Partners in Success: Standardization and the Oil & Gas Sector

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Canada's Oil & Gas Industry
Economics

- Employment 500,000
- Invested $30 billion in 2004…
  the largest single private sector investor
- Industry paid $16 billion in 2003
  to governments

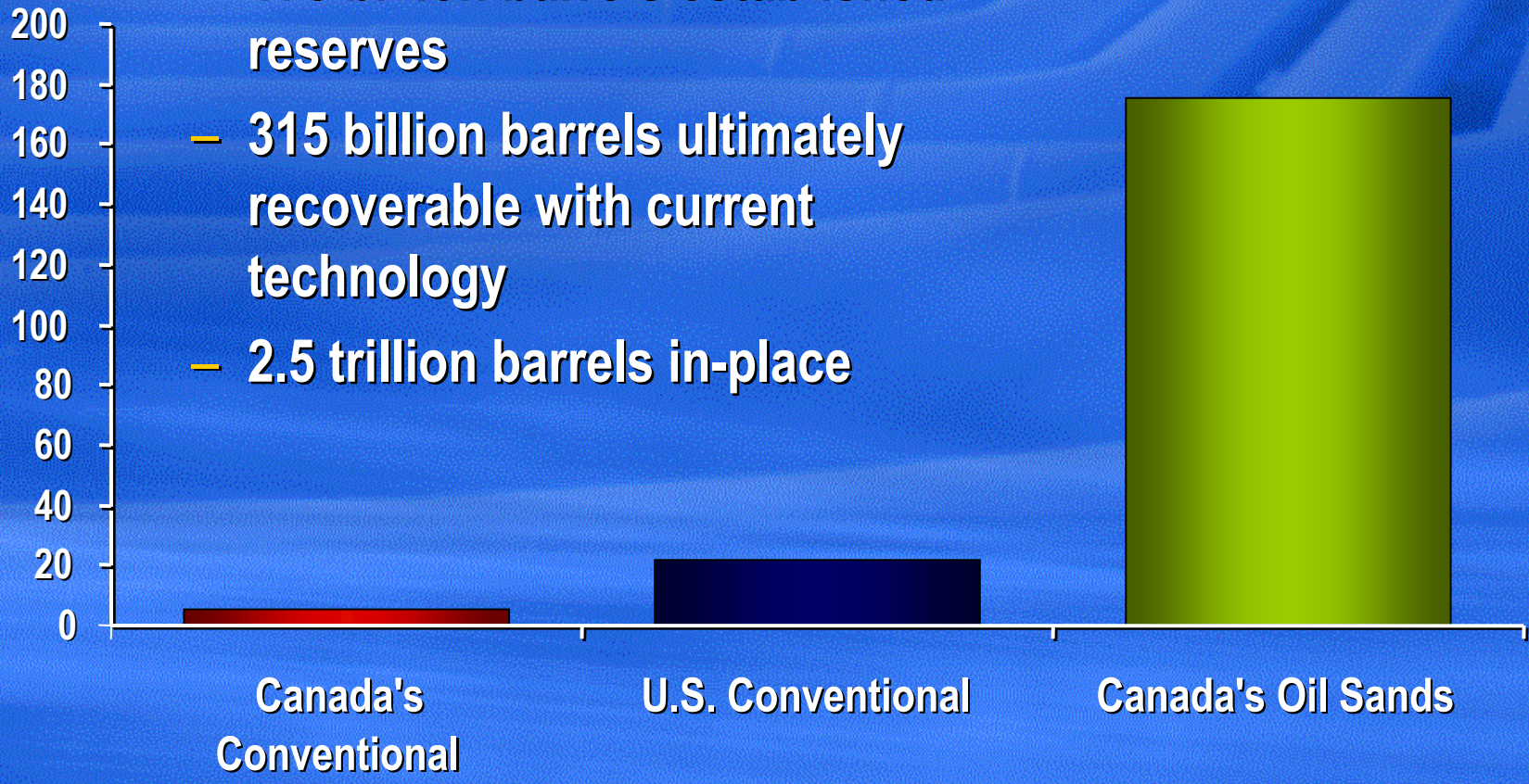
Canada's Oil & Gas Industry
World Positioning

- World's 2nd largest crude oil reserves
- World's 3rd largest natural gas producer
- World's 13th largest crude oil producer
- Oil & Gas: 9.3% of exports
- Oil & Gas: 57% of trade surplus
- Energy: $62 billion, or 16% of exports

