IPA

Independent Project Analysis Newsletter

Independent Project Analysis, Inc. is the preeminent organization for quantitative analysis of capital project effectiveness worldwide. At IPA, we provide practices you can use to ensure your success.

Volume 3, Issue 1 **March 2011**

Research Spotlight:
Getting Off on the Right Foot - Innovative Projects

Andras Marton, Ph.D.

Commercializing new technology and entering a market with a new product or a new process is a complicated task, but one with a profound effect on a company's future. For many companies, innovation has been a long-term driver of success. The performance track record for moderately or highly innovative projects, however, is dismal. In evaluating detailed histories of innovative projects, we find that 40 percent of the projects commercializing some level of new technology fail; that is, they never operated as intended and were considered business failures. Less than 20 percent of new technology projects delivered what was promised at authorization. Cost overruns and schedule slips are typical for new technology projects, and usually start to occur right from the beginning of the venture. The last, and often unexpected, blow to these projects comes after completion: significant operational shortfalls. This track record leads to disappointment in new technology projects and has discouraged organizations from commercializing innovations.

The risk-averse nature of many companies is evident from examining our project database. In the last fifteen years, IPA has observed a steady decline in industrial innovation; most recent innovation has focused on only incremental improvements in existing processes. In recent years, however, much of this has changed: many companies started ventures that are significantly more innovative—even pioneering. The decade-long absence of innovation, however, has left most companies without expertise in the art of commercialization. Therefore, any new technology ventures currently being considered are deprived of opportunities to apply lessons learned from innovative predecessors.

In addition to the typical project practices, we used our innovative projects database of over 1,000 projects to identify Best Practices for the key activities that precede successful commercialization of new technology. Practices for piloting activities, scale-up projects, the types of prototype and testing facilities used, characteristics of the process development program, and the type and amount of research and design effort are vital factors in determining project outcomes. Critical to mitigating the risks associated with innovation is in timing these practices appropriately in the process and product development process ***(Figure 1)***.

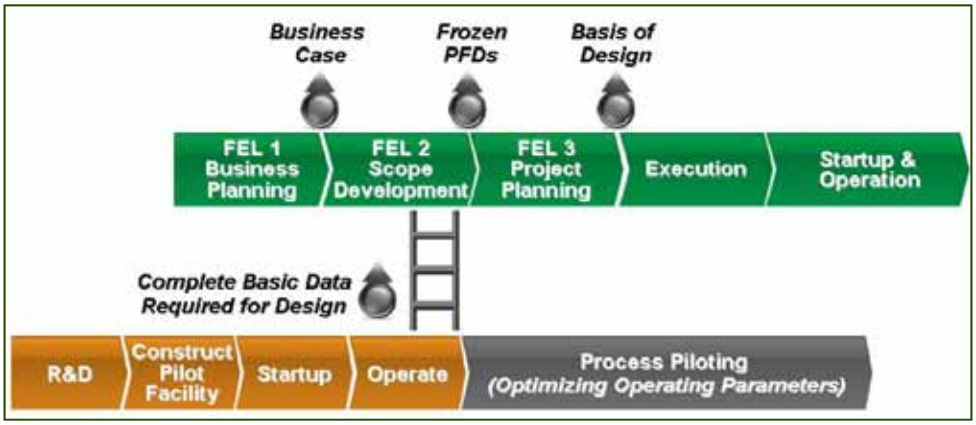

Figure 1. **New Technology Project Delivery Roadmap**

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Inside this issue:

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The prerequisite for developing an optimal commercialization effort is to recognize new technology as such. We define ***new technology projects*** as those that have at least one chemical or physical processing step that involves technology that is new in industry. This new technology step can either involve commercially new chemistry or a first-time combination of feed and equipment. Projects in our database that failed to recognize the innovation were significantly more likely to encounter problems. One of the most common failures of innovative projects is an incorrect assessment of the level of difficulty posed by the underlying process. Although the misdiagnosis happens in both directions, the more common bias is to assume that the project is less risky than it really is. Not recognizing or underestimating the level of difficulty—not the level of difficulty itself—leads to failure. Correctly assessing process characteristics such as process type, process complexity, physical properties of process materials, number of commercially unproven steps, and the use of recycle streams must be done to identify the degree of innovation, the associated risks, and the correct process development approach.

