

The background of the slide features a light blue world map with a semi-transparent globe in the center. The globe has a grid of latitude and longitude lines. Overlaid on the globe is a red rounded rectangle containing the text "risk management and assessment for business" in a black italicized serif font.

risk management and assessment for business

Bridging the HSE Risk Management Competence Gap

Presentation to IADC Critical Issues Asia Pacific Conference

Kuala Lumpur, 23rd November 2011

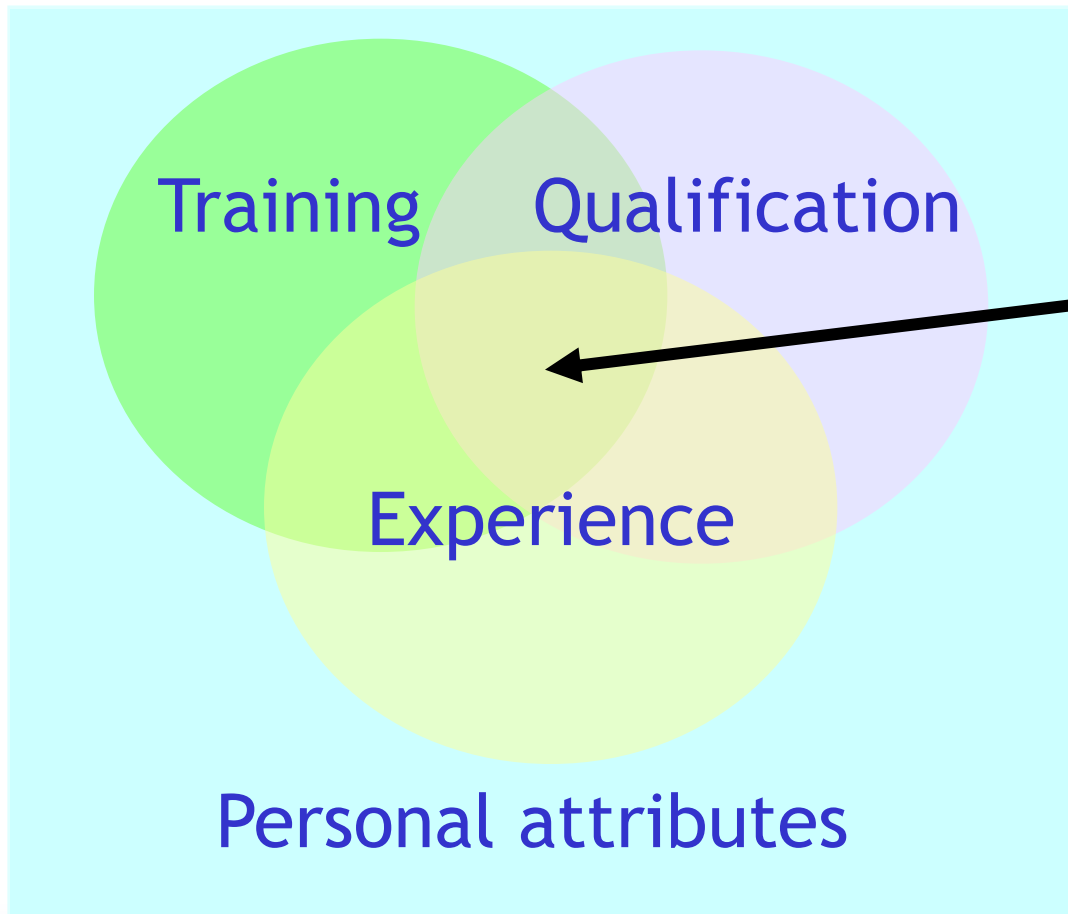
By Gareth Book, Director, Risktec Solutions Ltd

Purpose of presentation

- **What is the competence gap? Why does it exist?**
- **How to bridge the gap?**
 1. Training
 2. Qualifications
 3. Drilling-specific issues
- **Case study**
 - Building blocks
 - Modular programme
 - Benefits

What is the competence gap?

