SNC·LAVALIN

Northwest Construction Consumer Council

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Supply Chain Management in EPC Delivery

May 31 2012

Presented by: Greg Tardanico, V.P. Procurement

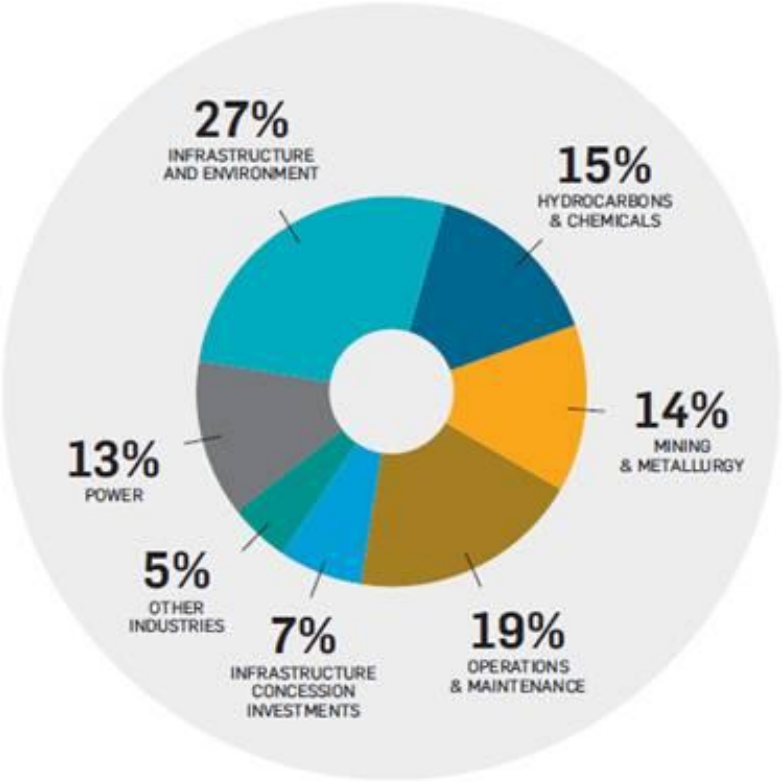
What I Will Talk About

- Who SNC-Lavalin is
- What SNC-Lavalin's procurement model consists of
- Case study highlighting the value project procurement can bring in achieving project key results and managing project risks

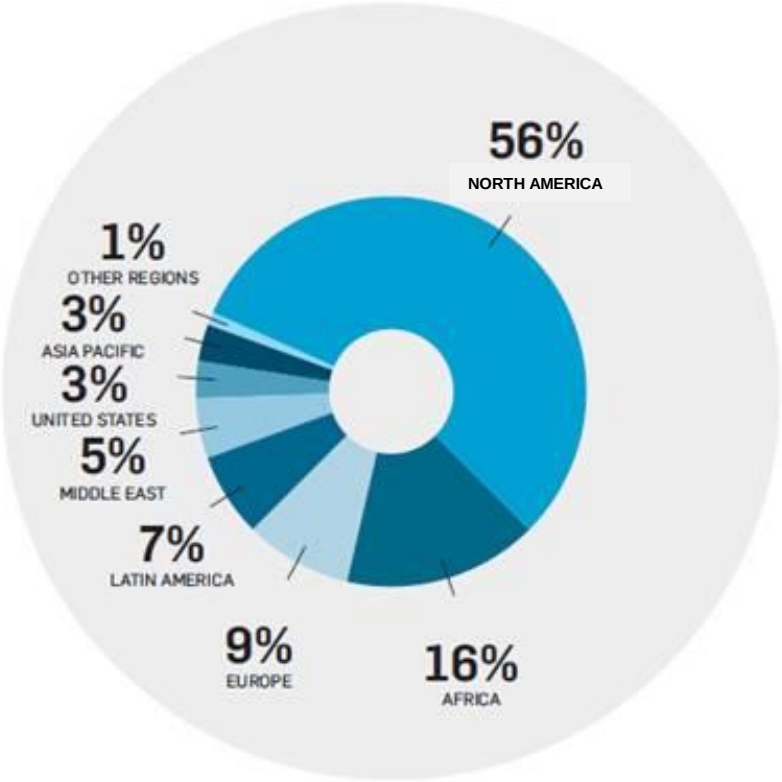
SNC-Lavalin

- Founded in 1911
- A world leader in engineering and construction
- Revenue: $7.2 Billion in 2011
- Backlog: $10.0 Billion
- Permanent offices in more than 30 countries
- Projects in more than 100 countries
- 28,000 staff speaking over 50 languages

