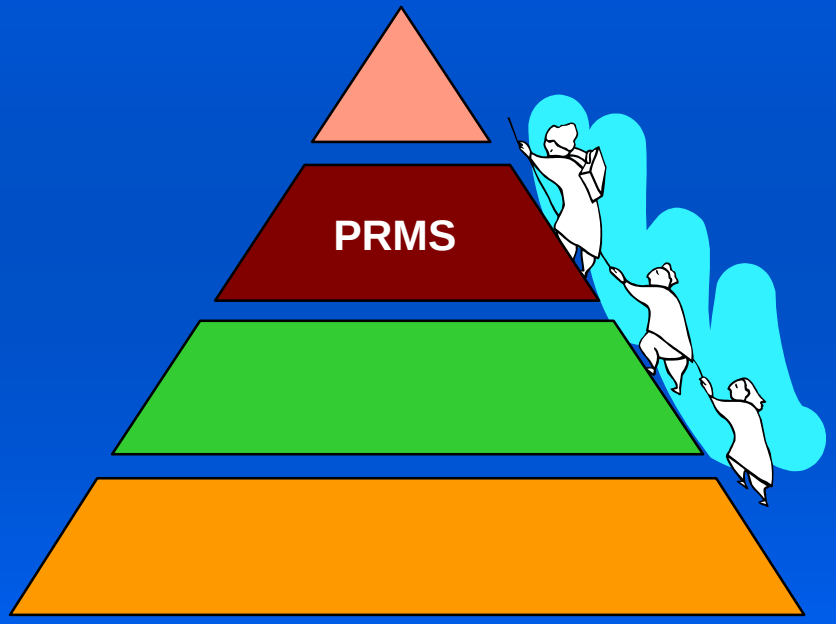
SPE/WPC/AAPG/SPEE Petroleum Resources Management System (PRMS)



Prepared by the SPE Oil & Gas Reserves Committee (OGRC)

Who is the OGRC?

SPE Oil and Gas Reserves Committee

Structure

- Eleven members with reserves expertise.
- Appointed for 3-year terms.
- Worldwide representation.

Duties

- Deals with oil and gas reserves matters, including definitions and standards.
- Disseminates information to other agencies, companies, and organizations.
- Works to achieve worldwide use of standard reserves definitions.
- Monitors activities in reserves definitions and recommends revisions to reserves definitions to SPE Board of Directors.

Committee Observers

- American Assn. of Petroleum Geologists.
- Intl. Accounting Standards Board.
- Soc. of Exploration Geophysicists.
- Soc. of Petroleum Evaluation Engineers.
- U.S. Energy Information Agency.
- World Petroleum Council.

International representation
(USA, Canada, Australia, UK, Italy, Hungary, Saudi Arabia)

