



Shell Global Solutions

International Standards Workshop

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Panel: Adoption and use of International Standards in petroleum and natural gas industries

Neil Reeve

neil.reeve@shell.com

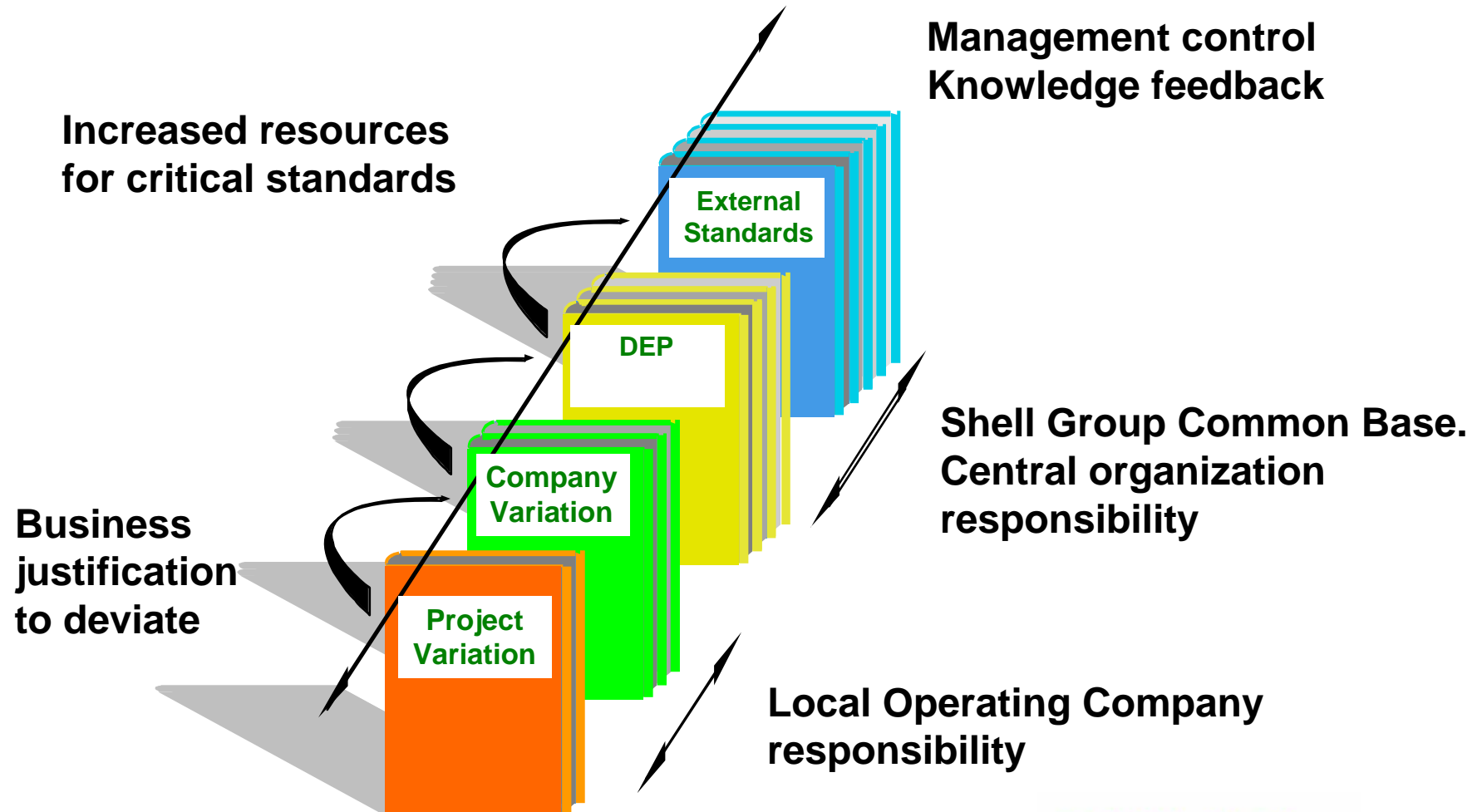
Shell Global Solutions International B.V.



