



engineering and construction contracting association

# Strategic Issues Management Workshop

## ***ENGINEERING MANAGEMENT***

*ECC Annual Conference*

*September 3, 2014*

*Orlando, Florida*



# INTRODUCTION



- Owners, contractors and suppliers in every sector know that ENGINEERING MANAGEMENT is an important issue; the cost, effort, duration and quality of engineering work are not only major success factors in themselves, but also have a direct impact on construction and overall project success.
- Many industry executives have observed that among the root causes of engineering management ineffectiveness is the ***inability of owners and contractors to understand and appreciate the other's point of view.***
- This Workshop is an open forum providing a safe, non-commercial environment in which owners, engineering contractors and suppliers can freely exchange ideas and experiences to:
  - Improve mutual understanding
  - Provide a starting point for collaboration on solutions to resolve issues and improve engineering predictability, productivity and performance

# Agenda



<b>TIME</b>	<b>TOPIC</b>
<b>11:30 – 12:30</b>	<b>Lunch</b>
<b>12:30 – 1:00</b>	<b>Introduction:</b> <ul style="list-style-type: none"><li>• <b>Review of pre-meeting survey results</b></li><li>• <b>Selecting the top issues to be addressed in the workshop</b></li></ul>
<b>1:00 – 2:00</b>	<b>Breakout Groups address highest priority issues</b>
<b>2:00 – 2:15</b>	<b>Break</b>
<b>2:15 – 4:15</b>	<b>Presentations and group discussions of results from each team</b>
<b>4:15 – 4:20</b>	<b>Summary of results and plan for Friday Forum presentation</b>
<b>4:20 – 4:30</b>	<b>Survey of participants for planning future Strategic Issues Management Workshops</b>