Focus on technical standards

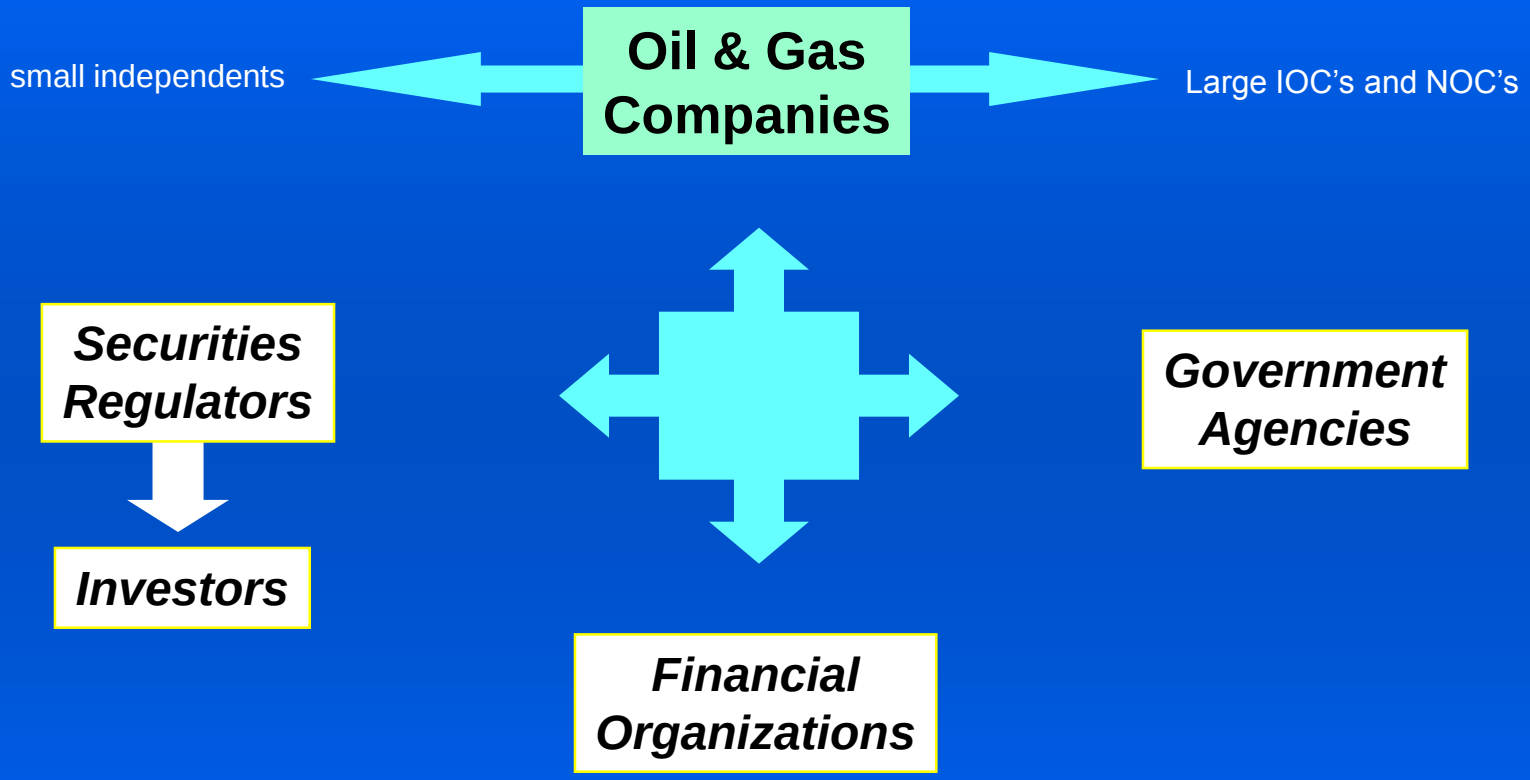
Inter-organizational cooperation

SPE "Vision" for Reserves/Resources

SPE/WPC/AAPG/SPEE definitions and classification system (and associated estimating guidelines) will continue to be maintained evergreen and enhanced to incorporate new best practices, and unconventional resources, and will be recognized as the premier classification standard.

- SPE will actively promote and facilitate in-depth understanding of the definitions and their universal adoption by the oil, gas, and related industries; international financial organizations; governments; regulatory agencies; and reporting bodies.

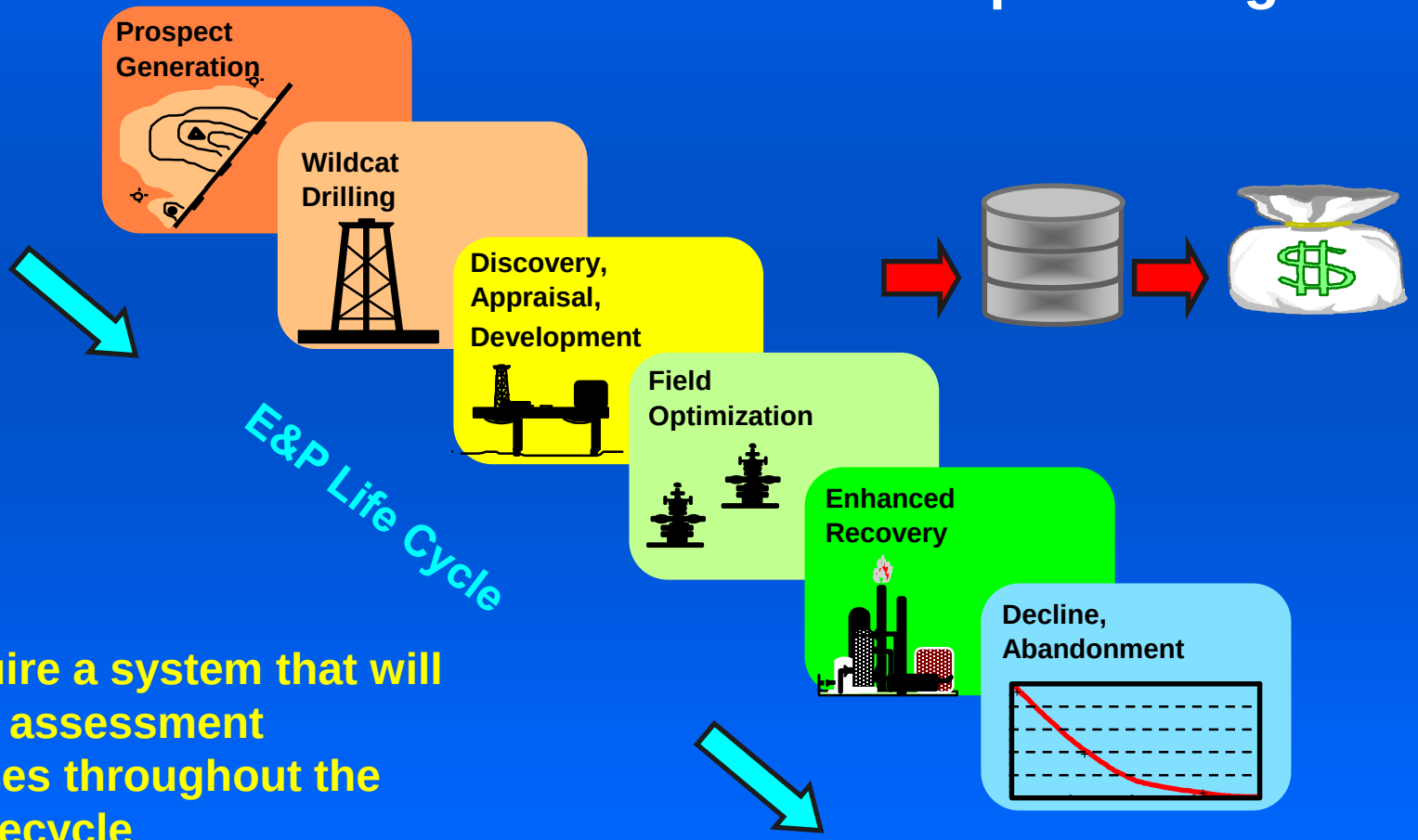
Our Stakeholders



All stakeholders require complete, consistent and reliable information on future production and associated cash flow estimates through full life recovery.

