

Safety management issues in the transition from project development to project construction in the construction industry



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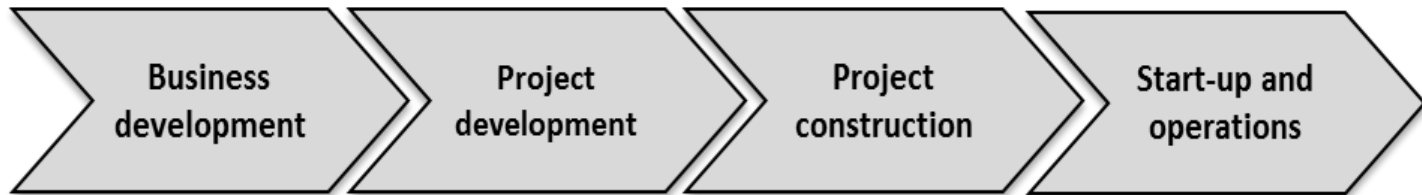
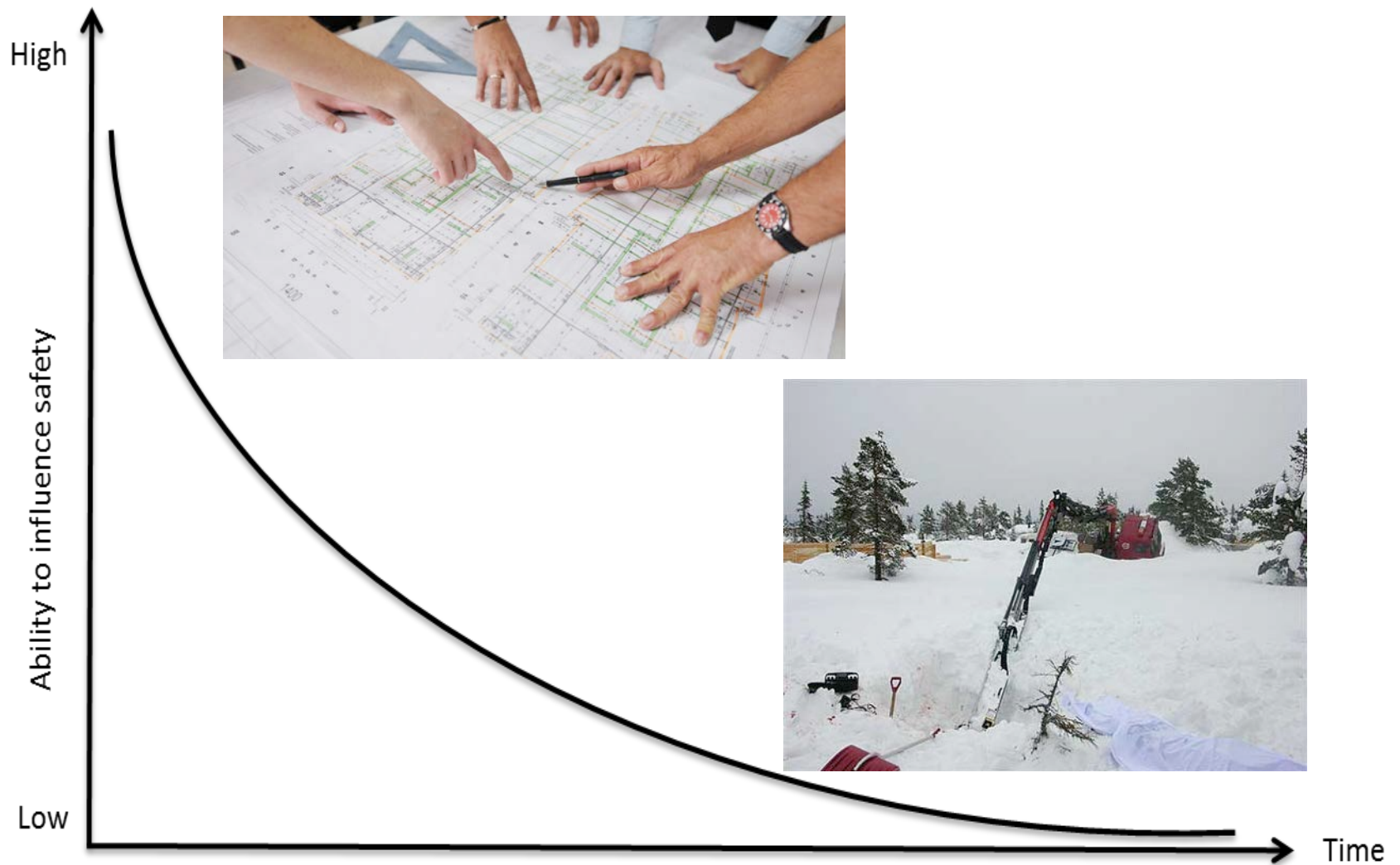
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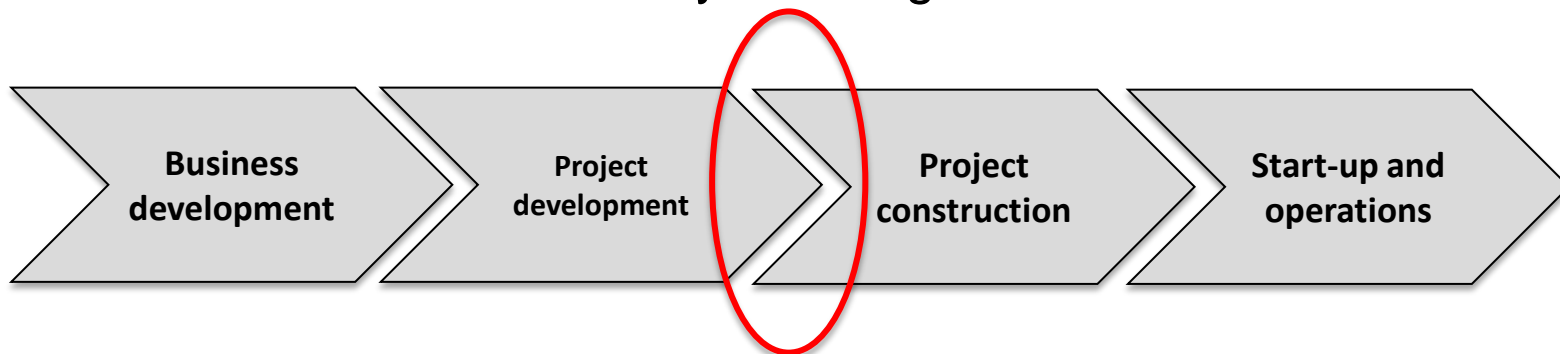
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Purpose

