

OSH Webinar Series 2020, #10

Cognitive Analysis of Safety Work

Conducting Work Domain Analysis
for Safety Work

YOUR PREMIUM OCCUPATIONAL SAFETY & HEALTH PARTNER

Content

- Introduction
 - Workplace safety assessment
- Cognitive Work Analysis (CWA)
 - Work Constraints
 - What is analysed?
- Work Domain Analysis (WDA)
 - Abstraction Hierarchy with Means-ends relations
 - Abstraction Decomposition
 - Subgoals
- Diversity of WDA (CWA)
- Conclusion



Comparison of important aspects...

Assessment of Occupational Health and Safety Management Systems (OHSMS) Status and Effectiveness...

- OHS Climate
- OHSMS (the management system)
- Culture (of the workplaces)
- Managers (the role they play)
- Improvement...
- Analysis, audit, level...
- Prevention, process, support...

A cross-sectional study of factors influencing occupational health and safety management practices in companies

- Culture
- Safety
- Health, Risks, Size(of company)
- Analysis, Better work...
- Management...
- Variables

What is Cognitive Work Analysis?

- Method for assessment of complex work domains
- Insight in relationships between elements within a system
- Look at different dimension
- Formative method; analyses the work out from how it can be done contra *normative* (how the work shall be done) and *descriptive* (how the work is done)
- Focus on identifying constraints
- Useful in designing work systems
- Deal with complex issues without simplifying

Work Constraints

- Definition of Constraints...
 - ✓ Limits on behaviour which must be respected for a system to perform effectively
- Constraints despite limiting the courses of actions possible...
 - ✓ allow for a degree of freedom of behaviour, which in turn enables adaptation within the limits of effective performance to situational eventualities not always a priori predictable

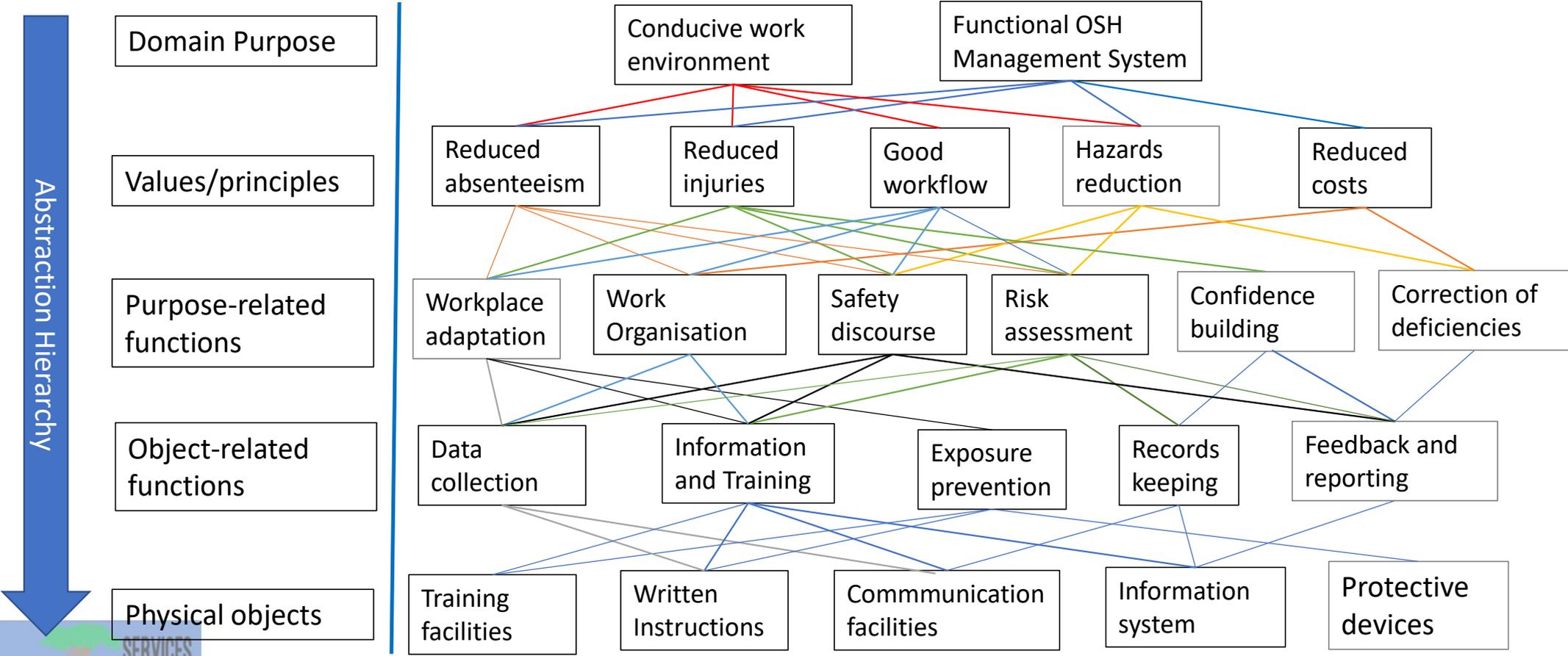
Naikar N (2013). Work domain Analysis. Concepts, Guidelines and Cases. CRC Press, Taylor & Francis Group, p5.