2011 Revenues

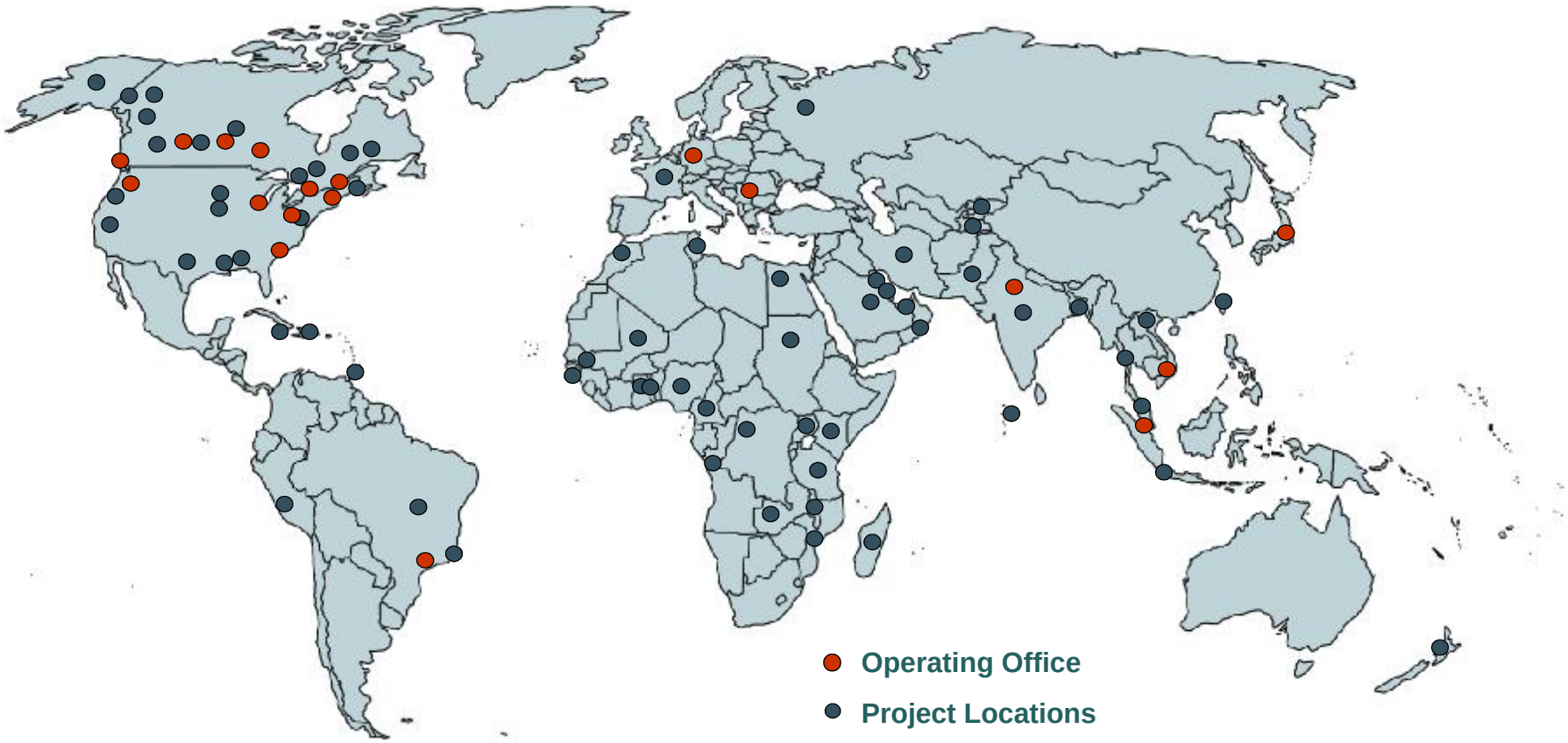


Diversity by industry segment



Diversity by geographic area

SNC-Lavalin Global Power Global Presence



The Power Group

Our Power Group has 100 years of experience in over 100 countries.
Our projects now represent an installed capacity of more than 350,000 megawatts, 110,000 kilometers of transmission and distribution lines, and 1,600 substations around the world.

Brilliant Expansion Project
British Columbia, Canada

AltaLink Southwest Development Project
Alberta, Canada

Becancour Combined Cycle
Cogeneration Project
Becancour, Quebec, Canada

Nuclear

19,400 MW

- CANDU Nuclear Plants
- Steam Generator Replacements

Point Lepreau Nuclear
Generating Station
New Brunswick, Canada

Prairie Island Nuclear
Generating Plant
Red Wing, Minnesota

Transmission and Distribution

- 650+ T&D professionals across Canada, and more than 2,000 worldwide with operating offices in Brazil, the Middle East and India
- Expertise in projects from distribution voltages up to 800 kV AC and +/- 600 kV DC

111,000 KM

Transmission System Upgrade Project
El Salvador

Three Sisters Underground Conversion Project
Canmore, Alberta, Canada

Hydro

- 20 turnkey hydroelectric projects
- Designed and managed construction of 50 hydroelectric power stations for total installed capacity of 24,600 MW
- Studied over 150 hydro power stations in Canada and 32 other countries
- Rehabilitated 18 dams and 34 power stations

280,000 MW

Shipshaw Optimization Project
Quebec, Canada

Karebbe Hydroelectric Project
Sorowako, Sulawesi, Indonesia

Thermal Power

48,000 MW

SNC-Lavalin Thermal Power Division Headquarters
Bothell, Washington

- Projects on Six Continents
- Natural Gas, Renewable Energy, Alternative and Waste to Energy
- Permanent Offices in Seattle, Vancouver, BC, Warsaw, Poland and Bangkok, Thailand

Patnow Project
Konin, Poland

Hadjret en Nouss Project
Algeria

Natural Gas Projects

Portlands Energy Centre
550MW Combined Cycle Power Plant
Toronto, Ontario

Goreway Station
880MW Combined Cycle Power Plant
Brampton, Ontario

Skikda
820MW Combined Cycle Power Plant
Skikda, Algeria

Aughinish
150MW Combined Heat and Power Plant
Askeaton, Ireland

Biomass and Waste-to-Energy Projects

Fibrominn
55MW Biomass (Turkey Litter) Power Plant
Benson, Minnesota

Anderson
49MW Wood Waste-to-Energy Power Plant
Anderson, California

Ridge Generating Station
40MW Wood Waste and Tire-Fueled Power Plant
Lakeland, Florida