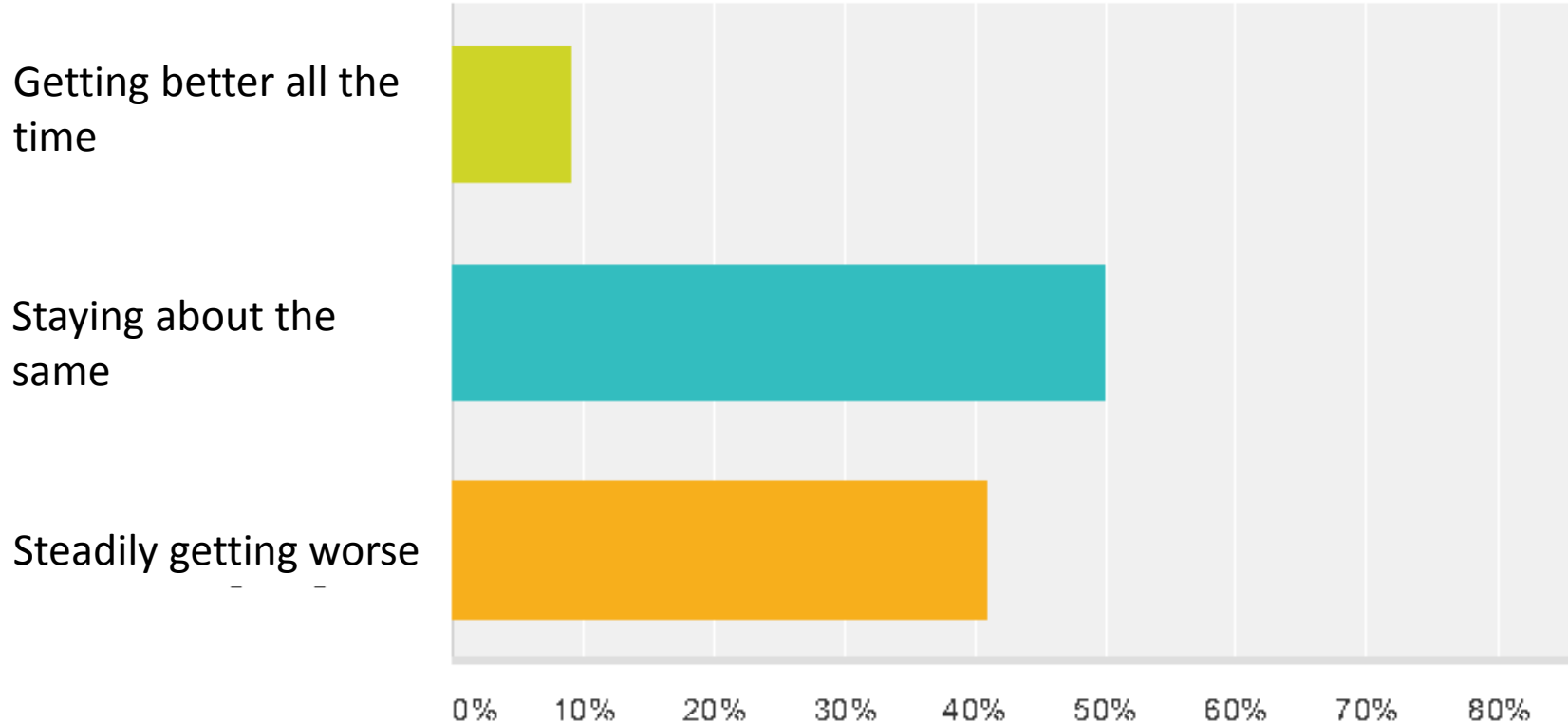


# SURVEY RESULTS

45% owners  
55% contractors/suppliers

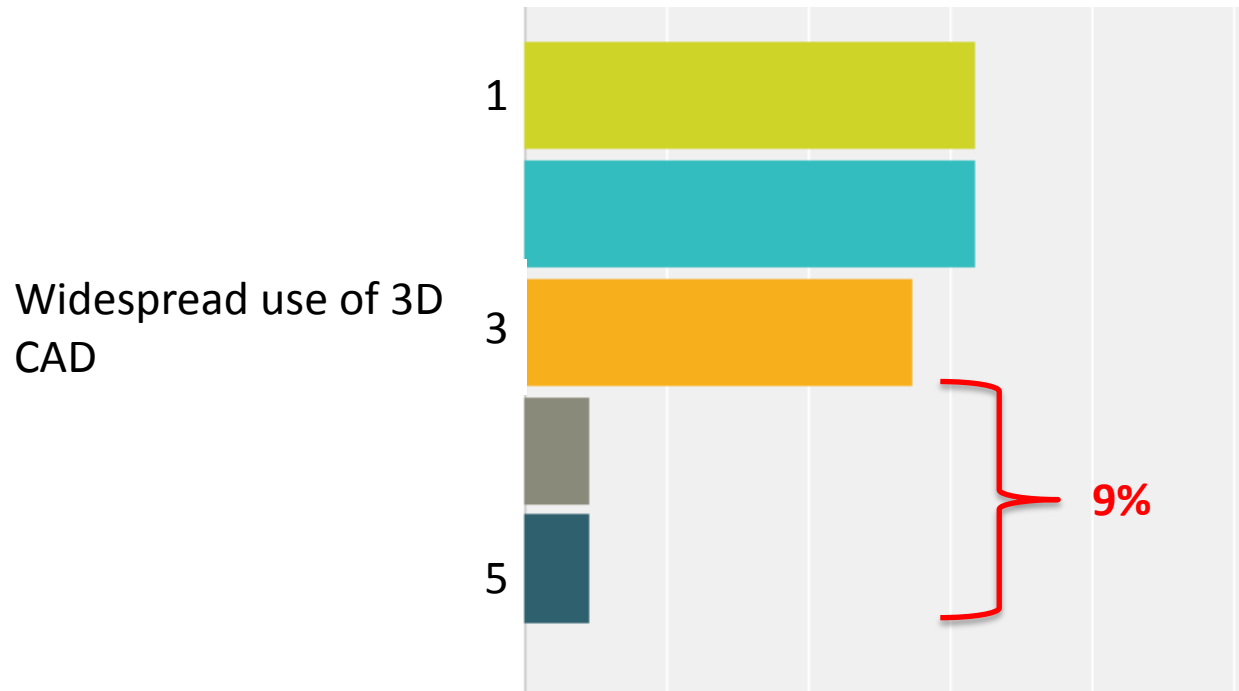


## Q2 What best describes the current trends in engineering productivity?



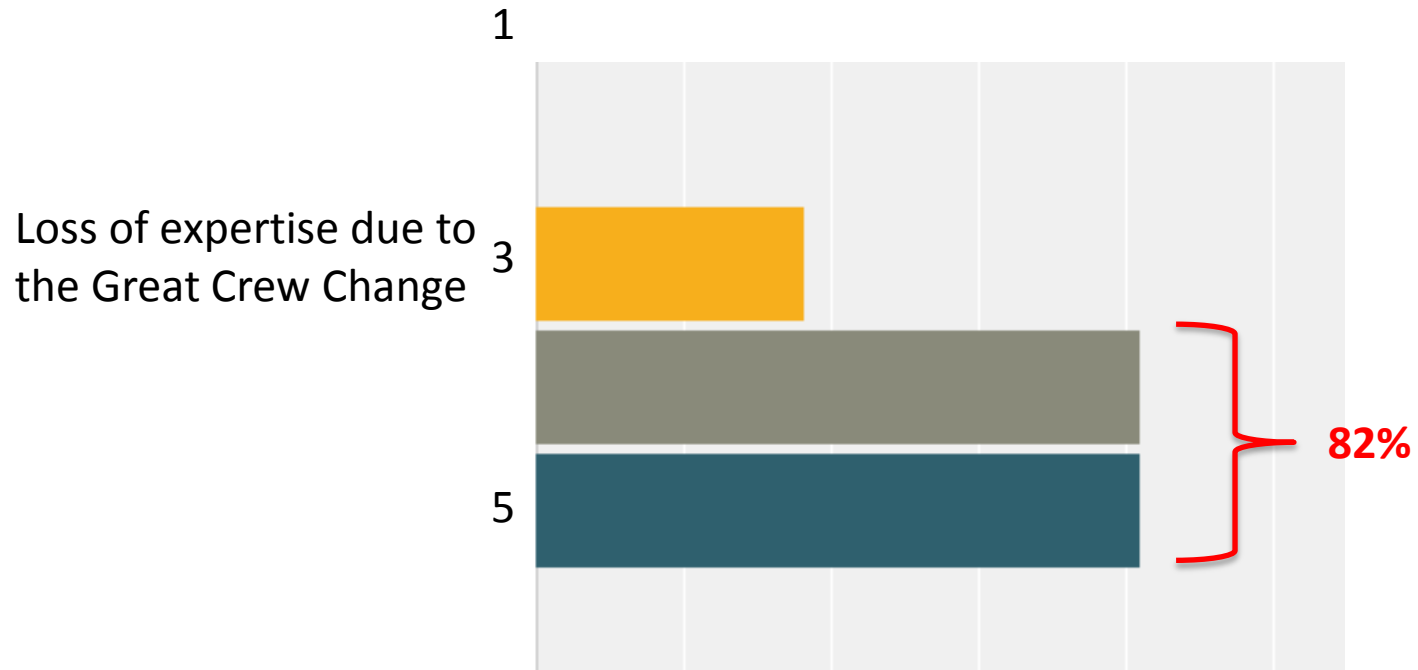