Comparative Oil Reserves

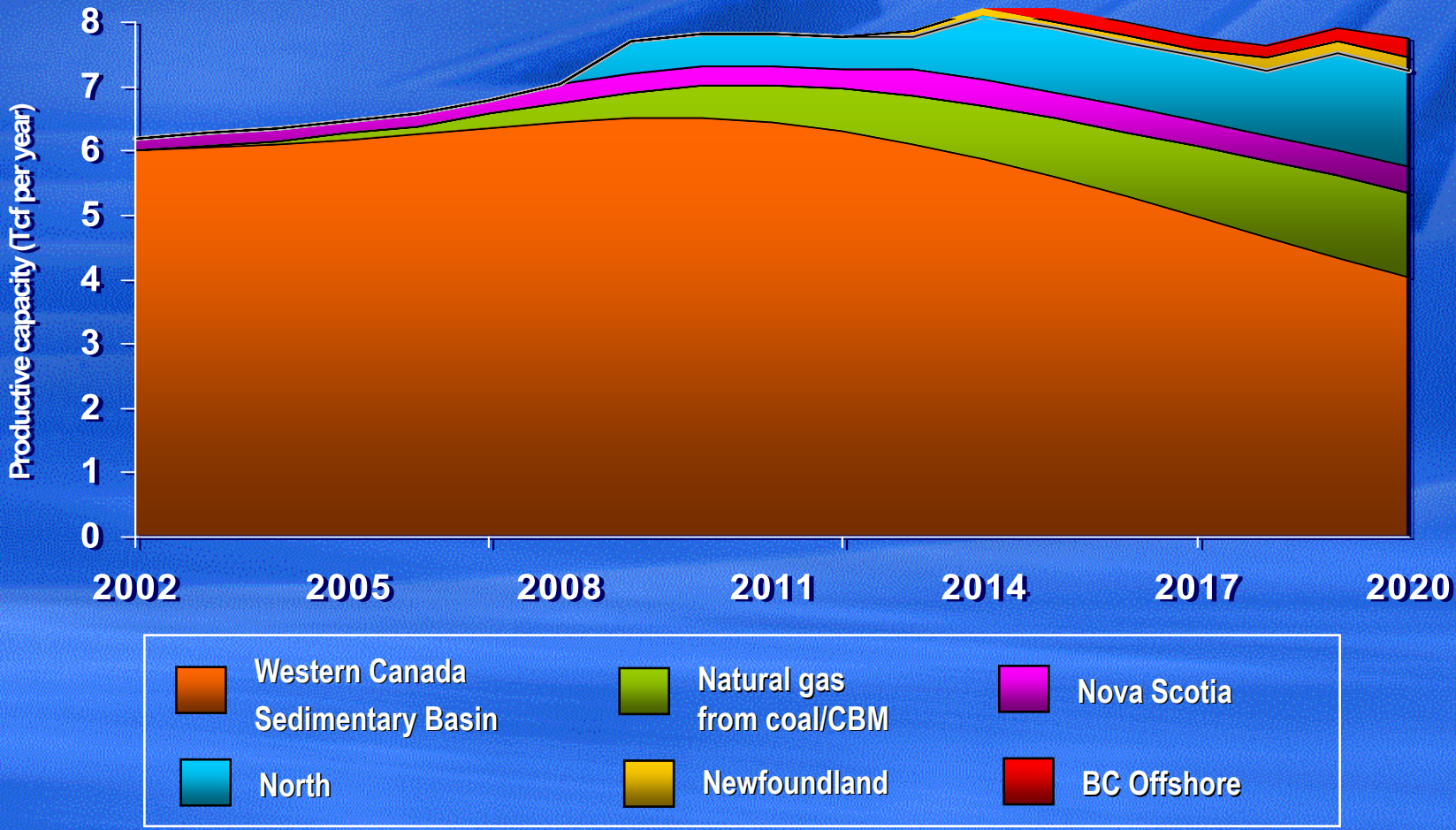
Billions of Barrels

- **Oil Sands Deposits:**
  - 175 billion barrels established reserves
  - 315 billion barrels ultimately recoverable with current technology
  - 2.5 trillion barrels in-place



