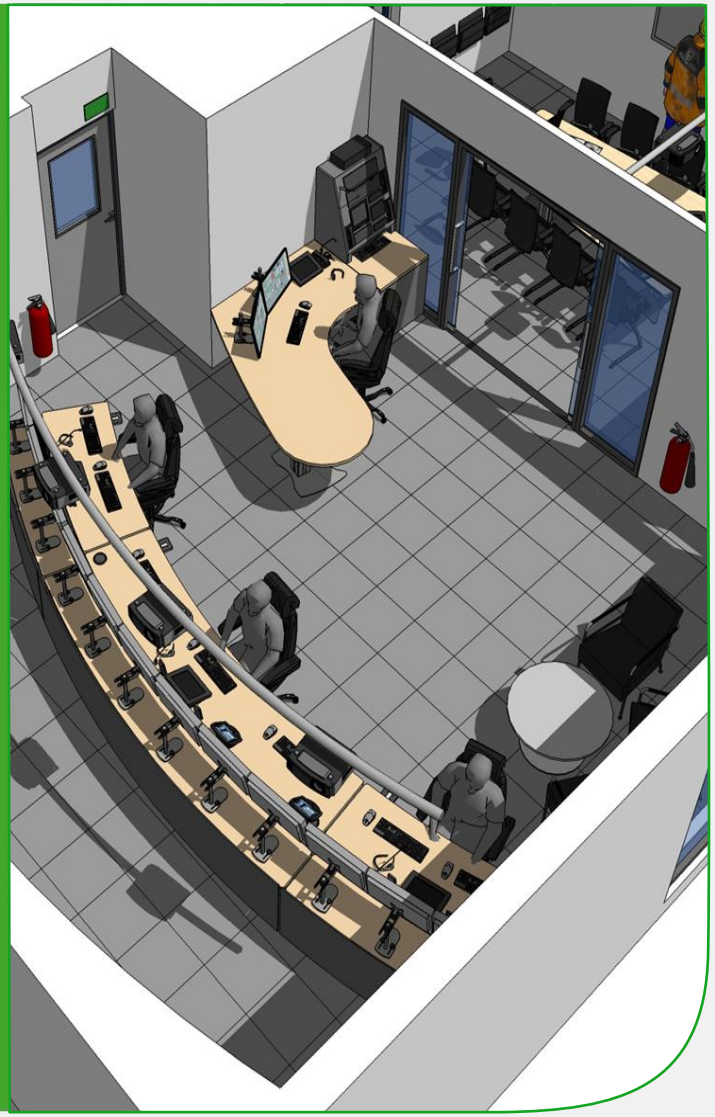
Risk reduction by design

NTNU Course:

”An Introduction to Human Factors in the Oil & Gas Industry”

Developed for the HFC Forum

October 2013



Agenda

- Goals / Scope
- Syllabus
- Theory and practice
- Course assignment
- Challenges
- Reading material
- Practical

Course Goal: What we want to avoid…

Course Goals and Learning Outcomes

Course Goal

- The aim of the course is to provide ***an introduction and overview*** of human factors approaches, methods and techniques that can be applied in the Norwegian oil and gas industry for the control room/systems design. Greenfield and Brownfield. The framework for the course is the ISO 11064 standard.

Scope

- Norwegian oil and gas industry for ***control room/systems*** design. Includes cabins, systems and Integrated Operations.
- Norwegian ***PSA regulations*** and ***NORSOK*** standards apply.
- The framework for the course is the ***ISO 11064*** standard.