**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**





**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**

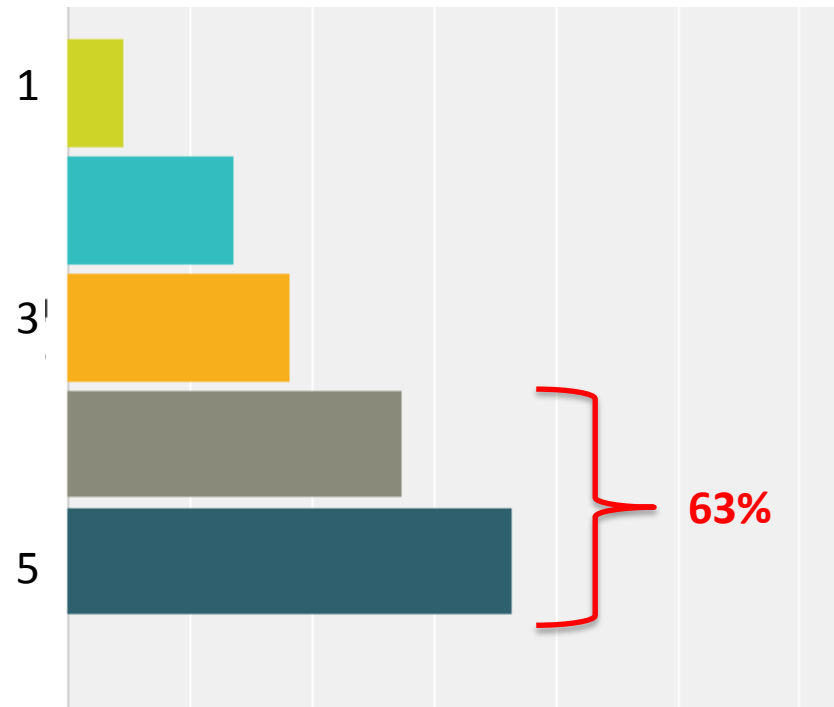






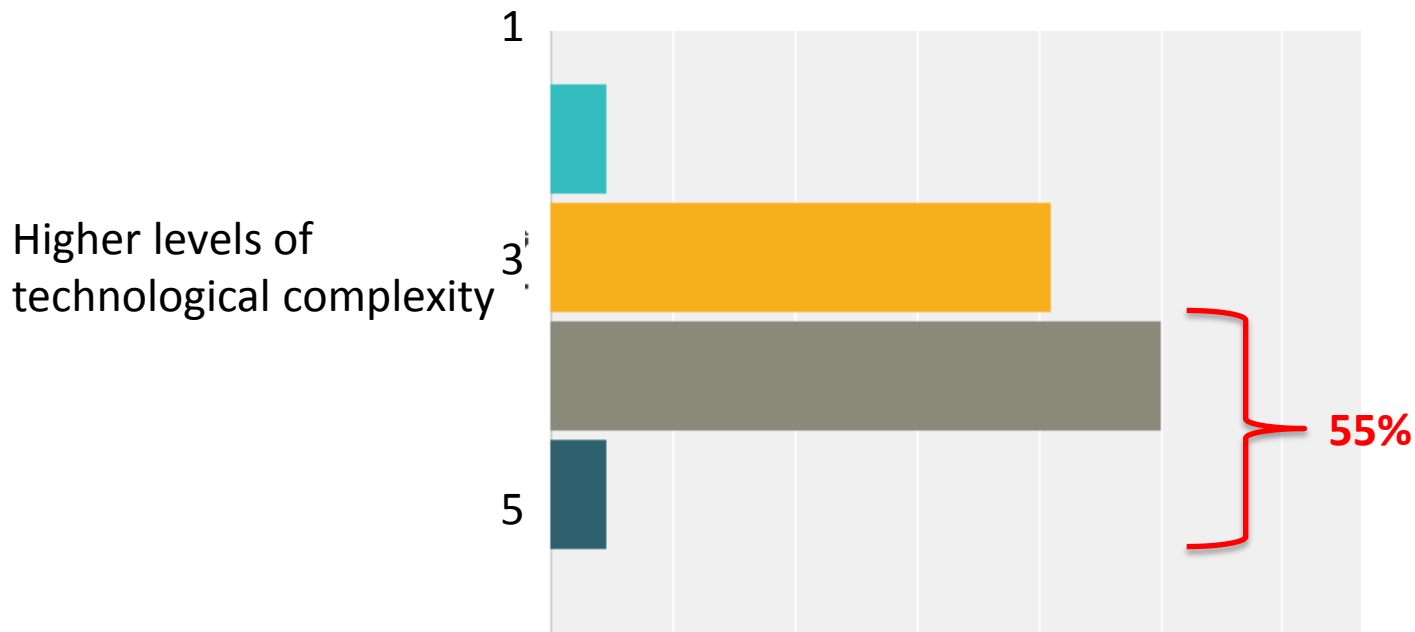
**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**

