



INFRASTRUCTURE
MINING & METALS
NUCLEAR, SECURITY & ENVIRONMENTAL
OIL, GAS & CHEMICALS

22nd Annual Rice Global E&C Forum

Our House is on Fire – EPC Transformation & Implementation

November 12, 2019

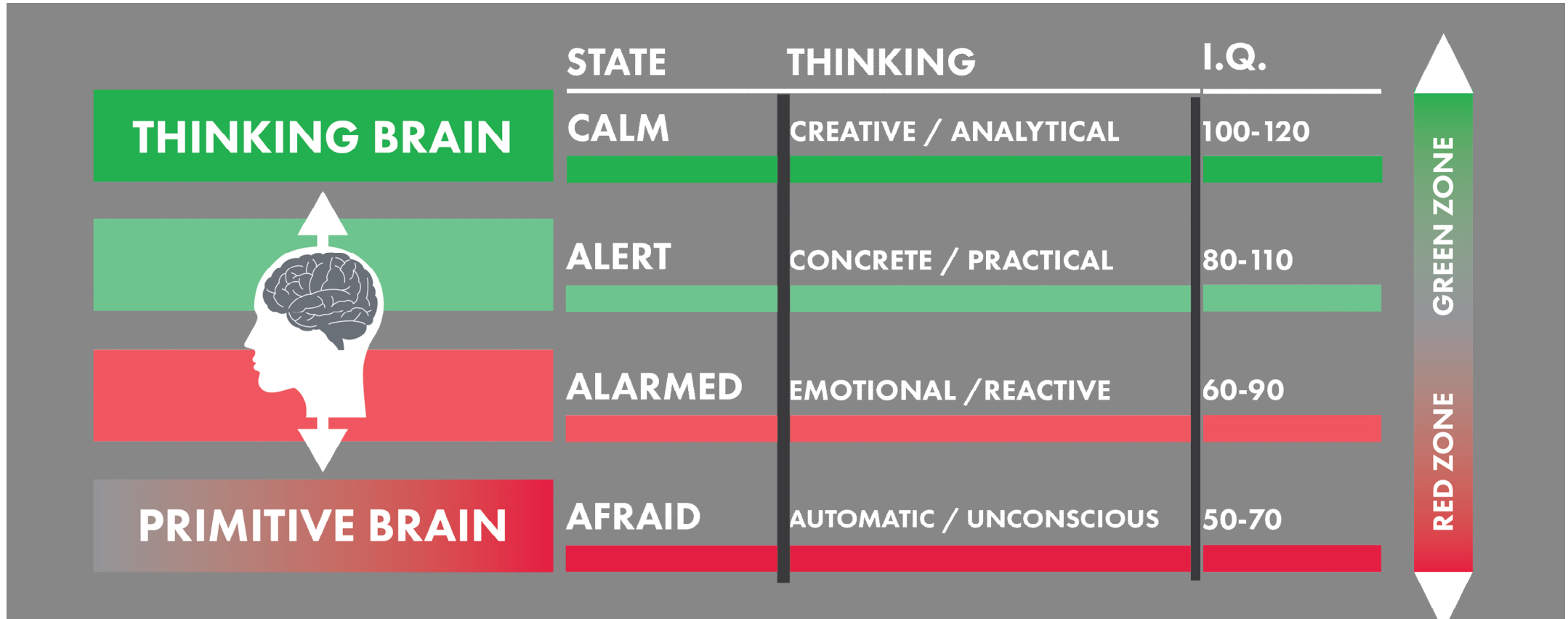


Level 3 - Bechtel Internal
and Selected External Distribution

Agenda

