



2018 Annual INCOSE
Great Lakes Regional Conference
SYSTEMS AT THE CROSSROADS
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Surviving the Deadly Divide Between Pre-Sale and Post-Sale

Welcome to Reality

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A Different Point of View

- We often speak of Systems Engineering in isolation, yet SE never occurs by itself
- In reality we operate in a system of systems business hierarchy that spans many domains
- Most INCOSE presentations focus on how to become better at some aspect of SE
- This presentation focuses on improving development outcomes through improved integration of SE

About the Presenter

- Systems Engineer
- Program Manager
- Business Leader
- Disruptive Innovator
- Charter member of INCOSE
- Lots of free content on INCOSE and PMI websites, LinkedIn, etc.
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Introduction

Orthogonal Roles

- SE is responsible for definition
- PM is responsible for execution
- Sales is responsible for expectations
- Development is the emergent property of interaction
- Lots of things get in the way of harmony
 - Independent success and reward criteria
 - Organizational boundaries
 - Competition for mastery of the effort

“Sale” is Dangerous in Development

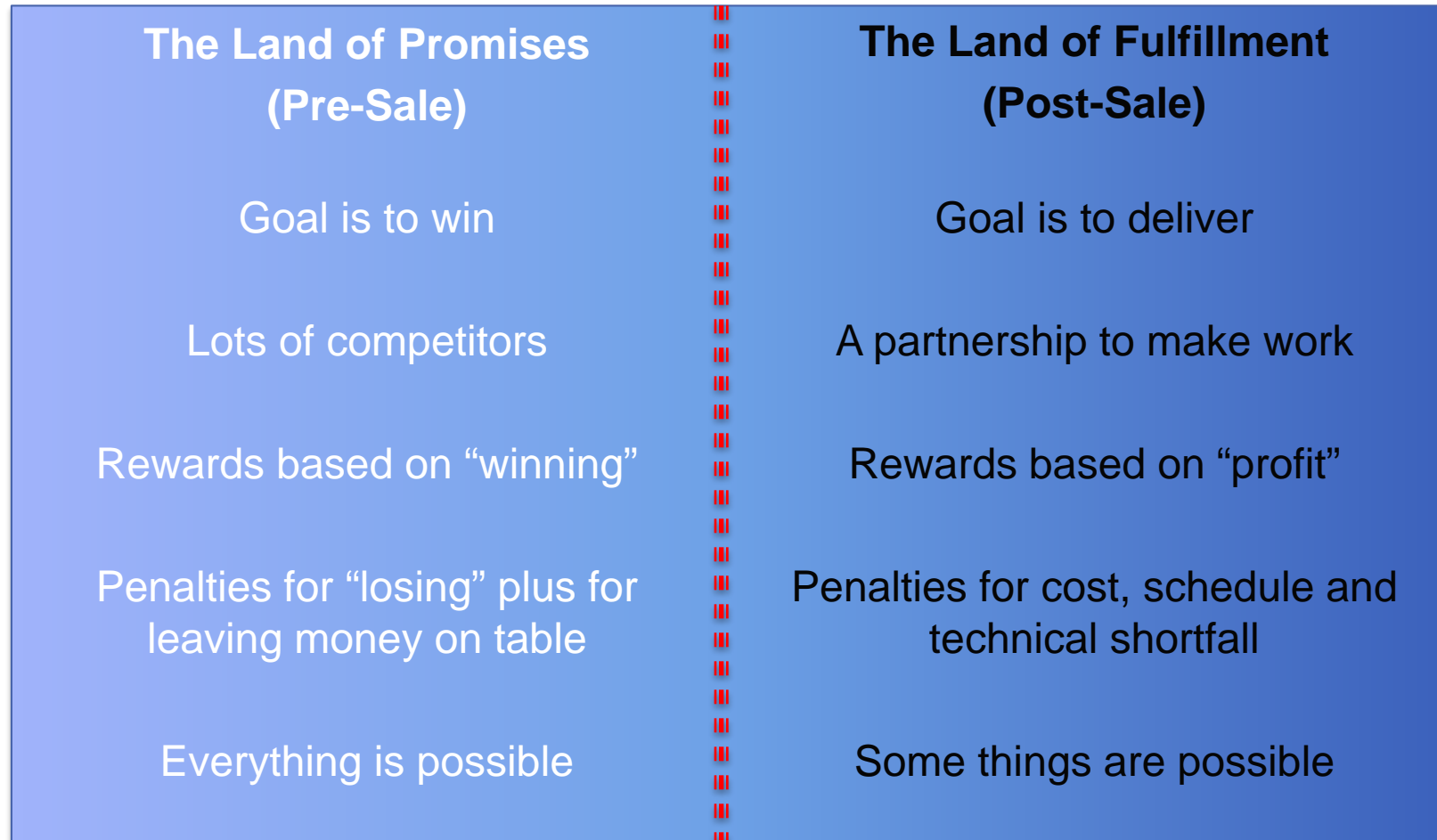
- We don't sell completely defined things like shampoo, printers or cars...
- Our projects, programs and portfolios require at least some definition as well as execution
 - Incrementally identified goals and requirements
 - Lots of different starting points
 - Many possible outcomes
 - Variable “before / after” award timing