Goals/learning outcome

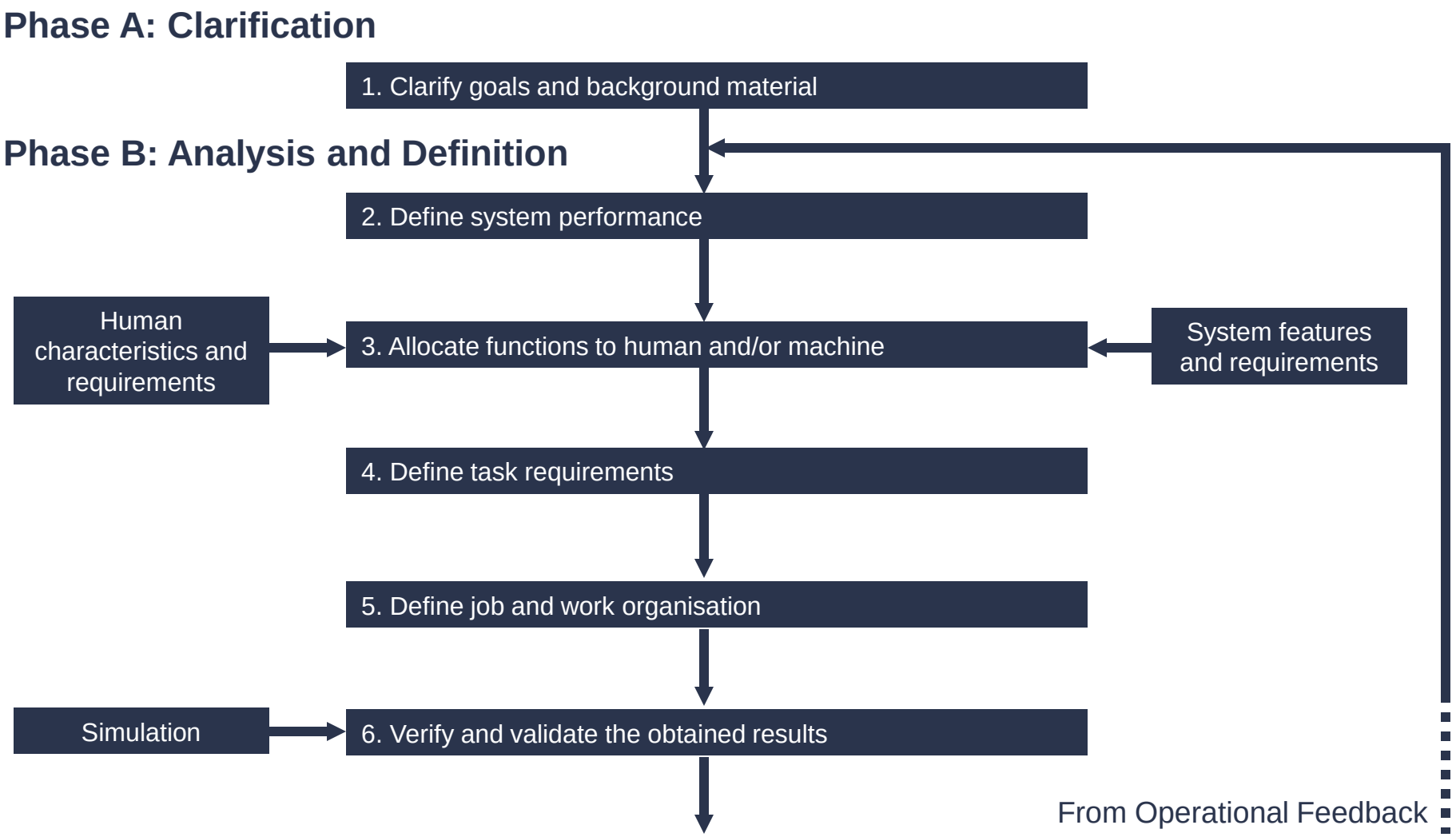
Target group

- Professionals in the oil and gas industry in Norway - engineers, equipment/systems designers, interface designers, psychologists, social scientists, ergonomists.
- "***Open minded***" to new disciplines, approaches, methods and techniques.
- Attend all lectures (50/60 lectures) + complete assignment (ca 10 days)