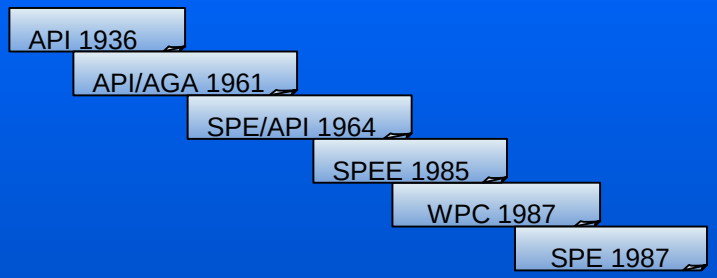
Scope of Projects

Align with the hydrocarbon finding, developing and producing business!



We require a system that will support assessment processes throughout the asset lifecycle

Evolution of Petroleum Evaluation Guidelines



1997 SPE/WPC Petroleum Reserves Definitions

2000 SPE/WPC/AAPG Petroleum Resources Classification and Definitions

2001 SPE/WPC/AAPG Guidelines for the Evaluation of Petroleum Reserves and Resources

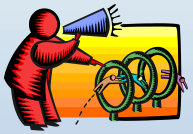
2005 SPE/WPC/AAPG Glossary of Terms

2007 SPE/WPC/AAPG/SPEE **P**etroleum **R**esources **M**anagement **S**ystem ***(SPE-PRMS)***

Consolidate, build on, update, and replace prior guidance

SPE Mapping Project

Agencies Selected for Comparison



Securities Disclosures

Government Reporting

International Standards

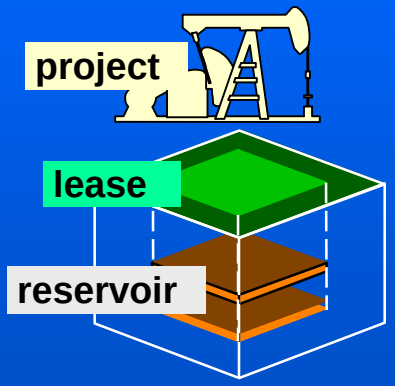
1. US Securities and Exchange Commission (SEC-1978)
2. UK Statement of Recommended Practices (SORP-2001)
3. Canadian Security Administrators (CSA -2002)
4. Russian Ministry of Natural Resources (RF-2005)
5. China Petroleum Reserves Office (PRO-2005)
6. Norwegian Petroleum Directorate (NPD–2001)
7. United States Geological Survey (USGS-1980)
8. United Nations Framework Classification (UNFC-2004)

(see final report December 2005 on SPE.org)

PRMS - Major Principles

1. The System is “Project–Based”.
2. Classification is based on project’s chance of commerciality. Categorization is based on recoverable uncertainty.
3. Base case uses evaluator’s forecast of future conditions.
4. Applies to both conventional and unconventional resources

"Project-Based" System



How much is there?

What is my entitlement using this project?

Reservoir
(in-place volumes)

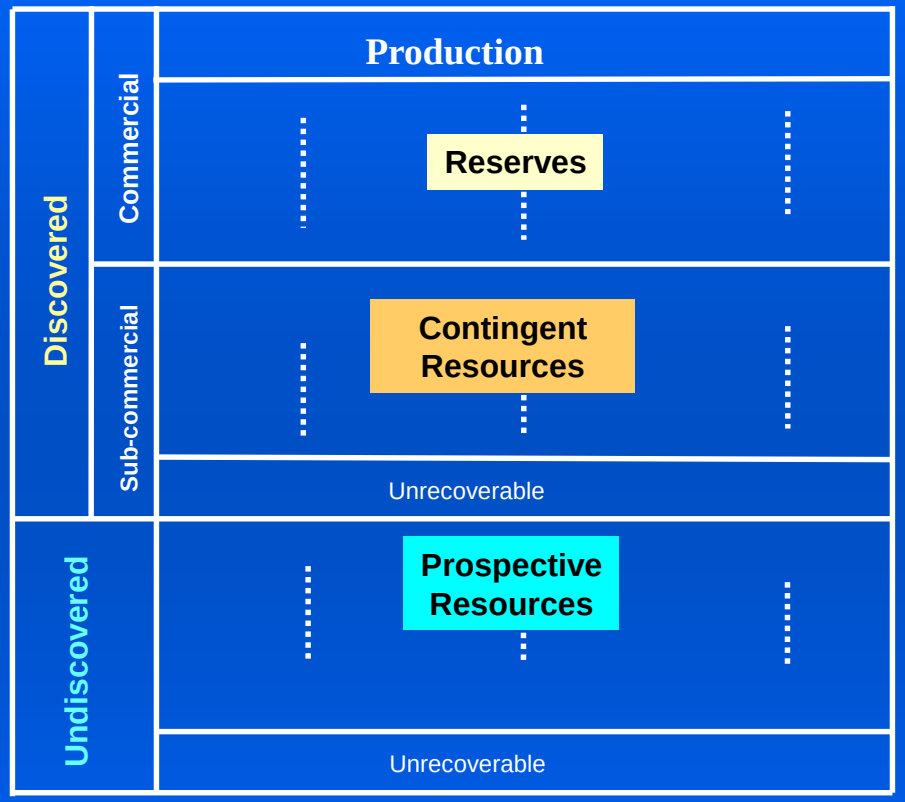
net recoverable resource

Project
(production & cash flow schedules)

Property
(ownership/contract terms)

What is my share of costs and revenues?