Projects Have Pre / Post Sale Periods

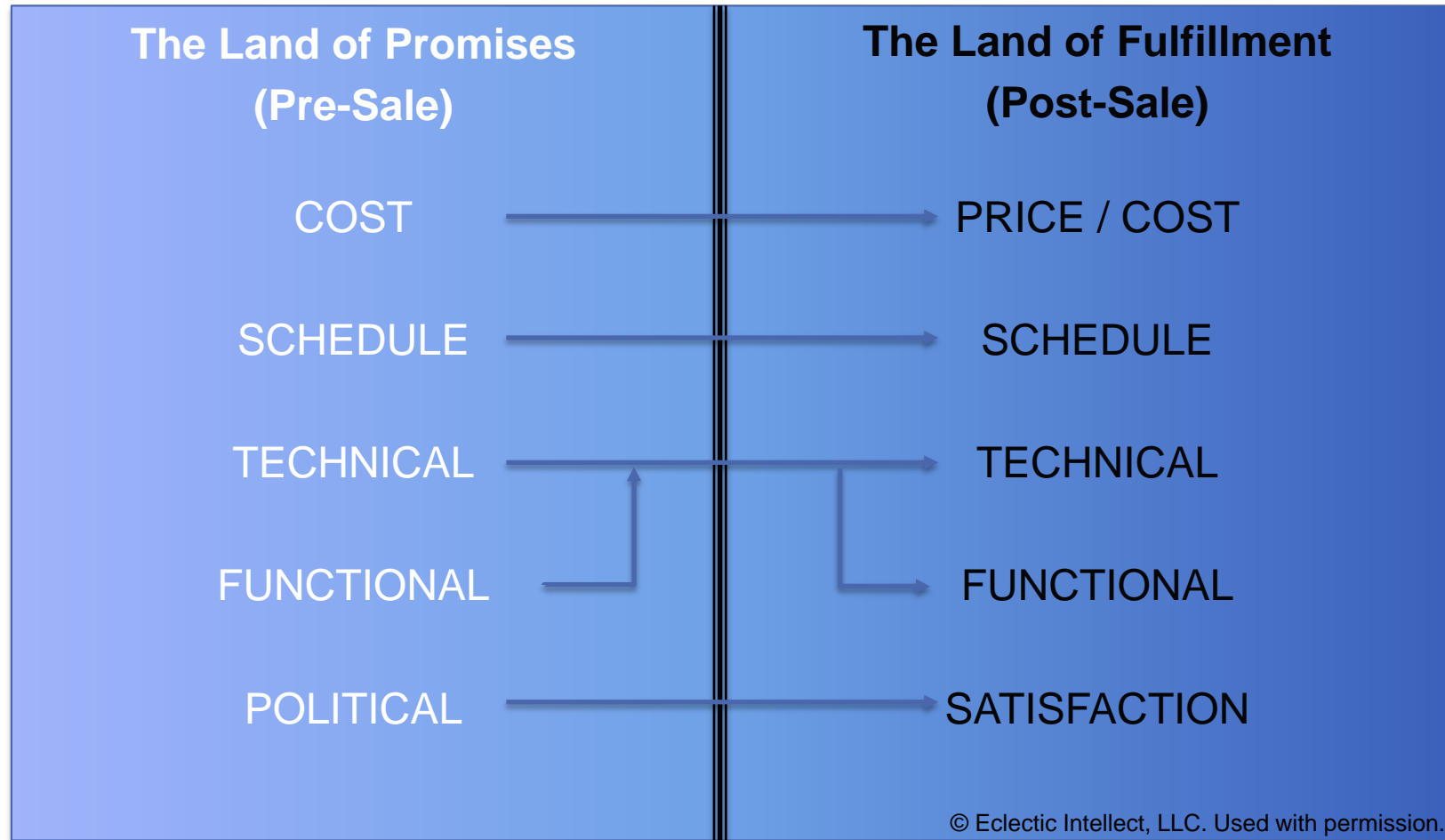
- The “buy and sell” model for dreams
 - Any RFP-based procurement process
 - Most commercial development contracts
 - Even internal development approvals
- A boundary is introduced by the division into pre and post sale periods
- This boundary has very serious consequences