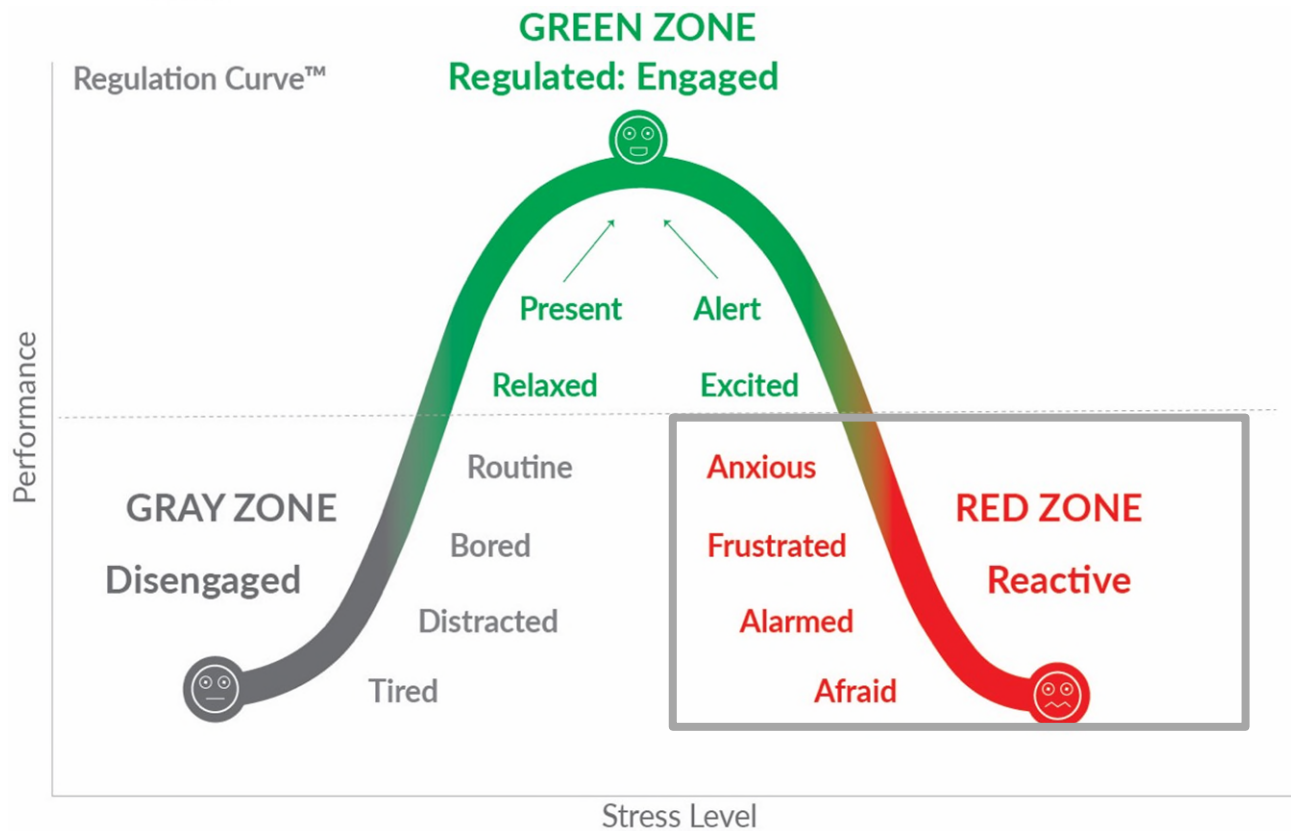
- Safety Message – Caring For People
- Our House is on Fire – EPC Transformation & Implementation
 - Contracting & execution approach
 - Technology, digitalization and marrying the digital with the physical
 - Key talent
- Closing remarks
- Q&A

Safety Message – Understanding the ‘Emotional Brain’