Underestimating process difficulty and technology risks is particularly dangerous because it leads to flawed expectations on progress and performance, and inappropriate allocation of resources.[1] On average, new technology projects experience cost growth of 30 percent and schedule slip of 65 percent. As projects with unrecognized difficulty progress, previously unknown resource requirements become apparent; however, because by this point significant resources are already sunk into the venture, spending money for the additional resources is justified. It is often the case that if these additional resource needs had been known very early in the planning process, the project would not have been executed until market conditions were more favorable to support the higher development cost.

Still, cost and schedule overruns are often manageable for a highly profitable venture. The trouble comes from the third project outcome: operability. Unlike with off-the-shelf technology, where operational performance is implied by similar commercially operating facilities, the basic functionality of a new process in an industrial setting is questionable. This means that when process difficulty and technology risks are misdiagnosed, projects not only miss their cost and schedule targets, but also miss their startup and operational goals. On average, moderately innovative projects that did not appropriately develop their processes (because technical difficulty was not recognized) fell short of their production targets by over 50 percent in the second 6 months of operation ***(Figure 2)***. The same projects, on average, also experience startup durations that are 50 percent longer than

Figure 2. **Operability Suffers When Process Development Is Not Complete at Authorization** (Continued on page 3)

[1] Adequate resource requirements, such as time in process development (potentially including integrated piloting), time in Front-End Loading (FEL) and later project phases, money, and personnel, are a function of the same new technology project characteristics that determine process difficulty and technology risk.

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industry average for similar projects ***(Figure 3)***.

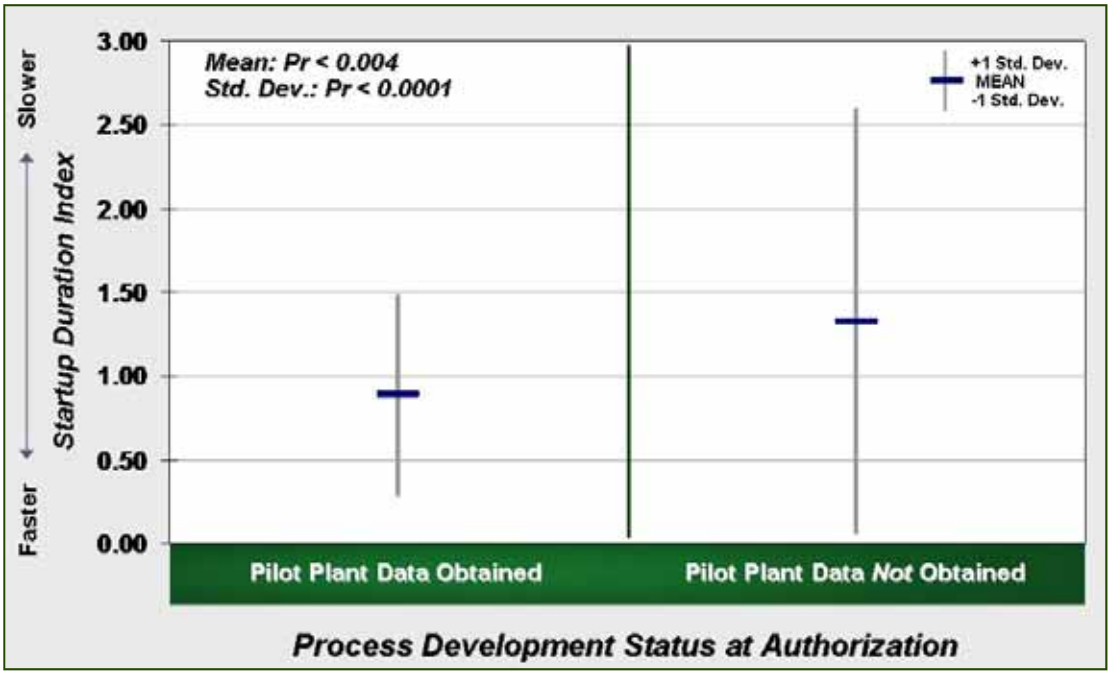

Figure 3. **Pilot Plants Reduce Startup Duration**

Overlooking the effect of technological innovation on operational performance not only affects the outcomes, but significantly undermines the whole premise of a new technology project. In the absence of detailed understanding of process performance, the true resource and development needs of the project are underestimated. This situation becomes further clouded by optimistic forecasts and flawed business models, a frequent consequence of the lack of certainty and understanding of operational performance of innovative projects. Misunderstood resource requirements combined with optimistic performance assumptions often create the perception of a highly profitable project, frequently leading to a feedback loop: the high projected revenue flow incentivizes shortening the cycle time and cutting out the much-needed process development effort, which results in a weaker understanding of difficulty and risk, and masks the risks taken in projections. Our database shows that projects with such a fundamental flaw failed miserably at meeting their goals.

