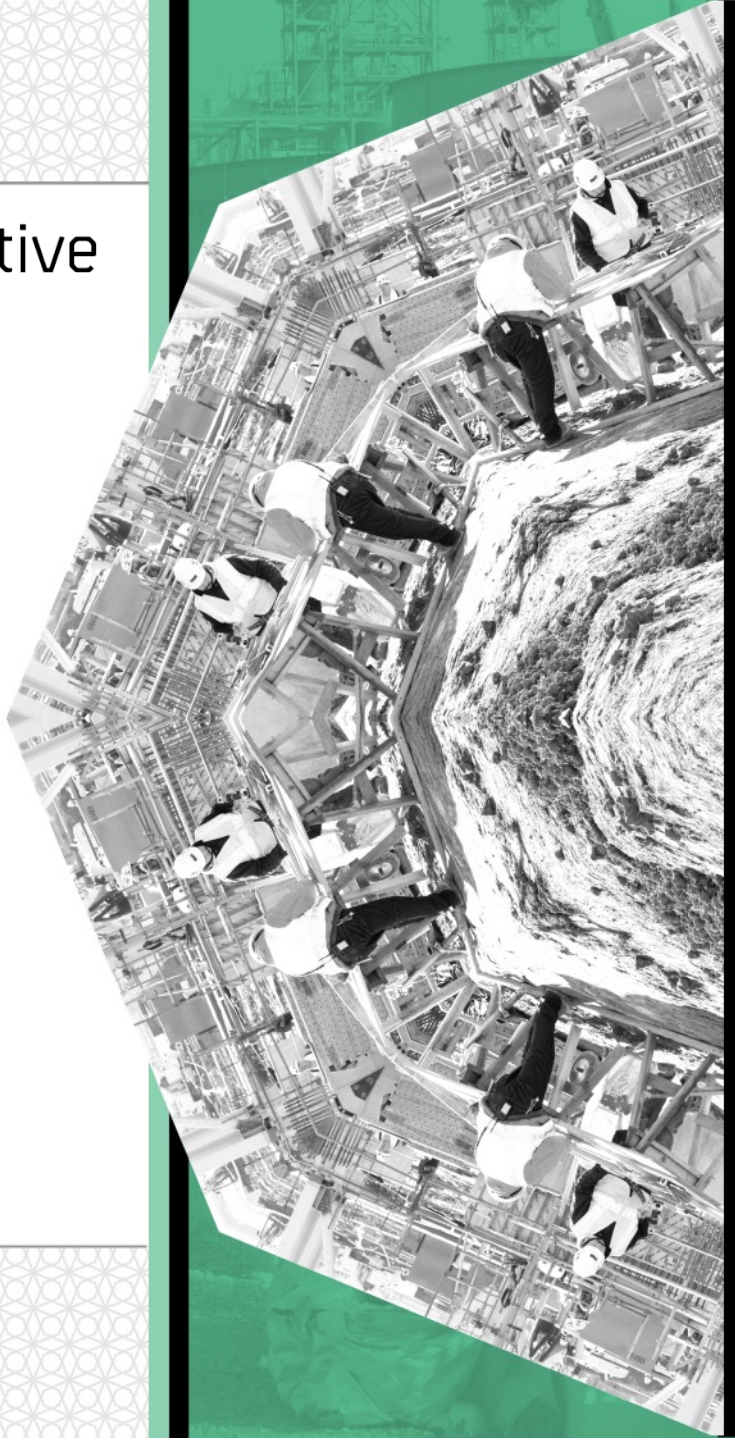
PerspECCtive

Quality is killing us

The impact of Loss of Competence



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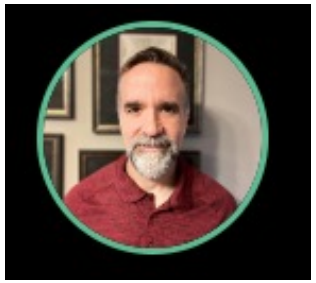
Quality is killing us – The impact of Loss of Competence