Competence may be defined as:



HSE risk
management
skills & knowledge
specific to drilling
industry & job role

The competence gap arises when there is a mismatch between an individual's knowledge and skills and the judgements they must make as part of their role

The role of a competent HSE risk management professional

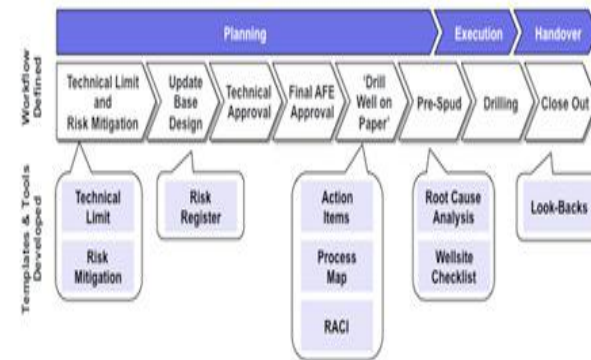
- To confidently provide advice to help the organisation make the right risk-based decisions at the right time
- To keep an open mind and see beyond pre-conceptions
- To apply appropriate risk management techniques and accurately interpret results
- To draw on their own judgement and apply common sense

But what judgements are required?

Spectrum of risk management roles and judgements



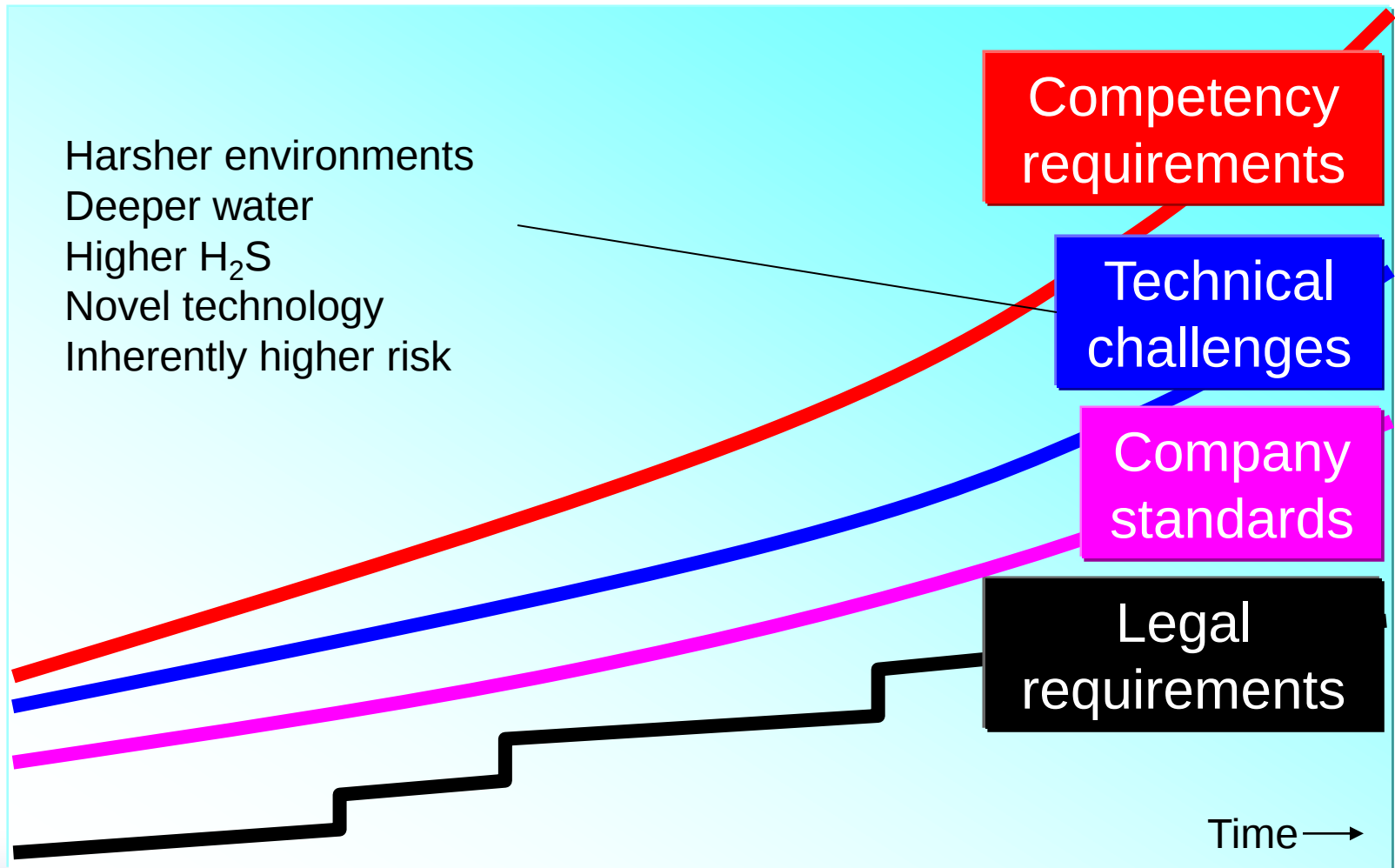
IMPROVED DRILLING PLANNING AND EXECUTION PROCESSES