Increasing project size and complexity



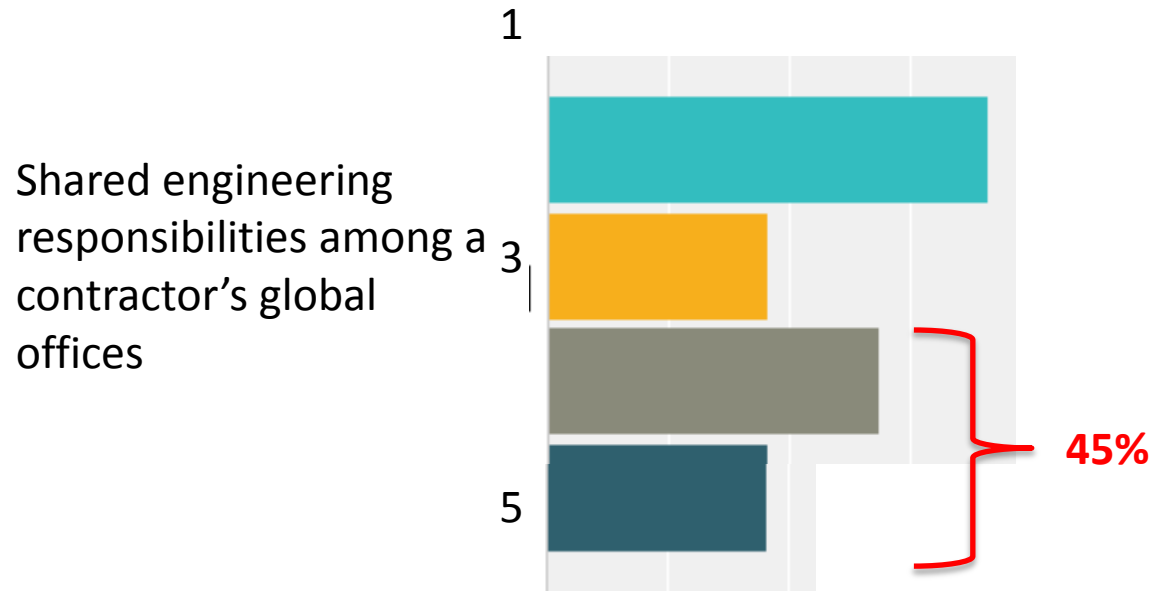


**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**



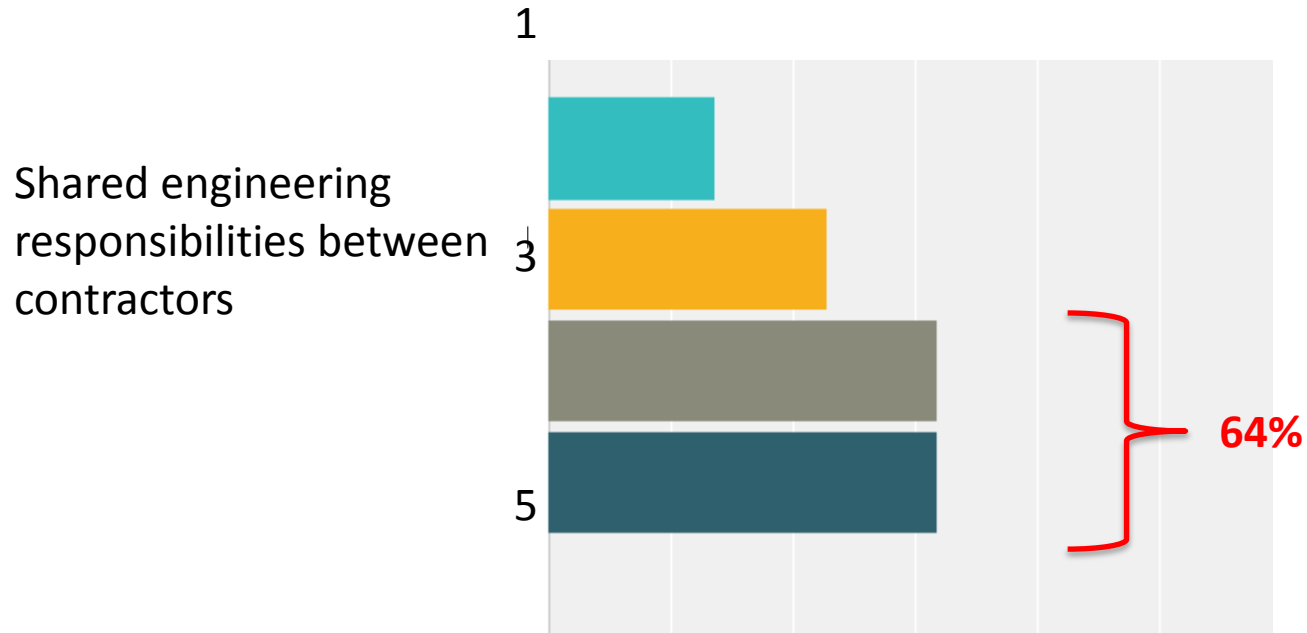


**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**