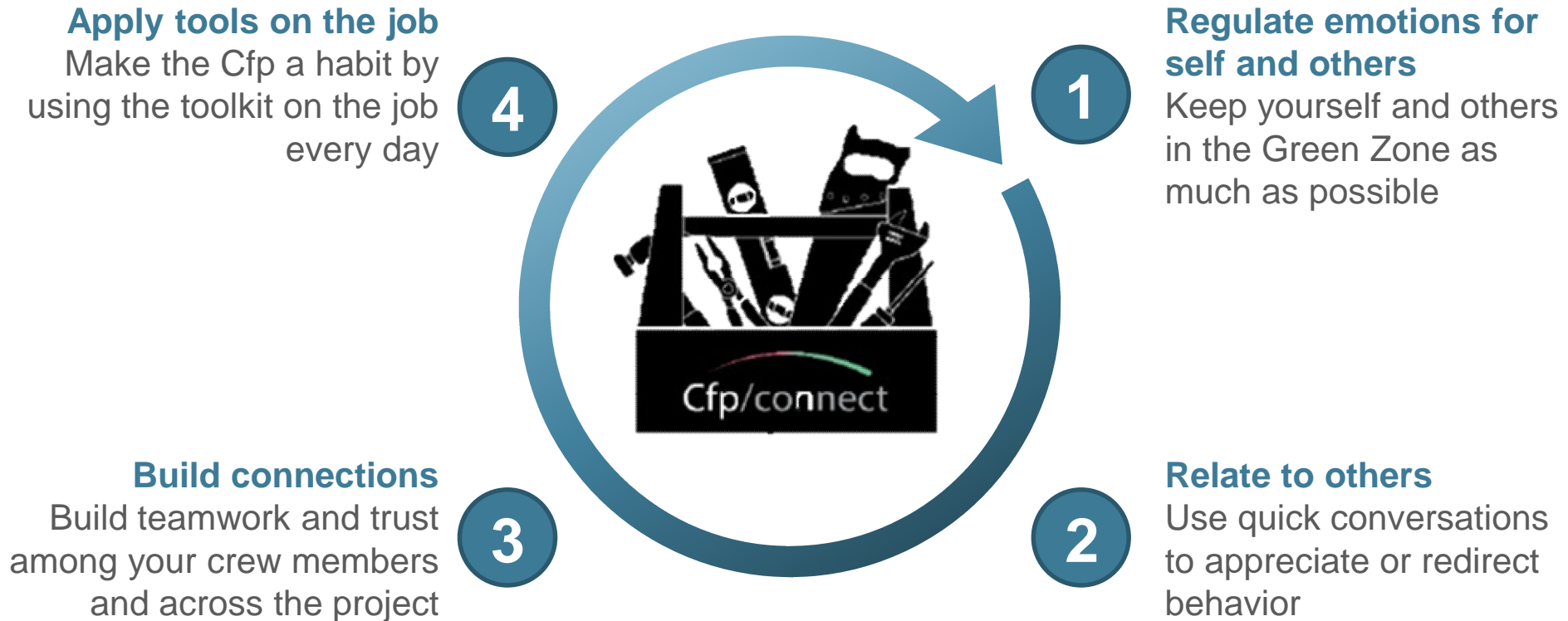
 All input is bottom-up
 

Safety Message – Understanding the ‘Emotional Brain’



- When we are **frustrated, upset, angry or afraid**—we react with “fight or flight”
- IQ is low and people react without thinking
- Quality, safety and productivity are low
- It’s not the stress, but how you handle/regulate it

Safety Message – Caring For People, Coaching





Our House is on Fire

*“Our House is on Fire.
If we don’t address the
various problems, we may
cease to exist as an
industry and...customers
will cease to have
confidence that we can
deliver”*

– Brendan Bechtel



Contracting & Execution

Key Challenges

- | | |
|---|--|
| <ul style="list-style-type: none">▪ Disaggregation▪ Cost reimbursable▪ Lump sum | <ul style="list-style-type: none">▪ Owners adopting one size fits all contracting & execution approach |
| <ul style="list-style-type: none">▪ Poor decision making. Not knowing where you are. | <ul style="list-style-type: none">▪ Scope, planning and experience challenges |

Recommendation – How are we Adapting

- | |
|--|
| <ul style="list-style-type: none">▪ Working with customers is key to understanding their drivers▪ Conducting a contracting & execution analysis on every job▪ Passing on 'bad' deals |
| <ul style="list-style-type: none">▪ Effective selection of leaders▪ Culture of individual accountability▪ Active management (know the work, team, etc)▪ Driving a culture of inclusion, empowerment & integrity |

Execution

INTEGRATED EPC THROUGHOUT LIFE CYCLE

Studies

Solution Centric
Technology and Design

FEED

Sustainability
Regulator Support

EPC

Modularization
Direct Hire Construction

Startup

Operator Training
Startup Expertise

Operations

Plant Support Services

DIRECT HIRE – SELF PERFORM EXECUTION

Site Civil



Marine



Pipe



Modules



Tanks



ISBL/OSBL

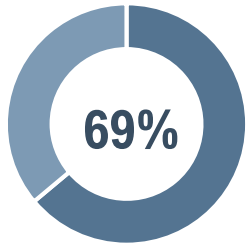


CSU

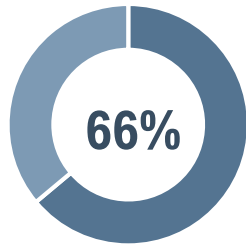


Proven experience with a fully integrated self-perform model.
On budget projects and 4-6 months ahead of schedule in business lines such as LNG

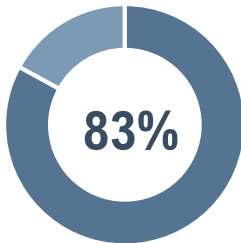
EPC Industry Executive View of Innovation & Digitization



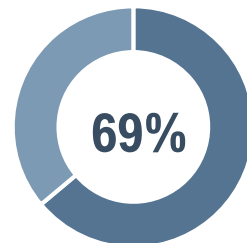
Of execs expect to see new entrants challenging traditional players.