Facilitator

Keith Magowan

Project General Manager, **bp**

Panel Members



George Zener

Engineering & Quality Manager
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Terry Tuggle

Project Quality Director
KBR

Randy Pound

Executive Director
Tormod LLC

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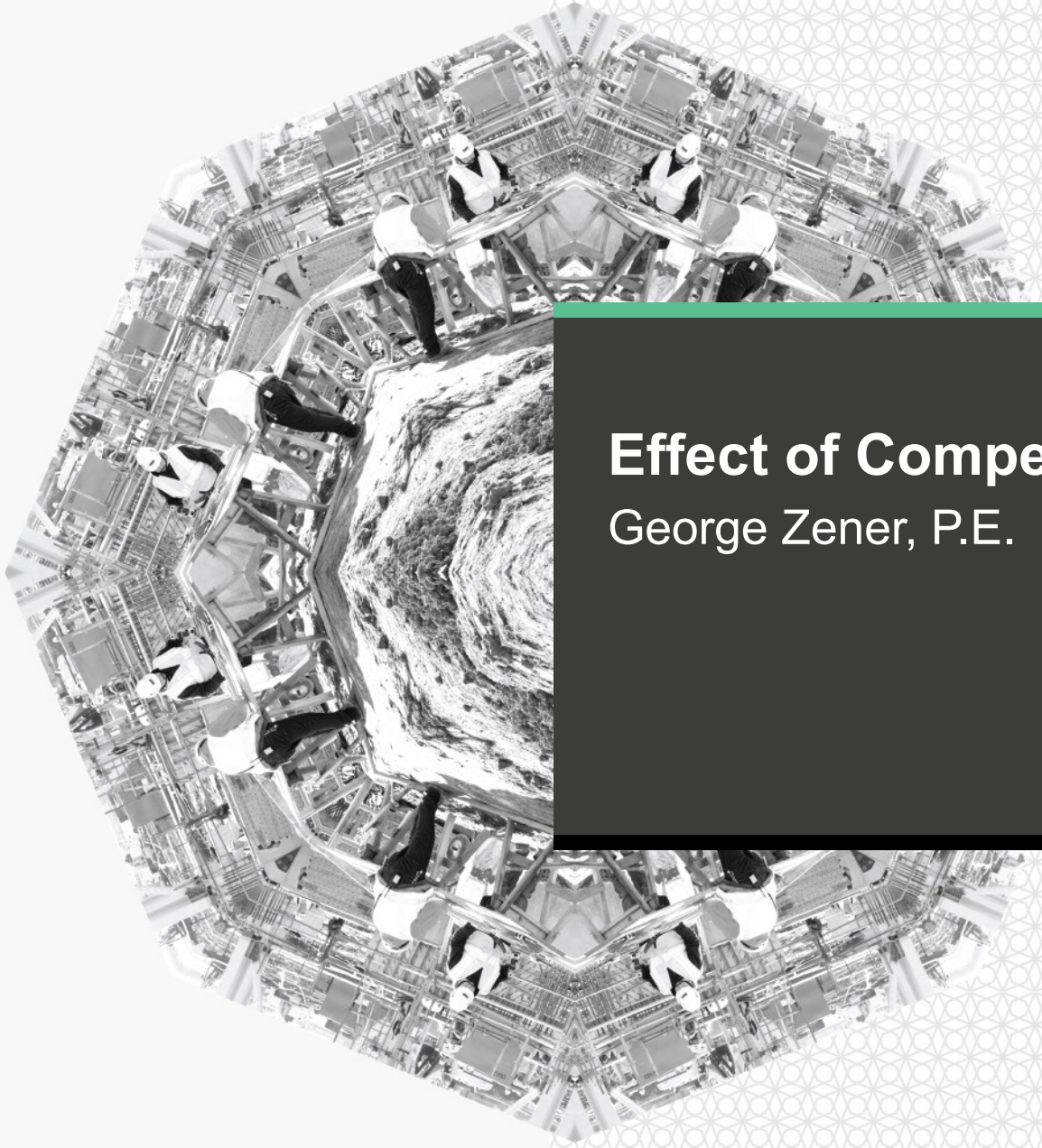
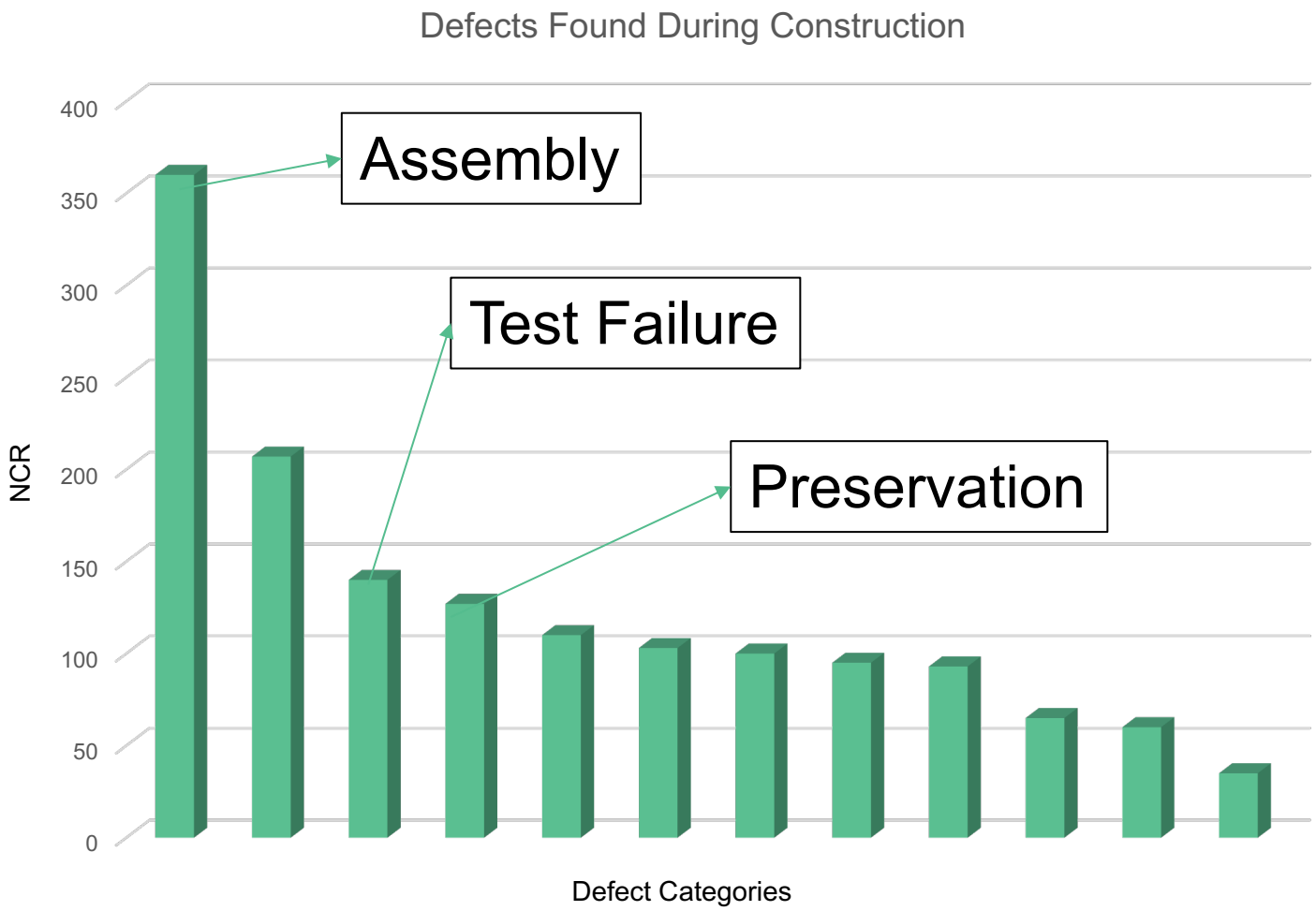