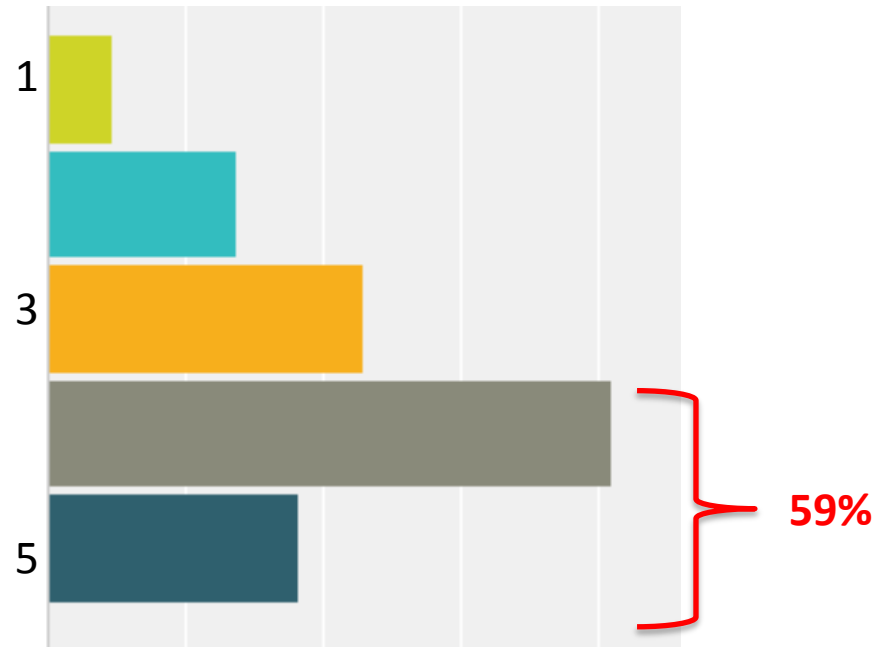
**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**





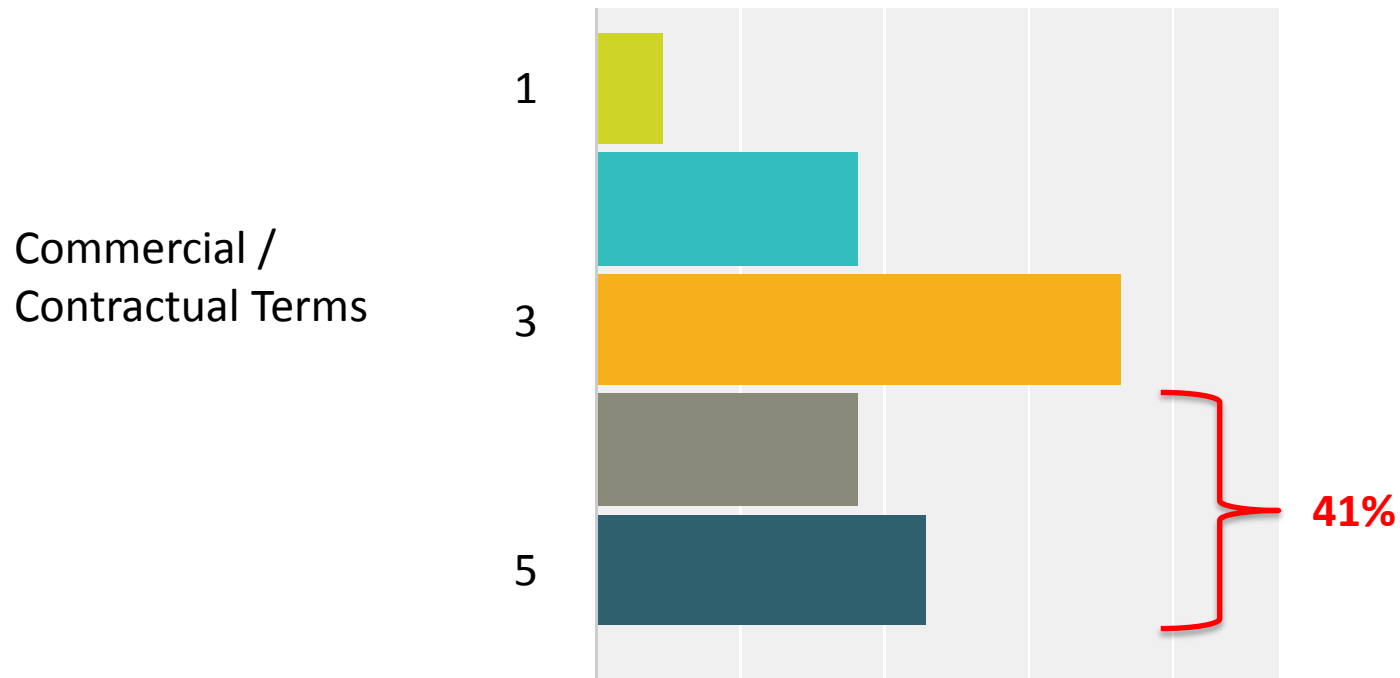
**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**