Ultimately, the problem is that related shortcomings and issues usually don't surface until startup and operation, when it is too late to fix major problems. These issues often create a serious business problem, as revenue flow is affected. The only remedy is costly debottlenecking and fix-up projects to shore up production or, in worst case, complete abandonment. Thus, the core lessons to doing new technology projects right are to understand and accept how vulnerable new technology projects are to operational uncertainty, and to understand the relationship of operational performance to the development of the underlying process.

To summarize, let's look at a hypothetical example. Let us assume that a proposed project involves a four-step continuous process with two new steps, involving a solid feedstock and a recycle stream. According to our analysis using IPA's new technology database, such a project would constitute a highly risky project. Even if the new steps are well studied and thus fully understood, their interaction with each other and the remainder of the process on a continuous operational basis is too stochastic to predict. This is further complicated by the feedback loop created by the recycle stream and the solid feedstock that creates not only an operational issue but also a reliability problem. To minimize the risks of commercial application, such a project would need to be pi-

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loted in a manner similar to a commercial operation. If continuous operation of such pilot facility proves commercial viability, the risks associated with the process are effectively reduced to nearly those of an off-the-shelf project. Once the need for such detailed process development is recognized, the business opportunity can be fairly evaluated in light of a better understanding of process risks, venture rewards, and resource requirements. The next step is to quantify risks, rewards, and resource requirements, and establish a commercialization path that is customized and responsive to the needs of the effort.

The core of the commercialization path is the process development that should address all process-related and operational unknowns. Typically, process development starts at a small scale, and as the process is better understood, larger and more integrated development facilities may be built. The trick is not to be overconfident in our understanding of the process and to avoid extrapolations that have no empirical basis. To ensure that there are no surprises during startup and operation, the small-scale process must not only mimic the commercial process closely, but must also be continuously run long enough to indicate reliability. Only then can the commercial-scale project complete the Scope Development (FEL 2) phase and progress through FEL using Best Practices.

Professional Profile: *Andras Marton, Ph.D., Senior Project Analyst*

Andras is a Senior Project Analyst at Independent Project Analysis, Inc. (IPA), where he is responsible for IPA's work with the National Renewable Energy Laboratory and the U.S. Department of Energy. Andras has evaluated over 30 new technology projects in the refining, chemicals, and alternative energy industries, and has studied over 100 new technology projects.

Andras has authored several studies on understanding and identifying the pathway to commercialization of new technologies. He has facilitated courses conducted by the IPA Institute on project management Best Practices. Andras has conducted workshops for clients' process development systems to identify gaps and make recommendations to ensure successful commercialization of their new technology projects. In 2007-2008, he led the research initiative to understand the current status and Best Practices for alternative energy projects. The findings of the study were presented at the 2008 meeting of IPA's Industry Benchmarking Consortium (IBC).

Prior to joining IPA, Andras worked as a research assistant developing solar cells. He gained experience in a wide range of experimental techniques, and designed and built custom scientific instruments.

Andras received the B.S. degree in Chemistry from Saint Mary's College of California, Moraga, California, and the Ph.D. degree in Chemistry from Johns Hopkins University, Baltimore, Maryland.

The goal of the *IPA Newsletter* is to provide you with research-based articles on current capital project issues, announce upcoming IPA events and IPA Institute course offerings, and introduce new and future IPA products that can improve your project management systems.

To subscribe to the IPA Newsletter and to view an archive of all past issues, please visit our website at *www.ipaglobal.com/Newsletter*.

To be kept informed regarding upcoming IPA Institute programs and courses being developed for capital project improvement, please join our mailing list at *www.IPAInstitute.com*.