Company Standardization Management

- **Standards Steering Committee:** - E&P, refining, distribution, chemicals
- **Transparent standards structure:**- policy
- **Internal standards:**
 - provision of standards (DEPs);
 - materials standards catalogue (MESc)
- **External standards:**
 - input to external standards
- **Variety control:**
 - type restriction; vendor selection
- **Information technology:**
 - provision of internal and external standards;
 - CD-ROMs and company website

Shell's Transparent Standards Structure



Shell Standardization Policy



- Maximize use of common industry standards (ISO/ IEC if possible)
- Minimize additional company requirements
- Ensure variations justified (technical and commercial)
- Ensure continuous improvement (feedback from users)
- Influence external standards bodies. Participate actively in the technical committees and working groups of key external standards

Benefits are maximized when all companies use the same common industry standards

TECHNICAL SPECIFICATION
**CENTRIFUGAL PUMPS (AMENDMENTS/SUPPLEMENTS
TO ISO 13709)**

DEP 31.29.02.30-Gen.
May 2004

DESIGN AND ENGINEERING PRACTICE



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Conclusions

- Standards are a corporate asset, and not a corporate liability
- Shell will maintain a standards system
- Shell needs and uses International Standards
- Shell participates in developing International Standards

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- **Organizations should develop a standards plan to meet their needs (Identify key standards; manage use of these).**
 - **I advocate taking part in the ISO/TC67; ISO/TC28 and ISO/TC193 process. It is in your organization's commercial interest. It is in your own "personal development" interest.**

Introduction

- **Who needs standards? The world needs standards. Shell uses standards.**
- **By way of example, I will describe Shell's technical standards needs, and what Shell and our industry sector “the petroleum, petrochemical and natural gas industry” are doing about this. I can speak from our experience.**
- **Shell is an international company, trading in an international industry, using international (and national) suppliers under many different regulatory regimes. For our projects and operations, Shell prefers to use **International Standards (ISO, IEC, ITU)**, and is actively supporting this.**
- **The principles are the same whichever standards system is to be used.**

Challenges facing the Oil and Gas Industries

- **Aging workforce**

- Shared burden. Reduced in-house effort. Repository future generations

- **High project load**

- Coherent set. Fit for legal use. Timesaving features. Acceptance and compliance. Feed back learning

- **Community stakeholder emancipation**

- Provide cover for HSE. International Standards reduce risk of liability. Manage HSE; avoid “gold-plating” response

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STANDARDS ARE
A CORPORATE ASSET
NOT A CORPORATE
LIABILITY

Company benefits from standards

Cost Reduction - Increase Business Efficiency

- Simplify design and procurement; Variety Control
- Interchangeability of equipment
- Promote stable and global market

Enhance Technical Integrity

- Safety, Health and protection of the Environment
- Maximise availability, minimise lost revenue