Potential for societal impact

Risk management professionals can be called upon to make or support an enormous variety of judgements

And things are not getting easier



And demographics are not helping

- Generational gap (low influx in 80s & 90s)
- Ageing workforce: >50% over 45

*"The industry is experiencing a **shortage of skilled personnel** for both construction and operations with a large section of the existing **workforce approaching retirement**.*

Both issues need to be addressed, as a matter of urgency, if the industry is to meet rising demand in a timely and effective manner in the future".

OPEC Secretary General

Getting it wrong

Poor HSE risk assessment practices by practitioners can result in:

- Unidentified, unmitigated or overstated HSE risks
- Less than optimum allocation of resources

Poor awareness of HSE risk management by managers can result in:

- Ineffective leadership effecting HSE culture
- Lack of assurance that HSE risks are managed



But training & education is often not very effective

■ **Industry training**

- Off-the-shelf training may not fit reality
- One-off hit with no assessment of learning
- Spoon-feeding information

■ **Academic study**

- Can be too abstract or theoretical
- Too far removed from industry-specific day-to-day realities
- Focus on emerging research rather than current good practice in industry

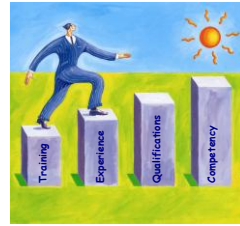
So what to do?

- Attract and retain new talent
- Retain ageing workforce
- Transfer knowledge from ageing workforce

Effort mainly focussed on petroleum and geological workers to date.

What can drilling industry learn from this effort and other major hazard industries facing identical issues, e.g. nuclear?

Three simple steps to bridging the competence gap



1. Tailor the training (one-size does not fit all)

- Address real risks relevant to drilling and individuals' job roles
- Practical, hands-on exercises based on real-life drilling case studies