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IPA's Site Organizational Effectiveness Assessment

For the past 15 years, IPA has benchmarked the performance of site-based projects and identified practices that contribute to superior cost and schedule performance for these small projects (typically less than US$10 million). In conducting research on small projects, IPA has found that the resources and structure of the project organization can promote or restrict the implementation of Best Practices. Hence, IPA has developed methodologies for benchmarking the effectiveness of a site organization.

As many sites see their capital spend for 2011 increased relative to 2010, site-based project organizations question whether they have enough resources and the right mix of competencies to support their upcoming project portfolios. IPA's updated Site Organizational Effectiveness assessment can address these questions.

What Is a Site Organizational Effectiveness Assessment?

IPA's Site Organizational Effectiveness (OE) assessment benchmarks the strengths and weaknesses of a project organization, and identifies how the site can better support its people and work processes for superior capital effectiveness. For example, the Site OE analysis may uncover that the root cause of a site's poor level of project definition is an inadequate number of project managers for the portfolio.

IPA has developed a unique database of information on more than 50 sites representing 20 owner companies from various industries worldwide. We used these data to develop the Site OE Staffing Model. The model allows us to benchmark owner and agency[1] headcount in both direct[2] and indirect[3] competencies against those headcounts for Industry. ***Figure 1*** lists the specific direct and indirect competencies that are part of the OE assessment. We control for specific portfolio characteristics when determining benchmarks, such as annual capital managed and annual number of projects. The benchmarks compare site data against Industry and Best Practice. The Industry metrics reflect the staffing levels required to achieve industry average practices, while the Best Practice metrics reflect staffing levels required to achieve optimal practices.

Direct Competencies	Indirect Competencies
– Capital Projects Director	– Business Development
– Project Management	– Safety
– Process/Conceptual Design Engineering	– Environmental/Regulatory
– Cost Estimating	– Procurement
– Cost Controls	– Operations/Production
– Scheduling/Planning	– Maintenance
– Construction Management	
– Commissioning and Startup	
– Technical Specialists	
– Inspection	
– Contracts Administration	

Figure 1. **Direct and Indirect Competencies Evaluated in IPA's OE Assessment**

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[1] Agency staff is non-owner staff that report directly to the owner. Agency staff is benchmarked with owner staff now because most sites rely on agency staff to some degree for their projects. In our analysis, we compare the use of agency staff to that of Industry and Best Practice.
[2] Direct competencies are functions typically found in site-based capital projects groups.
[3] Indirect competencies are functions that provide support to project teams, but are not typically within the projects group.

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The results of IPA's Site OE assessment include an analysis of the site's high-level organizational structure, training budgets, work process experience, compliance, and gatekeeping system. In addition, a distribution and level of owner participation for each direct competency and the distribution for each indirect competency are provided.

A comparison of the participation of owner personnel in direct competencies is also presented for Industry Average, Best Practice sites, and the site being evaluated. Sites typically use a mix of owner/agency personnel to staff direct competencies. However, Best Practice Sites have a greater percentage of owner personnel in direct competencies ***(Figure 2)***. One benefit of having a specific competency in-house is a significant improvement in the level of project definition completed prior to authorization. The OE Assessment also addresses the site's level of owner participation for indirect competencies and direct/indirect staff experience, and compares the site to Industry and Best Practice sites. Furthermore, IPA provides specific and actionable recommendations on how the organization can better support its people and work processes to improve its capital effectiveness.