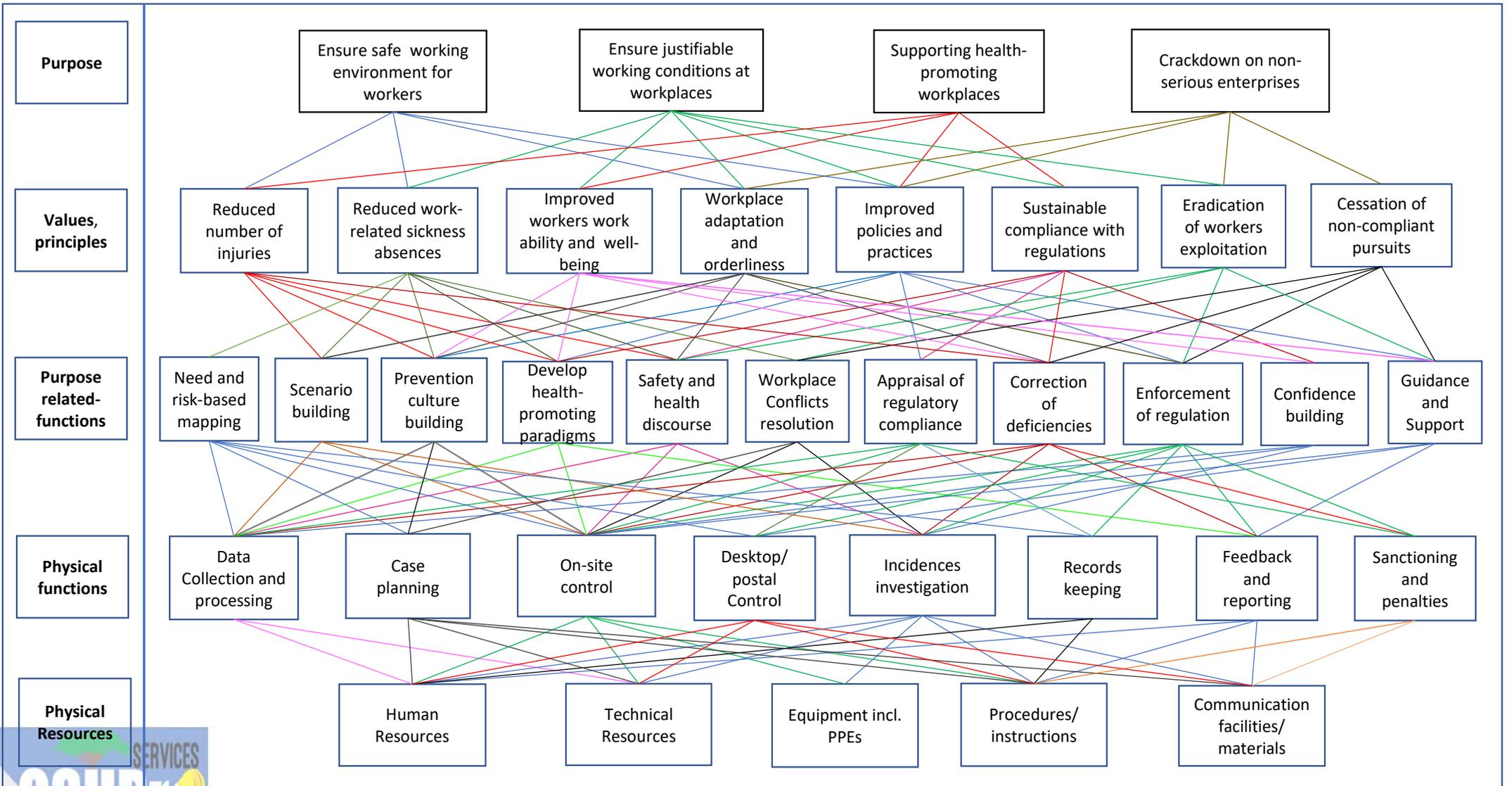
Work Domain Analysis (WDA)

Comprise of five phases:

