



PETE D. LUAN, PMP



Mr. Luan is a Principal with Long International and a Capital Project Advisor with over 40 years of experience. During his career, he has served as an Engineer, Project Manager, Construction and Development Manager and a Project Execution Consultant in the upstream and downstream energy industry. Mr. Luan has expertise in major offshore and onshore oil and gas developments including natural gas processing, LNG, refining, petrochemical, and chemical projects. In addition, he has held key roles in a significant number of major/mega projects, and has an excellent understanding of major/mega and LNG project challenges in foreign locations based on his involvement with assignments and projects in Argentina, Azerbaijan, Bolivia, Cameroon, Canada, Denmark, Egypt, Korea, Malaysia, Nigeria, Norway, Russia, Thailand, the United Arab Emirates, the United Kingdom, Venezuela, and Vietnam.

Mr. Luan has also worked with C-level management to completely revamp project delivery systems for energy firms that resulted in project cost and schedule improvements. Moreover, he served as an advisor to C-level management for major oil and gas, petrochemical and refining projects in most of the countries listed above. Mr. Luan has conducted execution assessments on numerous megaprojects. He has participated in numerous cost and schedule risk analysis assessments of international major projects and facilitated mitigation of these risks.

EDUCATION

M.S., Mechanical Engineering, Rice University, 1973

B.S., Mechanical Engineering, Rice University, Magna Cum Laude, Phi Beta Kappa, 1972

PROFESSIONAL REGISTRATIONS

Project Management Professional (No. 209524)

PROFESSIONAL AFFILIATIONS

AACE International

Society of Petroleum Engineers

Project Management Institute

TEACHING AND SEMINARS

Mr. Luan develops and presents 3-5 day courses to individuals from major international energy companies, contractors, and regulatory bodies. Below is a partial list of courses he developed and presented:

- Project Controls
- Project Construction Management
- Project Management for Engineering & Construction
- Managing Brownfield Projects
- Advanced Project Management
- Project Estimating – A Primer
- Risk Management – Probabilistic and Deterministic
- Turnarounds, Shutdowns, and Outage Management



Companies and educational facilities include: ExxonMobil, Chevron, Daewoo Engineering & Construction, British Petroleum, MODEC, Total, SBM Offshore Company, Royal Dutch Shell, Nobel Energy, Anadarko, Marathon Petroleum, PEMEX, Saudi Aramco, Koch Industries, Korean Gas Corp., Williams Energy, Kuwait Oil Company, Qatar Petroleum, Abu Dhabi National Oil Company, Repsol, Nigerian National Petroleum Corp., Sonangol, Samsung Engineering, and Seoul National University.

TECHNICAL EXPERIENCE

Representative U.S. and international technical experience includes:

- Validated cost estimates for three refining and petrochemical megaprojects with a total capital spend in excess of \$10 million.
- Developed a cost estimate for a gas liquefaction plant in Latin America.
- Led a project cost estimating team charged with the development of a full-cycle cost estimate for a \$12 billion upstream Eurasia project including export pipelines, offshore structures, infrastructure and well costs.
- Performed project execution consulting for the development of a major LNG facility in Latin America.
- Recommended planning and execution processes for a proposed LNG plant.
- Analyzed multiple cost risk analysis models for megaprojects to ensure alignment with the project environment.
- Assessed front-end planning and associated risks for a proposed LNG facility.
- Performed probabilistic cost and schedule risk analysis for major capital projects. This included a detailed review of the cost risk model and its applicability based on the execution environment.
- Served as Project Manager during the construction execution phase for several onshore oil and gas projects.
- Led a construction execution planning engagement for an onshore megaproject.
- Led project execution planning and technical performance assessments.
- Conducted contract reviews and assessments for onshore megaprojects.
- Formulated engineering and project management plans and procedures.
- Conducted risk analysis for multiple international upstream and downstream projects.
- Performed contract reviews, negotiations, signings and post-award contract management.
- Led readiness assessments prior to funding for numerous international upstream and downstream projects.
- Served as a peer review leader for various project execution, project controls, and construction execution reviews for U.S. Gulf Coast petrochemical megaprojects.
- Provided deposition and expert witness testimony.
- Oversaw process engineering, process flow diagram and piping & instrumentation diagram development, and preparation of equipment specifications.
- Instructed and advised on project management best practices, risk management, project controls, construction management, and project change management.