Effect of Competence on Quality

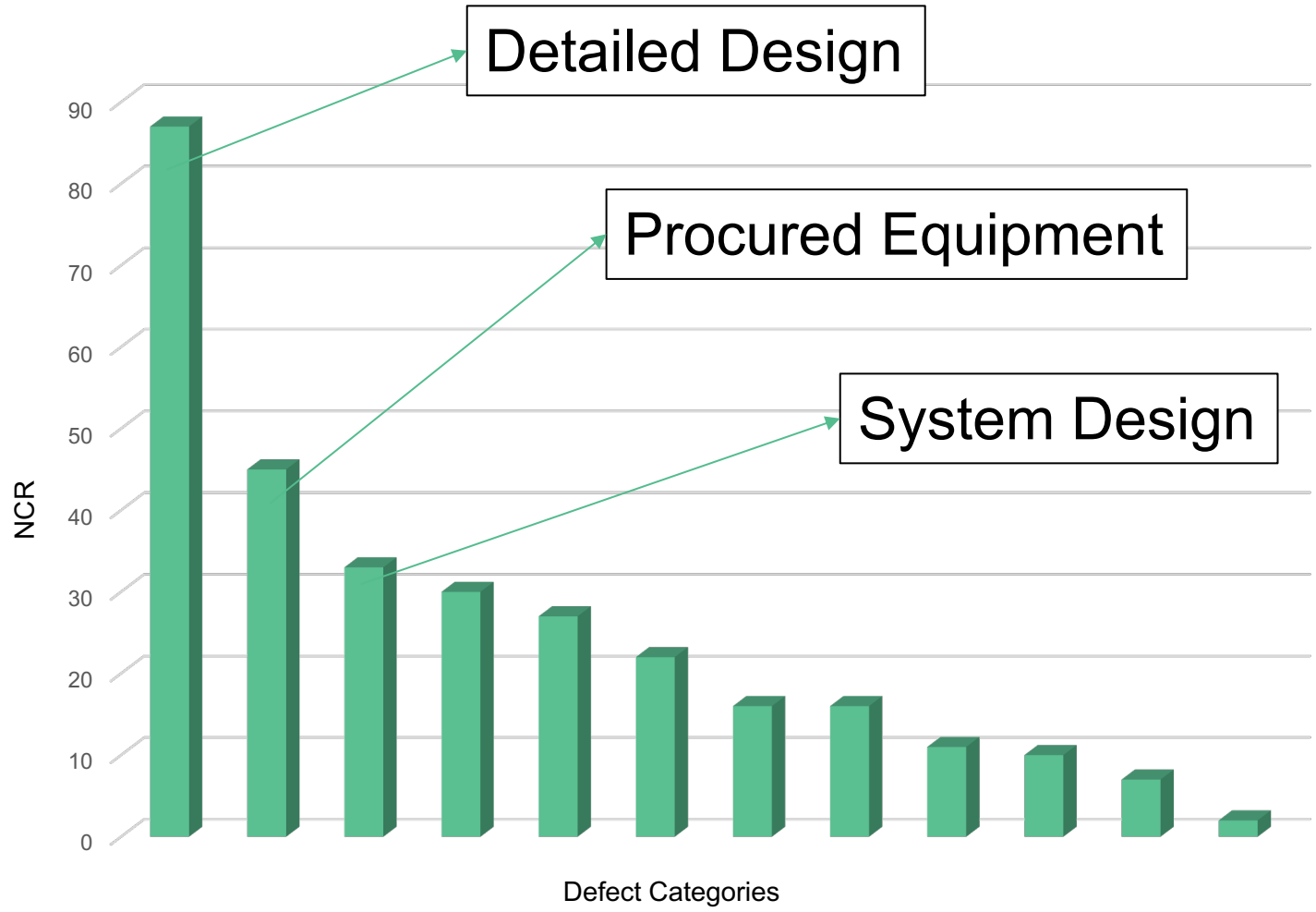
George Zener, P.E.