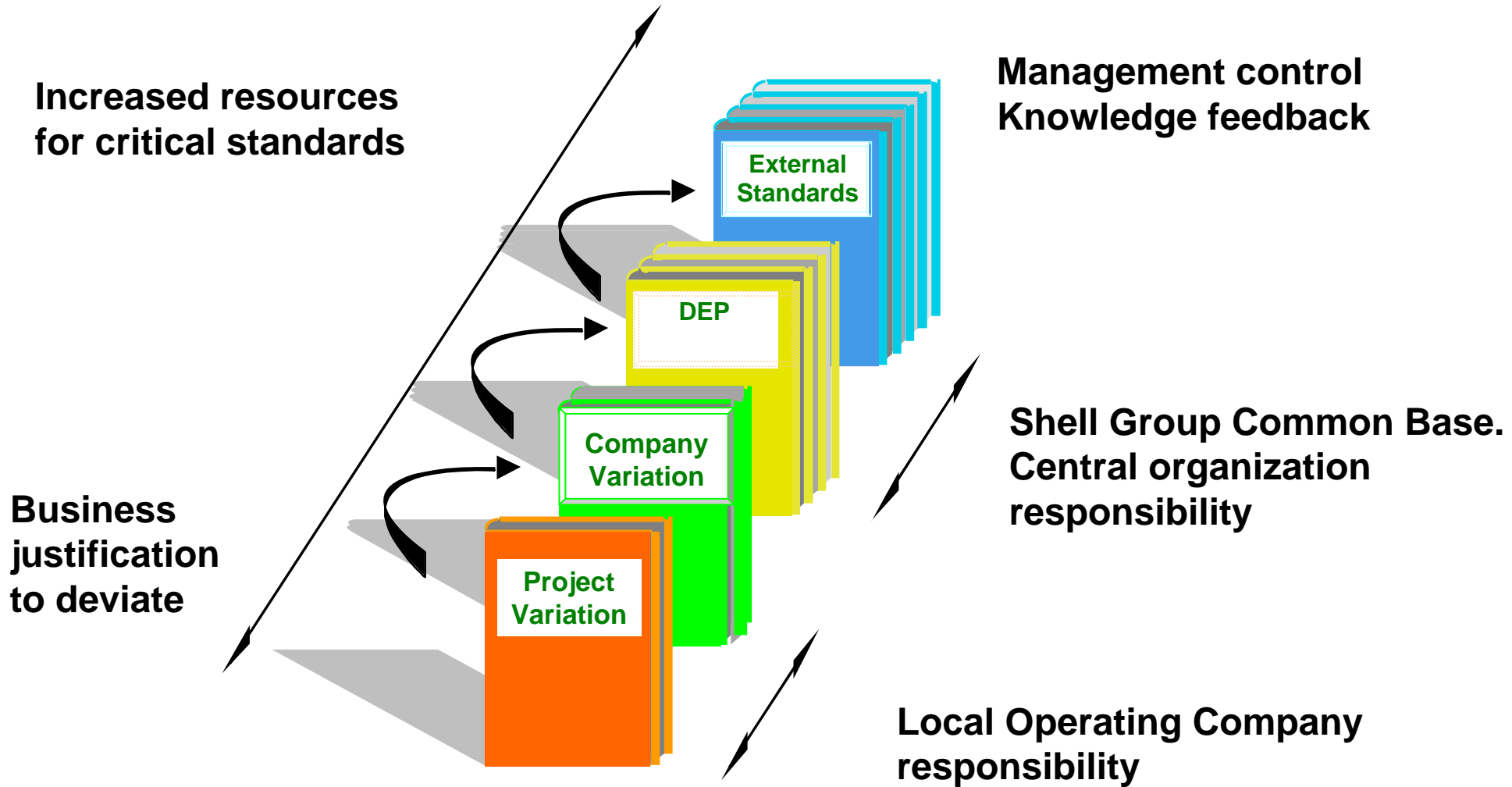
Establish a Common Technology Base

- Technology transfer / Sharing best practice / Remove barriers to trade

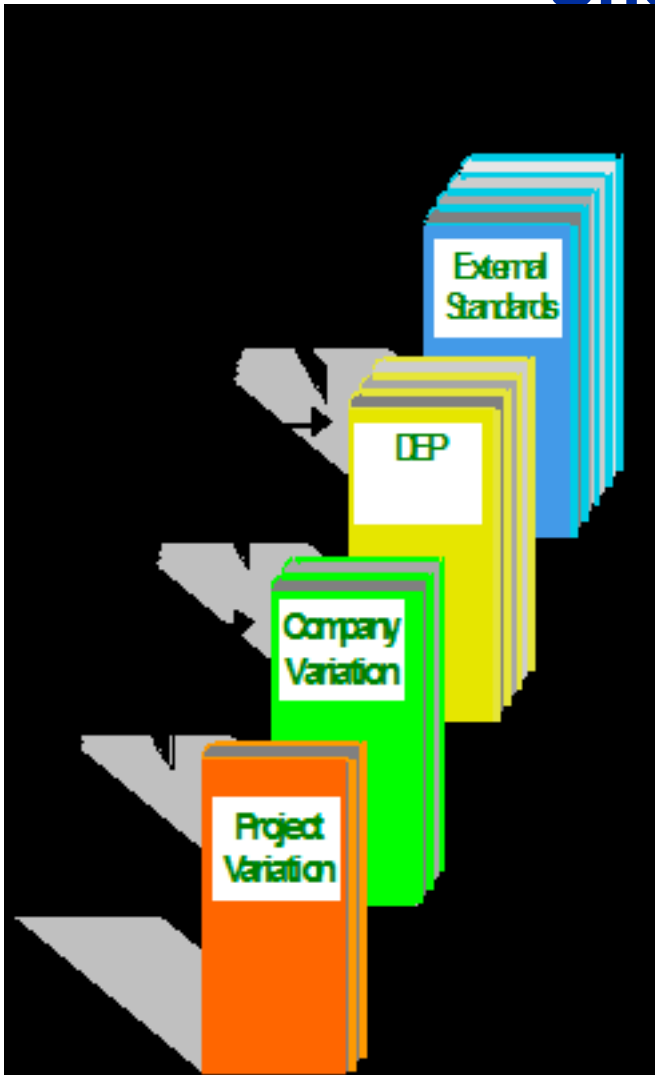
Support Legislation where linked

- Safety and Environmental Regulations (e.g. Process Safety Management, US)
- Procurement Legislation (e.g. European Directives)
- Essential Requirements (e.g. 'New Approach' European Directives)