Sterling
26MW Tire-Fueled Power Plant
Sterling, Connecticut

Municipal Solid Waste Projects

Brandon
1,000TPD MSW Resource Recovery Facility
Brandon, Florida

Okahumpka
15MW/530TPD MSW Power Plant
Okahumpka, Florida

Burlington
200TPD Biomass Gasification Facility
Burlington, Vermont

Pusan
400TPD MSW Incineration Plant
Pusan, Korea

Coal Projects

Patnow
460MW Lignite Supercritical Thermal Power Plant
Warsaw, Poland

Genesee
800MW Coal-Fired Thermal Generating Station
Edmonton, Alberta, Canada

Paiton
800MW Thermal Generating Station
East Java, Indonesia

Battle River
675MW Thermal Generating Station
Alberta, Canada

Other Projects

Honey Lake
30MW Wood-Fired and Geothermal Power Plant
Wendel, California

Corinto
70.5MW Barge Mounted Floating Power Plant
Nicaragua

10.5MW Landfill Gas Power Plant
Roosevelt, Washington

Atlantic City
200,000 pph District Heating/Cooling Facility
Atlantic City, New Jersey

Industry Leading Installations

Astoria Phase II

Project Finance International

Americas Power Deal of the Year, 2009

Power Magazine Top Gas Plant 2011

ENR New York Award of Merit 2011

Differentiators in Contracts

EPC	vs.	EPCM
•Firm fixed price		•Fixed fee variable cost
•Firm schedule		•Target schedule (usually bonus to meet/better)
•Firm performance		•No performance guarantees
•Wrapped responsibilities for all 3rd party commitment		•Administration rights only for all 3rd party commitments
•PO's/payment on our paper		•PO's/Payments on Owner paper
•High risk for Contractor		•Lower risk for Contractor
•Higher CAPEX		•Lower CAPEX
•Low risk for Owner		•Higher risk for Owner

PROJECT PROCUREMENT – THE SNC-LAVALIN MODEL

- **All activities related to the acquisition of goods and services from initial requirement identification thru completion of commissioning at site and at warrant expiry.**
- **Procurement ≠ Only Purchasing!**

Purchase Orders

Transportation

Fabrication Inspection

Site Material Inventory

Contracts

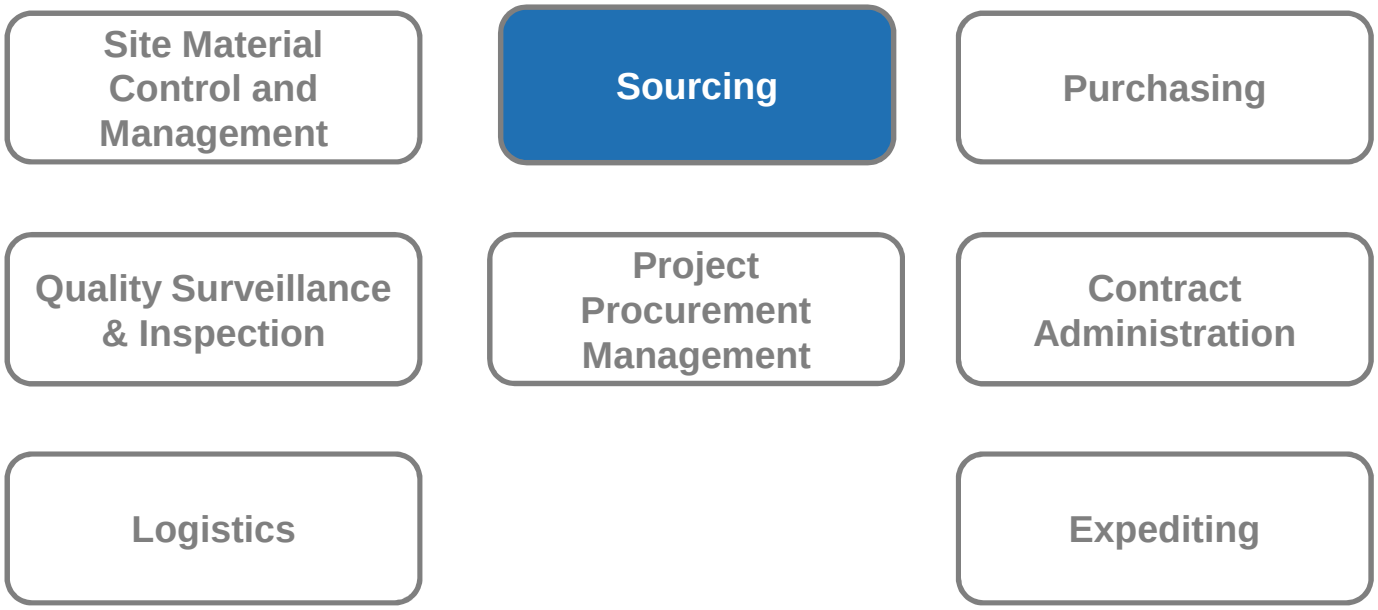
MAIN OBJECTIVES OF PROJECT PROCUREMENT?