Lack of transparency between owner and contractor





**Q3 On a scale of 1 – 5 (1: not significant, 5: very significant) rate the following factors that can reduce engineering productivity:**



**Q4 Answer these questions only if you are an OWNER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

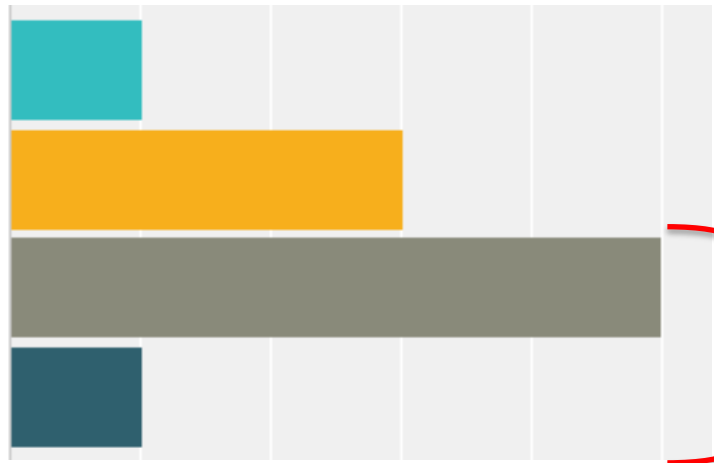
**Q5 Answer these questions only if you are a CONTRACTOR/SUPPLIER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

### The productivity of engineering contractors is decreasing

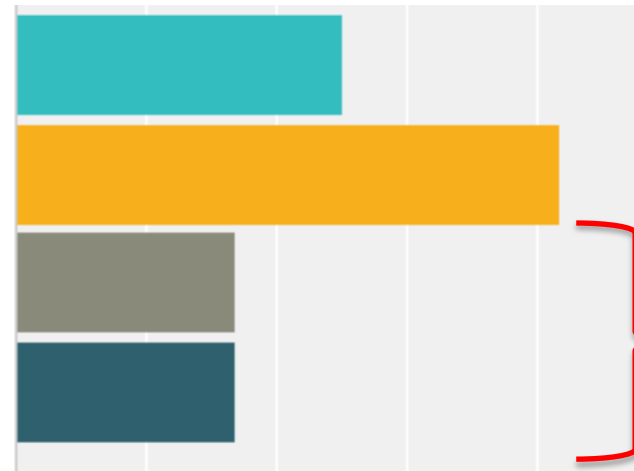
1

3

5



60%

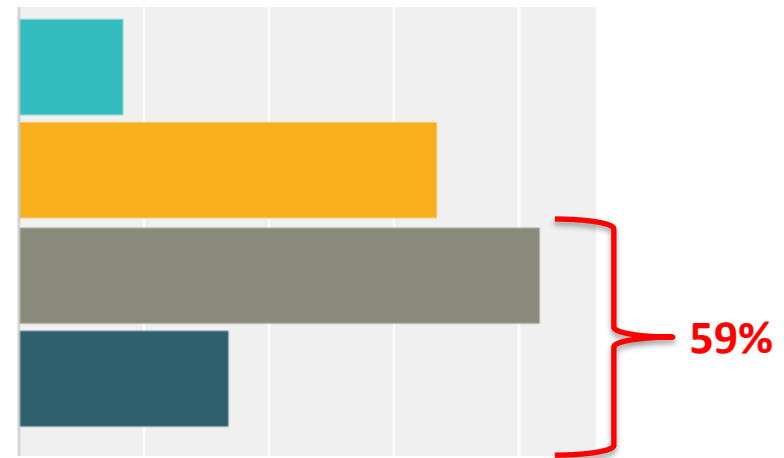
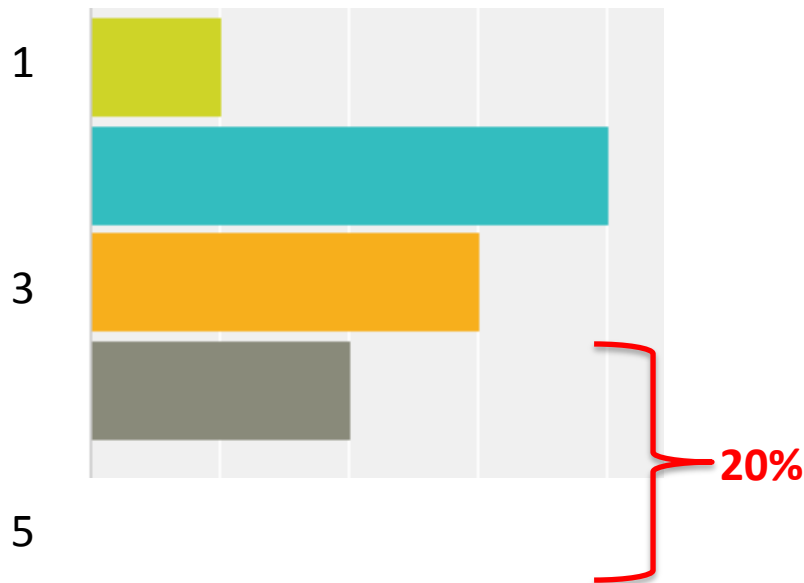