Shell's Transparent Standards Structure



Shell Standardization Policy



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ISO Standards for use in the oil & gas industry

ISO 10418 Basic surface safety systems
ISO 10423 Wellhead & christmas tree equipment
ISO 13533 Drillthrough equipment (BOP)
ISO 13534 Hoisting equipment - core/maint
ISO 13535 Hoisting equipment - specification
ISO 13626 Drilling and well-servicing structures
ISO 13702 Control & mitigation of fire & explosion
ISO 13703 Offshore piping systems
ISO 14224 Reliability/maintenance data (Rev)
ISO 14692 OBP piping, Parts 1-4
ISO 14693 Drilling equipment

ISO 15156-1 Selection of cracking resistant materials for use in H₂S environments
ISO 15156-2 Cracking-resistant steels and cast irons for use in H₂S environments
ISO 15156-3 Cracking-resistant alloys for use in H₂S environments
ISO 15138 HWAC offshore
ISO 15544 Emergency response
ISO 15653 Life cycle costing, Parts 1-3
ISO 17776 Assessment of hazardous situations
ISO/TS 29001 Sector-specific quality management system

ISO 13819-2 Fixed steel offshore structures
ISO 19900 Offshore structures - general requirements
ISO 19901-1 Metocean design and operating considerations (New)
ISO 19901-2 Seismic design
ISO 19901-4 Geotechnical and foundation design
ISO 19901-5 Weight control
ISO 19903 Fixed concrete offshore structures (New)
ISO 19904.1 Floating offshore structures (New)

ISO 13629-1 Subsea production systems (Rev)
ISO 13629-2 Subsea flexible pipe systems (Rev)
ISO 13629-3 Subsea TH pumpdown systems
ISO 13629-4 Subsea wellhead & christmas trees
ISO 13629-5 Subsea control umbilicals

ISO 13628-6 Subsea production controls (Rev)
ISO 13628-7 Completion/workover riser system (New)
ISO 13628-8 EOV interfaces
ISO 13628-9 EOT intervention systems
ISO 13628-10 Bonded flexible pipe (New)
ISO 13628-11 Flexible pipe systems for valves and marine applications (New)

ISO 10427-1 Flow spring casing centralizers
ISO 10427-2 Centralizer placement and stop-collar testing
ISO 10427-3 Performance testing of cement float equipment
ISO 10432 Subsurface safety valves
ISO 11960 Casing and tubing
ISO 11961 Drillpipe
ISO 13501 Drilling fluids (Rev)
ISO 13501 Drilling fluids - processing systems evaluation (New)

ISO 12503-1 Measurement of viscous properties of completion fluids
ISO 12503-2 Measurement of properties of proppants (New)
ISO 12503-3 Testing of heavy brines (New)
ISO 12503-4 Measurement of stimulation & gravelpack fluid leakoff (New)
ISO 12503-5 Measurement of long-term conductivity of proppants (New)
ISO 12678 Thread compounds
ISO 12679 Connection testing
ISO 12680 CRA wearless tubes for casing and tubing
ISO 14310 Packers and bridge plugs
ISO 15136-1 Progressing cavity pump systems
ISO 15136-2 Progressing cavity pump systems - drive heads (New)
ISO 15463 Field inspection of new casing, tubing and plain end drill pipe
ISO 15546 Aluminium drillpipe
ISO 16070 Lock mandrels and landing nipples (Rev)
ISO 17078-1 Side-pocket mandrels

ISO 3977-5 Gas turbines - procurement
ISO 10434 Bolted bonnet steel gate valves
ISO 10437 Special-purpose steam turbines
ISO 10438 Lubrication, shaft-sealing and oil-control systems, Parts 1-4
ISO 10439 Centrifugal compressors
ISO 10440-1 Rotary PD process compressors (Rev)
ISO 10440-2 Rotary PD packaged air compressors
ISO 10441 Flexible couplings - special
ISO 10442 Integrally geared air compressors
ISO 13631 Reciprocating gas compressors
ISO 13691 High speed enclosed gear units
ISO 13704 Calculation heat tube thickness
ISO 13705 Fixed heaters for general service (Rev)

