

# Incorporating BIM into Dutch Building Contracts



Realiseren van blijvende kwaliteit

## Ballast Nedam

- Construction and Real Estate company
- Corporate headquarters in Nieuwegein, The Netherlands
- Turnover 2012: € 1,30 billion
  - Turnover The Netherlands: € 1,15 billion (88%)
  - Turnover International: € 0,15 billion (12%)
- Top-5 construction firm in The Netherlands
- 3860 employees (December 2012)
- 136 year in operation (established in 1877)

# Core Activity - Housing



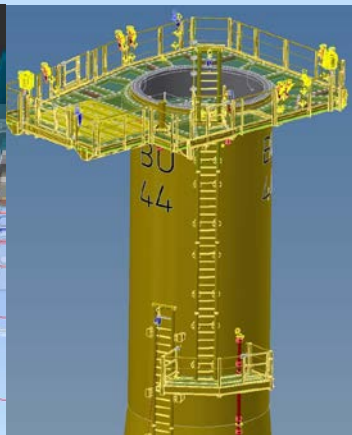
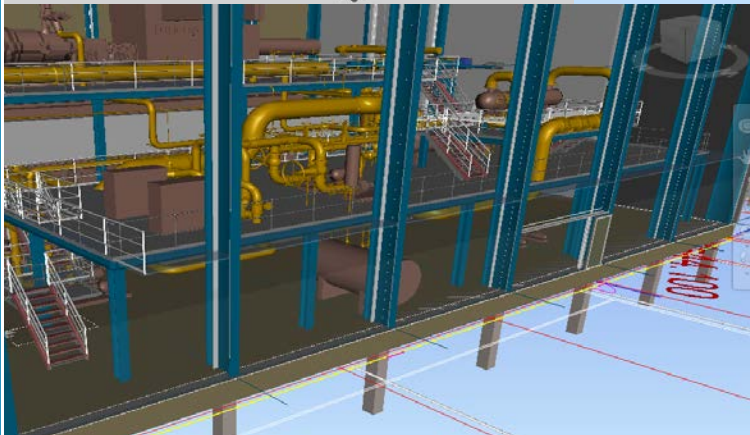
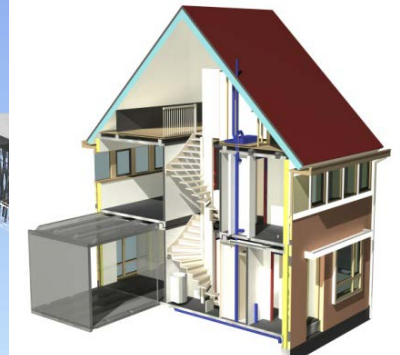
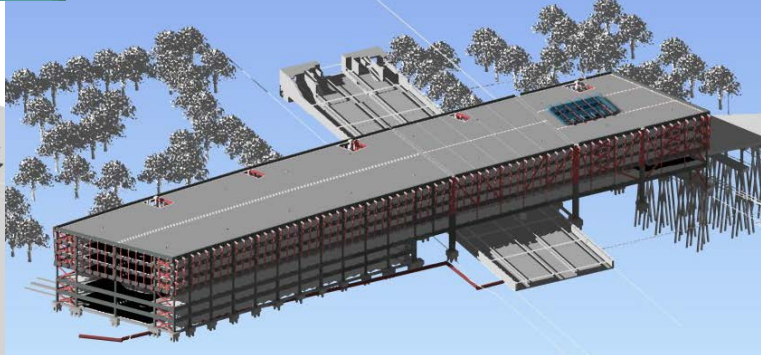
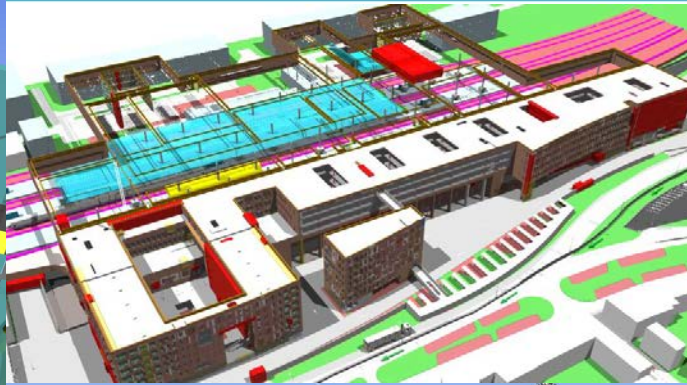
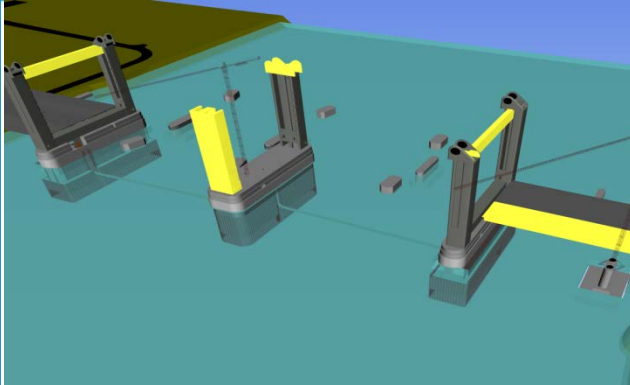
# Core Activity - Mobility