Defects Found During Construction



- “Assembly” is mainly “not built to print” but also encompasses flange makeup and sometimes welding
- Test failure usually rooted in supplier quality
- Preservation procedures not being followed
- Competence is a common theme

Defects at Handover

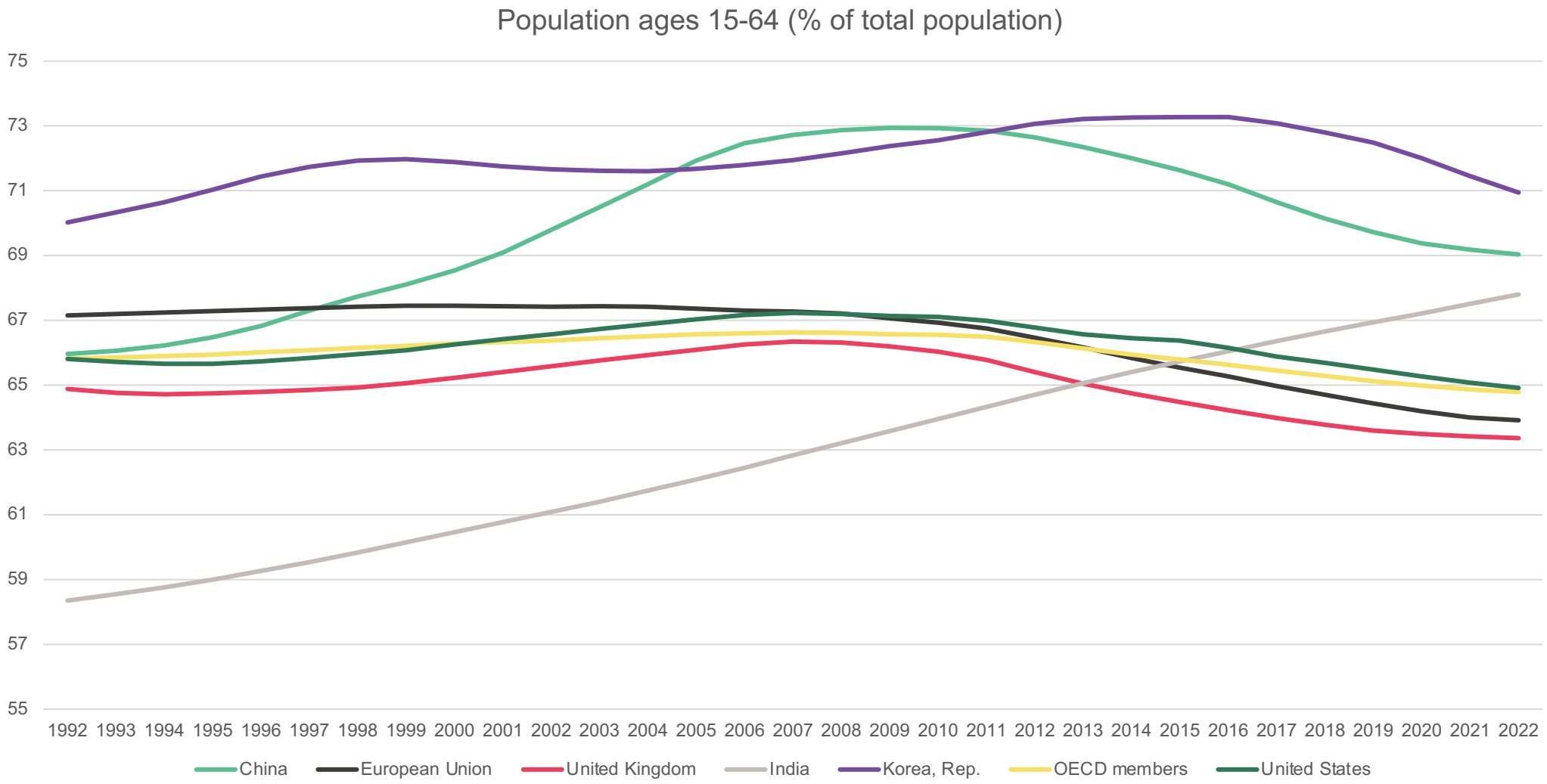


- Engineering is the major driver
- Engineering defects are harder to fix
- Purchased Equipment (including packages) is the second largest contributor

What is Competence?