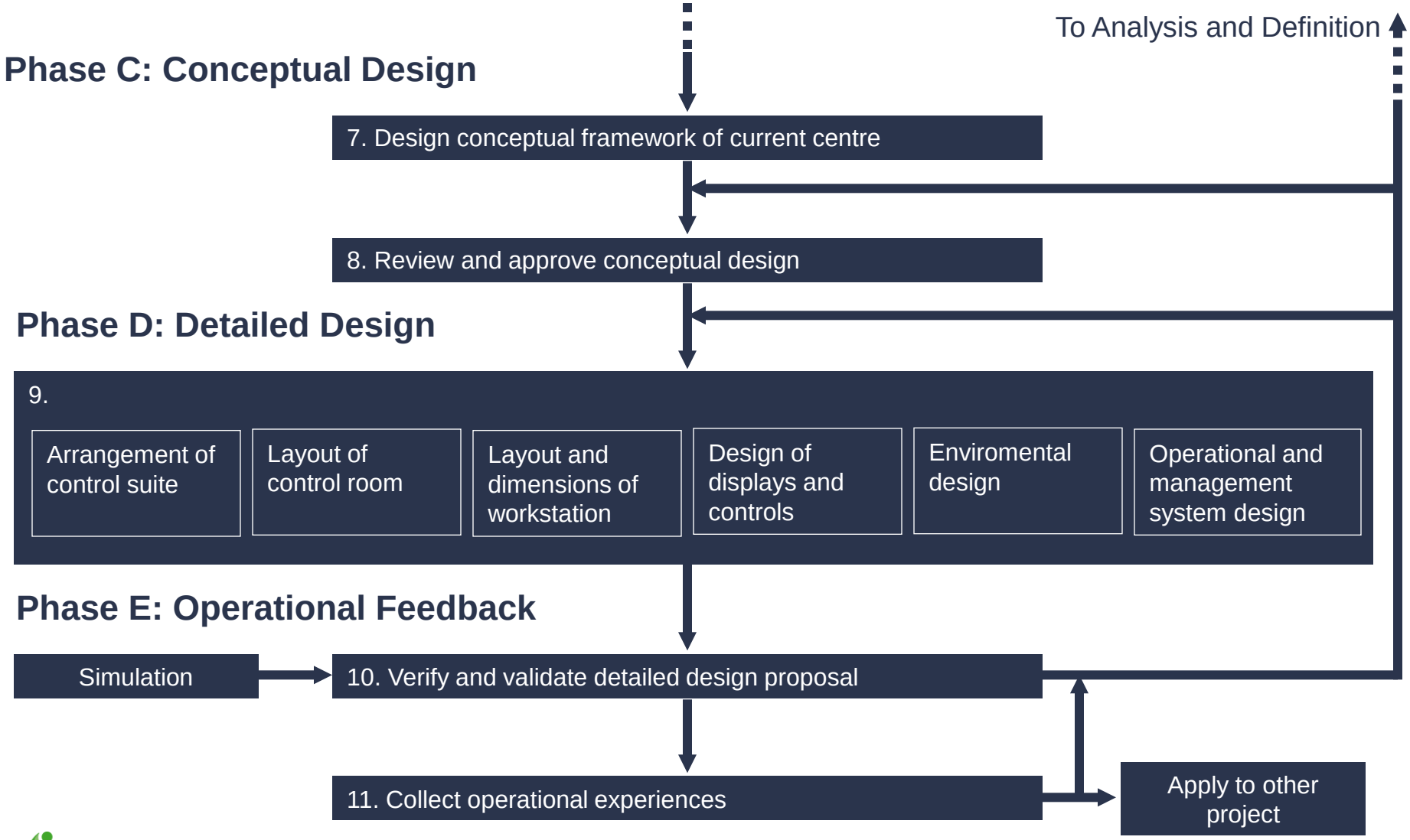
Learning Outcomes

- Working knowledge of what human factors is and the challenges when applying HF to control room/system design in the Norwegian oil and gas industry.
- An overview of the different human factors approaches, methods and techniques and where these can be applied in the ISO 11064 design process (CCR).

Framework: Design Process: ISO 11064 (1 of 2)



Framework: Design process: ISO 11064 (2 of 2)



HF Approach – Typical Syllabus

- **Day One** Introduction to Human Factors, PSA Regs, ISO 11064
- **Day Two** Clarify Goals and Overview of Analyses
- **Day Three** Overview of Analyses, Preparation and Assignment

- **Day Four** Perception and Information Processing
- **Day Five** Workstation and Control Room Design
- **Day Six** Interaction Design and Display Design
- **Day Seven** Organisation, Training and Procedures

- **Day Eight** Team work / Visit to site
- **Day Nine** Verification and Validation incl CRIOP
- **Day Ten** Human Error and Summary

Theory and Practice

- Classroom exercises
- Practical exercises
- Visit to Control Room / IO

Course Assignment

- Demonstrate ability to *apply* HF approach to Norwegian offshore oil and gas industry challenges. Use of methods, literature and knowledge
- Can relate to own work
- Wide range of assignments
- Support from lecturer
- 10 days work
- Formalities described

Challenges

- Different background / interests
- ”I want more info on IO”
- ”I want less info on IO”
- More theory vs. less theory
- I know all about HMI, do I need to attend the HMI module?
- Written course assignment – first time in 25 years…
- I just wanted to know the character size on the screen
- No time is a good time for everyone

Course Advantages

- Formal part of Masters / PhD at NTNU
- 15 Study points, NTNU
- Networking
- Understanding of human factors impact on individuals, companies and the industry
- Less than 5% drop out
- Positive written feedback

How can you contribute?

- Spread infomation about course
- Propose project assignments
- Provide facilities for demonstration

HF Approach – Reading Material

Reading list: Obligatory

- Wickens, Lee, Lui and Gorden-Becker, 2003. Introduction to Human Factors Engineering, Prentice Hall
- Kirwan : A Guide to task analysis
- Ivergård, 1989. Handbook of Control Room Design and Ergonomics, Taylor and Francis.
- Johnsen, S.O., Lundteigen, M.A., Fartum, H., Monsen, J., 2005. Identification and reduction of risks in remote operations of offshore oil and gas installations, SINTEF.
- ISO 11064: Principles for the design of control centres, International Organization for Standardization.

HF Approach – Reading Material

Reading list: Optional

- Dix, Finlay, Abowd and Beale, 2004. *Human Computer Interaction, Prentice Hall.*
- Endsley, 2003, Designing for Situation Awareness, Taylor & Francis.
- Henderson J., Wright K., Brazier A, 2002. *Human factors aspects of remote operations in process plants, Health and Safety Executive (HSE).*
- Reason, 1990. *Human Error, Cambridge University Press.*
- Redmill and Rajan, 1997. *Human Factors in Safety-Critical Systems, Butterworth Heinemann.*
- Sandom C. and Harvey R., 2004. *Human Factors for Engineers, Institution of Engineering and Technology*
- Wilson and Corlett, 1990*. Evaluation of Human Work, Taylor & Francis.*
- Weick, C. *"Sensemaking"*
- Luff.. *London Underground*

Practical

- Location: NTNU Videre Trondheim & HFS, Ski or other
- 2014 course – weeks 6,11,14
- Book by 10 January
- 10 days lecturing
- 10 days assignment
- Course material English
- Assignment English/Nordic
- Fee NOK 25.000
- 15 Study points, NTNU
- Feedback throughout course

http://videre.ntnu.no/shop/courses/displayitem.do?dn=uid=nv13119,ou=ntnuvproducts,dc=ntnu,dc=org