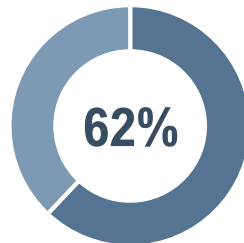
Of the top 20% innovative leaders' projects achieved 90% of planned schedule



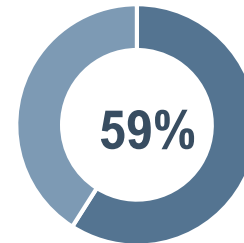
Of execs feel organizations will be data-driven, including routine use of data analytics and predictive modeling for project planning and monitoring.



Of the top 20% innovative leaders adopt integrated project management systems



Of execs believe most organizations will be performing real-time adaptive risk and return modeling and reporting on their projects.



Of execs foresee augmented and virtual reality as common on most projects.

Source: KPMG 2019 Global Construction Survey

Technology and Digitalization

Technology & Digitalization

Will be a disruptive force to traditional EPC execution model (still digitizing historic processes today)

Rate of change increasing

Many Tier 1 firms are redesigning entire processes to eliminate documents and hand offs

Key element is managing the massive amount of data collected from projects world wide

Need to incorporate lessons learned & best practices in a process at the start of innovation and throughout the program

Technology and Digitalization – CFIHOS

- Industry standard approach/platform
- Capital Facilities Information HandOver Specification (CFIHOS)
- Started in 2012 and just completed phase 3 of the development
- Standardizes information exchange between companies who make equipment for, own, operate and construct oil & gas projects
- Plan is for the standard to be proposed as ISO 15926-10X standard under TC 184/SC 4/WG 3
- Benefits:
 - Owner/Operators
 - Contractors
 - Equipment Suppliers
 - Software Vendors



12 Aug 2019

Bechtel Actions

Objectives

- Drive productivity
- 30% schedule start & completion milestone improvements
- 20% cost reduction