- Speaker and author of numerous articles and training manuals on the subjects of project management, construction management, procurement, risk management, project controls, change order management, and critical project success factors.

PROJECT EXPERIENCE

Mr. Luan has extensive experience in worldwide major project management. He has held significant leadership positions for the following projects:

Oil Refinery, Petrochemical and Chemical Plants, and Offshore Oil & Gas Production Facilities

- Project Controls Manager for a \$12 billion offshore development in Azerbaijan, which led to the execution of a Project Sharing Agreement.
- Engineering Director for a \$1 billion oil and gas facilities development in Latin America.
- Project Manager for a Middle East offshore compression platform.
- Project Manager for substantial modifications to a 1 BCF/day onshore natural gas processing facility in the Middle East.
- Project Manager for early phase work for a major gas-to-liquids project in Trinidad.
- Midstream Development Manager for a \$300 million Latin American gas processing and transportation opportunity.

PROFESSIONAL EXPERIENCE

Long International, Inc.

Houston, Texas (September 2019 to Present)

As a Principal with Long International, Mr. Luan provides expert services in all facets of contract dispute analysis and resolution, litigation/arbitration/mediation support, and expert testimony. He specializes in engineering management and project management of large EPC and EPCM projects with a focus on project management assessments, cost and schedule risk assessments, performance measurement, and standard of care.

Project Execution Consultant

Houston, Texas (July 2004 to September 2019)

Mr. Luan worked with an operator of a major LNG facility to develop work processes for modifications to the existing LNG plant. These work processes focused on cost estimating, schedule development, and project execution planning. Part of his scope of work involved training engineering staff to support the LNG plant.

As a Project Advisor, Mr. Luan led a construction planning engagement for a \$3 billion downstream project. This engagement entailed the development of an initial construction execution plan as well as a work package approach, which ensured the alignment among schedule, labor availability, procurement, and the engineering work package. The work package approach also included the development of a “path of construction” as well as dividing the facility into Construction Work Areas (CWA) and their associated Construction Work Packages (CWP) by craft.



As a Project Execution Consultant, Mr. Luan reported directly to the VP, Capital Projects for the early development of a significant petrochemical plant expansion in Port Arthur, Texas. The expansion consisted of three major projects in excess of US\$10 billion: an ethane cracker, a polyethylene plant, and an aromatics facility. Mr. Luan's role included leading development of a contracting strategy for the three projects and conducting constructability assessments. As part of his assessment, Mr. Luan reviewed the robustness of the cost estimates and validated them based on the field and work environments. For all three megaprojects, he led gate-clearing peer reviews to assess the quality of all project deliverables, which resulted in receipt of next stage funding and, ultimately, project approval.

As a Project Advisor, Mr. Luan conducted a Lessons Learned Workshop on megaprojects and why they fail for a LNG senior project leadership team that is currently developing a LNG facility.

As a Project Execution Consultant, Mr. Luan conducted probabilistic cost risk assessments on major/megaprojects with a capex range of \$500 million to \$6 billion. Some of these projects included: a major FPSO installation in the South China Sea, a gravity production platform in the Norwegian sector of the North Sea, an ethane cracker and polymer complex in the U.S. Gulf Coast, an offshore production facility in the Gulf of Mexico, and an offshore facility in the North Sea. As part of his project responsibilities, Mr. Luan reviewed the cost risk model for applicability to the project environment.