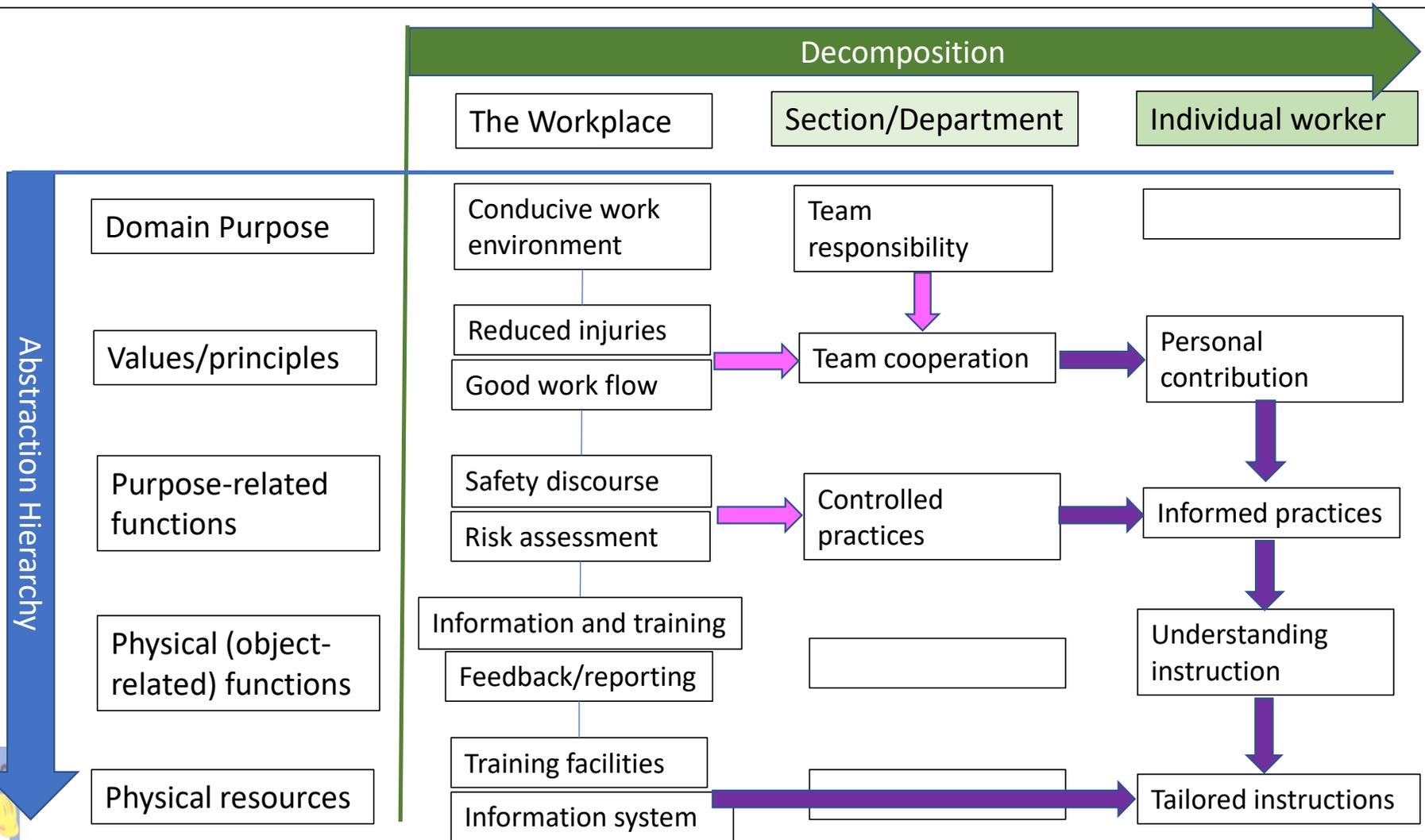
1. Domain purpose – Goal/objective of the work
2. Values and principles – Measure of success of objective attainment
3. Purpose-related functions – What is necessary/must for the purpose and the values/principles
4. Object-related functions (Physical processes) – The activities necessary
5. Physical objects (Physical processes attributes) – Instruments necessary to achieve the system purpose

WDA: Safety work





Abstraction Decomposition



WDA subgoals and subsidiary functions

Purpose-related function

Subgoals and subsidiary functions

Safety and health discourse

Engage in dialogue with workers and employer; discuss the significance of OSH practices; motivate promotion of workers' mental health and well-being; advocate for workers' good psychosocial work environment; raise awareness of regulatory requirements

Correction of deficiencies

Help comprehend implementation shortcomings; investigate and address incidences; correct the interpretation of relevant regulatory provisions; guide on attaining an optimal level of compliance; influence adaptation of OSH management system to various situations

Diversity of WDA (CWA) use

- Safety – Nuclear power station; Manufacturing; Workers behaviour adaptation...
- Military – Safety passage for jet-fighters; Control of submarines; Anti-Missile Systems
- Aviation – Determining flight path; Airline operations
- Hospitals/Health systems – Organising follow-up of cardiac surgery patients; Modelling for ICU patients; Surgical training; Patients falling from beds
- Road Traffic – Reducing fuel use; Automation of trucks; Traffic lights control
- Sports – Determining effective netball team strategy
- Safety work – ??

Conclusion

- Safety work is complex
- Analysis of safety work is very wide and demanding
- With Cognitive analysis one get a good understanding of the work
- WDA allows for identifying domain affordances
- Abstraction hierarch and decomposition provide details of hat one needs to do
- Establish means-ends relations identified in the hierarchy
- Effective within the work constraints
- Support of effective system design

Thank you for listening

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