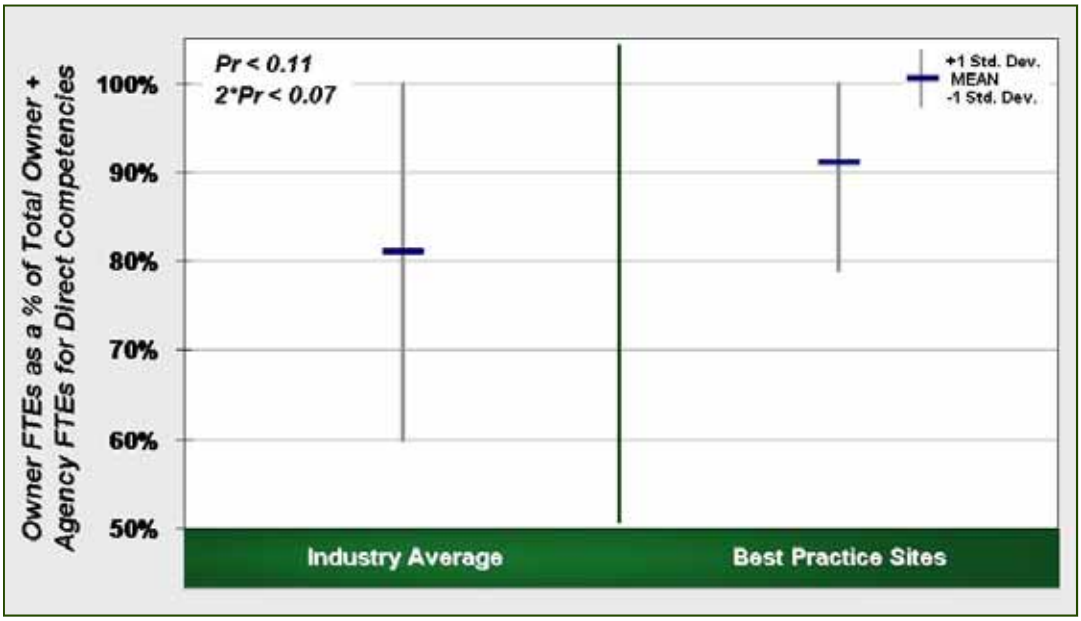

Figure 2. **Participation of Owner Personnel in Direct Competencies**

OE assessments complement IPA's traditional project evaluations because project performance is driven by practices at the project and organizational levels. The OE assessment is offered in combination with IPA's Site Benchmarking service or as a standalone analysis. Integrating an OE assessment with a site benchmarking adds the most value because it provides a comprehensive evaluation at the organizational and project levels.

Ongoing Site OE Research

IPA continues to advance its research on site organizational effectiveness and the dramatic effect of OE on project outcomes. Specific areas for future research include identifying the optimal way to structure your site project organization, the importance of owner competencies, and analysis for on-site contractor personnel.

Executing small capital projects well is critical to the ultimate success of the business. Having the right resources dedicated to these projects at the site level is essential for achieving that success. Learn more about how the OE assessment can assist in the optimal design of your project organization, and how IPA can help you shape a path forward toward achieving capital project excellence. Contact ***Phyllis Kulkarni***, Manager, Plant-Based Systems, at ***pkulkarni@ipaglobal.com*** or ***+1 (703) 726-5472***.

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Engineering, Procurement and Construction Market Forecast

Forecasting Capital Project Price Trends

Fore more than three years, IPA has published a quarterly newsletter forecasting capital project price trends five years into the future for nine regions of the world. The goal is to inform clients of market price trends so that:

- **Savings can be achieved through the timing of project expenditures**
- **Accuracy of future escalation estimates are more likely**

What Does This Product Provide?

Quarterly Newsletter: Approximately 20 pages of color graphics, articles, and tables presenting various aspects of EPC price trends, by component and region. An example is available on request.

The Data: A spreadsheet of the historical and forecasted values are provided for all of the price trends. Monthly price trends are forecasted five years ahead for:

Cost Categories	Engineering Services, Construction Labor, Major Equipment, Bulk Materials, and Composite Regional Price
Regions	Australia, Brazil, Canada, China, Europe, Middle East, Singapore, South Africa, and United States
Industries	The current focus is on onshore processing plants. Over time, cost categories unique to other areas (for example, offshore petroleum exploration and production) will be considered.

What Distinguishes IPA?

Database: IPA collects estimated and actual capital project information directly from project teams at the rate of approximately 1,000 projects per year. This continuously growing body of data is unparalleled and provides the basis for all IPA products and services, including our market forecasts.

Statistical Modeling and Forecasts: IPA's work is based on statistical modeling. This means that historical patterns are quantified and then extended to a future project or point in time. With forecasting, the market response is measured and then extended. The IPA forecasts represent our quantification of EPC price trends.