Mr. Luan served as a Project Advisor for a major U.S. refinery \$3 billion capital improvements program. His focus was on establishing clear project goals and objectives and alignment between senior management and the project team. Mr. Luan also facilitated development of a contracting and project execution plan.

Mr. Luan was retained by the CEO and EVP of an energy company to assess a challenged \$500 million plus offshore North Sea project that was currently in the fabrication phase. He assessed the project schedule, bid price vs. estimated spent to date, and work completed. Based on his recommendations, the CEO and EVP took significant steps to mitigate the substantial risks of the project to the company. From a scheduling perspective, Mr. Luan's analysis focused on progress to date vs. plan and work to be done with all of its attendant challenges. This analysis was done in the context of the capabilities of the lump sum contractor, its performance in the fabrication yard, subcontractor manning, field work package issues, alignment of schedule-field labor-engineering-procurement, etc.

As a Project Execution Consultant for an owner client, Mr. Luan reviewed reimbursable commercial bids for a \$6 billion petrochemicals complex for engineering, procurement, and construction. He analyzed procurement costs, construction manning, labor productivity, bulk material quantities, labor costs, and indirect field costs. Much of this analysis was based on the construction execution environment and the impact on field costs. Based on this analysis, Mr. Luan provided a recommendation to the owner as to potential cost risk areas.

Mr. Luan served as Project Advisor for a Southeast Asian company seeking to develop a LNG project. For this LNG project, he advised regarding methods to manage cost risk, contractor execution risk, and how to develop an overall contractor plan. Moreover, he assessed the overall organizational structure and recommended a path forward for development of the project. His assessment further included necessary recommendations for planning and execution standards and guidelines to execute the potential \$12 billion greenfield project as well as all of the required infrastructure to support the LNG plant.

Mr. Luan was retained by a Senior Vice President of an oilfield services contractor to improve cost and schedule performance of a "build-to-order" technology fabricator. Based on an assessment of its cost and schedule performance, Mr. Luan identified several root cause issues. He developed and implemented



a plan, which focused on the following: contract management, client owner management, project change administration, realistic cost and schedule risk management, robust integration of procurement with engineering, and an innovative approach to bid development. The results of this engagement were the topic of a joint paper with the client. The paper was subsequently presented at the American Institute of Chemical Engineers 2009 Spring National Meeting. As the profitability of the firm improved, the firm was ultimately purchased by a much larger oilfield services firm, which was the contractor firm's ultimate intent.

Mr. Luan conducted a high-level assessment of a proposed Western Hemisphere LNG facility and the potential risk factors associated with proceeding with the project with immature up-front planning. Key LNG project risks included commercial marketing risks, lack of building permits, a challenged construction site, upstream commercial risks, environmental permits, transportation issues, gas acquisition issues, etc.

As Project Execution Consultant, Mr. Luan was retained by the CEO of a major Russian oil and gas company with a \$100 billion capital project portfolio. A major component of the project portfolio included potential LNG projects. The firm experienced substantial problems with delivering megaprojects on schedule and on budget. These projects were all delivered in a challenging environment and culture. Mr. Luan conducted a cost and schedule analysis of past projects, and then developed a number of recommendations to address these gaps. In addition, he developed risk management and project change management standards, specifications, and procedures for use throughout the entire organization for all capital projects.

As Project Advisor, Mr. Luan developed capital project governance, cost/schedule management, scope management, and project change management procedures for a South American LNG plant operator. He performed an assessment of its capital projects delivery and previous contracting plans in support of the LNG plant. He recommended methods to preclude future contractor claims and work stoppages. Many of these work processes were implemented for all future capital projects associated with the LNG plant.

Mr. Luan developed the contracting plan, execution plan, and procurement plan for a \$1 billion Canadian midstream project. He generated an overall risk management and risk mitigation plan and aligned it with project cost and schedule parameters. Mr. Luan established procedures for management of project change, project controls, performance reporting, project governance, and methods to minimize project changes and contractor variation orders. He conducted a readiness of project to proceed assessment to the next project phase and, eventually, full funding for execution.

