

WP 3 Project Deliverable D3.5

Beta version of data management for the second prototype



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Abstract	
Keywords	

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1 Overview

This report gives a summary of the functionality of the second prototype of the data management. All sources developed by SiTu are provided on a CD-Rom attached to this report.

The layout of the system was not changed since the first prototype, but the functionality of the modules highly increased.

2 Abbreviations

VFS	Virtual Fires Simulator
CFD	Computational Fluid Dynamics
DM	Data Manager
CGNS	CFD General Notation System

3 Functionality of second prototype

3.1 Database

The database faced minor changes of attributes of some tables for the handling of XML data.

Additionally the database layout was extended to support the management of object states and the handling of tunnels made up of multiple visualisation models.

Reconfiguration of the MySQL server setup for proper handling the transfer of large binary CFD files. Testing was performed with datasets of up to 300MB per timestep to assure the faultless transfer of these datasets.

3.2 DM

Compared to the first prototype the DM was extended with the following functionality:

- Enhanced handling of CFD-results: faster querying for datasets belonging to a mission at a certain point in time
- Handling of cascaded (branched) missions
- Handling of objectstates
- Handling of events
- Performance and robustness enhancements
- Functions to support the specified UIC-DMC protocol

3.3 DMC

The DMC provides following functionality:

- Connection to the Database using the DM (part of first prototype)
- Connection to the CFDDController to start/stop a defined mission (part of first prototype)
- Download CFD results from database and deliver data to visualisation-plugin using the ReadCGNS Covise module (part of first prototype)
- Provide all necessary data according to the UIC-DMC Protocol (see Appendix A)

3.4 CFDDController and ICESteering

The CFD Controller is implemented as an ACE Acceptor and runs as a daemon on the machine, where the CFD Simulation (ICE) takes place. He waits for connections coming from the DMC and the CFD Simulation (ICE).

The CFDDController provides following functionality:

- Allow connection of one DMC and multiple CFD-Simulators, so that more than one CFD-Simulation can run simultaneously
- Start/Stop CFD-Simulation (part of first prototype)
- Upload new CFD results to the database and notify DMC (part of first prototype)
- Preparing input data for CFD simulation

4 Integration Status

All software modules were integrated on SuSE Linux 8.1 and into the Linux version of Covise.

Appendix A

<i>No.</i>	<i>Request</i>	<i>Parameters</i>	<i>Response</i>	<i>Comment</i>
1	[seqnumber] Request Scenarios		[seqnumber] "Scenarios" errornumber <list> <item> { "Name" ScenarioID TunnelID} </item> </list>	
2	[seqnumber] Request Missions <param>	ScenarioID	[seqnumber] "Missions" errornumber <list> <item> { "Name" MissionID second(1)} </item> </list>	
3	[seqnumber] Request Timestep <param> <param> <param>	MissionID second(2) second(3)	[seqnumber] "Timestep" errornumber Timedelivered <list> <item> { ObjectID XML} </item> </list>	returns a (possibly empty) list of objects that have had their state changed between this time and the last time requested. These objects should be "revisualised"
4	[seqnumber] Request ObjectStates <param> <param>	MissionID time	[seqnumber] "ObjectStates" errornumber <list> <item> { ObjectID XML} </item> </list>	

No.	Request	Parameters	Response	Comment
5	[seqnumber] Request ScenarioObjects <param>	ScenarioID	[seqnumber] "ScenarioObjects" errornumber <list> <item> { ObjectID XML} </item> </list>	
6	[seqnumber] Request ScenarioParameters <param>	ScenarioID	[seqnumber] "ScenarioParameters" errornumber ?	Should return a list of the parameters, parameter types and fieldIDs? that are supplied in the timesteps. FIGD/CD can you provide more information?
7	[seqnumber] Computation Start <param>	MissionID	[seqnumber] "Computation Start" errornumber	
8	[seqnumber] Computation Continue <param>	MissionID	[seqnumber] "Computation Continue" errornumber	
9	[seqnumber] Computation Stop <param>	MissionID	[seqnumber] "Computation Stop" errornumber	
10	[seqnumber] Computations Running		[seqnumber] "Computations Running" errornumber <list> <item> "Name" MissionID </item> </list>	

No.	Request	Parameters	Response	Comment
11	[seqnumber] Request Tunnels		[seqnumber] "Tunnels" errornumber <list> <item> "Name" TunnelID </item> </list>	
12	[seqnumber] Request Tunnel Description <param>	TunnelID	[seqnumber] "Tunnel Description" errornumber "String"(5)	
13	[seqnumber] Request Tunnel <param>	TunnelID	[seqnumber] "Tunnel" errornumber <list> {XML}(6) </list>	
14	[seqnumber] Request Geometry <param> <param>	ModelID Path	[seqnumber] "Geometry" errornumber filename(7)	passed on by the UIC to thingy with objectID/tempI D
15	[seqnumber] Request Description Scenario <param>	ScenarioID	[seqnumber] "Description Scenario" errornumber "String"	
16	[seqnumber] Request Description Mission <param>	MissionID	[seqnumber] "Description Mission" errornumber "String"	
17	[seqnumber] Request TemplateObjects <param>	classID(8)	[seqnumber] "TemplateObjects" errornumber <list> <item> { "Name" TemplateID} </item> </list>	