The Deadly Divide

The Deadly Divide

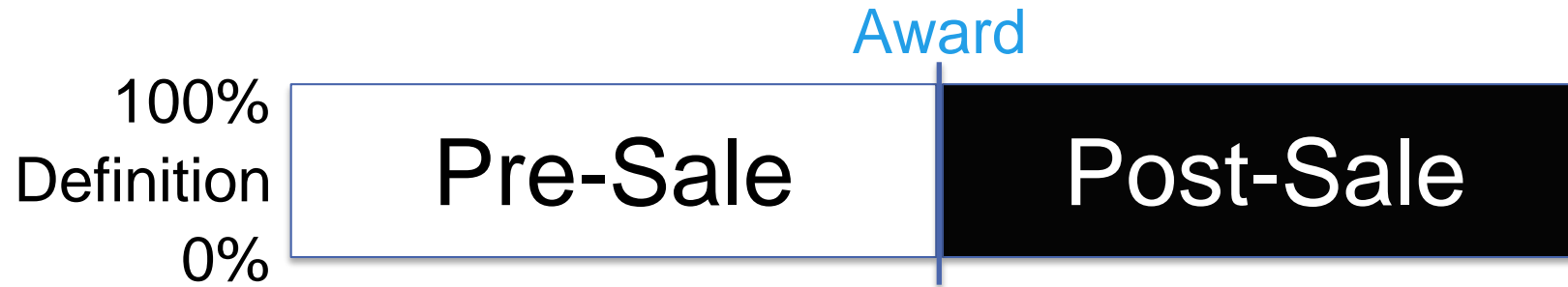


Translation Required



Sale

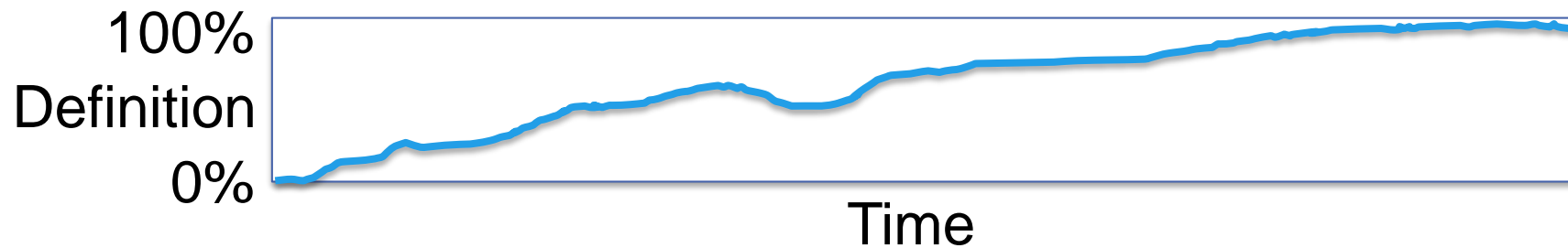
- Sale is a binary business event



- Sale represents agreement

Definition

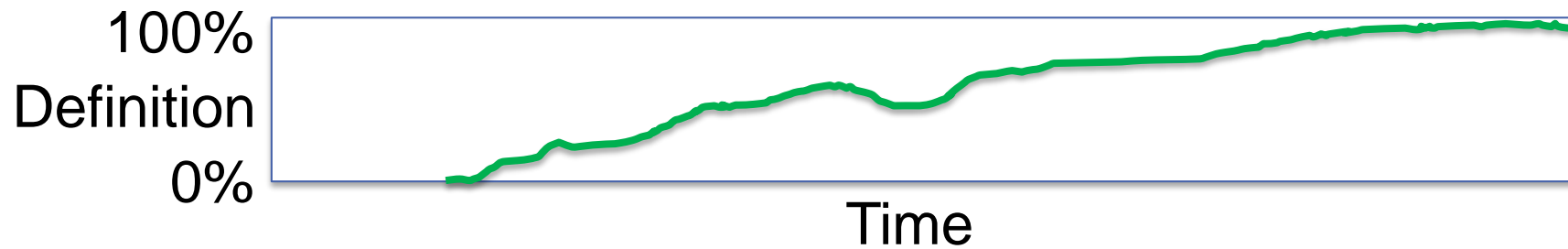
- Definition is a continuous analog activity



- Definition sets up and then solves problems

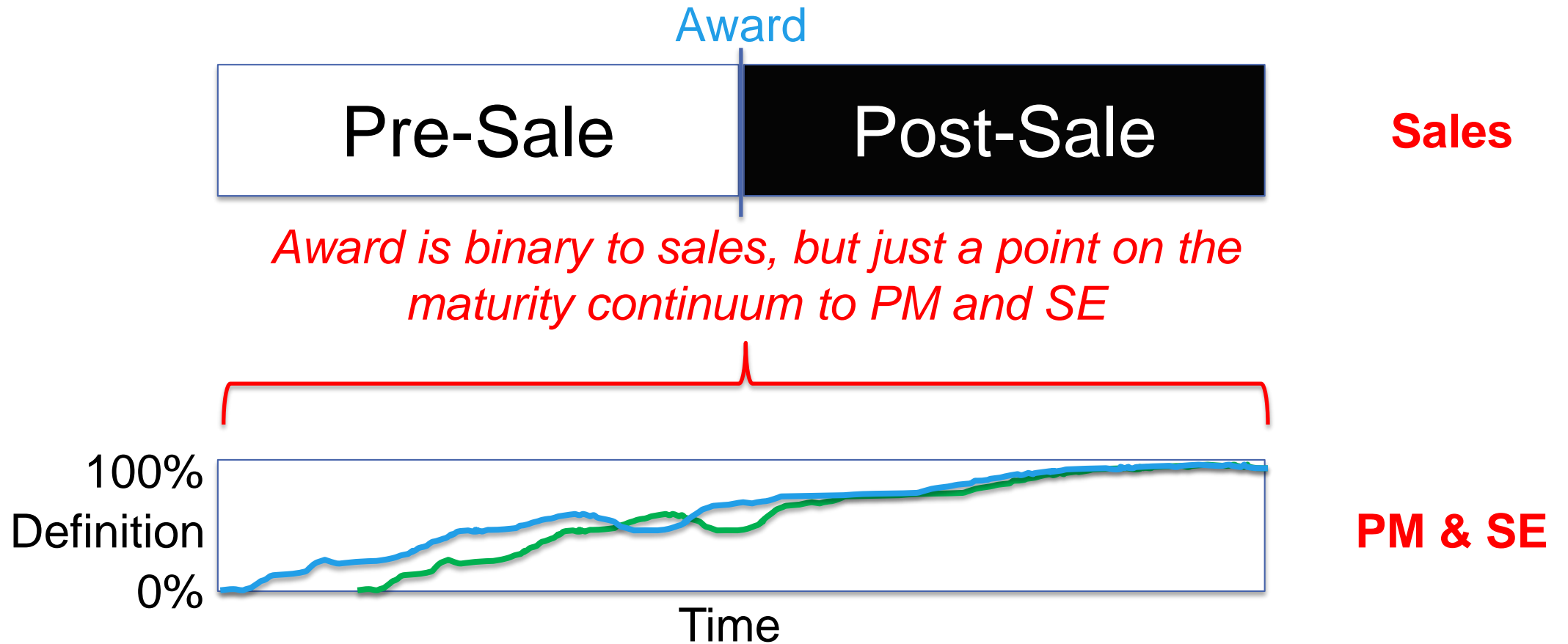
Execution

- Execution is a continuous analog activity



- Execution delivers results

A Conflict in Structure



Consequences for Those in Development

- Pre and post sale are just parts of a larger system you wish to optimize (system of systems view)
- Treating the two as independent leads to
 - Incompatible practices, cultures, reward systems
 - Increased development cost, schedule and technical risk
 - Inability to understand root cause of tension and issues