Mr. Luan served as Project Advisor to the Chief Operating Officer of a major European-based oil and gas company with major West Africa operations. The firm consistently delivered projects late and substantially over budget. Based on an assessment of its cost and schedule performance on several key projects, Mr. Luan developed and implemented a 24-month plan to completely revamp its project planning, project controls, contracting, and field execution approach. Mr. Luan performed the following key tasks:

- Established corporate and in-country governance processes for all capital projects;
- Developed roles and responsibilities for all key stakeholders;
- Established stage-gate process with key execution deliverables focused on project controls, risk management, contracting plan development, and contractor management;
- Created key procedures and processes for the following areas: project governance, project execution planning, probabilistic risk cost development, peer reviews, project change management, constructability, commissioning and start-up, and closeout; and



- Implemented readiness assessments for major projects and recommended intervention as appropriate based on expected project performance.

As a Project Advisor, Mr. Luan was engaged by the Board of Directors of a more than \$100 billion holding company to assist a large petrochemical subsidiary. The subsidiary had operations in the U.S., China, and Europe, and had a history of substandard project performance. Mr. Luan collaborated with the Vice President, Capital Projects to develop and implement a comprehensive plan to improve performance with a focus on project planning, engineering management, construction management, and project controls. He developed and implemented processes for project governance, risk management, peer reviews, project execution planning, and front-end planning. Mr. Luan led multiple peer reviews and assessed the readiness of capital projects to proceed to the next phase and, ultimately, to full project funding.

As a Project Execution Consultant, Mr. Luan was engaged by a North American refiner with a history of challenged project performance including multiple fatalities during project execution. He worked with the VP, Operations and GM Capital Projects to conduct lessons learned on prior projects. In addition, he recommended implementation of critical processes. Mr. Luan developed procedures for the following: risk management, HSE change management, stage-gate deliverable requirements, project change management, performance management, and constructability. For performance management, Mr. Luan addressed the following: cost and schedule development, earned value or value of work done, cost and schedule control, and monthly reporting.

As Project Advisor, Mr. Luan was engaged by the CEO of a large multinational North American upstream firm with a \$4 billion capital portfolio. He was responsible for improving its cost and schedule performance on major offshore projects. A root cause analysis of its cost and schedule performance led to development and implementation of a multiyear, multicounty improvement plan. More specifically, Mr. Luan developed and implemented guidelines, work processes, and procedures in the following areas:

- Project Controls Management;
- Risk Based Probabilistic Cost Development;
- Monthly Progress Reporting;
- Project Initiation;
- Project Change Management;
- Interface Management;
- Risk Management;
- Value Improving Practices – Constructability;
- Project Execution Key Performance Indicators;
- Project Execution Planning;
- Project Oversight and Governance; and
- Integration of Construction, Engineering and Procurement.

Mr. Luan served as a Project Advisor for a large offshore drilling contractor that experienced more than \$500 million in cost overruns related to high specification drill ships. He collaborated with the Vice President, Capital Projects to develop a methodology for project managers to administer the contractor fabrication process. This process included rigorous earned value or value of work done, milestone management, cost control, robust monthly reporting, and most importantly understanding owner rights within the fabrication contract.



As Project Execution Consultant for a \$1 billion oil and gas facilities project in the Amazon jungle, Mr. Luan collaborated with the project manager and country managing director to completely revamp the project construction approach. The site was remote, adjacent to tribal lands, environmentally sensitive, and only accessible by a waterway during the rainy season. Mr. Luan changed the construction approach to modularization as opposed to stick built and revamped the procurement strategy.