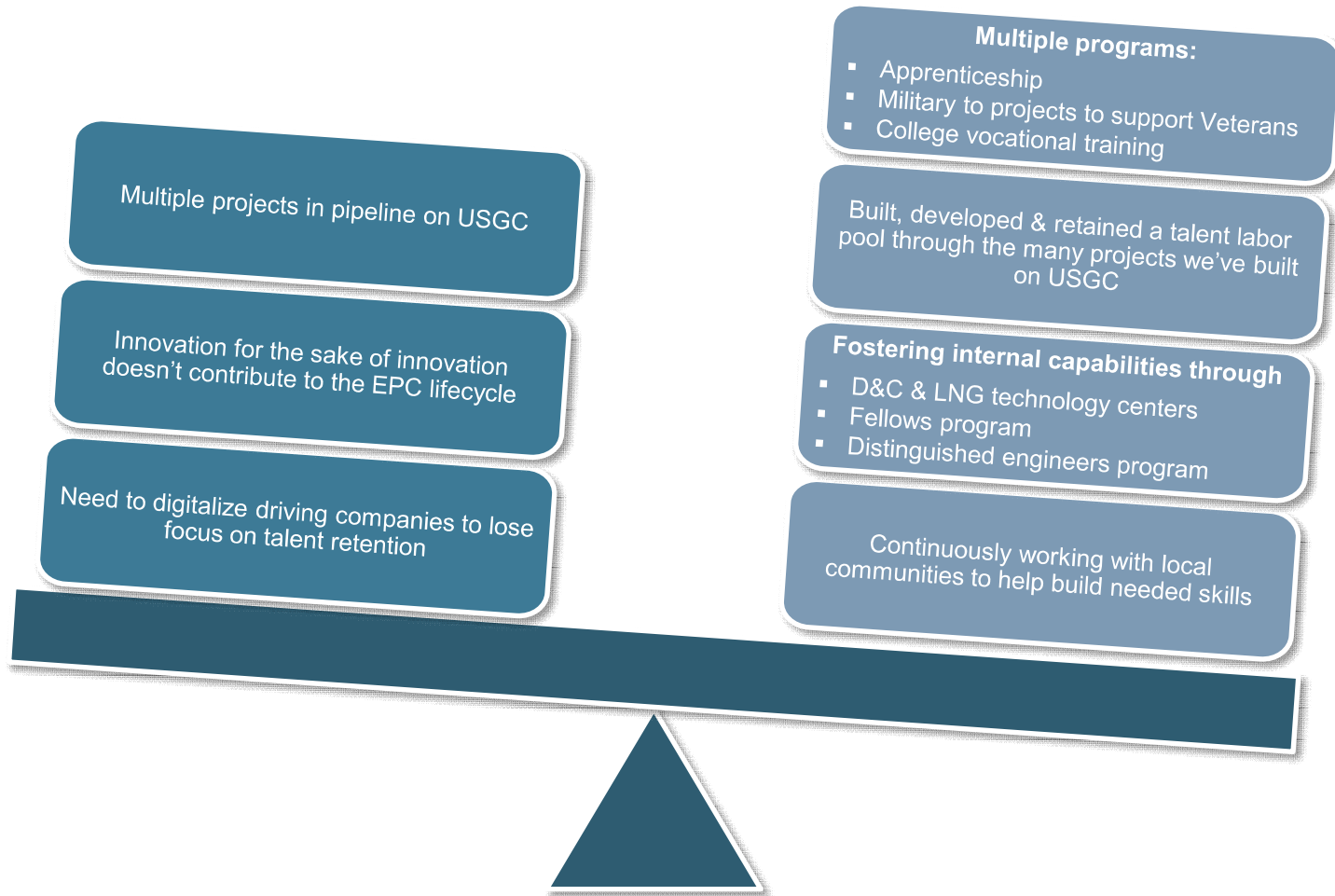
Multiple Initiatives

- Future fund
- Welding & Applied Technology Center (WATC)
- Houston innovation center
- Digital supply chain
- Industrial control system cyber security lab
- AR & VR used for 3D model reviews
- Construction data vaults

Digital Enterprise Program

- Corporate program designed to transform Bechtel into an integrated, data-centric & total-installed-cost-optimized EPC execution organization
- A paper free Bechtel with a team that is committed to digitally deliver the right information & the right material to the right people at the right time

