Solutions and Services

Co-Simulation of MBS (Vehicle) Dynamics and DEM Particledynamics

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Fields of Interest

- Direct interaction between particle- and multi-body dynamics
  - Feedback of multidisciplinary effects
  - e.g.: Vehicle/Soildynamics, rigid bodies and (elastic/plastic) deformable bodies etc.
Area Engineering Services
Particledynamics

Source: Pasimodo Screenshots
Use Case (1)

Packaging: Tube-Filling and Packing machines

Source: Oystar IWK
Use Case (2)

Wheel Soildynamics: Marsrover

Source: NASA
Use Case (3)

wheel/plow/ground dynamics: agricultural machinery

Source: Fendt
Use Case (4)

wheat/straw/wood - dynamics: agricultural machinery

Source: CLAAS
Industrial Research:
roadbed / track and railway-vehicle dynamics

Gravel

base of the rail

concrete sleeper

Source: Meinke/ThyssenKrupp/ZEVrail
Development Process

- Simpack-Server (as User-Routine)
- Particle-Server (as Plugin to Yade)
- Controller (Server-Client-Client-Server)
- Scope for the visualization of coupling
- Preparing additional simulation solvers
- Enhanced visualization solutions
Simulation environment

CoSimulation Pasimodo und Simpack
Scheme of a coupled simulation

MBS Engine

DEM Engine

Controller

Visualization over Browser

NuCOS
Numeric Cooperative Simulation
Visualization during simulation run
Scheme of the coupling platform
Increasing Interfaces
Examples of Simulations
Support

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Discussion

• Questions?
• Thanks for your attention!