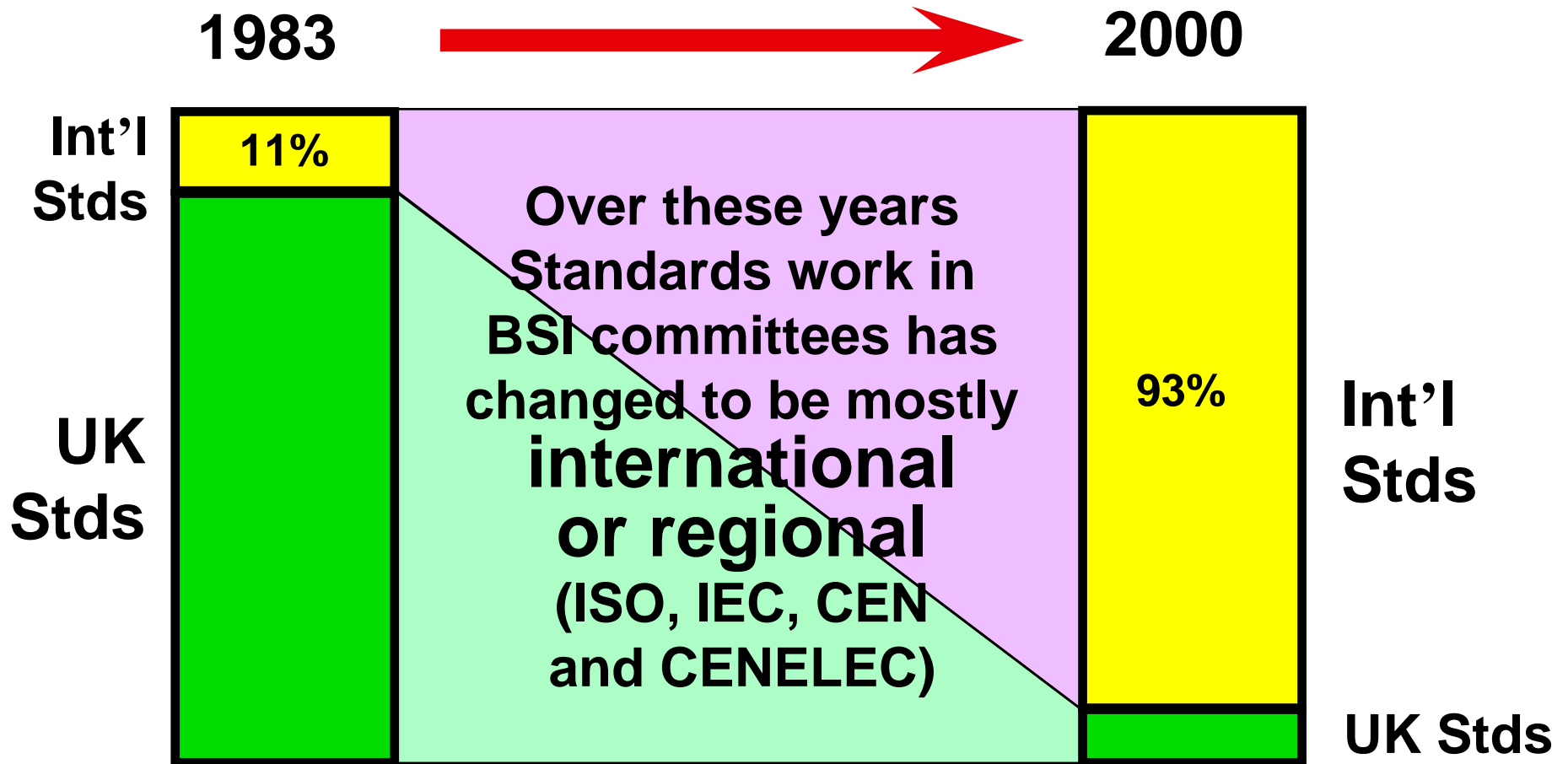
ISO 13706 Air-cooled heat exchangers (Rev)
ISO 13707 Reciprocating compressors
ISO 13709 Centrifugal pumps
ISO 13710 Reciprocating positive displacement pumps
ISO 14691 Flexible couplings - general
ISO 15547-1 Plate & frame type heat exchangers (Rev)
ISO 15547-2 Brazed aluminium platefin type heat exchangers (New)
ISO 15649 Piping
ISO 15761 Steel valves DN 100 and smaller
ISO 16812 Shell & tube heat exchangers (Rev)
ISO 17292 Metal ball valves
ISO 21049 Centrifugal and rotary pumps shaft sealing
ISO 22251 Pressure-relieving and depressuring systems (New)
ISO/TR 24817 Composite repair of pipework (New)