Natural Gas Productive Capacity

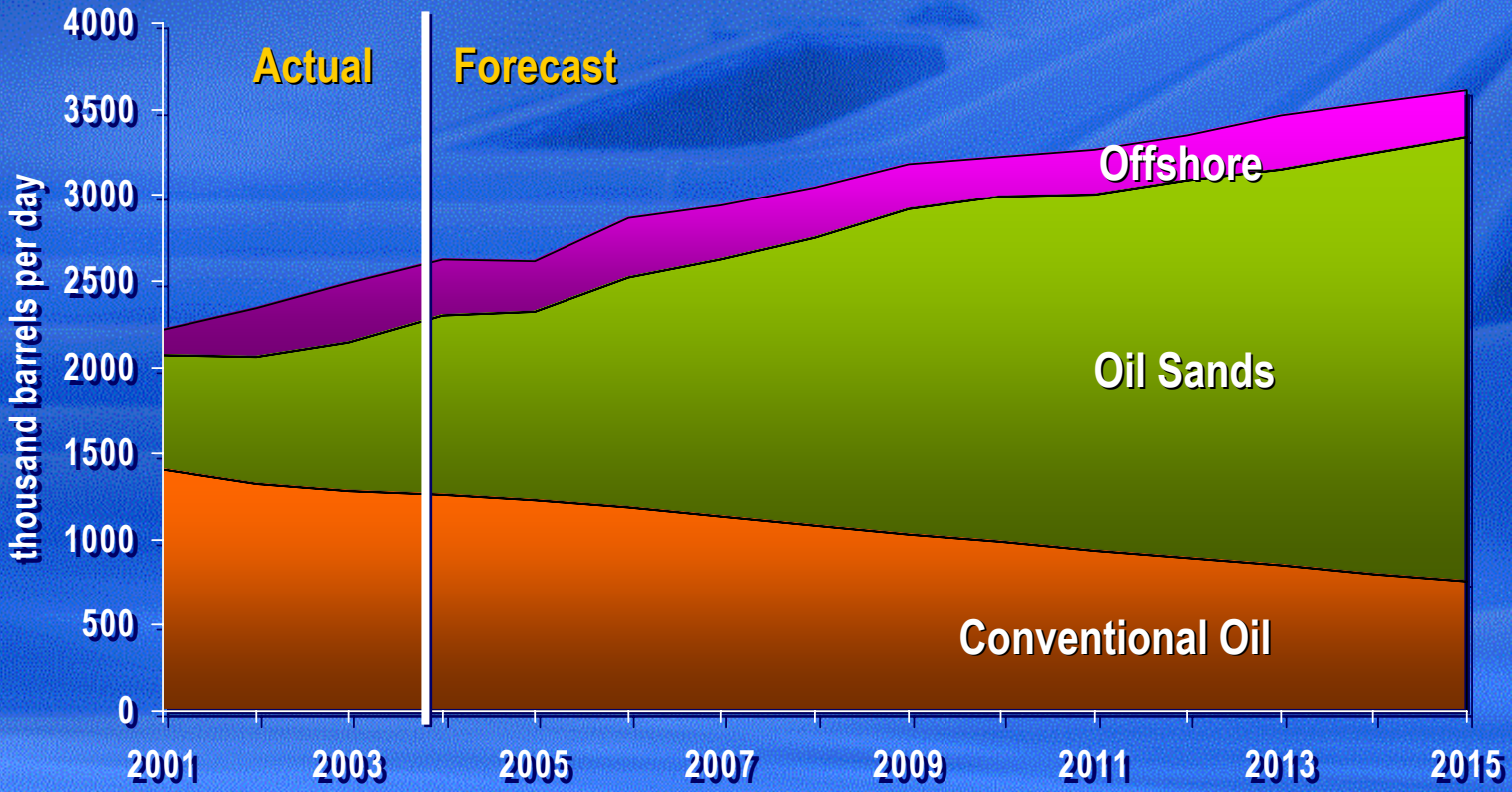
CERI Alternate Case



Source: Canadian Energy Research Institute

Canadian Oil Production

Oil Sands Outlook



Oil Sands Outlook:
2004 YTD = 1.2 mmb/d
2015 Forecast = 2.6 mmb/d

Canada's Oil & Gas Industry

Scope of the Pipeline Industry

- One of the largest and safest pipeline systems in the world
- 700,000 km of pipelines in Canada
- 95% of Canada's oil and natural gas moves through these pipelines

Partners in the Oil & Gas Industry

- Active and Engaged:
  - Standards Council of Canada (SCC)
  - Private Sector
  - Trade Associations
  - Stakeholders
  - Governments
  - NGOs
  - Canadian Standards Association (CSA)
  - Customers
  - Developing Countries
  - The Public