Hewitt Associates

Houston, Texas (July 2003 to June 2004)

Mr. Luan led a Business Development team of sales professionals charged with selling human capital outsourcing and consulting services. He collaborated with Vice Presidents, COOs, and CFOs from Fortune 500 firms to generate demand, show value and close the sale. Mr. Luan also developed a new go-to market approach for selling human capital design/outsourcing targeted to the CFO/COO market, which resulted in more initial meetings and increased sales engagements. This approach was subsequently adopted by all sales personnel system-wide.

Science Applications International Corp

Houston, Texas (July 2002 to July 2003)

Mr. Luan developed major new energy accounts via networking and cold calling C-suite management, farming existing accounts, qualifying leads, delivering client presentations, and developing customer proposals. He also led project teams in delivering information technology projects. Mr. Luan further oversaw the creation of a new applications management and infrastructure support outsourcing initiative to the upstream energy segment. He generated a marketing plan, value proposition, customer target list, and communications strategy to market messages.

Computer Sciences Corp

Houston, Texas (May 2000 to June 2002)

Mr. Luan served as an oil and gas and petrochemical Subject Matter Expert. He developed and successfully marketed a new offering in the upstream energy sector. Mr. Luan identified an under-served segment, developed a targeted solution, created a marketing plan, and led a business development team that successfully marketed the offering. In addition, Mr. Luan oversaw a sales pipeline, qualified leads, initiated cold calls to Fortune 100 company C-Suite management, delivered client sales presentations, developed proposals, performed joint account planning with external partners, and developed external vendor alliances for the energy sector.

BP Corporation

Houston, Texas (May 1975 to May 2000)

During his career with BP Corporation, Mr. Luan held the following roles:

Midstream Development Manager. Mr. Luan developed a \$300 million Latin American gas processing and transportation business opportunity. To develop this opportunity, he co-managed a joint study team with oil companies from Brazil, Argentina, and France. In addition, he assembled and led an intercompany project team, established a work plan, and negotiated commercial agreements to advance the opportunity.

Project and Construction Manager. Mr. Luan was appointed in this role to manage a major brownfield project. The project involved replacing the entire primary electrical distribution system for a major



gas processing plant, which included a large sulfur recovery train. In addition, he formulated the project concept and managed front-end engineering design, detailed engineering, and procurement. As Construction Manager, he created the construction contract and managed construction quality, value of work done or earned value, performance reporting, variation orders, and contract closeout.

Project Manager for Project Controls. Mr. Luan led a Project Controls intercompany team that generated a \$12 billion offshore development plan leading to the execution of production sharing agreements with the government of Azerbaijan. He led the intercompany team charged with schedule development and cost estimation.

Engineering Director. Mr. Luan managed a team of 20 professionals and outside partners to generate an on-time and on-budget development scheme, facility design and proposal for a \$500 million oil and gas facility in Venezuela.

Front End Project Manager. Mr. Luan developed the business case and conceptual design for \$100 million worth of modifications for a United Arab Emirates gas processing plant, which resulted in capturing substantial incremental gas reserves. He managed front end engineering and project execution planning for the facility.

Engineering Manager. Mr. Luan managed the technology selection, detailed design, construction, and startup of a major enhanced oil recovery (EOR) project in an oil and gas field. This area had been flooded by water in the past but never subject to EOR.

Project Manager. Mr. Luan oversaw demolition, refurbishment, relocation and installation of a \$150 million 300 MMSCFD Natural Gas Liquids (NGL) recovery plant. This complex facility included sour gas treating, gas dehydration, storage, and a full scale NGL fractionation plant. Mr. Luan collaborated with joint venture partners to process non-equity gas resulting in enhanced project economics and substantial risk mitigation.

Project Manager. Mr. Luan served as a Project Manager for a front-end development of a major gas-to-liquids facility in Trinidad. He developed a cost estimate, schedule, potential scenarios, finished product logistics, and business case development.