The Divide is Risky

- Risk exposure entering Post-Sale is enormous
 - Understanding all the major requirements, not just some
 - Finding solutions vs listing ideas in a chart
 - Evolving baselines and uncontrolled environments
 - Changes in personnel on both sides
- The best protection is to “eliminate the divide” for all but accounting purposes

Lessons

Lesson 1 – Product Wisdom Fails When Development is Required

- Rules that work great for building and selling products
 - Minimize cost of goods sold (pre-sale)
 - Standardize and automate processes
 - Optimize through repetition and learning
- Fail or are simply unavailable on development effort
 - Weak pre-sale leads to post-sale issues
 - Standardization is at best only partial
 - Must learn the rest during the actual project effort

Lesson 2 - Pre-Sale is an Investment, not Cost of Goods Sold

- With a fixed-value product, the more you spend to sell it the less revenue you get to keep
- Project value is not fixed, and depends heavily on the quality of promises and planning
 - Too little planning leaves risk and opportunity cost
 - Too much planning lowers net margin
- Seek the right investment in PM & SE, not the least cost

Lesson 3 – The Secret to Post-Sale Profitability is a Clean Win

- “Escaping defects” from pre-sale create havoc
 - Undiscovered stakeholders, requirements, constraints
 - Overlooked (or worse, suppressed) risks
 - Unrealistic promises made “to win” that poison acceptance
 - Weak / incomplete cost and schedule assumptions
 - Flat out mistakes and omissions
- You may struggle heroically to keep things from getting worse, but such projects are never really successful

Lesson 4 – Respect the Unfinished Business

- A “simple sale” goes from 0 to 100 in an instant
- Large “projects” evolve over time, often years
- The job in pre-sale is to develop just enough to understand the work and win the award
- The post-sale job is not only to execute, but also to complete the development effort
- Depending on where you start, that can be a tiny or critical impact

Lesson 5 – Cultural Mismatch is a Common Problem

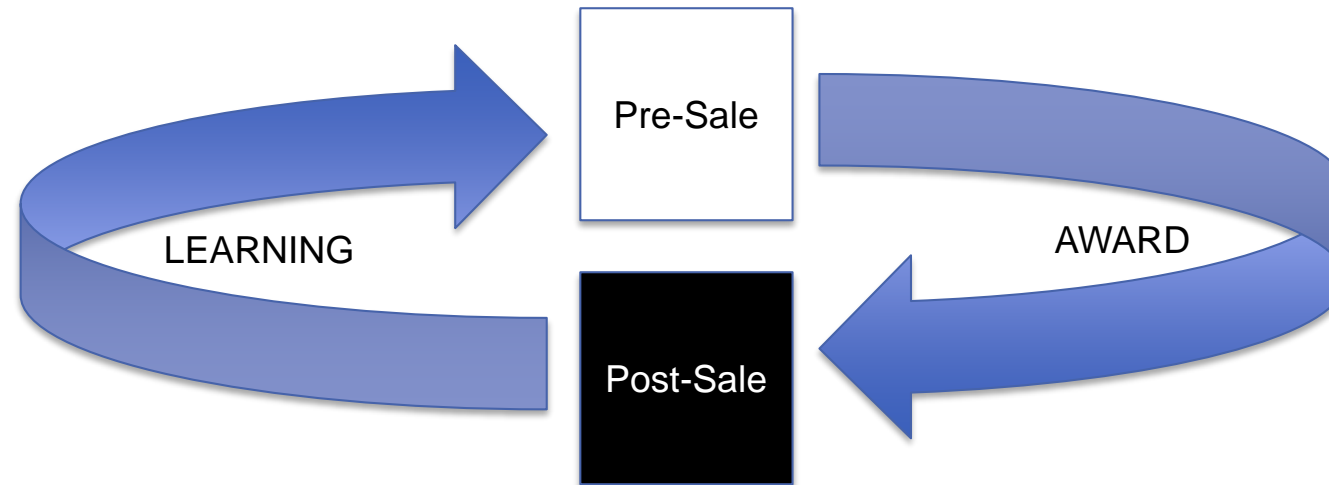
- It is difficult to be simultaneously excellent at both production and development effort
- In organizations that deal with both, one culture tends to dominate the other
 - They excel at production and suffer on development
 - They excel at development and suffer on production
- The development battle is much harder to win in production cultures