Separate Classification & Categorization



classify by Chance of Commerciality (Risk) of project applied

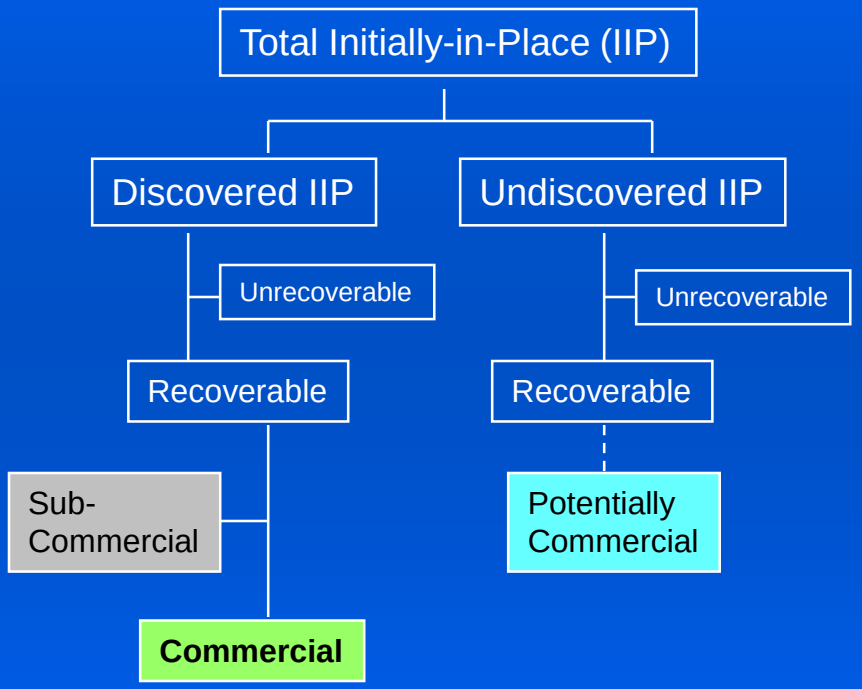
chance of development

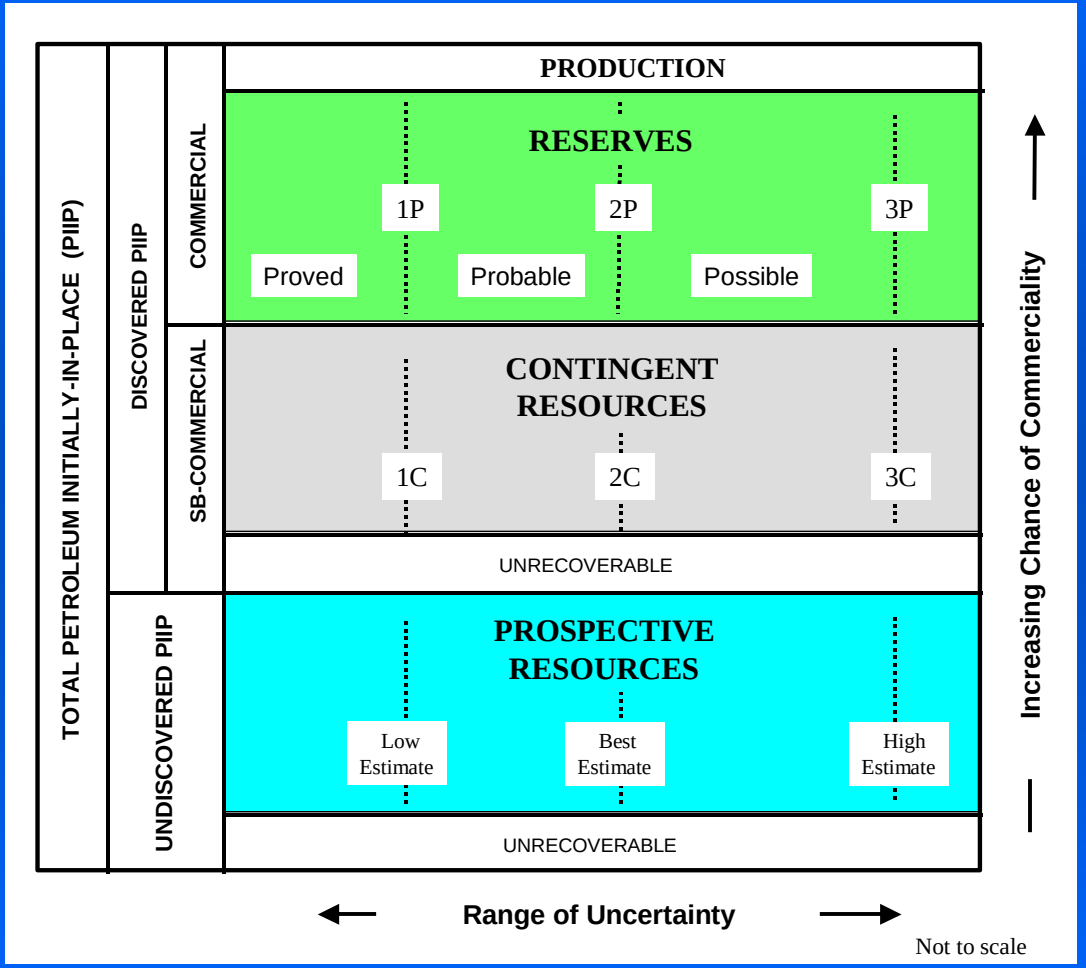
chance of discovery

categorize estimates based on uncertainty of sales quantities associated with project