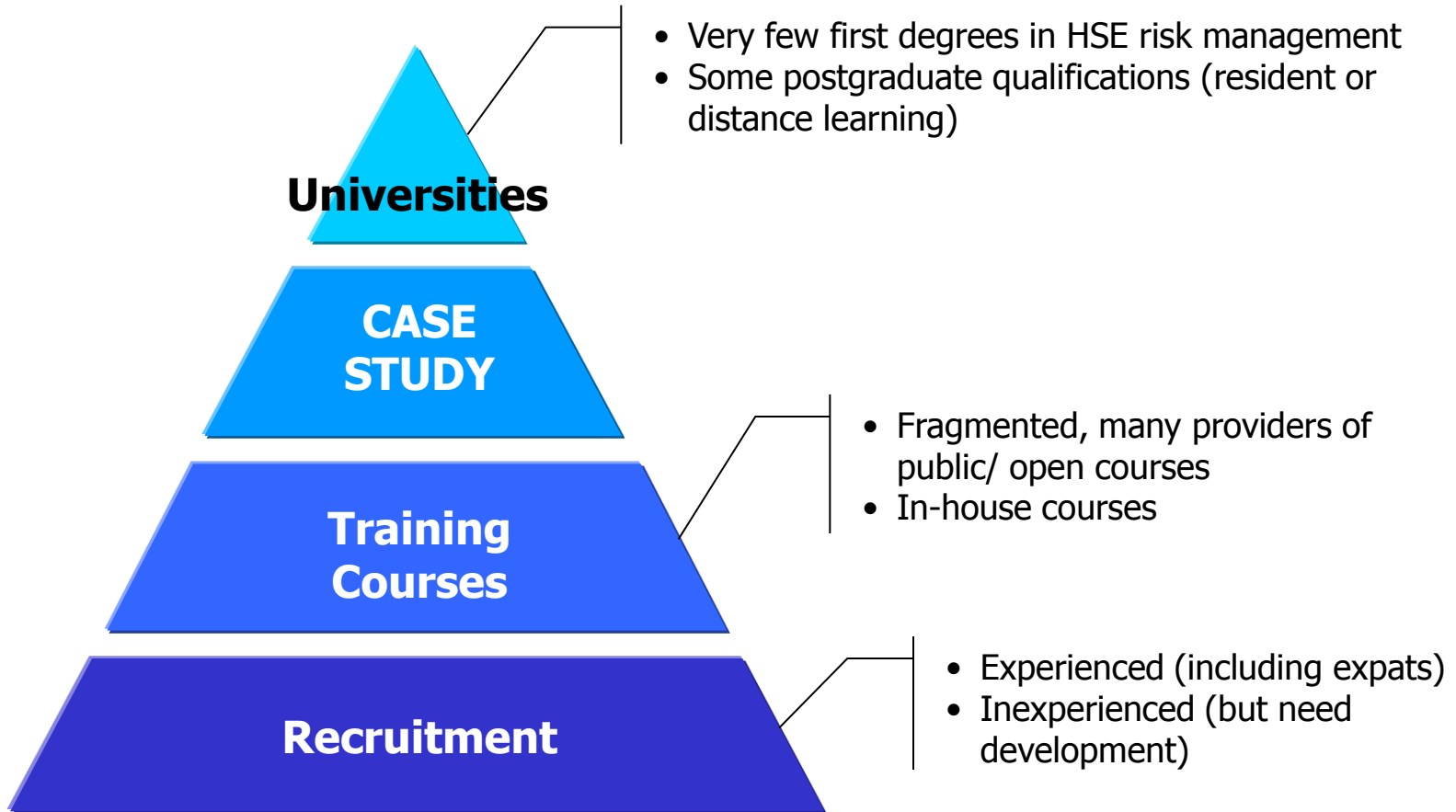
2. Obtain qualification (it can prove important)

- Requires assessment of performance, which encourages active participation and gains measurable skills
- Recognised qualification demonstrates investment in employees and contributes to professional development

3. Understand drilling-specific issues

- At least a working knowledge of technical and regulatory issues facing drilling industry
- Best practice from other industries

