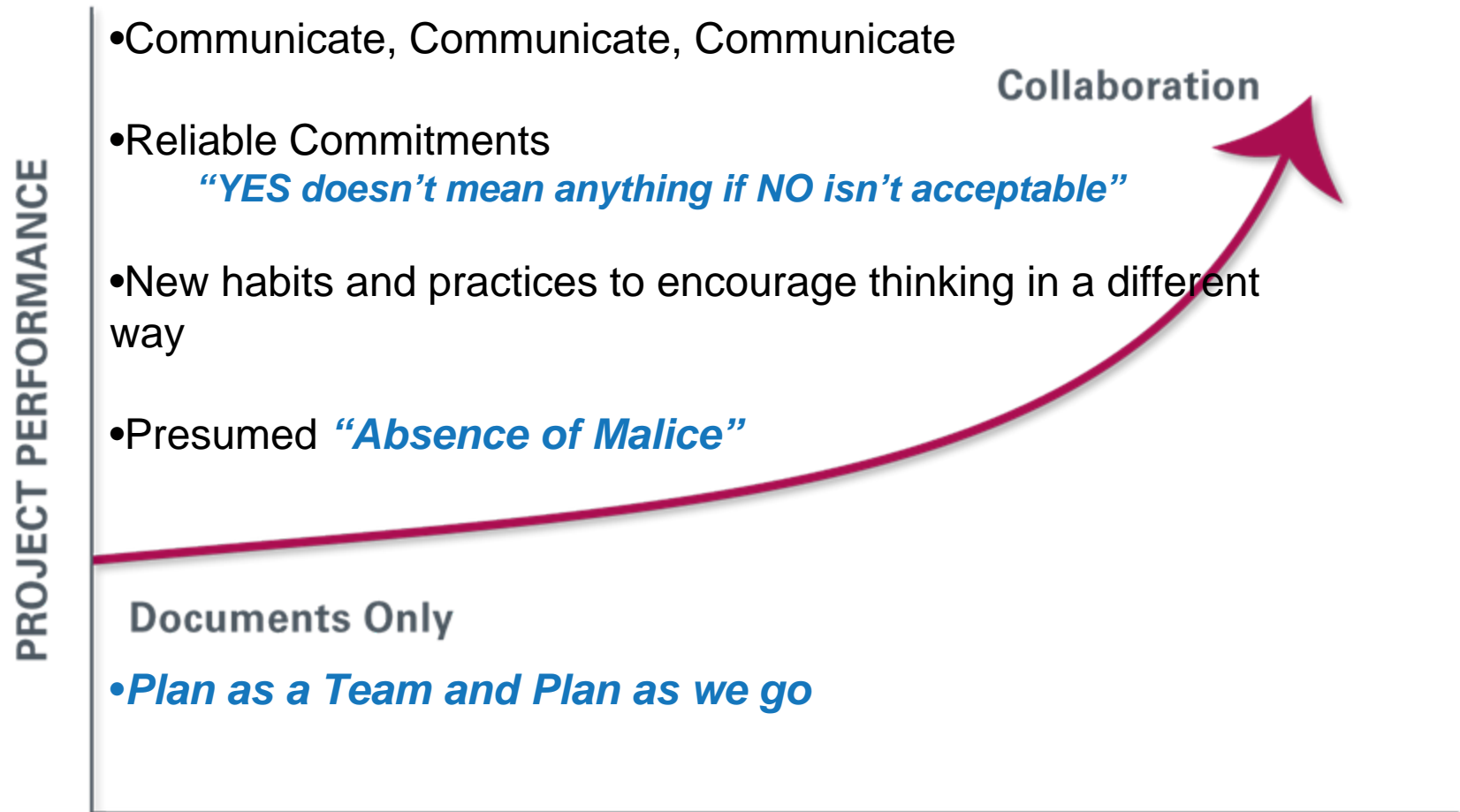


Integrated Project Delivery

- More/Earlier Contractor Involvement
- **Constructability Preview** not **Review**
- **Engineer in Value** not **Value Engineering**
- How will the project be built, design it to be built that way
- Collaboratively define the scope and then design the scope



Responsibility based Project Delivery (RbPD)



Project Experience

- Competitive Bid
- Key contractors selected during proposal
- Client, Designers, CM's, Contractors, Equipment Vendors involved early
- Emphasis on ***“Fuzzy Front End”***
- Established Rules of Engagement

“Challenge and expect to be Challenged”

“Because I am the Engineer of Record...” wasn't acceptable



Results

- What team members say...
 - “...produced better deliverables... we’re asking questions about what the deliverable is for or intended to communicate”
 - “...created a common vision for the deliverable”
 - “...when everyone gets involved, the quality of our work plan and the efficiency to execute it is vastly improved”
 - “It was first time we didn't stay up all night before the due date.”

- Contractor partners
 - “Was as much our design as yours”
 - “We know the design intent — we were there”

Lessons Learned

- It's not about the Tools or Process
- It's about people and how they think that is important, not companies, policies or procedures

“you can lead a person to a meeting, but you can't make them collaborate”

- ***Client involvement is huge!***
- ***It's a journey not a destination***
- ***Current Procurement and Contraction is a barrier***
- ***Relationships are better, allowing focus on project***

“People are still committing to things they probably can't deliver. We still sign up for too much.”

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