Long Term and Near Term Approaches on Productivity Improvements –

Where’s my Silver Bullet???

Jim Rammell
14 November 2017
facts...

A new global leader in technical, engineering and project services

$11BN over $11bn revenue
60+ Operating in more than 60 countries

WG.100 FTSE 100 listed
160 Over 160 years experience
purpose...

we deliver performance-driven solutions throughout the asset life cycle, from concept to decommissioning across a broad range of energy and industrial markets
purpose…
purpose...
purpose...

- **500+** families affected
- **$150,000+** raised via You Caring, fundraisers and corporate support
- **1,000+** Hope After Harvey t-shirts sold
- **50+** work crews mobilized across the Gulf Coast
- **200,000+** calories served by others
- **100+** tools and supplies collected, donated, borrowed or used

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“Houston, we have a problem...”

Long Term and Near Term Approaches on Productivity Improvements –

Where’s my Silver Bullet???
“Houston, we have a problem...”
“Houston, we have a problem…”

For Mega-Projects*:

• 98% of Projects incur cost overruns or delays
• The average cost increase is 80% of the original value
• The average slippage is 20 months behind original schedule

* From 08Sept17 McKinsey Rice E&C roundtable

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BUT WAIT!!!
“Houston, we have a Solution...”
“Houston, we have a Solution...”

Striving to Improve Productivity...

- Long Term
- Near / Short Term

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Productivity – Long Term

Long Term...

2 x
Productivity – Long Term
Productivity – Long Term

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Productivity – Long Term
Productivity – Long Term
Productivity – Long Term

Long Term...

- Data Analytics
- Combination of Incremental Improvements
- Technology
- Contract Structure
  - Collaborative Approaches (Integrated Project Delivery)
  - Upfront Planning
  - ...

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Productivity – Near / Short Term

Near / Short Term...

- Advanced Work Packaging
- Contract Structure
  - Collaborative Approaches
  - Upfront Planning
  - ...

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What is Advanced Work Packaging?

Work planning that emphasizes construction requirements

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AWP Discussion Points

• Foundational Background
• Benefits
• Implementation Challenges
• AWP Actions
Traditional Work Packaging

- has been done on every project since the pyramids.
- is a formal/informal process of understanding and performing field work.
- is accomplished inconsistently.
CII RT 272/319 Contributions: A Model for Advanced Work Packaging

Productivity & Predictability

Safety, Quality, Alignment, Communication, Reduced Rework

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## Level 2: AWP Effectiveness

AWP is seen as part of the business solution - being both an opportunity and a challenge.

Integration of AWP strategies are routinely developed and updated. These often seek to overcome integration and communication issues across project organizational units (silos). AWP is now included in all contracts.

Work processes and deliverables for individual business functions or departments are mostly well defined and standardized.

Integration of these processes are still problematic across functional unit lines. Frustration will be experienced when some functions are progressing towards AWP.
Maturity Model – Case Study Evaluations

Results:
- 60 ratings on 15 different projects.
- Independent ratings (RT319 experts).
- Two dimensions of analysis:
  - AWP Maturity
    - A. Process Adherence
    - B. Organizational Alignment
    - C. Contract Integration
  - Project Performance
    - A. Productivity
    - B. Cost
    - C. Safety
    - D. Schedule
    - E. Quality
    - F. Predictability

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(1) Recommendation in AWP Early Stages

AWP Early Stages

- Set small project goals.
- Allocate adequate budgets.
- Identify key roles to drive AWP implementation.
- Perform intensive training.

AWP Maturity

Project Performance

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(1) Performance in AWP Early Stages

<table>
<thead>
<tr>
<th>Performance Dimension</th>
<th>Maturity Stage</th>
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<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td>Around 10% improvement</td>
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<tr>
<td><strong>Cost</strong></td>
<td>Project on budget</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td>0 lost-time accident (TRIR below company average)</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>Project experienced minor delays</td>
</tr>
<tr>
<td><strong>Predictability</strong></td>
<td>Significant deviation from baseline estimates</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>Rework in line with previous quality performance</td>
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</table>
(2) Recommendation in AWP Effectiveness

**AWP Early Stages**

**AWP Effectiveness**

**AWP Maturity**

- Set ambitious project goals.
- Prioritize incremental improvement projects.
- Watch out for complacency.
- Attain to AWP guidelines.

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### (2) Performance in AWP Effectiveness

#### Maturity Stage: 1 – AWP Early Stage

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**2 – AWP Effectiveness**

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<th>Performance Break-Out</th>
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<td><strong>Schedule</strong></td>
</tr>
<tr>
<td><strong>Quality</strong></td>
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</table>

- **Productivity**: Around 25% improvement
- **Cost**: TIC 10% below estimates
- **Safety**: 0 lost-time accident (TRIR improves with sporadic first-aids / near misses)
- **Schedule**: Project slightly ahead of schedule during execution
- **Predictability**: Minor changes to execution schedule
- **Quality**: Rework slightly below company's average
(3) Recommendation in AWP Biz. Transformation

AWP Business Transformation

- Continue investing in AWP implementation.
- Increase the flexibility of project managers to evolve/adapt AWP processes.
- Export the project as “world-class” benchmark.

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## (3) Performance in AWP Business Transformation

<table>
<thead>
<tr>
<th>Performance Dimension</th>
<th>Maturity Stage</th>
<th>1 – AWP Early Stage</th>
<th>2 – AWP Effectiveness</th>
<th>3 – AWP Business Transformation</th>
</tr>
</thead>
<tbody>
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<td>Productivity</td>
<td></td>
<td>Around 10% improvement</td>
<td>Around 25% improvement</td>
<td>Around 25% improvement</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td>Project on budget</td>
<td>Around 10% below TIC</td>
<td>Around 10% below TIC</td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td>0 lost-time accident (TRIR below company average)</td>
<td>0 lost-time accident (sporadic first-aids and near misses)</td>
<td>0 lost-time accident (sporadic first-aids and near misses)</td>
</tr>
<tr>
<td>Schedule</td>
<td></td>
<td>Project experienced minor delays</td>
<td>Project slightly ahead of schedule during execution</td>
<td>Project slightly ahead of schedule during both planning and execution</td>
</tr>
<tr>
<td>Predictability</td>
<td></td>
<td>Not very satisfying (major changes to estimates)</td>
<td>Moderately positive (minor changes to estimates)</td>
<td>Execution schedule to plan</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td>In line with previous quality performance</td>
<td>Reworks slightly below company's average</td>
<td>Rework substantially below company average + substantial reduction in RFIs</td>
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Project Performance with AWP

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Performance Break-Out

Productivity

Quality

Predictability

Schedule

Cost

Safety

Predictability

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Managerial Implications

AWP Early Stages

- Set achievable project goals
- Allocate adequate budget during planning
- Identify key roles to drive AWP implementation
- Perform intensive training for all key participants

AWP Effectiveness

- Set ambitious project goals
- Prioritize incremental improvement projects
- Watch out for complacency
- Attain to AWP guidelines

AWP Business Transformation

- Continue investing in AWP implementation
- Increase the flexibility of project managers to evolve/adapt AWP processes
- Export the project as “world-class” benchmark

Project Performance

AWP Maturity

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AWP Implementation Challenges

- Qualified Companies
- Qualified Individuals
  - UH Students
  - Train Current EE’s
    - “only thing worse than training your employees and losing them... ...is not training them and keeping them!”
- Keeping the Momentum
AWP Actions

- Call to Action
- Name a Champion
- Share your Wins
- Engage Others
Path Forward

- Continue Long Term Research
- Continue Near Term Implementations
- Celebrate Successes
- Engage Others