33%

**Q4 Answer these questions only if you are an OWNER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

**Q5 Answer these questions only if you are a CONTRACTOR/SUPPLIER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

### Owner mindsets & behaviors are the primary factors driving engineering contractor performance

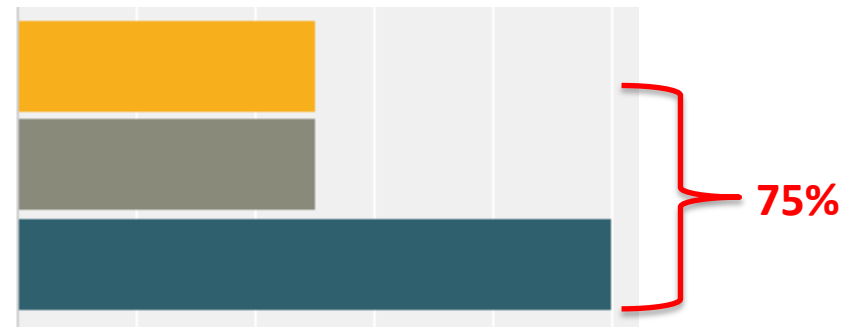
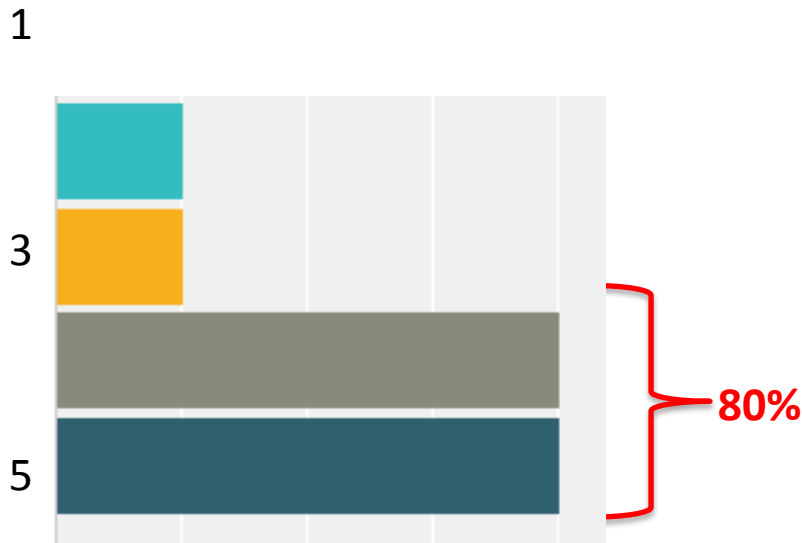




**Q4 Answer these questions only if you are an OWNER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

**Q5 Answer these questions only if you are a CONTRACTOR/SUPPLIER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

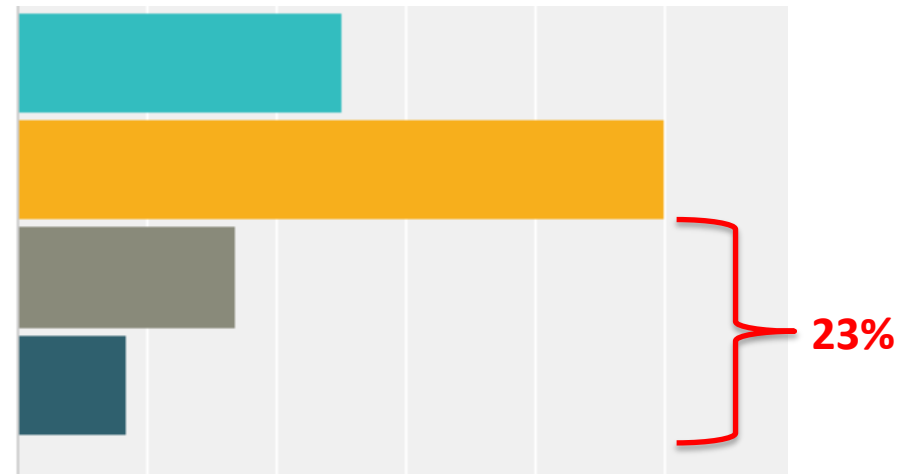
### Contractors can improve engineering productivity by improving the way they recruit, train, and deploy people