ISO 3183 Sinepipe, Parts 1-3
ISO 13623 Pipeline transportation systems
ISO 13847 Pipeline welding
ISO 14313 Pipeline valves
ISO 14723 Subsea pipeline valves
ISO 15599-1 Cathodic protection for on-land pipelines
ISO 15599-2 Cathodic protection for offshore pipelines
ISO 15599-3 Pipeline induction bends
ISO 15599-4 Pipeline fittings
ISO 15599-5 Pipeline flanges
ISO 15599-6 Pipeline reliability-based limit state design (New)
ISO 21329 Test procedures for pipeline mechanical connectors



Standards in **brown** issued in 2005
 Standards in **green** are a priority for 2006 issue
 Many of these standards are adopted by API, CEN and other recognised standards bodies

Pattern of change - Work in BSI



Note: Typical for all European Standards Bodies

Global standards used locally worldwide

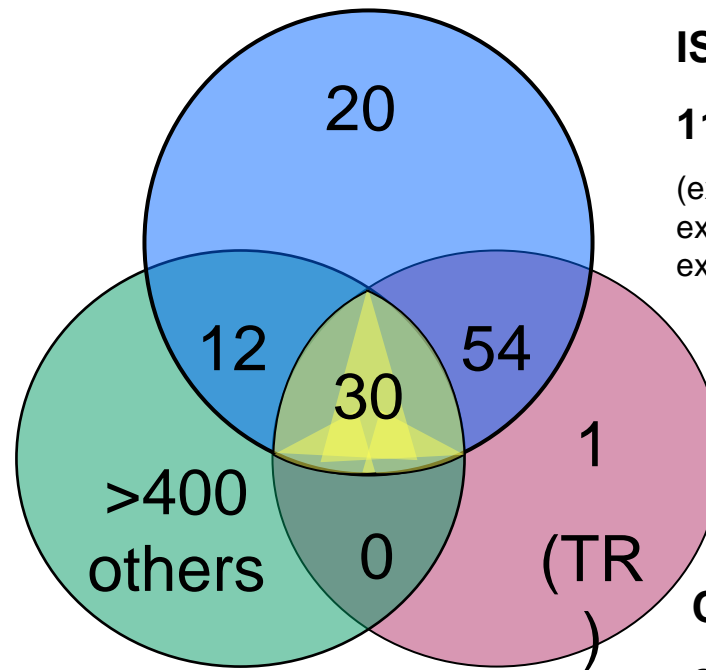
ISO-API-CEN

API

Upstream & Refining

42 cobranded published;

(excl. NACE MR0175/ISO 15156;
 excl API Spec 9A/ISO 10425 from ISO/TC105
 excl ISO 10497 from ISO/TC 153;
 Excl 4 MPMS adoptions from ISO/TC28)



ISO/TC67

116 published

(excl. ISO 10425 from ISO/TC105;
 excl ISO 10497 from ISO/TC 153;
 excl. so-called “fast-track” standards)