No.	Request	Parameters	Response	Comment
18	[seqnumber] Request TemplateObject <param>	TemplateID	[seqnumber] "TemplateObject" errornumber XML	
19	[seqnumber] New Scenario <param> <param> <param>	TunnelID "Name" "Description"	[seqnumber] "New Scenario" errornumber ScenarioID	
20	[seqnumber] New Object <param> <param>	TemplateID XML	[seqnumber] "New Object" errornumber ObjectID	UIC must replace temporary ID for model in thingy
21	[seqnumber] Update Object <param> <param>	ObjectID XML	[seqnumber] "Update Object" errornumber	
22	[seqnumber] Associate Object <param> Scenario <param>	ObjectID ScenarioID	[seqnumber] "Associate Scenario" errornumber	
23	[seqnumber] Associate Object <param> Mission <param>	ObjectID MissionID	[seqnumber] "Associate Mission" errornumber	
24	[seqnumber] Dissociate Object <param> Scenario <param>	ObjectID ScenarioID	[seqnumber] "Dissociate Scenario" errornumber	
25	[seqnumber] Dissociate Object <param> Mission <param>	ObjectID MissionID	[seqnumber] "Dissociate Mission" errornumber	
26	[seqnumber] Delete Scenario <param>	ScenarioID	[seqnumber] "Delete Scenario" errornumber	
27	[seqnumber] Delete Object <param>	ObjectID	[seqnumber] "Delete Object" errornumber	
28	[seqnumber] Delete Mission <param>	MissionID	[seqnumber] "Delete Mission" errornumber	

No.	Request	Parameters	Response	Comment
29	[seqnumber] New Mission <param> <param> <param> <param> <param>	ScenarioID "Name" "Description" stoptime resolution	[seqnumber] "New Mission" errornumber MissionID	
30	[seqnumber] New MissionBranch <param> <param> <param> <param> <param> <param>	MissionID "Name" "Description" starttime stoptime resolution	[seqnumber] "New MissionBranch" errornumber MissionID	
31	[seqnumber] Add Event <param> <param> <param> <param>	MissionID time ObjectID XML	[seqnumber] "Add Event" errornumber EventID	
32	[seqnumber] Set Mission Endpoint <param> <param>	MissionID time(endpoint)	[seqnumber] "Mission Endpoint" errornumber	
33	[seqnumber] Set Mission Resolution <param> <param>	MissionID time (0<x<=600?)	[seqnumber] "Mission Resolution" errornumber	
34	[seqnumber] Delete Event <param>	EventID	[seqnumber] "Delete Event" errornumber	
35	[seqnumber] Request Description Event <param>	EventID	[seqnumber] "Description Event" errornumber ?	
36	[seqnumber] Request Event List <param> <param>	MissionID	[seqnumber] "Event List Future" errornumber <list><item> EventID </item></list>	
36a	[seqnumber] Request Event List Future <param> <param>	MissionID [Time	[seqnumber] "Event List Future" errornumber <list><item> EventID </item></list>	

No.	Request	Parameters	Response	Comment
36b	[seqnumber] Request Event List Past <param> <param>	MissionID Time	[seqnumber] "Event List Past" errornumber <list><item> EventID </item></list>	
37	[seqnumber] Request Event <param>	EventID	[seqnumber] "Event" errornumber XML	
38	[seqnumber] Update Event <param> <param>	EventID XML	[seqnumber] "Update Event" errornumber	
39	[seqnumber] Request Computation Parameters <param>	MissionID	[seqnumber] "Computation Parameters" errornumber stoptime resolution	

(1)The endpoint of this calculation in seconds from 0

(2)The closest previous timestep to the specified second (absolute)

(3)The second sent to the DMC in the last request (0 if this is the first time the request is sent)

(4) gone

(5)May not contain newline chars

(6>Returns one or more XML object descriptions (that make up the tunnel)

(7)will deliver root filename

(8)fixed_firefighting_equipment, combustible_objects, props, fire_fighters, fans,
weather_boundary_conditions...

(*)add a display tag in the xml description

(*)Response to a question, error or answer is the text following the sequensnumber and tag.

(*)errornumber is either 0 to indicate success, followed by the parameters indicated in the response field or -
1 to indicate failure, possibly followed by an errorstring.