**Q4 Answer these questions only if you are an OWNER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

**Q5 Answer these questions only if you are a CONTRACTOR/SUPPLIER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

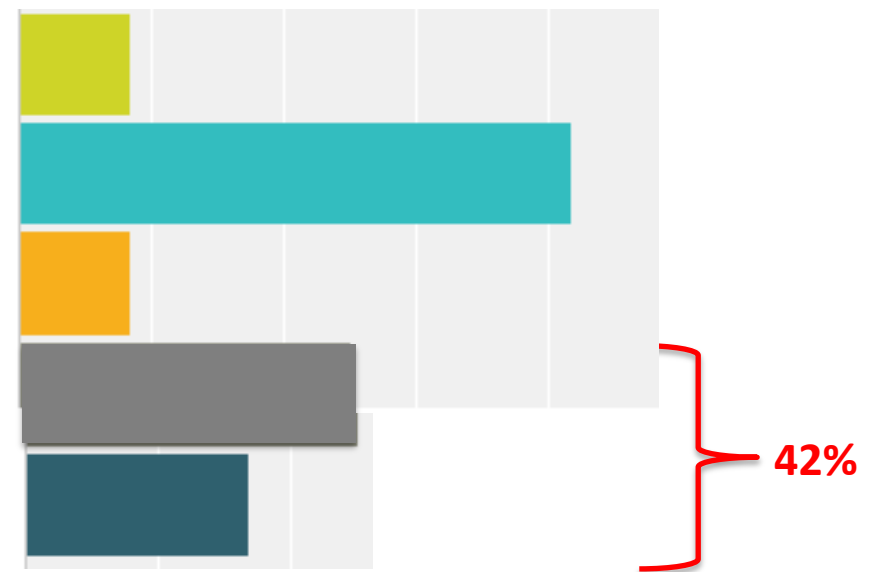
### The quality of engineering deliverables is decreasing



**Q4 Answer these questions only if you are an OWNER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

**Q5 Answer these questions only if you are a CONTRACTOR/SUPPLIER. Use a rating scale of 1 to 5 (1: strongly disagree, 3: neutral, 5: strongly agree)**

### Contractors have difficulties understanding an owner's priorities and constraints



# Instructions for Teams



- Your table has a copy of the survey results for each person
- Discuss these results and establish the most important “take-away” your team derived from the survey
- Be prepared to share this result with the group



# **SELECTION OF ISSUES TO WORK ON**



Issue #1: **THE COST AND TIME REQUIRED TO COMPLETE ENGINEERING OFTEN EXCEEDS THE ESTIMATE**

The effort, cost and time required to complete engineering for major projects often greatly exceeds the estimate, and causes additional penalties in the cost and time to complete construction.

Issue #2: **CONVENTIONAL METHODS FOR MEASURING ENGINEERING PROGRESS ARE OFTEN OPTIMISTIC**

Conventional methods for measuring engineering progress often overstate percent complete, resulting in inefficiencies in engineering management and serious delays in construction.



## Issue #3: **THE ENGINEERING RESOURCE REQUIREMENTS FOR MAJOR PROJECTS OFTEN EXCEED CONTRACTOR'S CAPABILITIES**

Various internal and external factors often create difficulties for contractors in mobilizing and retaining the required resources with the necessary skills. Strategies to use multiple offices and/or other contractors can increase the resource base but also create new challenges.

## Issue #4: **MANAGEMENT OF CHANGE (MOC) PROCESSES ARE INEFFECTIVE**

The scale of major projects, the large number of interfaces to be managed, and the use of 3-D CAD models all contribute to the challenges of managing change in the design process. Ineffective MOC, in turn, contributes significantly to the issues of cost overruns and progress measurement.



## Issue #5: **THE QUALITY OF DESIGN DELIVERABLES IS MORE DIFFICULT TO ENSURE**

The loss of industry expertise (impact of the “great crew change”), increasing project complexity, and the growing number of interfaces to be managed, have made it more difficult to ensure that the necessary judgment has been applied to ensure that designs are complete and correct.



## Each team will select an issue to work on today



Issue #1: THE COST AND TIME REQUIRED TO COMPLETE ENGINEERING OFTEN EXCEEDS THE ESTIMATE

Issue #2: CONVENTIONAL METHODS FOR MEASURING ENGINEERING PROGRESS ARE OFTEN OPTIMISTIC

Issue #3: THE ENGINEERING RESOURCE REQUIREMENTS FOR MAJOR PROJECTS OFTEN EXCEED CONTRACTOR'S CAPABILITIES

Issue #4: MANAGEMENT OF CHANGE (MOC) PROCESSES ARE INEFFECTIVE

Issue #5: THE QUALITY OF DESIGN DELIVERABLES IS MORE DIFFICULT TO ENSURE



# **INSTRUCTIONS FOR BREAKOUT TEAMS**

# Instructions for Breakout



- Your team has been assigned an ISSUE to be addressed. You are to address this issue strictly from the assigned POV (owner or contractor)
  - Please use the following framework for your breakout discussions:
    - What is the SITUATION? *Describe the issue in specific terms, using realistic project scenarios as appropriate.*
    - What is the COMPLICATION? *Identify the factors that make this issue difficult to resolve*
    - What is the RESOLUTION? *Develop ideas/approaches that both owners and contractors agree are practical and effective*
- Appoint a scribe to capture the results on the template provided
- Select a spokesperson from your team to present the results to the full group