Key Talent

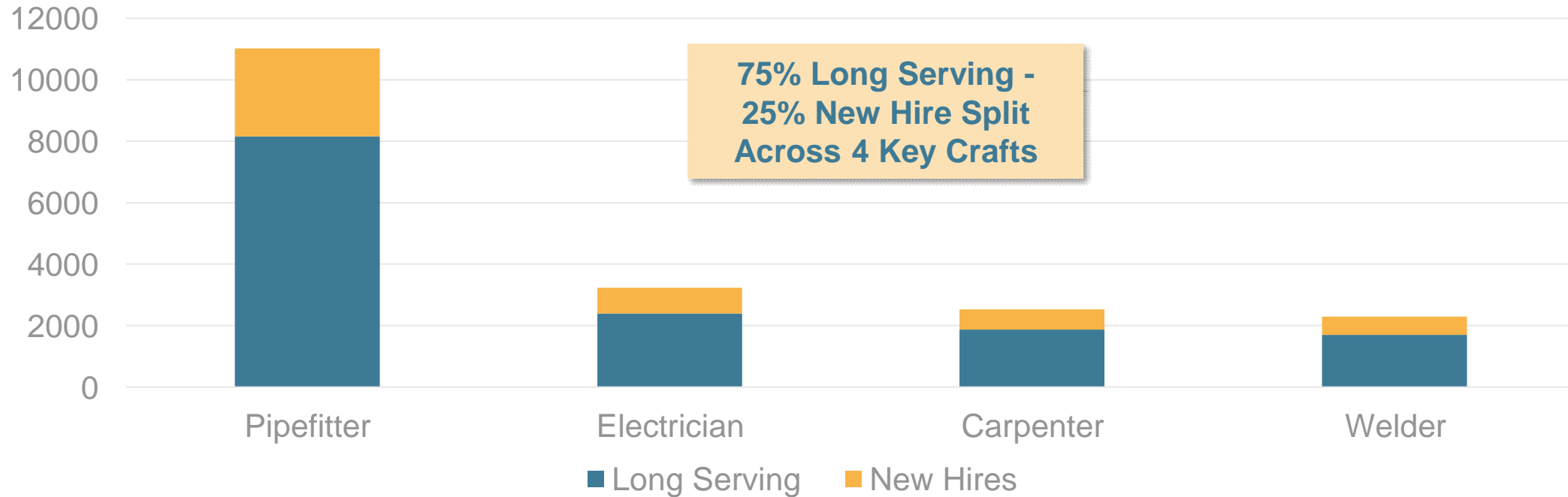


SEEK Camp Competition



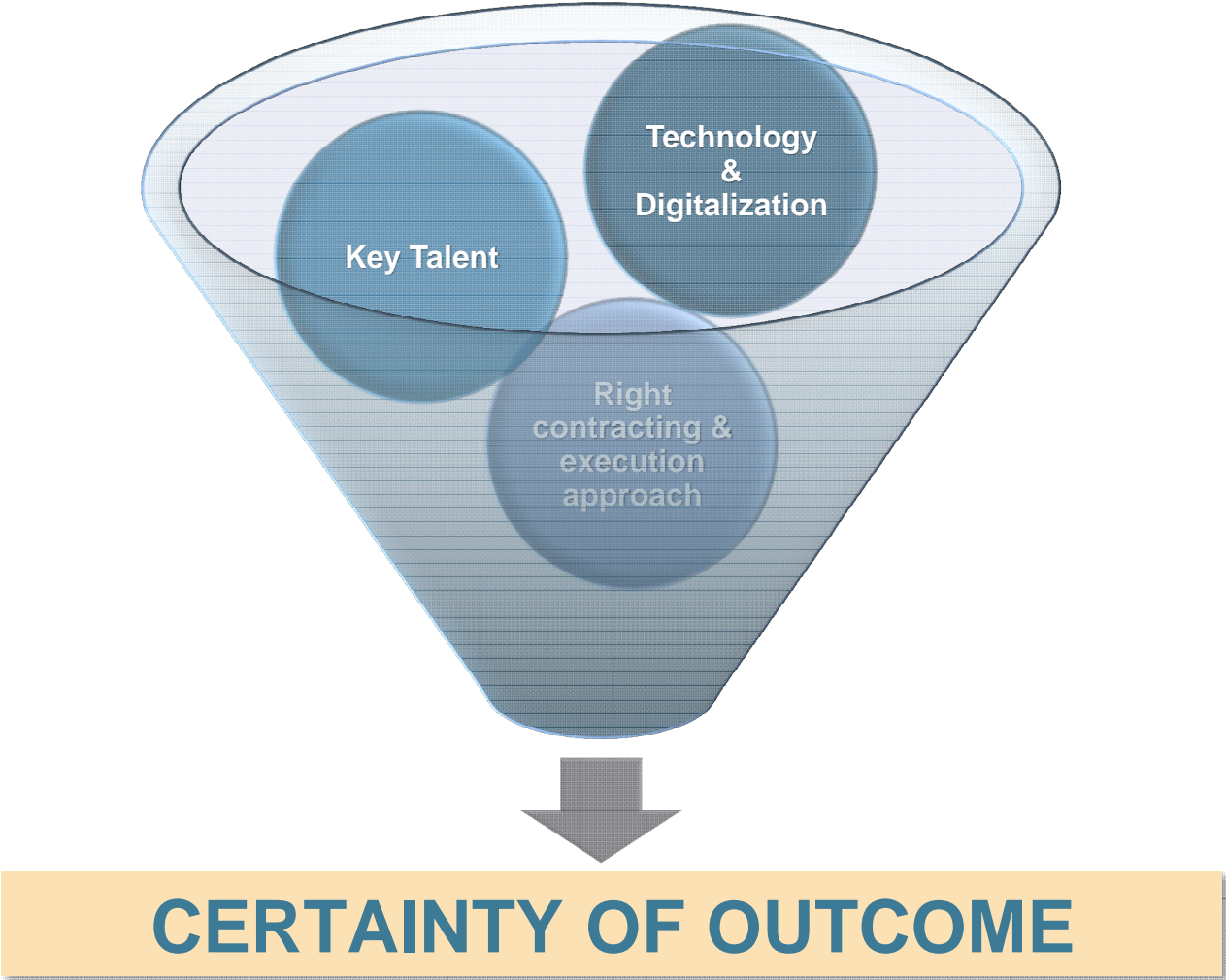
Key Talent - The Craft Story

Bechtel USGC Projected Craft Requirements



- Long serving craft transitions from project to project is essential for the certainty of outcome
- Ensures implementation of lessons learned and best practices from one project to the other
- Innovation and technology meant to compliment the craft pool and not replace it
- Need to implement upskilling programs and giving back to local communities is greater than ever

Closing Remarks





Q&A