CEN/TC12

85 published

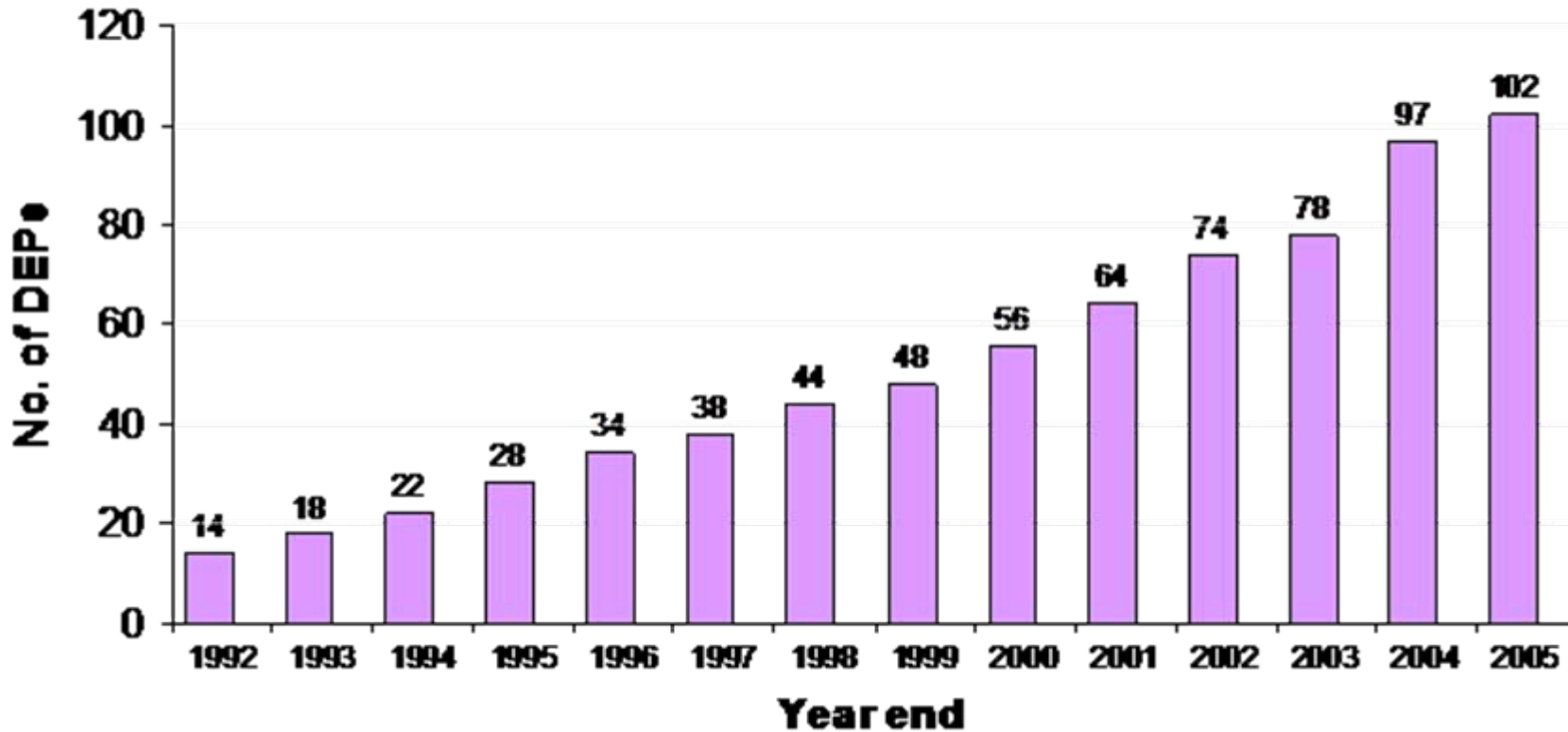
(incl. EN ISO 10434, EN ISO 15761 and
 EN ISO 17292 from CEN/TC69; and incl.
 TR for use of ASME B31.1)

Note: 33 of the other >400 API Standards are
 linked with 36 of the other 74 ISO/TC67 Standards

Trend towards transparency - Benefit of external standards efforts

(Total number of DEPs = 312)