Project and Construction Manager. Mr. Luan was appointed in this role for a major brownfield project. The project entailed the replacement of the entire primary electrical distribution system and a large sulfur recovery train for a major gas processing plant. Mr. Luan developed the project concept, front end engineering design, detailed engineering, and procurement. Moreover, he formulated the construction contract, oversaw construction quality, value of work done or earned value, performance reporting, variation order management, and contract closeout.

Project Manager. Mr. Luan served in this role for the construction of an offshore 100 MMSCF gas compression platform in the Middle East. He was responsible for interfacing and managing the joint venture local operating partner. In addition, he directed the engineering contractor, procurement, and module fabrication.

Upstream Engineering Supervisor. Mr. Luan led a U.S.-based technical team charged with joint interest facilities management, operating agreements negotiation, and capital improvements to natural gas processing plants. Additionally, he managed engineering, construction, startup and field facilities operations. Overall field production was 25,000 BOPD.



Project Manager. Mr. Luan supervised the installation of a major petrochemical plant distributive control system on schedule and within budget. He managed detailed engineering, contractor selection, contractor work progress, variation orders, and contract closeout. He was also responsible for contract development and contractor negotiations.

Construction Manager. Mr. Luan was involved in a \$1 billion offshore major gas transmission system in the North Sea. He oversaw construction of a \$200 million major pipeline lateral. Mr. Luan focused on quality management, safety, construction work progress, and performance reporting.

Project Engineer. In this role, Mr. Luan was involved in petrochemical plant brownfield projects. He was charged with cost and schedule development, performance reporting, procurement, and construction management.

Proctor & Gamble Manufacturing

Dallas, Texas (May 1973 to May 1975)

Mr. Luan worked as a Project Engineer. He managed the design, procurement, and construction of plant maintenance projects. In addition, he administered vendor quality and oversaw rail and truck logistics.

PUBLICATIONS AND SPEAKING ENGAGEMENTS

“Aligning on Contractor and Owner Objectives,” moderated an owner and contractor panel at the *Downstream Engineering, Construction & Maintenance Annual Conference, 2017*.

“A Data Driven Approach to Project Success,” presented at the *National Gas Processors Association Annual Conference, 2016*.

“How to Avoid Project Train Wrecks,” Society of Petroleum Engineers, Oil & Gas Facilities, March 2016.

“Tough Love – How to Ensure Your Project Team Delivers,” presented at the Engineering & Construction Contracting (ECC) Association Annual Conference, 2016.

“A Structured Approach to Get Your Project Teams to Work Effectively and Drive Bottom Line Results,” *Women’s Global Leadership Conference in Energy, Annual Conference, 2016*.

“How to Avoid Project Train Wrecks,” presented at *Energy Construction Form*, March 2016.

“The Path to Project Excellence,” presented at Rice University Engineering and Construction Forum, 3rd Quarter, 2015.

“Transformation of an E&P Company’s Approach to Asset Development,” co-author Tim Mills, client representative. Presented at *Society of Petroleum Engineers Hydrocarbon, Economics, and Evaluation Annual Symposium, 2012*.

“Delivering Large Energy Projects Predictably,” co-author Knut Eriksen, Sr. Vice President NATCO Group. Presented at *American Institute of Chemical Engineers Spring National Meeting, 2009*.

“The Enterprise Project Delivery System,” co-author John Wray. Presented at *American Institute of Chemical Engineers Spring National Meeting, 2008*.



EXPERT REPORT PREPARATION/ORAL TESTIMONY EXPERIENCE

2020-Present Leading a team of three expert professionals involved in a more than \$5 billion energy project arbitral contract dispute. Dispute involves a consortium of owners as well as a consortium of engineering and construction contractors. Working closely with legal counsel and reviewing thousands of contemporaneous project documents. Developing an initial 1000+ page report articulating the team's opinion concerning the allocation of costs between the claimant and respondent. The team will ultimately be involved in negotiating with counter party experts. Mr. Luan will be the testifying expert before the arbitral tribunal.