# Core Activity - Energy



# BIM in Ballast Nedam Projects



## Statements:

“Parties should not make any contractual arrangements when they start using BIM; it will kill the collaboration”

“Introducing BIM in the construction industry has no legal consequences for relationships between contracting parties”



## Contents of this presentation

- Background
- Integration and coordination in Dutch Construction Contracts
- Integration and coordination with BIM: experiences in the Netherlands
- Integration and coordination with BIM: experiences in the United States
- Proposals for arriving at a solution for constraints in the legal context
- Conclusions
- Questions and discussions



## Backgrounds of our paper and this presentation

- Focus on Dutch construction industry
- Research summer 2011 – spring 2012
- Adaption of master thesis
- Scope of thesis is larger
  - Exchange of Information and reliability
  - Design Responsibility
  - **Coordination and Integration with BIM**
- Research Question of our Paper:

**“What changes must be made in Dutch commonly used General Conditions to regulate the use of BIM better as coordination and integration tool?”**

## ▪ Scope & Liabilities

Finance/Design/Build/Own/Operate/Maintain/Transfer contracts  
*DBFMO contract RWS, FIDIC gold book*



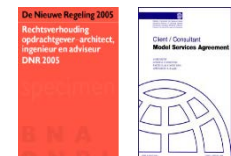
Integrated contracts (*design & construct*)  
*UAV-GC 2005, FIDIC yellow & silver book*



Traditional contracts (*construct only*)  
*UAV '89/ UAV 2012, FIDIC red book*



Consultant, service contracts (*service*)  
*Construction Management, Engineering*  
*DNR 2005/2011, FIDIC White book*



Increasing responsibility & liability  
of the Contractor

## Dutch General Conditions: DNR 2011

- Two-party agreement between Employer and Consultant
- Little specific (material) arrangements
- Employer only appoints coordinator
- Narrow view on liability



## ▪ Scope & Liabilities

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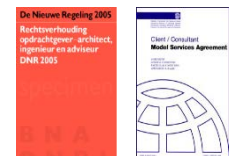
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## Dutch General Conditions: UAV'89/UAV2012

- Two-party agreement between Employer and Contractor
- Construct Only
- No specific (material) arrangements
- Employer only appoints coordinator
- Coordination sometimes via Coordination Agreement
- Narrow view on liability



## ▪ Scope & Liabilities

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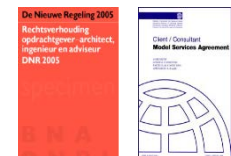
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## Dutch General Conditions: UAV-GC 2005

- Two-party agreement between Employer and Contractor
- Design & Construct
- No specific (material) arrangements
- Employer only appoints coordinator
- Coordination in many cases via Coordination Agreement
- Potentially broad view on liability



## Dutch Construction industry – current practice

- BIM exchanges regulated mainly by BIM Plans/Protocols
- BIM regulation by Rijksgebouwendienst (government buildings)
- Technical matters are dealt with quite sophisticated





## Dutch Construction industry – constraints

1. Lack of uniformity (standard company plans)
2. Form of cooperation in BIM plans often does not match overlying contracts
3. Relation between BIM plan and overlying contract often unclear



## US Construction industry – current practice

- Branch organisations launched BIM appendices
- Fit in with widely used ranges of existing contracts
- Overlying contracts regulate liabilities and responsibilities
- But: based on keeping traditional contractual arrangements
- Introduction of the role of ‘Model Manager’
  - Scope of Model Managers responsibilities may differ
  - Wide range is possible, shifting liabilities depend on scope
- Model Manager may appear to be virtual Project Manager

- Dutch General Conditions hardly regulate coordination/integration
- Little uniformity in BIM arrangements
- Legal questions are the same as 20, 30, 40 years ago?



## Coordination and Integration in Design Phase

- BIM specific Coordination
- BIM Annexes form the US industry offer good starting point
  - ConsensusDOCS: parties to decide
  - AIA: appoints Model Manager



## Possible solution 1

- Standard regulation for design coordination/integration
  - Include all associated works consultants
  - Properly describe the purpose
  - Tasks and responsibilities
  - Liability arrangement
    - Joint responsibility
    - 'Building Team'

Note: no 'execution know-how' available

## Possible solution 2

- Expand DNR 2011
  - Properly describe the purpose of coordination
  - Liability arrangement
    - Either party responsible for integration of its part
    - Appoint one party to integrate all disciplines



## Possible solution 3

- Integrated Design Teams
  - Occur very rarely
  - Disciplines are anxious for legal effects
  - Clients could direct in selection process



## Constraints left from design phase

No specific execution know-how available

- Option 1: Building Team
- Option 2: Integrated Contract (Design & Construct)

Expand on regulation for design coordination





## BIM improvements for Execution Phase

- 4D BIM to coordinate multi party activities in confined spaces
- Dynamic 4D BIM for optimization of logistic processes



## Conclusions:

“What changes must be made in Dutch commonly used General Conditions to regulate the use of BIM better as coordination and integration tool?”

- Improve/extent existing general conditons with regulations on design coordination
- Increase D&C/Building Teams
- Describe BIM as working tool for coordination/dynamic 4D BIM application

# Questions?



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