Partners in the Oil & Gas Industry

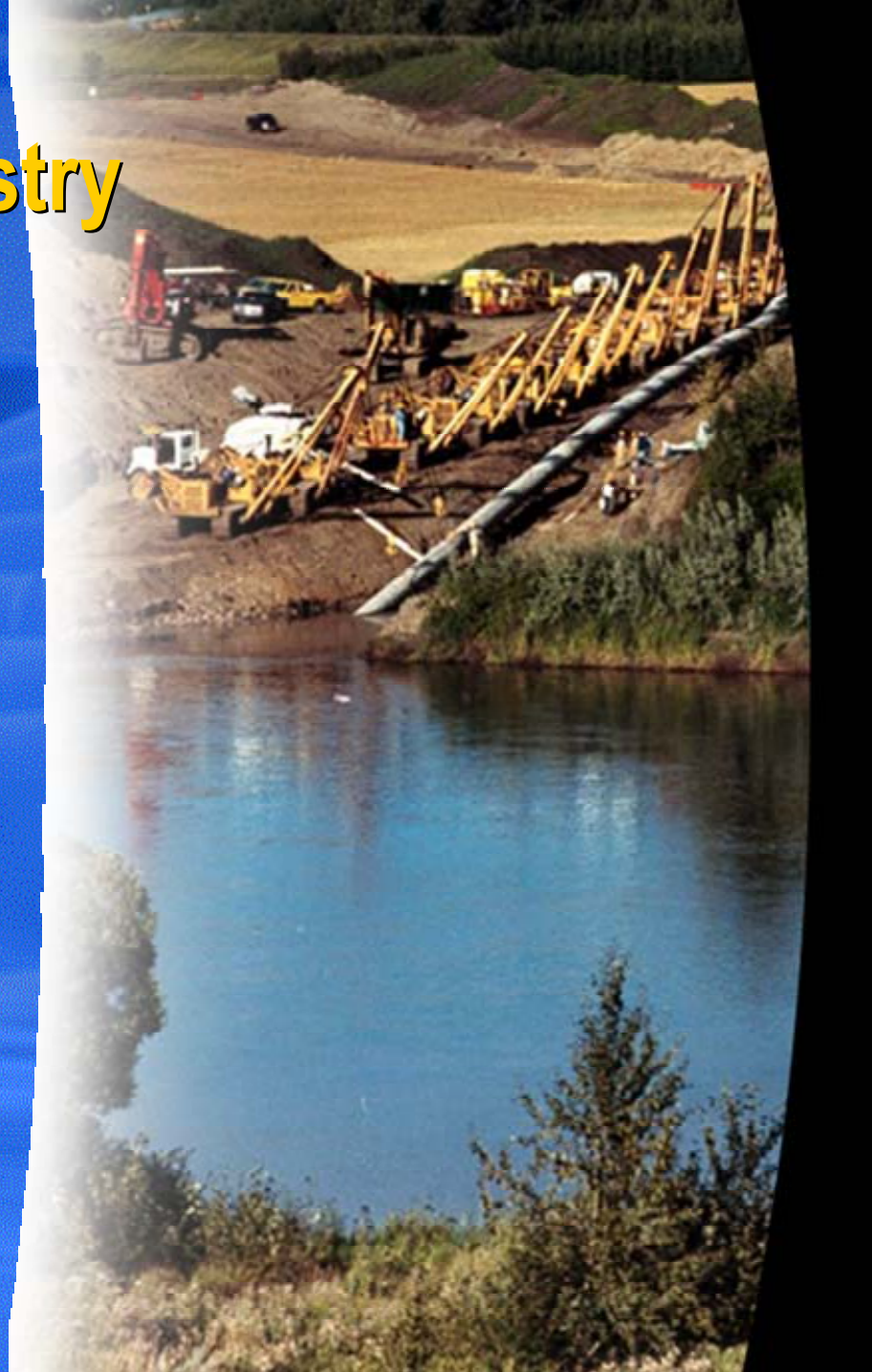
- Standards contribute to:
  - Industry growth
  - Safety for the industry
  - Environmental stewardship
- CSA Members
  - 500 volunteer members in the Oil & Gas program:
    - 300 in pipelines and systems, 200 in offshore structures
- CSA Staff
  - Facilitate this process