reservoir in-place uncertainty + project recovery efficiency

Resources Classification System





Resources Class Criteria

Discovered

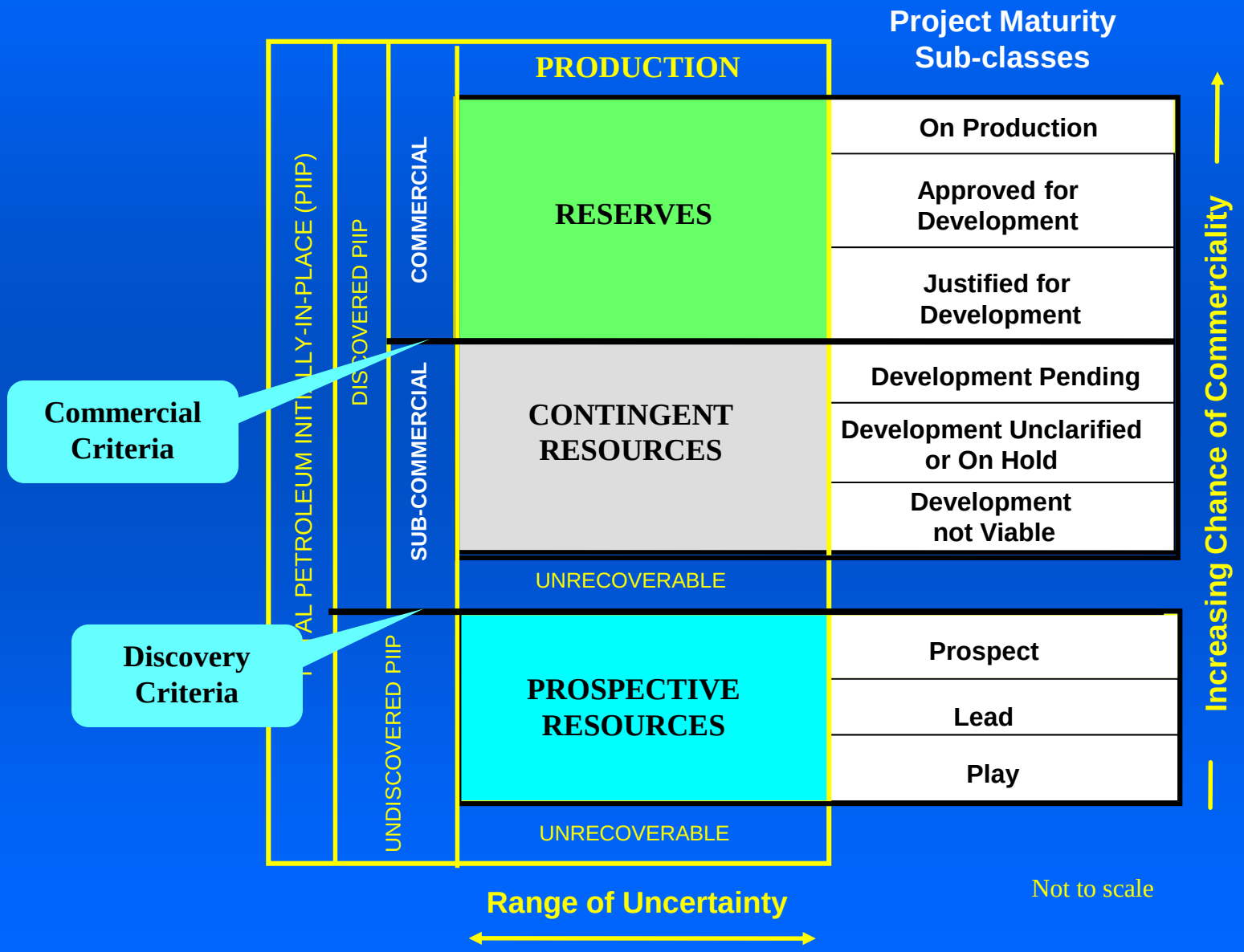
Established through testing, sampling and/or logging the existence of a significant quantity of potentially moveable hydrocarbons.

Commercial

- Meets evaluator's economic criteria
- No significant contingencies that would prevent development
- Reasonable expectation that all internal/external approvals will be forthcoming
- Intent to initiate development within a reasonable time frame

*" **reasonable time frame"** depends on the specific circumstances and varies according to the scope of the project.*

Sub-classify by Project Maturity



Additional Classification Modifiers

Reserves Status

Recoverable quantities my be subdivided based on the funding and operational operational status of wells and associated facilities into:

Developed (Producing or Non-Producing)
Undeveloped

Reserves status may be applied to Proved, Probable and Possible

Economic Status

Projects may be further characterized by economics and commercial modifiers into:

Economic *(Reserves)*

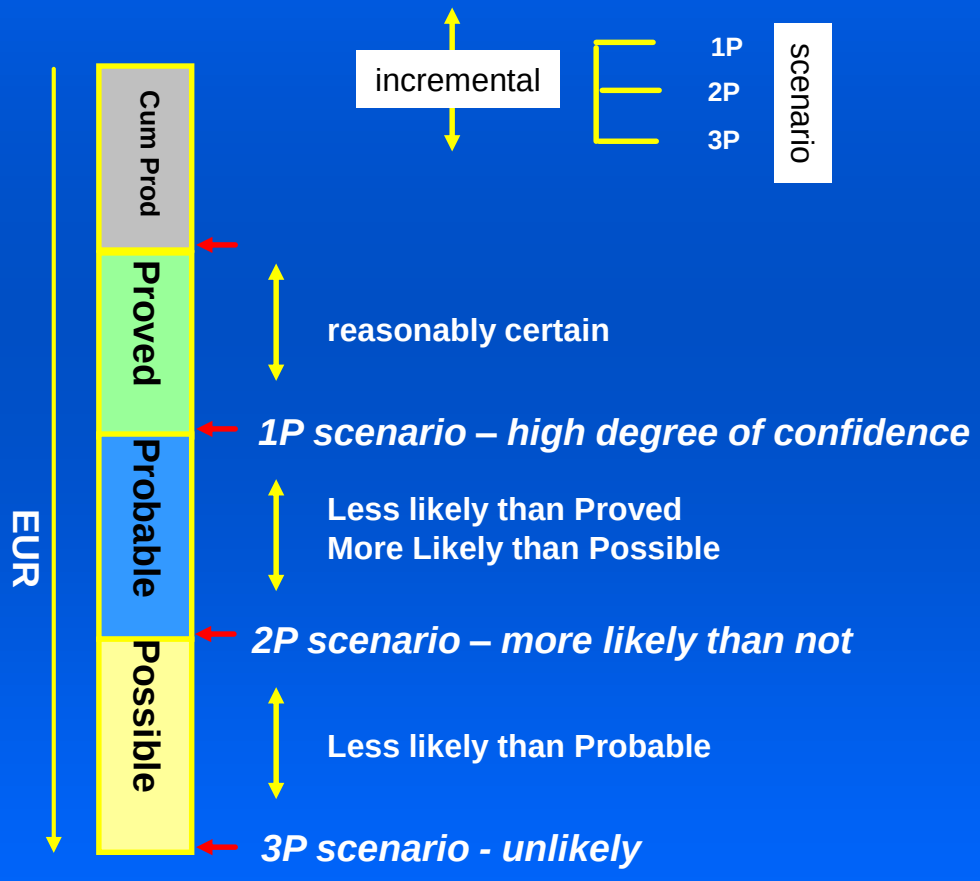
Marginal Economic *(Contingent Resources)*
Sub-Marginal Economic *(Contingent Resources)*

"Reserves" and "Economic" Status may be applied separately or in combination with Project Maturity Sub-classes

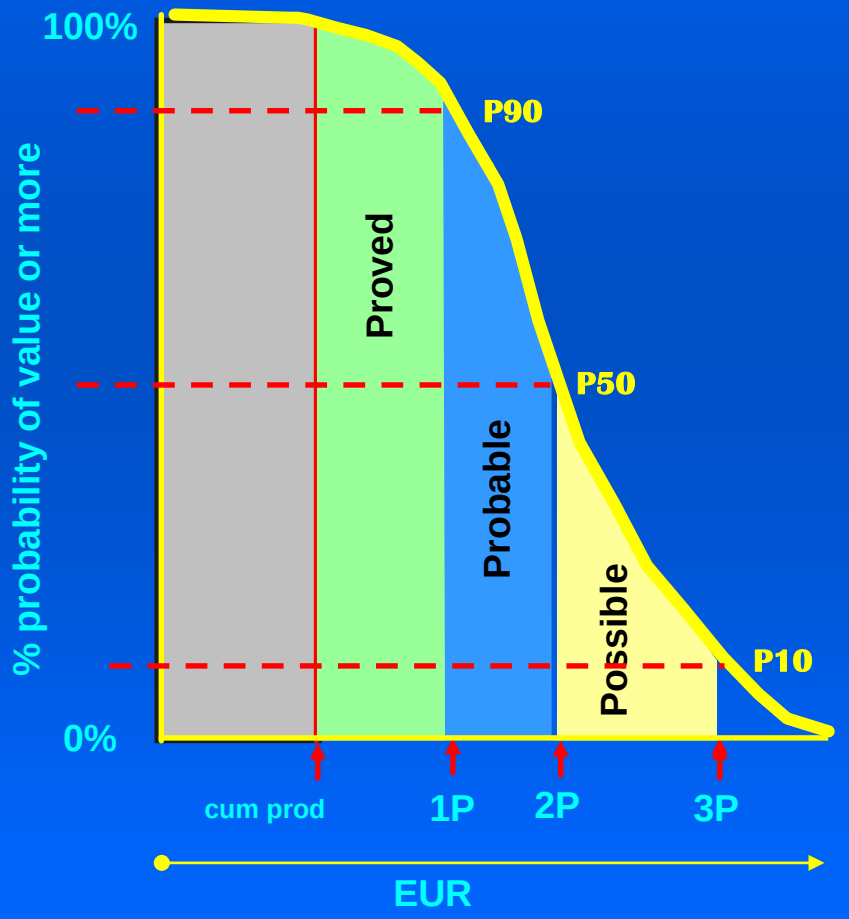
Categorize by Uncertainty

The system accommodates multiple approaches to assessing uncertainty.