- A clear understanding of requirements are defined
- Strategies have been set for managing risks
- Qualified suppliers are sourced/invited for the bidding process
- Goods and Services:
  - Are obtained at fair and reasonable prices within project budget
  - Meet the specified contractual (spec, performance, legal and quality) requirements
  - Are delivered in a timely manner as per the project schedule

PROCUREMENT DISCIPLINES

Site Material Control	Sourcing	Purchasing
Quality Surveillance & Inspection	**Project Procurement Management**	Contract Administration
Logistics		Expediting

PROCUREMENT DISCIPLINES



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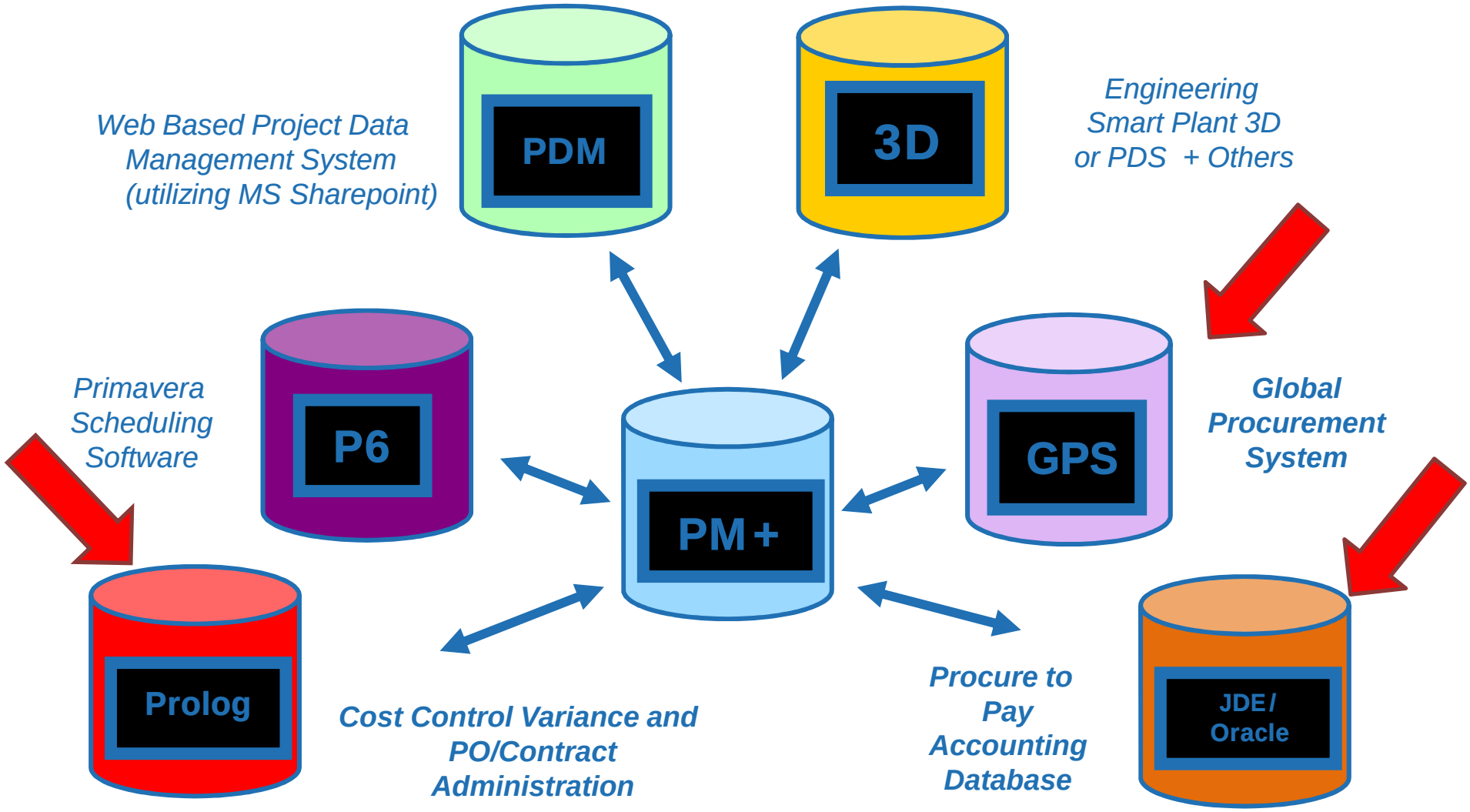
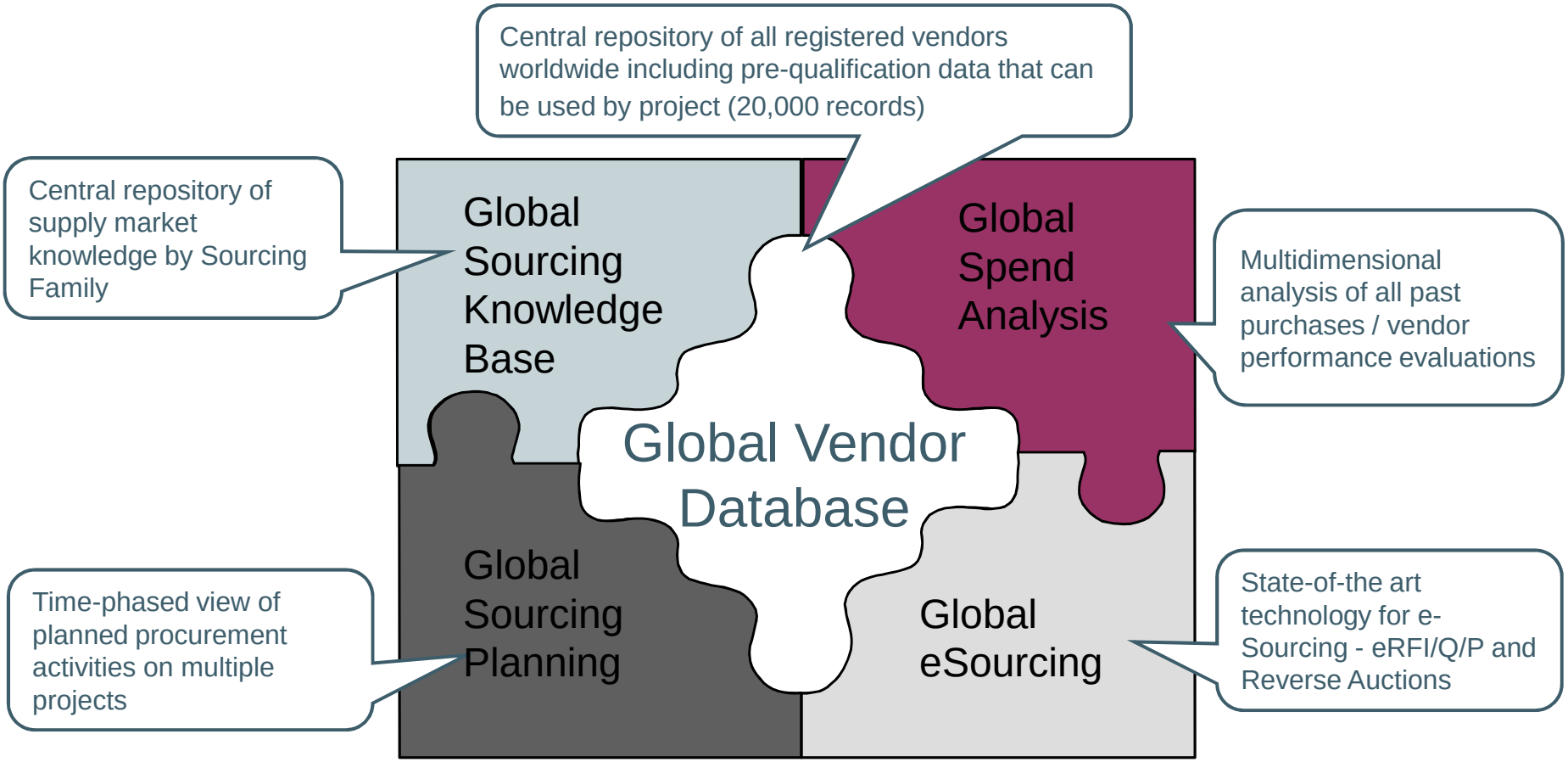
Integrated Project Delivery Systems