Partners in the Oil & Gas Industry

- Influence standard content
- Permit industry consensus
- Complement regulations
- Reduce costs
- Provide common technology base
- Drive industry best practices
- Enhance safety

Strategies for the Industry

- System Performance
- Safety and System Integrity
- Environment and Sustainability
- Stakeholder Relations
- New Markets



Strategies
System Performance

- Pipeline
  - Pipeline transportation system – safest in Canada
  - Declining failure rates over the last five years: from 3.2 to 2.5 per 1,000 km despite increase in pipeline installations from 256,000 to 317,000 km
- Offshore
  - Operate successfully in harsh off-shore environment
  - Sub-sea flowline, risers and well components provide safe operations

Strategies

Critical Issues for System Integrity

- Pipeline & Offshore
  - Emergency Shutdown Procedures (ESD)
  - Operations and Maintenance Systems
  - Integrity Management Systems
  - Sour Service Safety Management
  - Operator Training and Competency Standards
  - Safety Management Systems
  - Unique Operating Conditions

Strategies
Environment & Sustainability

- **Pipeline & Offshore**
  - CSA drives responsible environmental practices
  - ISO 14000 series on Environmental Management Systems (EMS)
  - Incorporating environmental references in standards to protect environment during construction and operation

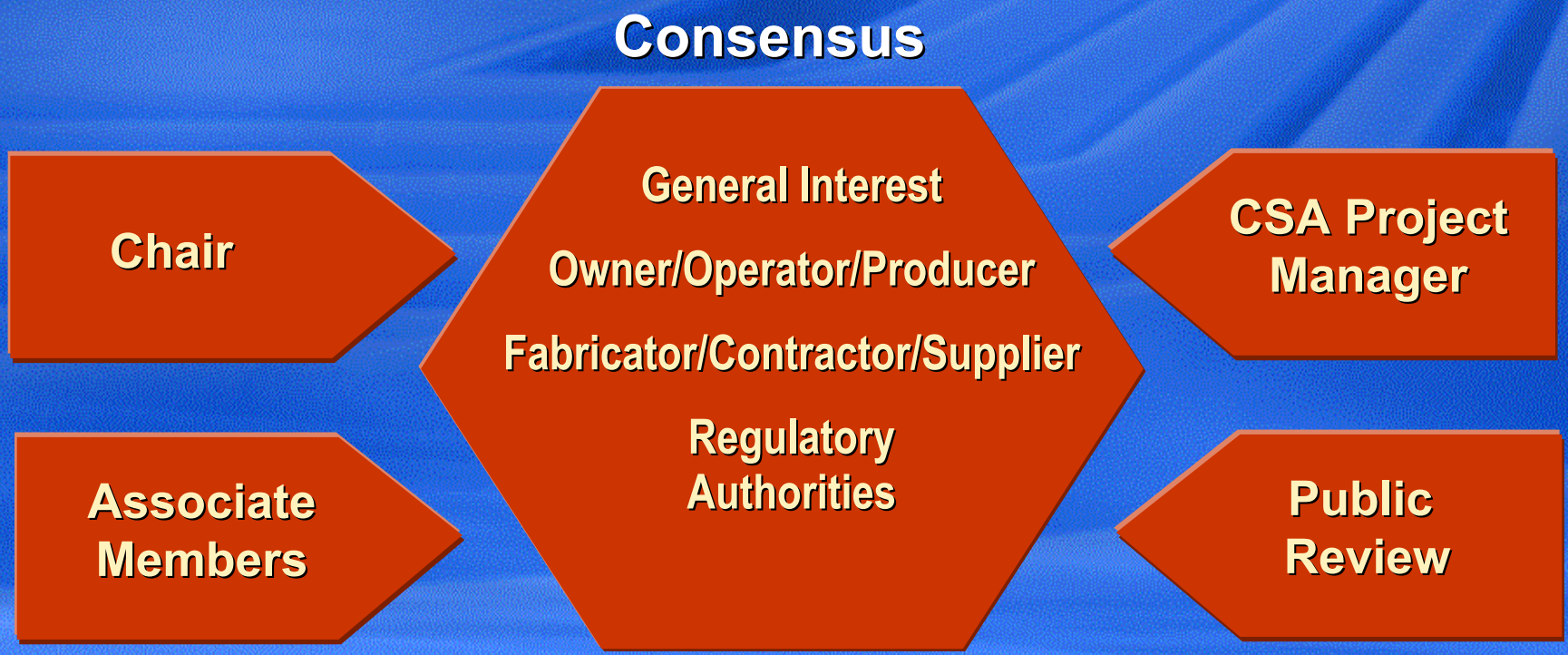
Strategies
Stakeholder Relations

- Plus 663: Land Use Planning With Respect To Pipelines – A Guideline for Local Authorities, Developers and Pipeline Operators
- CSA standards set ground cover requirements for buried lines
- CSA standard on public involvement – Z764
- Industry invests in community-based consultations