Deterministic Methods



Probabilistic Methods

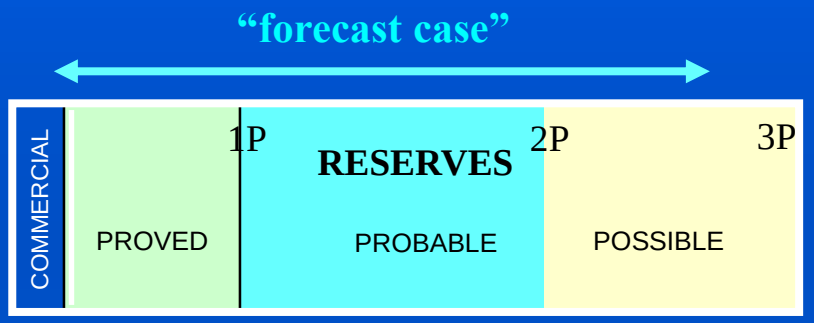


Based on Forecast Conditions

Project decisions are based on the evaluators view of "Forecast Conditions" = those assumed to exist during the project's implementation

Conditions include:

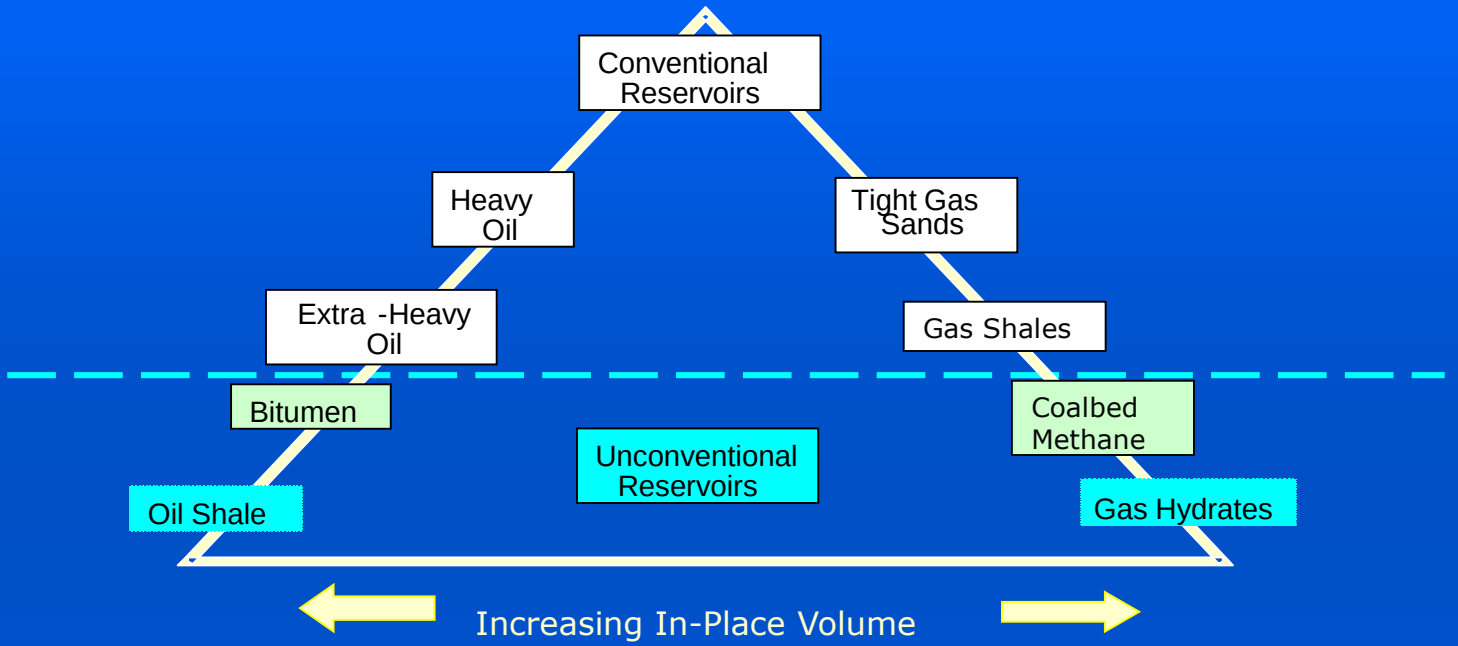
- Prices and costs
- Technology available
- Environmental standard
- Fiscal terms
- Regulatory constraints



Alternate economic scenarios are typically considered in the decision process and, in some cases, to supplement reporting requirements.

For example, one sensitivity case may assume "current conditions" will remain constant throughout the life of the project ("constant case").

Unconventional Resources



➡ *Pervasive over large areas and not significantly affected by current hydrodynamic influences, i.e. buoyancy of petroleum on water!*

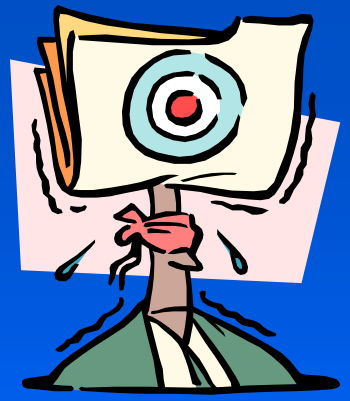
SPE classification still applies (but may require alternative assessment approaches).