- Skills – Johnny can't weld…..
- Knowledge
  - Design context
  - Specifications not transmitted
  - Instructions unclear
  - Language barrier
  - Product familiarity

Demographics



Source : OECD

The “Good Old Days”

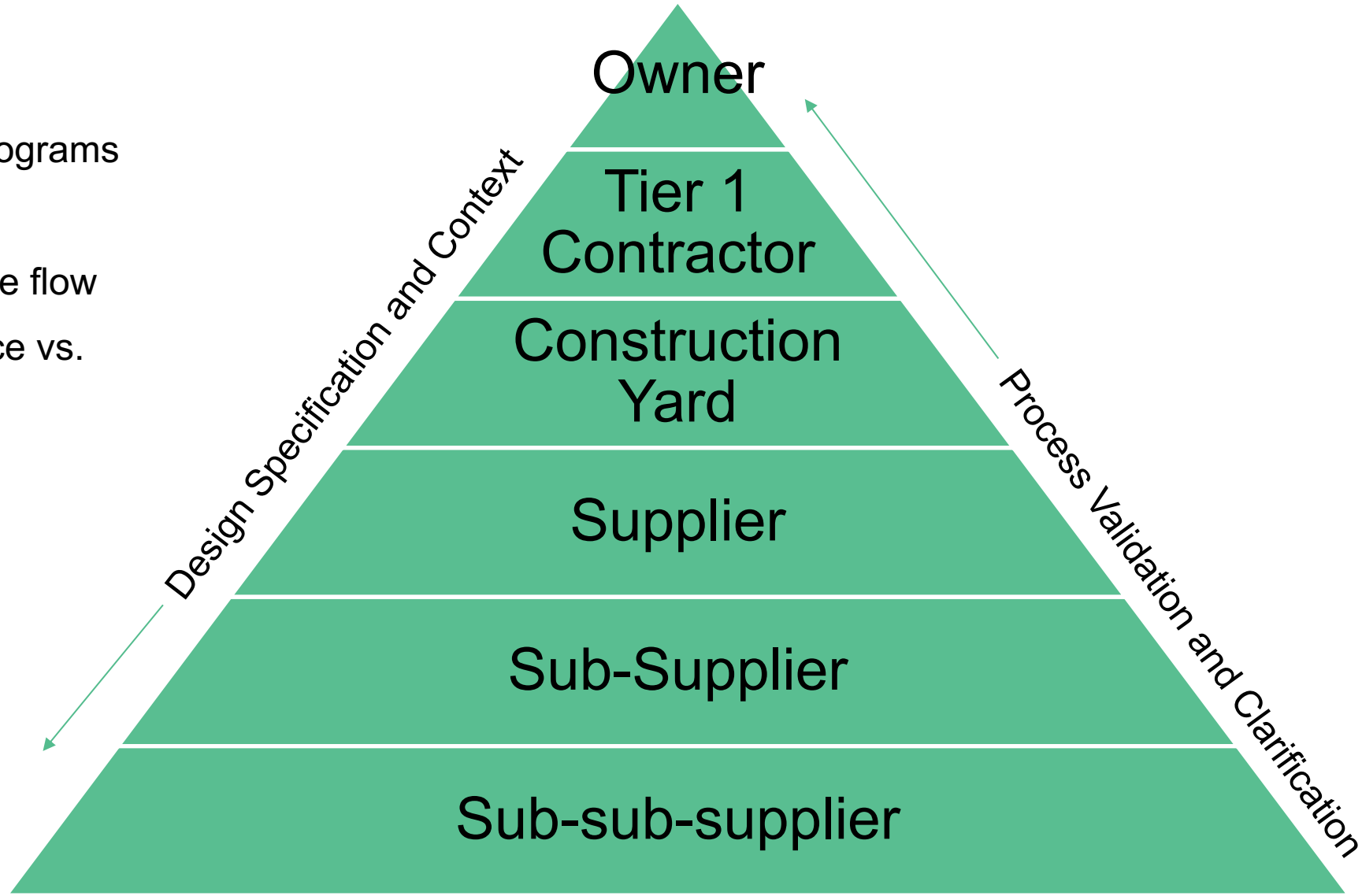
- Nearly all operations under one roof
- Engineers are “hands on” with the product every day
- Long tenured, highly skilled work force
- But……
  - Expensive
  - Inflexible
  - Hard to scale