Procurement – GPS Tool



Procurement – Global Expertise

EXPERTS

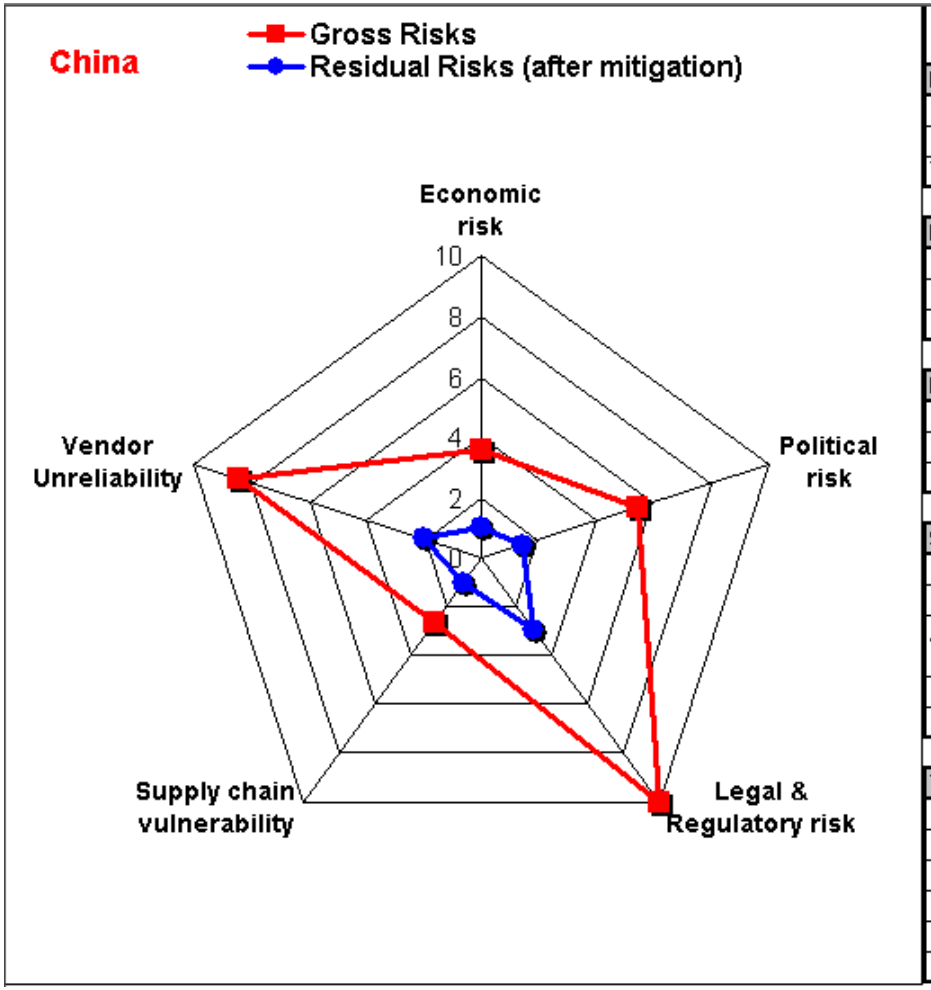
Global Sourcing

Category Management

Global Logistics

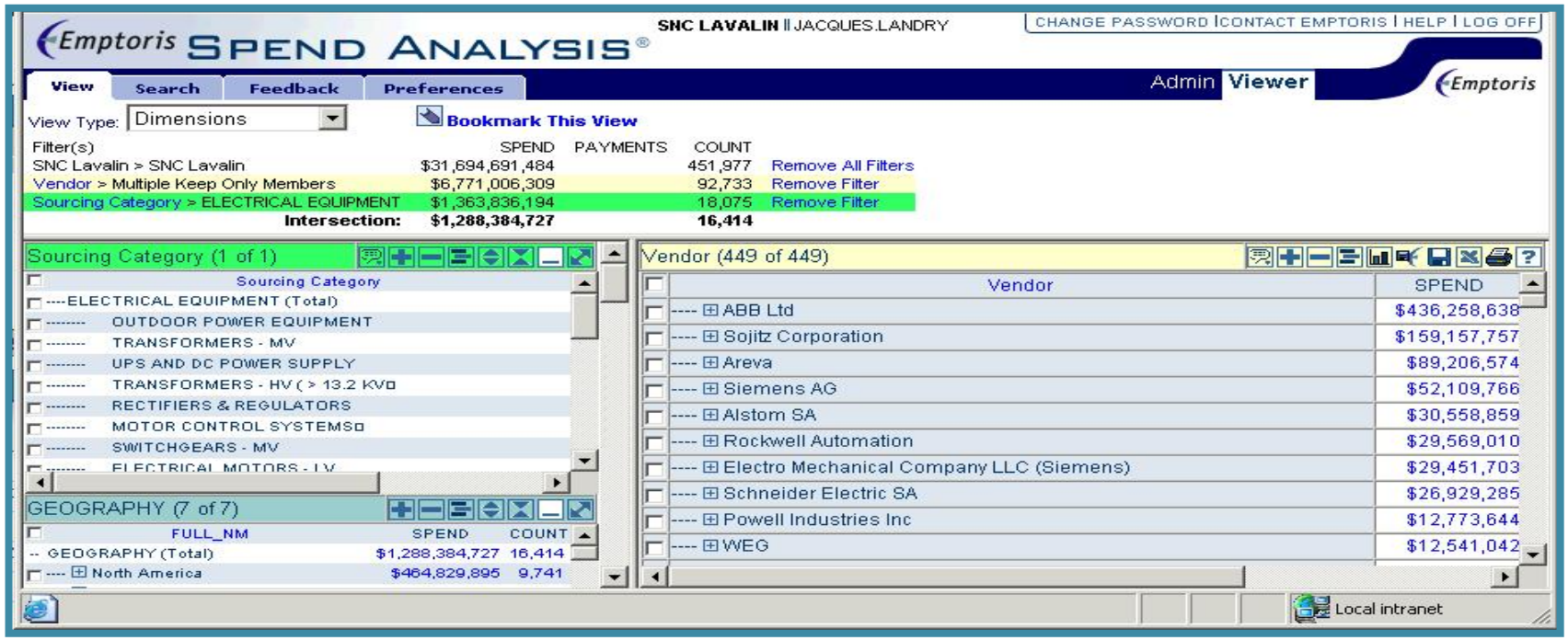
Procurement Risk Management

Procurement – Country Sourcing Risk



Risk Type *(Click on type to see details)*	Gross Risk	Residual Risk
Economic variables	**3.6**	**1.0**
Local currency appreciation	1	1
Unreliability of financial institutions	3	1
Tax miscalculations	10	1
Political variables	**5.4**	**1.4**
Local administration inefficiency	10	3
social and political instability	1	1
Corruption	7.5	1
Legal & Regulatory variables	**10.0**	**3.0**
Import/ Export restrictions	NA	NA
Lack of Intellectual Property Rights protection	10	1
Unreliability of legal system	10	5
Supply chain vulnerability variables	**2.7**	**1**
Poor quality of logistics infrastructures	3	1
Power shortages	7.5	1
Additional costs and delays in inland transportation and customs	3	1
Insecurity of inland transportation	1	1
Roads, ports, airports closed due to natural hazards	1	1
Typical vendor unreliability variables	**8.4**	**2.0**
Lack of suitably qualified people	7.5	1
Communication problems (language and behaviour)	10	1
Supplier's lack of transparency	10	5
Inobservance of schedules	7.5	1
Non-ethical practices in the workplace environment	10	5
Quality problems	7.5	1

Procurement – Spend Analysis Module



Past purchases across SNC-Lavalin are analyzed to find the key suppliers with whom we have experience for specific sourcing categories.