Highlights From the Current EPC Market Forecast Issue

The most recent issue (Volume 5, Issue 1) released in February 2011 includes discussions on the following topics:

- Market overview and trends for the following issues: Global rebalancing and the increased demand for capital projects in emerging markets, the importance and impact of demographics on economic trends, the shift from private debt to public debt over the last few years, and the drivers for the increase in number of megaprojects being executed.
- Updated economic indicators and "Tier I" contractor and vendor information
- Perspective on the EPC market associated with petroleum exploration and production (E&P) from Carlton Karlik, a recognized industry expert on the cost of upstream capital projects. Carlton explores three major issues facing the current E&P capital project market.
- Cost analysis and estimating discussion on two analytical issues affecting the project world: *Metallurgy Differences and the Use of Labor Wage Rates.*
- Details on IPA's upcoming EPC Market Forecast Tool to benchmark escalation. This tool will offer a way to calculate cash flows and future escalation given different project characteristics.
- Regional and global price trends

Annual subscriptions are available to existing IPA clients. Terms and conditions are consistent with our existing contracts. For more information, please contact Dean Findley, Regional Director, North America at dfindley@ipaglobal.com or +1 (703) 726-5332.

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Ed Merrow's Upcoming Book:

Industrial Megaprojects: Concepts, Strategies, and Practices for Success

Available Online and at Select Bookstores May 3, 2011

Ed Merrow, IPA's Founder and President, has finished his latest work, ***Industrial Megaprojects: Concepts, Strategies, and Practices for Success*** (John Wiley and Sons). The book will be available for purchase in May 2011. Ed wrote the book to update and deepen our ongoing research into these complex, difficult, and large projects, and to explore the reasons for their high rate of failure.

Industrial Megaprojects, full of convincing data and real-world examples, offers an understanding of why these major projects get into trouble and how companies can prevent hazardous and costly errors when undertaking such large technical and management challenges. This book is the perfect addition to classroom and board room reading. *Industrial Megaprojects* is de facto required reading for those with an interest in capital projects. Here is the table of contents:

Industrial Megaprojects: Concepts, Strategies, and Practices for Success

Part One: Understanding the Projects

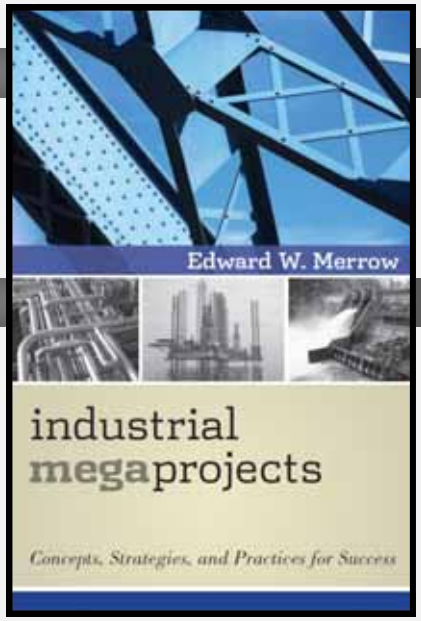
- ***Seven Sorry Mistakes That Kill Megaprojects***
- **Chapter 1 Introduction and Guide to the Reader**
- **Chapter 2 The Projects and Data: *How We Approach the Analysis***
- **Chapter 3 Glory and Gore: *The Outcomes of Megaprojects***

Part Two: Making the Right Business Decisions

- **Chapter 4 The Opportunity Shaping Process**
- **Chapter 5 Devising the Shaping Strategy**
- **Chapter 6 Megaprojects and Corporate Governance**

Part Three: Making the Right Project Decisions

- **Chapter 7 Basic Data Are Basic!**
- **Chapter 8 Megaproject Teams: People Do Projects**
- **Chapter 9 Megaproject Organization**
- **Chapter 10 Getting the Front-end Right**
- **Chapter 11 Contracting: *Whose Project Is This?***
- **Chapter 12 Maintaining Value: *Controls and Risk Management***
- **Chapter 13 Summing Up: *Focus on Success***



***Industrial Megaprojects* is an essential step-by-step guide for taking control of these major projects, offering the tools and principles that are the true foundation of safe, cost-effective, and successful megaprojects.**

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Upcoming IPA Events & Presentations for 2011

May 4

OTC 2011 in Houston, Texas

IPA Founder and President Ed Merrow will speak at the 2011 Offshore Technology Conference at the Reliant Center in Houston, Texas. Ed's presentation, ***Oil Industry Megaprojects: Our Recent Track Record,*** will highlight some of the research findings detailed in his upcoming book, ***Industrial Megaprojects: Concepts, Strategies, and Practices for Success***, to be published by John Wiley and Sons in May.