Lesson 6 – Misplaced Organizational Boundaries are Costly

- It is common for production environments to divide pre and post sale organizations
 - Great idea when all you need is a part number
 - Terrible idea when development is required
- It is always preferable to have continuity across the entire development subset of PM effort
 - Too many pending variables to cleanly hand off
 - Experience avoids entire classes of risk exposure

Lesson 7 – Close the Circle

- The transition from post-sale to pre-sale is also of enormous potential value



- The circle closes at the start of the next project

Conclusion

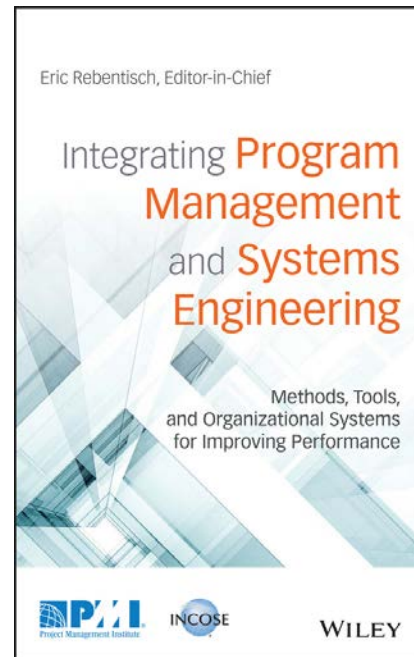
Conclusion

- Crossing the divide from pre to post-sale is a natural part of the development life cycle
- It is tempting (particularly to production cultures) to divide resources and responsibility at the award boundary
- That works well for simple product fulfillment but severely impacts any aspect still under development
- View the two as part of a system of systems, and optimize the interface between them for best results

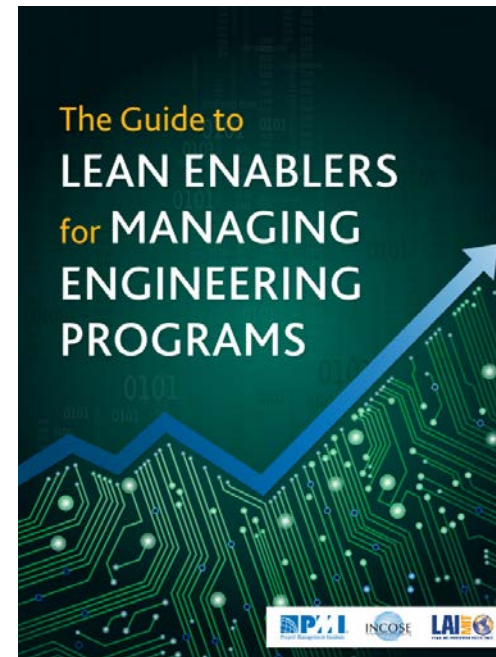
Questions?

Resources

Great Info for PM and SE Integration



Available on the INCOSE bookstore
at a member discount.



Available as a free pdf download from MIT.
(<https://dspace.mit.edu/handle/1721.1/70495>)

You May Also Enjoy

- INCOSE Webinar
 - Tech Ops #100, Integration of PM and SE
- PM.COM Webinars
 - Launch Trajectory
 - The Invisible Matters
 - 3 Secrets to Product Development Success
- PM Point of View Podcast Series
 - #38, Systems Engineering
 - #44, PMBOK 6: Scope & Schedule
 - #45, PMBOK 6: The Agile Effect
 - #52, PMBOK 6: Risk



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