China

- Volume - Approximately 1.5 Billion
- Types of Products - Fabricated steel / Piping / Pressure vessels, module fabrications
- Approaches –
  - Direct oversight (live in supplier's shop during fabrication phase)
  - Direct purchase of goods – not through middle man
  - Localization of oversight/communication – in house employees
  - Documentary Letters of Credit upon achievement of key milestone events
  - Take possession of goods EXW and manage freight internally

So how can procurement be the key to project success?

Consider the following:

60% of CAPEX dollars on a self perform project is 3rd Party spends (85% on subcontracted projects)

You don't leave that up to chance.

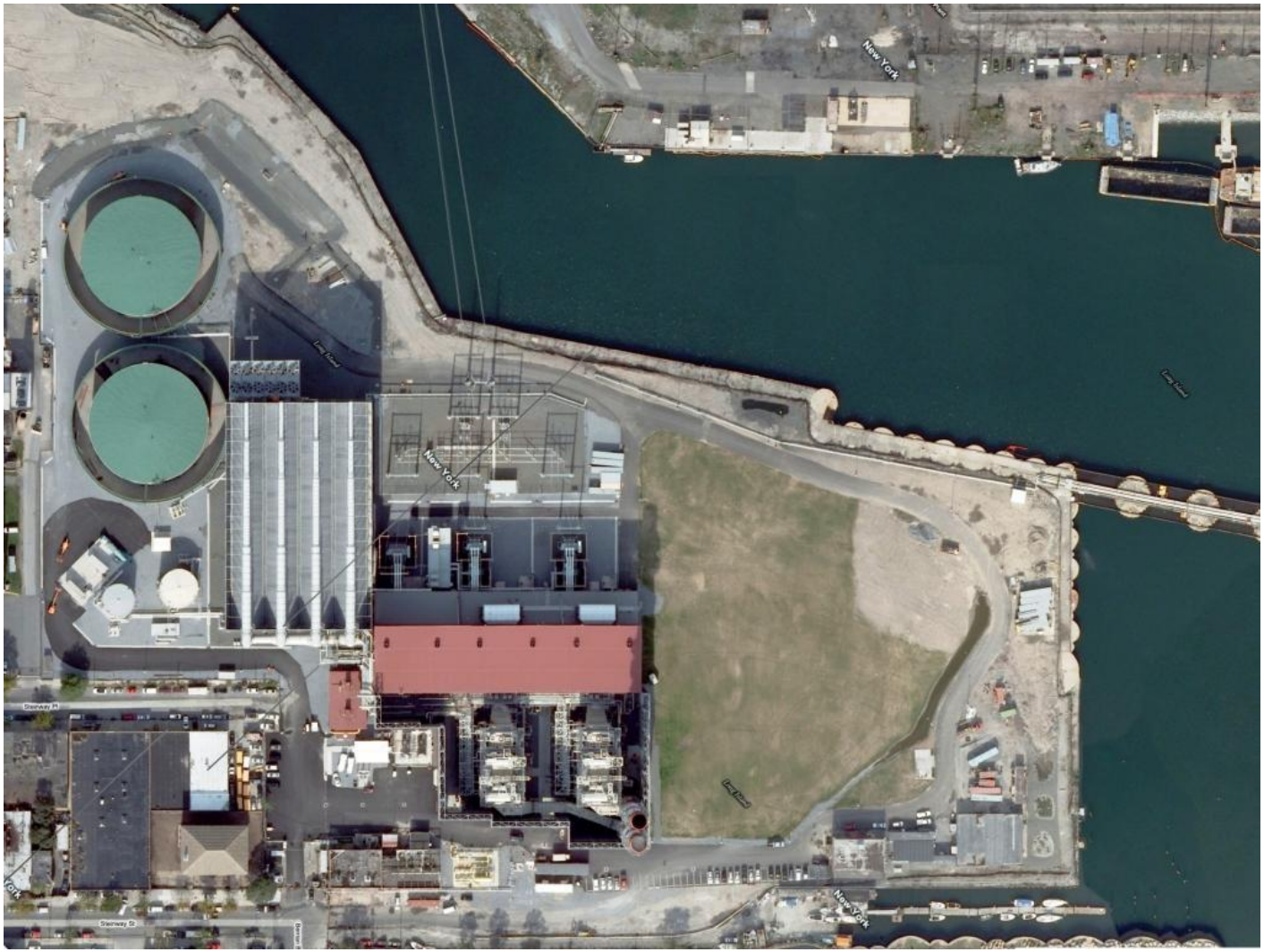
Case Study – Astoria II

Astoria II Project

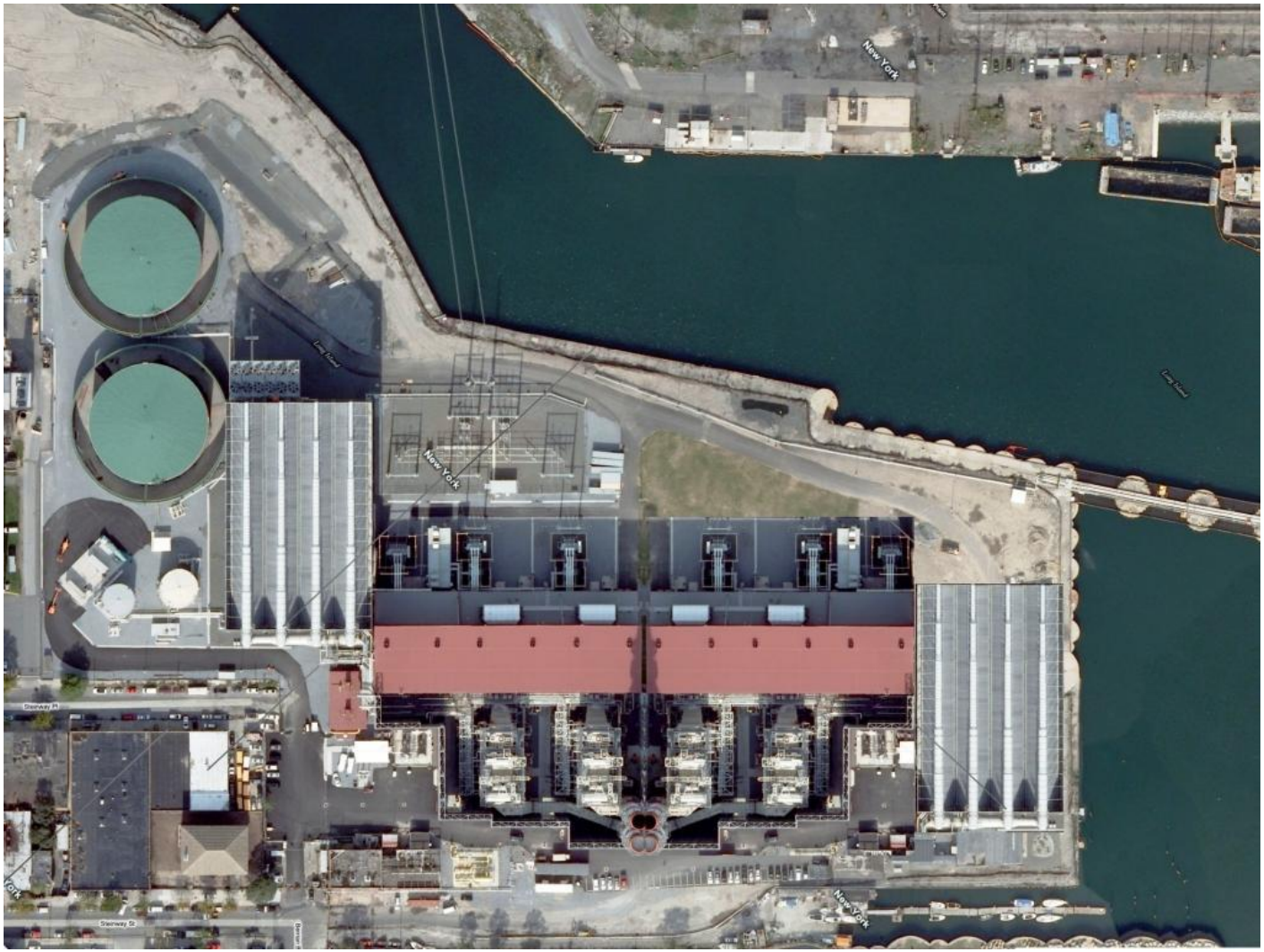
575 MW Combined Cycle Power Plant (total 1150 MW)

Queens, New York, USA

Phase One - Astoria



Phase Two – Astoria



Key Factors for Success

- Meeting local/state strict environmental compliance – (site had heavily contaminated soils)
- Achieve better than industry safety record average – (NY known worse than avg industry safety record)
- Maintain labour harmony in a militant union area – develop strong subcontract partner relationships
- Minimize on-site construction due to available footprint
- Do not disrupt the existing Phase I facility or abutting Steinway Piano factory during entire contract period
- Maximize modularization & off site pre-assembly of major equipment
- Maximize cost savings
- Minimize schedule slippage risks – JIT delivery (no onsite storage or laydown...water on three sides)
- Early identification of project issues, risks, mitigations and opportunities
- Planning, planning and planning... did we say planning?

Key Results

- local trade unions concessions - supported offsite maximizing of pre-assembled major equipment and system.