IPA Senior Project Analyst Lynn Dickey's presentation, ***Reducing the Financial Impact of E&P Shutdowns***, quantifies the significant effect Exploration & Production shutdowns have on business and operations.

May 11 - 13

IBC EMEA 2011 in The Netherlands

IPA will host a local version of the IBC, IBC EMEA, for the IBC companies with a presence in Europe, the Middle East, or Africa. IPA will highlight the practices and performances of projects defined and executed in Europe, the Middle East, and Africa. Both large and small project Best Practices and metrics will be covered, and there will be many opportunities for discussion and networking. IBC EMEA 2011 will be held at the Dorint Hotel Amsterdam-Airport in The Netherlands. For more information regarding IBC EMEA 2011, please contact **Vania Loma de Bagga** at ***vlomade-bagga@ipaglobal.com*** or send requests to ***IBCEMEA@ipaglobal.com***.

May 17

IPA President to Present at the 19th COAA Conference, Edmonton, Canada

Ed Merrow will speak as part of the opening keynote panel of the 19th Construction Owners Association of Alberta (COAA) Best Practices Conference on May 17, 2011 at the Shaw Center in Edmonton, Canada. The theme for this 2-day conference is "Global Competitiveness - What Is It Going To Take?". Mr. Merrow will share the panel with Dr. Mike Percy, Dean of the University of Alberta School of Business, and President of the COAA, Ron Genereux.

June 15

2011 Upstream Cost Engineering Committee (UCEC) in Houston, Texas

The UCEC annual meeting, formally organized in 1999, is an approved subcommittee of the UIBC. The purpose of the UCEC is to improve upstream project and business results by providing metrics for better cost engineering. The UCEC metrics provide asset evaluation and concept development professionals with a better understanding of costs and schedules. For more information, please contact Carlton Karlik at **ckarlik@ipaglobal.com**. More details can be found on page 11.

July 27

IPA to Present at Biomass 2011, National Harbor, Maryland

IPA will present at the fourth annual biomass conference, Biomass 2011: *Replace the Whole Barrel, Supply the Whole Market* on July 27. Biomass 2011, hosted by the U.S. Department of Energy, Office of Energy Efficiency, and Renewable Energy's Biomass Program, will be held at the Gaylord National Resort and Convention Center at the National Harbor in Maryland. IPA's presentation will occur during the technical breakout session entitled *Investment Risks of New Technology Innovation – The Views of Venture Capitalists, DOE, and IPA*.

September 13 - 15

Cost Engineering Committee (CEC) 2011 in Herndon, Virginia

The purpose of the CEC, an approved subcommittee of the IBC, is to extend the IBC forum to cost engineering practices with a focus on cost and schedule metrics. By using these cost and schedule metrics and research findings, companies can improve their project and business results. For more information, please contact Robert Brown at **rbrown@ipaglobal.com**.

November 14 - 16

UIBC 2011 in Tysons Corner, Virginia

The UIBC 2011 provides an independent forum for each participating company to view its performance against the performance of other companies. The consortium highlights Best Practices, reinforcing their importance in driving improvements in asset development and capital effectiveness. For more information, please contact Rolando Gächter at **rgachter@ipaglobal.com**.

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ADVANCING PROJECT KNOWLEDGE

2011 IPA Institute Programs Schedule

To view full course descriptions, pricing, up-to-date registration details, and special discounts, please visit our website at www.IPAInstitute.com

Best Practices for Small and Plant Projects (22 Professional Development Units)

March 21 - 23: Perth, Australia
August 23 - 25: Houston, Texas
October 11 - 13: Las Vegas, Nevada
November *(TBA)*: Sydney, Australia

Best Practices for Mining Projects (16 Professional Development Units)

March 22 - 23: Lima, Peru
April 13 - 14: Brisbane, Australia
September 20 - 21: Belo Horizonte, Brazil

Project Management Best Practices (22 Professional Development Units)

April 12 - 14: São Paulo, Brazil
April 27 - 29: Shanghai, China
May 10 - 12: Los Angeles, California
June 7 - 9: Moscow, Russia
June 14 - 16: Santiago, Chile
August 16 - 18: Santa Cruz, Bolivia
September 6 - 8: Singapore, Singapore
September 20 - 22: Beijing, China
September 27 - 29: Houston, Texas
October 11 - 13: Kuwait City, Kuwait
November 8 - 10: Buenos Aires, Argentina
November 22 - 24: Johannesburg, South Africa