Strategies
New Markets

- Growth Opportunities
  - Atlantic Canada
  - Arctic
- Approaches
  - Limit state design
  - Harsh environment standards
  - Offshore structures

Delivering Standards Solutions



Typical Oil & Gas Committee
Voting Matrix

Importance of National Standards

- Standards are mission critical to the Oil & Gas industry
- Leadership role in addressing the need for harmonized standards
- A window for Canadians influencing regional/ international standards

Making a Difference

- CSA has been making a difference in the Oil & Gas industry for over 40 years
- Standards address safety and efficiency from start to finish – from well head to burner tip, to the point of use by consumers
- Hundreds of standards supporting the Oil & Gas industry

New Markets, Best Practices

- Pipeline
  - CSA coating standards are being used internationally
  - CSA standards are being used globally as basis for underground storage
- Offshore
  - CSA's S471 was used in Northern Russia
  - Canada now leads ISO Arctic Offshore Structures Work Group

Globalization

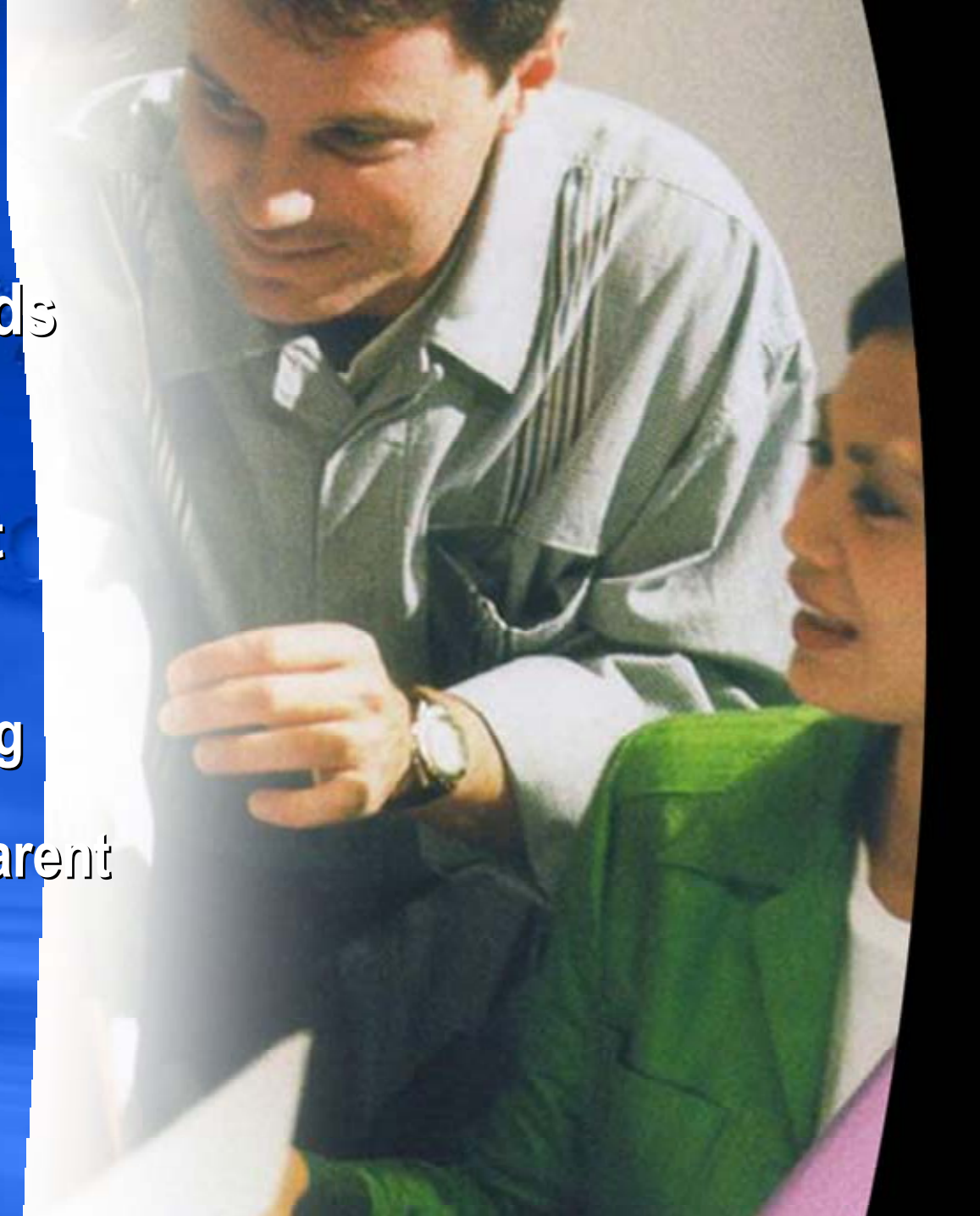
- Key drivers toward globalization:
  - Multi-national Oil & Gas consortia share the risks for ‘mega-projects’
  - Streamlining local (national) regulatory processes
  - Enhance competitiveness and attractiveness to investors
  - Transfer world-wide industry best practices