- Configuration/Partnering of HRSG, Pipe Racks and ACC equipment to withstand offsite assembly 1000's of miles away.
- Partnered with logistics and insurance firms to properly plan for the sophisticated heavy and abnormal load haul/movements
- Coordinated global sourcing of commodities and equipment leveraged from combined procurement events with other in-house SNC-Lavalin projects
- Created strategic supplier agreements configured for shorter than market delivery, JIT delivery management, protected pricing
- Despite a 4 month owner/city permitting delay the project finished on-time (compacted schedule), significantly under budget, achieved the project safety record goals set out and never once disrupted/interfered with local abutting neighbors/business.
- An ecstatic client who achieved all of his goals....as did we!

Little of this was possible without exhaustive pre-planning, flexible engineering, a strong procurement system, tight management of suppliers and outstanding local subcontractor relationships

Astoria II – Innovative Modularization and Prefabrication

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Advanced Engineering Tools, Methods, Applications

Collaborate with Engineering & Construction to develop the most comprehensive procurement plan designed to:

1. Build as much offsite as possible to reduce cost
2. Reduce installation footprint
3. Reduce schedule and labor risks
4. Increase quality control

Engineering and Design Enhancements

- Preferred vendor procurement agreements
  - Performance based specifications enable vendor collaboration and provide cost savings
- Modular construction
- Design optimization

What We Discussed

- Who SNC-Lavalin is

- SNC-Lavalin's procurement model

- The value that a robust project procurement process can provide in managing project risks and achieving project key results.

Hope I left some questions unanswered…