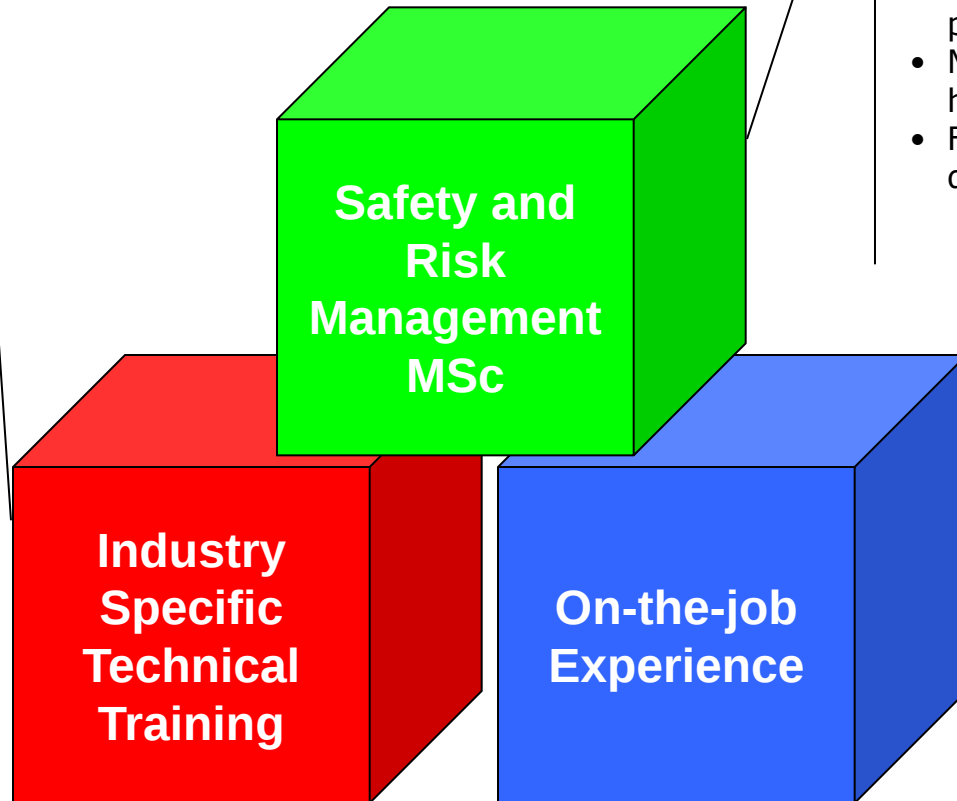
Where is such HSE risk management training & education available?



Case study – the building blocks

Foundation modules

- Principles & technical issues
- Legal requirements and regulatory aspects



Modular training programme

- HSE risk management principles & techniques
- Mix of lectures & practical hands-on exercises
- Formal assessment to MSc qualification

Work experience at facilities

- Secondments
- Shadow experienced professionals
- Interact with range of industry personnel

Postgraduate Certificate

Core Modules

Introduction to
Practical Risk Mgmt

Hazard Identification

Hazard Assessment

Risk Reduction & ALARP

Health, Safety & Environ-
ment (HSE) Mgmt Systems

Optional Modules Choose one

Bowtie Analysis

Risk Control Systems &
Performance

Safety/HSE Cases

Competency Mgmt,
Culture & Behaviour

Postgraduate Diploma

Choose six

Identification and Assessment

HAZOP Study

Physical Effects
Modelling

Bowtie Analysis

Human Factors in
Design & Operations

Safety Integrity Levels
(SIL)

Oil and Gas Lifecycle
Hazards & Risks

Availability, Reliability and
Maintainability (ARM)

Nuclear Lifecycle
Hazards & Risks

Fault Tree & Event
Tree Analysis

Rail Industry Hazards &
Risks

Management Systems and Implementation

Safety/HSE Cases

Accident Investigation
& Analysis

Emergency Response
Planning

Workplace Safety

Assurance and Improvement

Performance Monitoring,
Auditing & Mgmt Review

Competency Mgmt,
Culture & Behaviour

Risk-Based Decision Making

Risk Control Systems &
Performance

QRA for Oil & Gas &
Process Industries

Oil & Gas & Process
Industry Risk Studies

PSA in Nuclear
Industries

Rail Safety Analysis

Business Continuity
Management

Research Methods

Master of Science

Project



Tailored Diploma in Management

Foundation Courses

Regulatory and Legal Basis

Principles of Regulatory Systems and
Processes

Implementation of a Regulatory
Regime

Client-Specific Regulatory Issues
(to be delivered by Client)