- Study safety challenges in the interface between the project development phase and the project construction phase.
- Research questions:
 1. What safety challenges should be examined in the interface between project development and project construction?
 2. Why do these safety challenges occur?
 3. How should the safety challenges be dealt with?

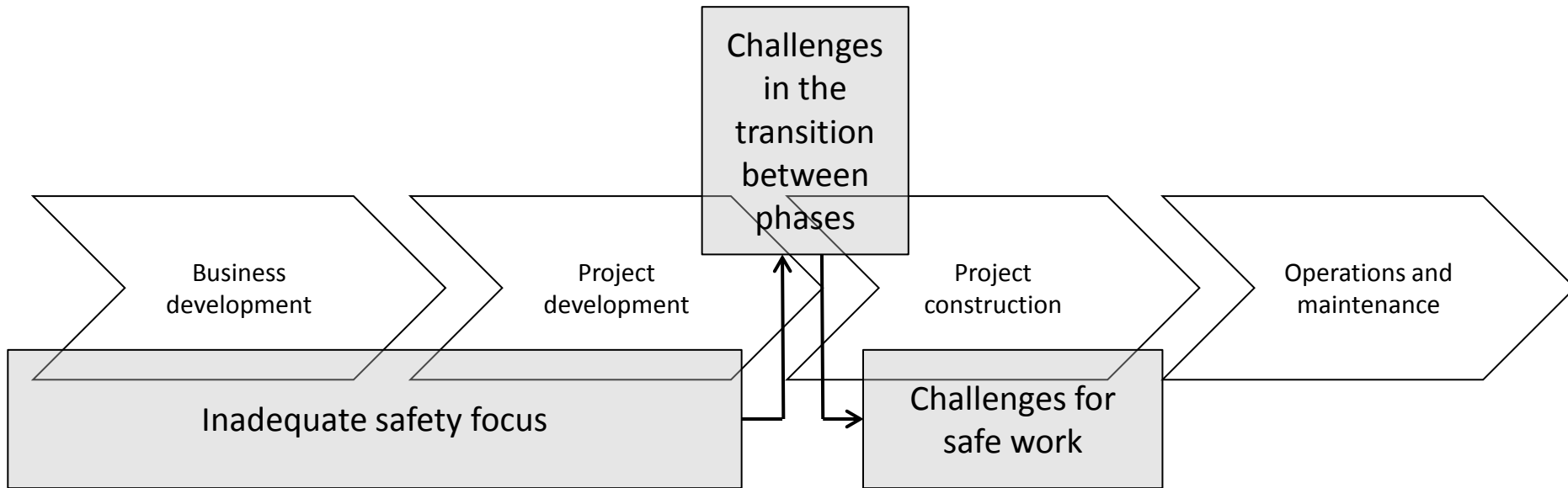


Method: interview study

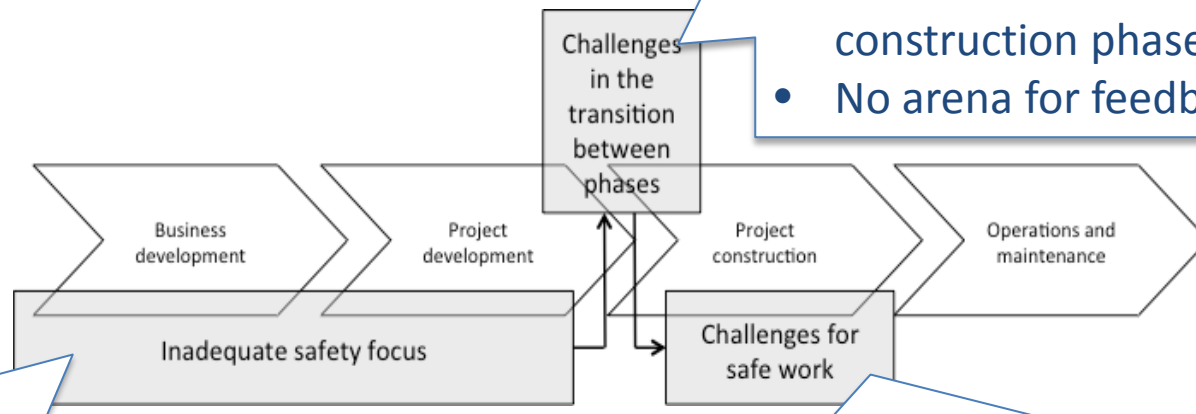
- Interviews at two on-going construction projects in Norway:
 - Road
 - Railroad
- 24 interviewees from:
 - client
 - designer
 - main contractor
 - sub-contractors
- Roles of interviewees:
 - Project manager
 - HSE advisors
 - Design engineer
 - Production supervisor
 - Safety representatives
 - Site manager
 - Purchasing manager
- Interview topics:
 - cooperation and coordination
 - information flow
 - safety analyses
 - work practices
- Interview responses based on experience on previous projects and the on-going project



Results of interview study



Results of interview study



- Inadequate flow of information between phases and actors
- Lack of continuity of personnel between phases
- Contractors seldom involved in project development
- Persons in project development seldom involved in the project construction phase
- No arena for feedback and dialogue

- Lack of practical experience and “hands-on” knowledge
- Lack of time
- Focus on end product, not safe work
- Produce too general safety plans, not adapted to specific projects
- Poor risk assessments. Not updated risk register

- The other identified challenges results in operative problems
- Poor plans create delays
- No time buffer in plans
- Problem solving due to poor plans
- Limited possibilities to give feedback on plans and drawings

Analysis

- Two interrelated issues in the empirical data:
 - Inadequate safety plans (and other plans), not suited the actual context of operative work
 - Limited possibilities for feedback from project construction to planners
- Theories on knowledge management explain the identified challenges
 - Organizational learning through interwoven processes of transition and combination of tacit and explicit knowledge (Nonaka and Takeuchi, 1995)
 - Internalization: applying plans and drawings for sharp-end work
 - Externalization: utilizing tacit knowledge of workers in planning processes
- What are the obstacles preventing creation of knowledge in the case projects?

Obstacle #4:

Conflicting objectives between safety and efficiency

Obstacle #3:

Compartmentalization of information.

Not updated information

Planning and procedures-level

Actors:

- Client's project management

- Designers

Phase:

- Project development

Obstacle #1:

Plans, rules and drawings not fitted the reality of work.

Feedback on actual or expected results of activity

HSE plans
Drawings and construction

Execution-level

Actors:

- Contractors

- Sub-contractors

Phases:

- Project construction

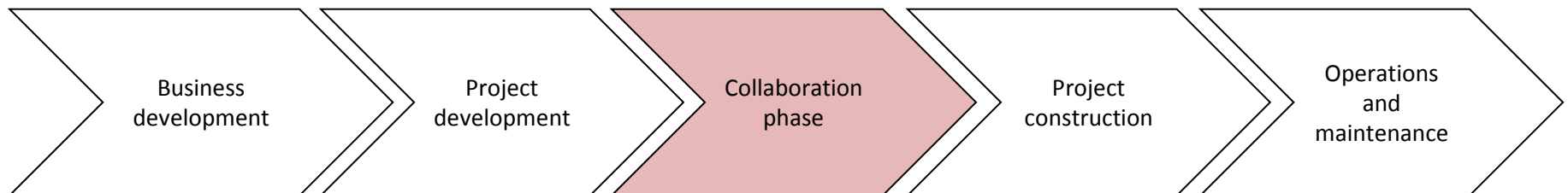
- Operation and maintenance

Obstacle #2:

Inadequate structures and practises for feedback of practical limitations of plans

One solution: the collaboration phase

- Objective: establish common understanding among different stakeholders in the project
- Participants: client, designers and main contractor
- Positive experiences:
 - Mutual trust is established
 - Improved collaboration
 - Better predictability
 - Possibility to give feedback and to modify formal structures
- Negative experiences:
 - Too short period of time
 - Sub-contractors not involved
 - Lack of continuity of personnel between phases



Thank you for your attention

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