Globalization

- Key benefits of globalization:
  - Efficiencies for Oil & Gas companies
  - Effective deployment of engineering resources
  - Global participation
  - Common international standards reduce trade barriers

Globalization

- ISO / IEC Standards
  - Facilitate trade
  - International best practices
  - Global networking
  - Open and transparent



Globalization

- ISO / IEC Standards and Organizations
  - ISO, 148 countries
  - IEC, 62 countries
  - Market driven
  - Worldwide application
  - SCC represents Canada

Globalization

- ISO Network, by the numbers…
  - 14,251 ISO standards
  - 188 TCs, 531 SCs, 2,224 WGs
  - 4,169 active projects
  - 35,000 experts
  - 714 secretariats from 37 countries
  - Member bodies in 97countries

Globalization

- ISO TC 67: Materials, equipment and offshore structures for petroleum, petrochemicals and natural gas industries
  - Established in 1947
  - 24 participating members, 23 observing members
  - 148 standards in current suite
  - 70 published standards

Globalization

- ISO TC 67 Vision
  - Global participation
  - Global adoption
  - Co-branded

Globalization

- ISO TC 67 Objectives
  - Required by the industry
  - Worldwide adoption
  - Minimize specifications for companies

Globalization

- Oil & Gas Producers: position on standards
  - Promote standards within company
  - Access to international expertise and best practices
  - Influence use of resources
  - Representation on standards WGs
  - Save time and resources

Globalization

Do it once. Do it right. Do it internationally.

- Harmonization & ISO
  - Harmonize with international standards: ISO, IEC
  - Consider alternatives: tri-national, bi-national or regional
  - Create a national standard
- 4,000 Canadians involved on 476 CACs involved internationally (ISO, IEC, JTC1)

Globalization

Case Study - Offshore

- Offshore Structures
  - Adopt international standards
  - Canada's advancements reflected
  - Adoption of ISO 19900 series of Offshore Structure Standards as they become available

Globalization

Canada's Participation ISO TC 67

- ISO/TC67/SC2: Pipeline transportation systems
- ISO/TC67/SC5: Casing, tubing and drill pipe
- ISO/TC67/SC7: Offshore structures

Globalization

Value of Standardization

- 8 to 1 ROI from standards participation
- 1 to 5 manpower ratio, standards vs company only
- 50% savings, new projects
- 25% savings, operating costs

The Future

- What will be the role of local SDOs?
  - Get into the business of offering solutions to international standards

The Future

What is Smart Regulation?

Governments, citizens and business will work together to build a national regulatory system that enables Canadians to take advantage of new knowledge and supports Canada's participation in an international economy

Key Characteristics:

- Protecting and enabling
- More responsive regulation
- Governing Differently

The Future

- Key Principles of Smart Regulation:
  - Effectiveness
  - Flexibility
  - Transparency
  - Innovation and Adaptability
  - Accountability
  - Cooperation

The Future

- Opportunities/Outcomes, Smart Regulation:
  - Social and environmental benefits
  - Competitive innovative economy
  - Higher quality of life for Canadians

The Future - Discussion

- Who pays for standards development?
  - Standards do not develop themselves
  - Standard sales may not fully recover development costs
  - Information tends to be free

Thank you

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