Executing Successful Complex/Megaprojects (22 Professional Development Units)

May 30 - June 1: Kuala Lumpur, Malaysia
June 14 - 16: Beijing, China
July 11 - 13: Abu Dhabi, UAE
August *(TBA)*: Perth, Australia
October 4 - 6: Lima, Peru
October 4 - 6: Houston, Texas
October 18 - 20: Calgary, Alberta, Canada
October *(TBA)*: Brisbane, Australia
December 13 - 15: Shanghai, China
***(Dates TBA)*: Johannesburg, South Africa**

Establishing Effective Capital Cost and Schedule Processes (16 Professional Development Units)

April 13 - 14: New Orleans, Louisiana
May 10 - 11: São Paulo, Brazil
June 28 - 29: San Francisco, California
September 6 - 7: Santiago, Chile
October 4 - 5: Kuala Lumpur, Malaysia

Exploration and Production Project Best Practices (22 Professional Development Units)

May 10 - 12: Stavanger, Norway
July 12 - 14: Perth, Australia
July 26 - 28: Rio de Janeiro, Brazil
December 6 - 8: Calgary, Alberta, Canada

Practices for Shorter, More Cost Effective Turnarounds (14 Professional Development Units)

May 25 - 26: Rio de Janeiro, Brazil
July 26 - 27: Houston, Texas

Contracting in the Changing World of Projects (12 Professional Development Units)

October 18 - 19: Rio de Janeiro, Brazil
October 25 - 26: Houston, Texas

Best Practices for Government Project Management (16 Professional Development Units)

November 1 - 2: Arlington, Virginia

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2011 Upstream Cost Engineering Committee (UCEC) Annual Meeting

The UCEC charter is to provide the Upstream cost metrics for the purpose of:

- Supporting conceptual estimate development
- Supporting estimate reviews
- Assessing company metrics against industry norms
- Supporting calibration of internal company tools and databases
- Improving asset evaluation and concept development through improved understanding of costs and schedules

The 2011 UCEC Annual Meeting will be held on ***June 15, 2011*** at Chevron's offices in downtown Houston, Texas. Attendance is open to UIBC members who have joined UCEC.

The main outputs of the UCEC are a Metrics Report, Quarterly Cost Indices, and related studies. Metrics categories covered in 2011 will include:

Fixed Platforms
Subsea
Development Drilling
Floaters
Onshore
Development
Actual/Base Estimate
Level 2 Cost
Schedule
Pipelines

Studies will be presented at the Annual Meeting on the topics of Schedule Progression and Regional Differences.

For more information on the UCEC Annual Meeting, please contact ***Carlton Karlik*** at ***ckarlik@ipaglobal.com***.

Best of Upstream Industry Benchmarking Consortium (UIBC) 2010

The *Best of UIBC 2010* is a one-day series of presentations of the highest rated research studies and presentations from UIBC 2010. IPA hosts the UIBC each November. However, because not everyone can attend the conference in Northern Virginia, these presentations are designed to bring the research from UIBC to a much wider audience at locations around the world that are convenient to attendees. The major objective of the presentations is to disseminate knowledge and research related to upstream capital projects among upstream project professionals.

This year the *Best of UIBC* will be hosted by Chevron in Houston, Texas on ***June 14, 2011*** and is open to all UIBC companies. The agenda will include the following presentations:

- **Whole Asset Performance Metrics: Drivers & Outcomes**
- **Measuring Depletion Intensity**
- **Upstream Megaprojects Revisited**
- **Production Attainment Performance**

For more information on the UIBC annual meetings or the UIBC 2010 Road Show, please contact **Neeraj Nandurdikar**, Business Area Manager (Exploration and Production), at ***nnandurdikar@ipaglobal.com***.

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IPA improves the competitiveness of our customers through enabling more effective use of capital in their businesses. It is our mission and unique competence to conduct research into the functioning of capital projects and project systems and to apply the results of that research to help our customers create and use capital assets more efficiently.

www.IPAInstitute.com

The IPA Institute's mission is aligned with the overall IPA mission to improve the capital productivity of its clients. The programs offered provide a forum for in-depth understanding of key elements of the capital project process and how to apply these learnings to effect positive changes and improvements, resulting in the more effective use of capital.

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