Supply Chain Expansion

- Globally distributed production
- Flexible & Scalable
- Communication is more challenging
- Mission is less clear
- Interaction between engineering and production is greatly reduced

Solutions

- Worker competence programs
- Known suppliers
- Supply chain knowledge flow
- Automotive & Aerospace vs. Heavy Construction



What is killing us and what can we do

Terry Tuggle

ISSUE

Changes During Design Phase

MITIGATION

Track Changes and Costs Associated

COMMENTS

Engineering Metrics Showing Revisions

ISSUE

Loss of Seasoned Engineering

MITIGATION

Establish Training and communicate the progress

COMMENTS

Develop Specific modules that deal with each aspect of engineering

ISSUE

Build knowledge from within

MITIGATION

Allow new hires to explore opportunities and take ownership of their careers

COMMENTS

Develop internal program for advancement and professional development

ISSUE

Special Designs and one-offs

MITIGATION

Design with the end in mind. Buy off the shelf

COMMENTS

Performance and ease of operation

ISSUE

Cost of Rework

MITIGATION

Fabrication has a more consistent process

COMMENTS

Craft is a revolving door

ISSUE

Carry over work. Punch lists

MITIGATION

Ensure plan allows time to finish with float

COMMENTS

Schedules are always compressing

ISSUE

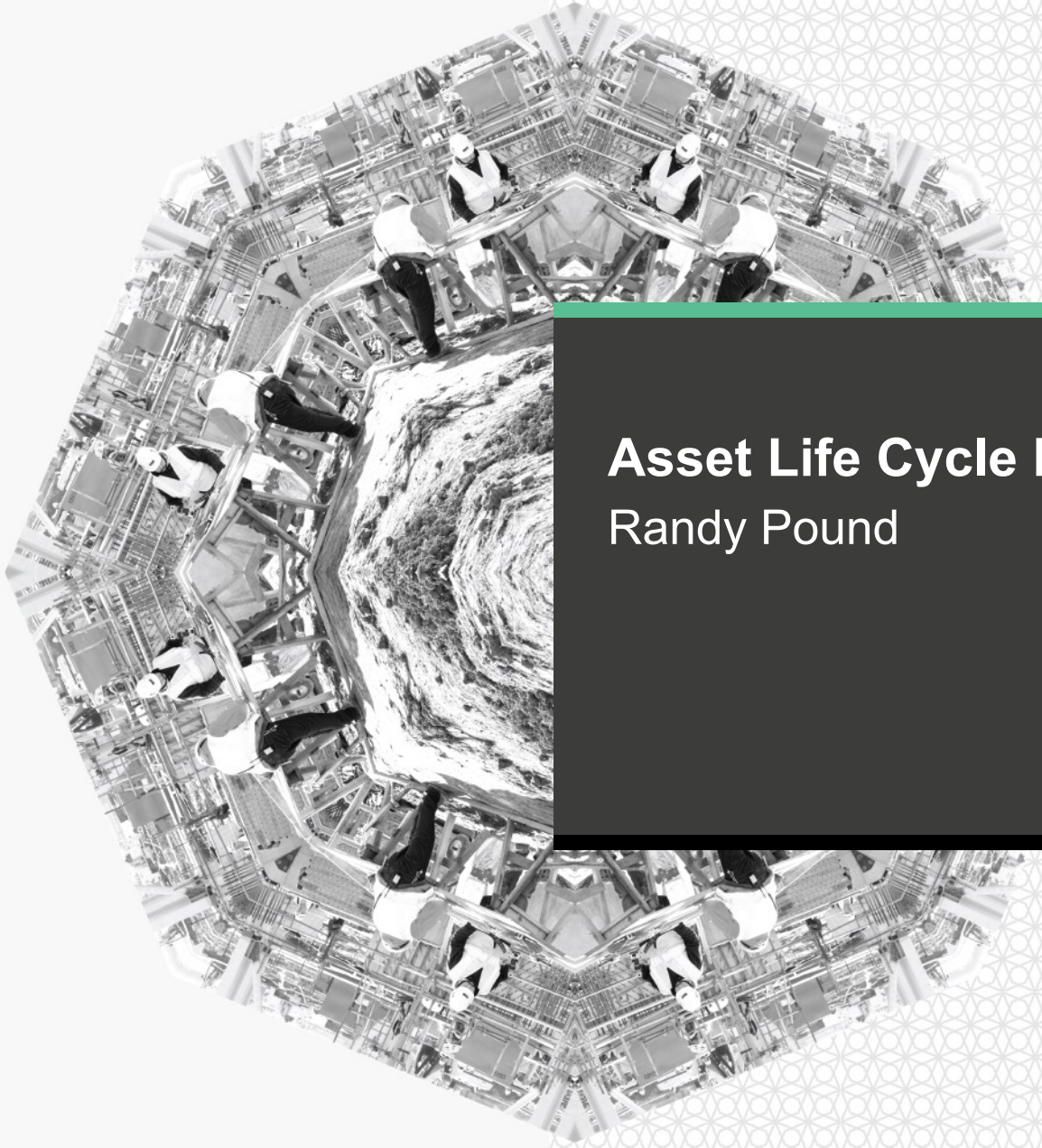
Operators often push the intervals to gain more production time

MITIGATION

Stick to maintenance plan

COMMENTS

Modify plan on known data



Asset Life Cycle Management & Quality

Randy Pound

Asset Life Cycle Management