PRMS Development and Approval "Process"

Final Approval
March 2007

Submit for SPE board and partner approval

OGRC
Definitions Revision
Project - Phase 1
Sept 2004 – Oct 2006



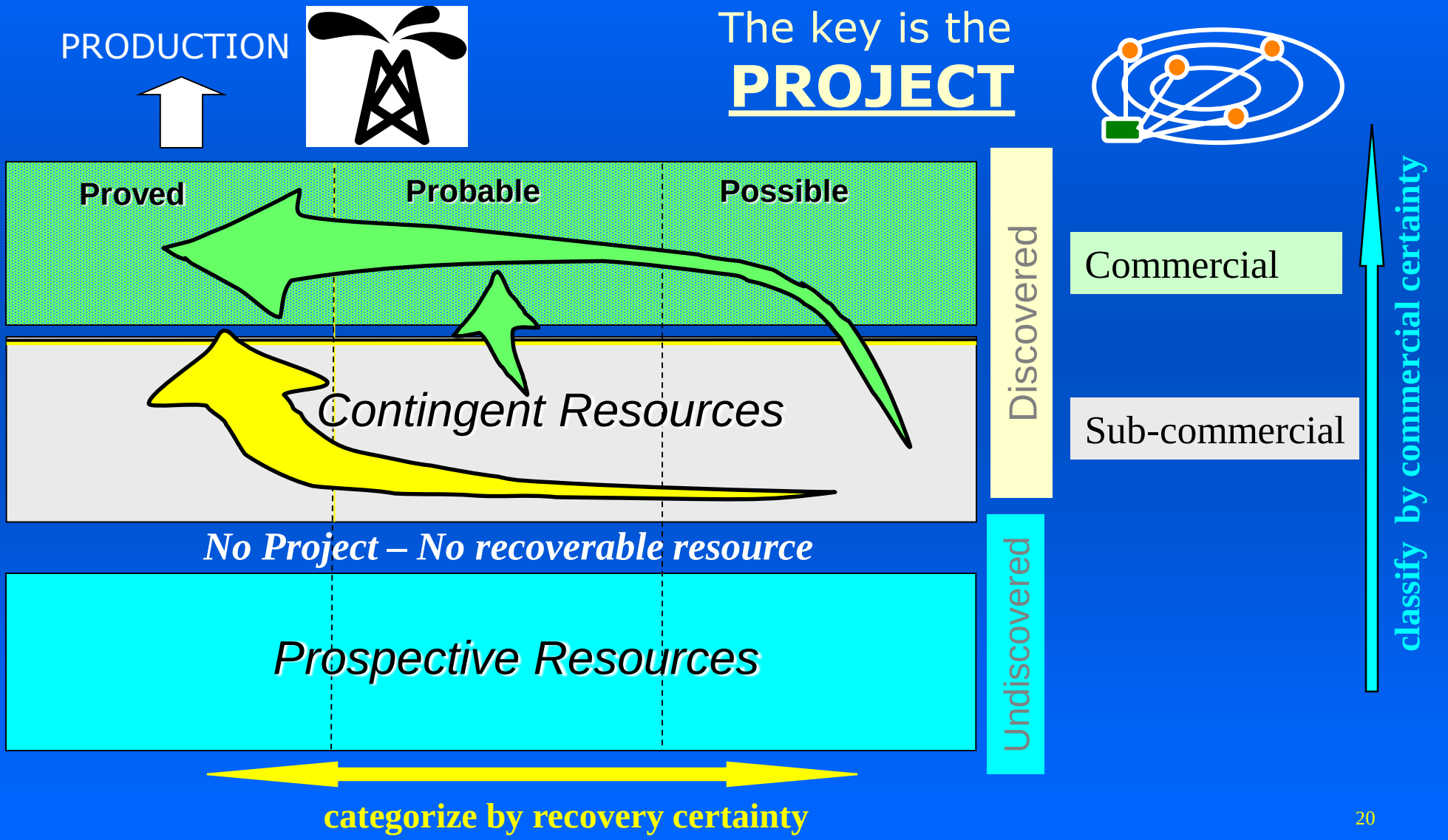
100 Day Industry
Review Period
(30 presentations –
global feedback)

OGRC reviews/incorporates feedback into a final PRMS

Summary of Major Changes in 2007 SPE/WPC/AAPG/SPEE PRMS

Revision	Comment
Combines 4 previous documents into single "Petroleum Resources Management System": 1997 SPE/WPC Petroleum Reserves Guidelines 2000 SPE/WPC/AAPG Petroleum Resources Classification and Definitions 2001 SPE/WPC/AAPG Guidelines for the Evaluation of Petroleum Reserves & Resources 2005 SPE/WPC/AAPG Glossary of Terms	Separate documents combined, abbreviated and clarified
Base case uses forecast conditions but still permits option to use constant conditions	Most companies base decisions on forecast conditions; some regulators require constant conditions for consistent reporting
Recognizes growing importance of unconventional resources	PRMS applies to both conventional and unconventional resources
Low, mid and high categories of Contingent Resources relabeled to 1C, 2C & 3C respectively	Aligns with 1P, 2P & 3P Reserve uncertainty categories but constrained by commerciality barrier(s)
Introduces classification modifiers: - Reserves status of developed and undeveloped can be applied to 1P, 2P & 3P Reserves - Reserves, Contingent Resources & Prospective Resources sub-classified by project maturity - Contingent Resources subdivided into 'marginal economic' & 'sub-marginal economic'	Additional classification modifiers optional but may greatly assist in understanding and tracking reserves and resources

Total Resource System is "Project-Based"



What's Next?

Education Programs (ATW's, JCORET, …)

Implementation Guides, Examples

Collaboration with Other Standards