Number of DEPs based on external standards

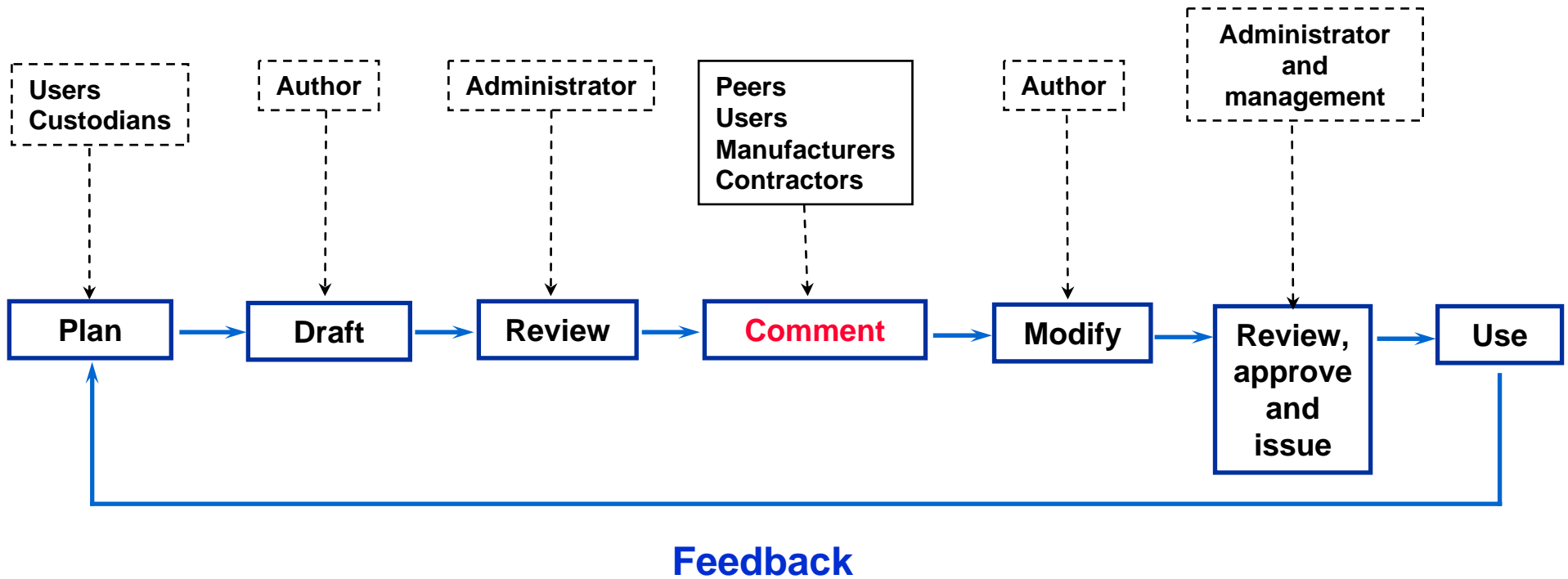


ISO/IEC references in Shell documents

	<u>1990</u>	<u>2003</u>
ISO	30	550
IEC	100	250
	130	800

Note: Step change in usage of ISO/IEC documents

DEP making process



DEP & MESOC system contents

Subject Category	No of DEPs
Miscellaneous Engineering Subjects and Indices	26
Mechanical Engineering	
General	13
General equipment/noise/safety relief systems	11
Boilers/furnaces	4
Heat exchangers	7
Vessels/columns/reactors	10
Rotating equipment	28
Piping and pipelines	44
Construction materials	4
Welding	3
Maintenance and inspection	6
Offshore applications	17
Instrument Engineering and Telecommunications	34
Electrical Engineering	20
Civil Engineering	21
Surface Protection	23
Safety and fire fighting	8
Drilling and production	24
Total number of DEPs	303



MESOC covers most of the piping class items, such as pipes, valves, flanges, fittings, gaskets, level gauges, meterruns, Y-type strainers, thermowells, etc.

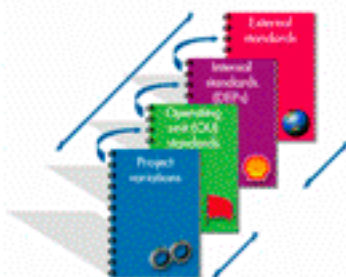
Standards

welcome

Global standards used locally worldwide

Within the Shell Group we use standards for a variety of reasons, including enhancing technical integrity, underpinning HSE policy, transferring knowledge, complying with legislation and, most importantly, in order to conduct our business efficiently and cost effectively.

There is a Group guideline for realising the benefits of applying standards to our operations. This includes:



- Maximising the use of common industry standards;
- Minimising the need for additional company requirements;
- Ensuring that any variations are justified;
- Ensuring continuous improvement of applied standards;
- Influencing external standards bodies.

Shell's application of standards worldwide

The transparent standards structure used within the Shell Group is illustrated above. This structure reflects the Group's decentralised organisation and recognises that OU variations and project variations to DEPs both exist and are required.

The main elements of the transparent structure for a particular standard are:

- The **external standard** (where available);
- The **DEPs**, which supplement the external standards in order to reflect the minimum, additional Group requirements;
- **OU variations**, which supplement the DEPs to reflect the regional and local requirements of that OU;
- **Project variations**, which supplement the DEPs (whether amended or not by the OU variation) in order to reflect the specific requirements of any project.

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Access External Standards by clicking on the Book:



Access the DEPs by clicking on the Book:



Conclusions

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Thank You

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