- Mindset . . . that turns into
- Structure . . . that turns into
- Processes . . . that turn into
- Learning . . . that turns into
- Improvement . . . that turns into
- Profitability . . . that turns into
- Sustainable competitive advantage

What are the solutions?

1	Train <u>all</u> senior leadership, and then the organization, about Asset Life Cycle Management. Earn their proper mindset.
2	Ensure that the organizational structure and the specific leaders in that structure support success.
3	Adopt the “Reliability Model” approach to analysis and improvement.
4	Ensure that all Key Performance Indicators (KPIs) and annual performance reviews support success. Share KPIs properly.
5	Edit capital program, project management, financial, and operating processes to support the Asset Life Cycle approach.
6	Add discipline and process to Organizational Learning. If processes, procedures, SOPs, specifications, product recipes, and training systems are not being edited, organizational learning is not occurring.
7	Improve training, coaching, and mentoring at <u>all</u> levels.
8	Obtain excellent talent from all available sources, internally and externally. Eliminate the “Not Invented Here” mindset. It never worked.
9	Implement disciplined benchmarking and best practices to continually learn and improve from other companies and industries.
10	and more . . . . .

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Title of Presentation

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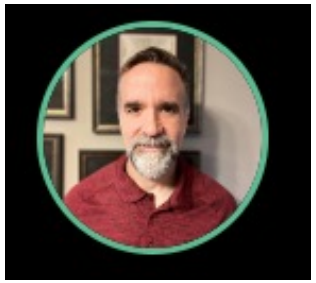

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