Nuclear Theory

Nuclear Reactor Basics

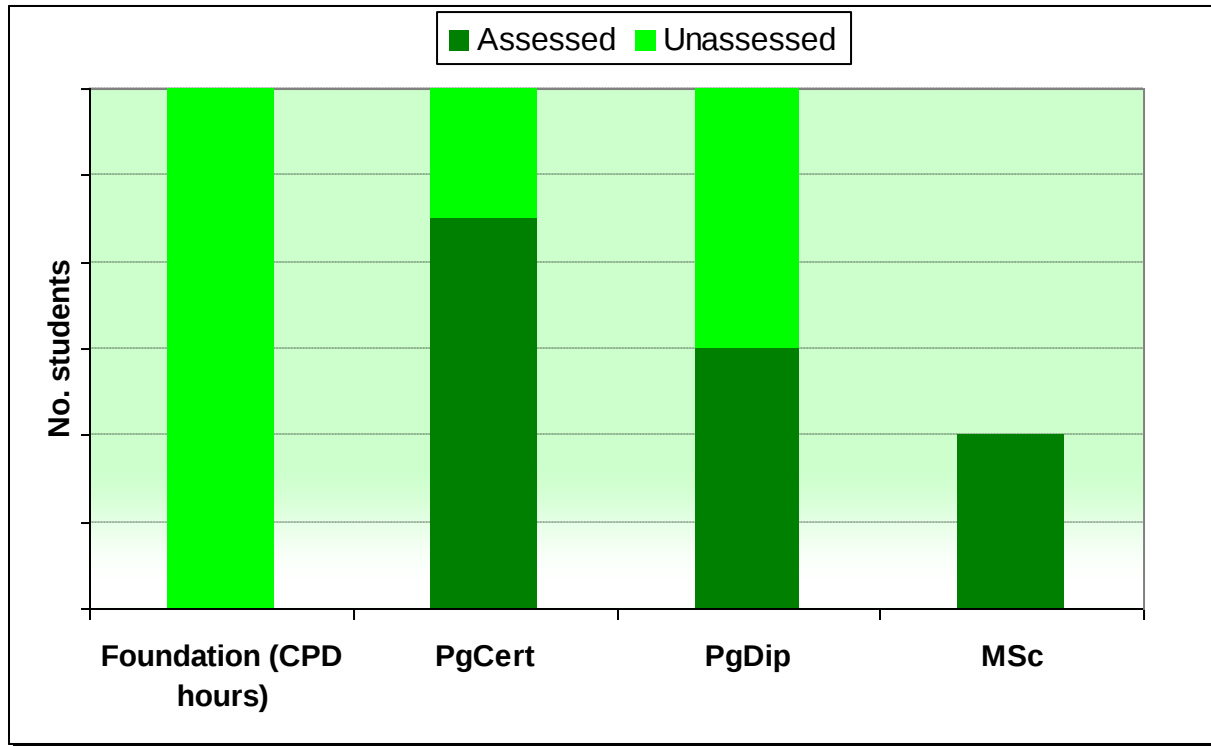
Nuclear Reactor Safety Principles

Practical Site & Industry Experience

Secondments

Industry networking

Case study – not everyone needs or desires a qualification



All students attend all modules but a reducing proportion complete the full MSc programme

Case study – advantages of assessment

- **Tests learning outcomes and helps monitor progress of student**
 - feedback to student & line manager of areas to focus on
- **Requires research beyond module content**
- **Demonstrates ability to critically review and analyse, and apply judgement**
- **Assessment questions:**
 - relevant to job role
 - output benefits company

Case study – key benefits of structured training programme



■ Company

- More skilled resource with formal qualifications, and greater staff retention
- Relevant learning, by tailoring case studies and methods
- Up-to-date topics delivered by approved risk practitioners
- Entirely flexible, modular approach allows integration with company existing training & development programmes

■ Student

- Receives formal qualification from recognised institution
- Demonstrates learning rather than just attendance
- Learning is specific, with case studies directly related to place of work
- Pathways through programmes tailored to individual needs

Summary: bridging the HSE risk management competence gap

- HSE risk management is relatively new compared to other professions
- Focus on providing new recruits with knowledge and skills to deal with technological challenges ahead
- Approach to training & education:
 1. Practical, case study based, relevant
 2. Assess learning
 3. Drilling-specific issues

THANK YOU