

# Better Version Management in MIKE+

Webinar 8 March 2023

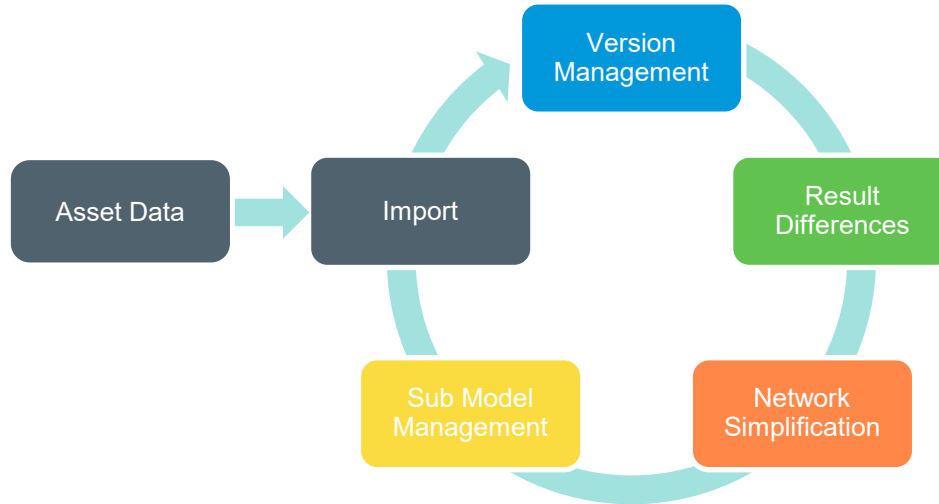
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# Agenda

01. Concept
02. MIKE+ Implementation
03. Tutorial
04. Variations
05. Challenges
06. Result differences

# MIKE+ Digital Twin Model Workflow Tools

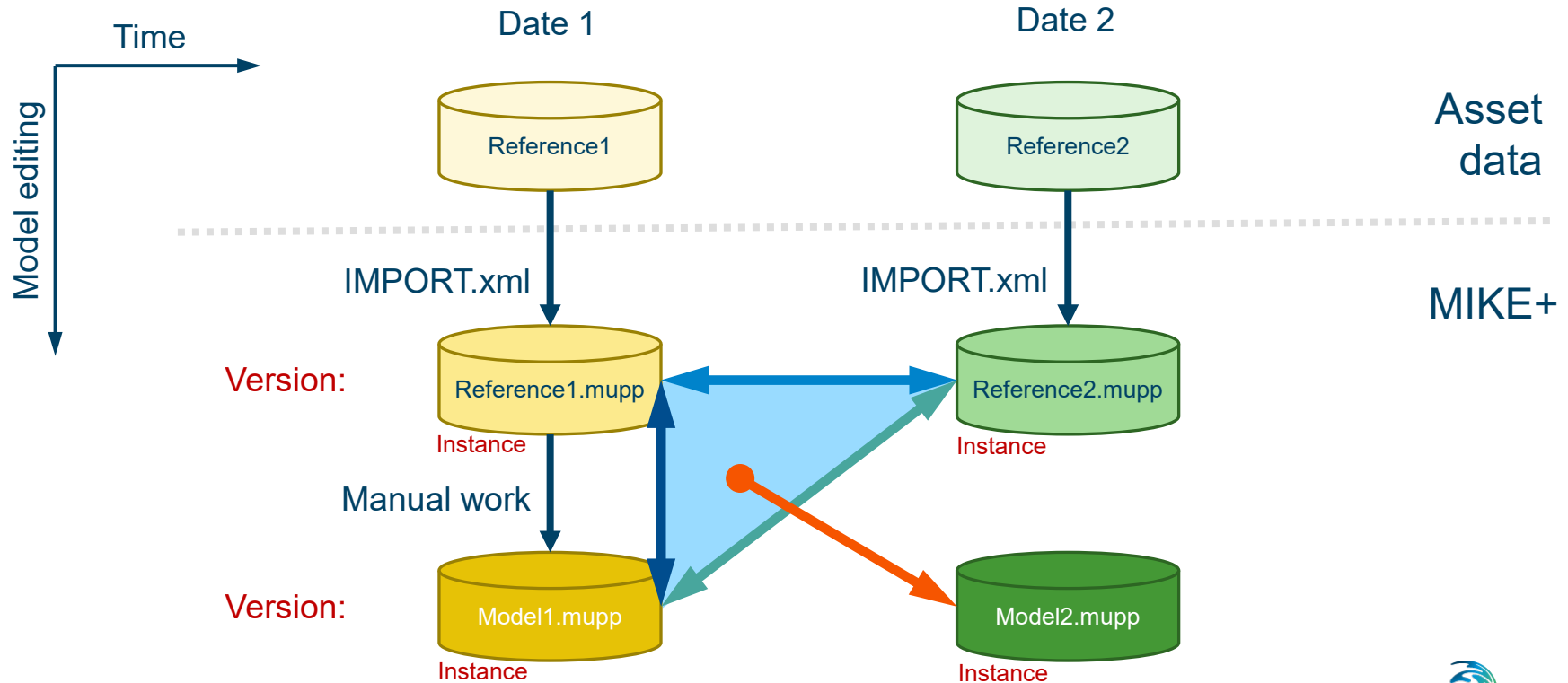


[https://manuals.mikepoweredbydhi.help//2023/Cities/MIKE\\_Plus\\_Model\\_Manager.pdf#page=325](https://manuals.mikepoweredbydhi.help//2023/Cities/MIKE_Plus_Model_Manager.pdf#page=325)

# 01.

## Concept

# References and models



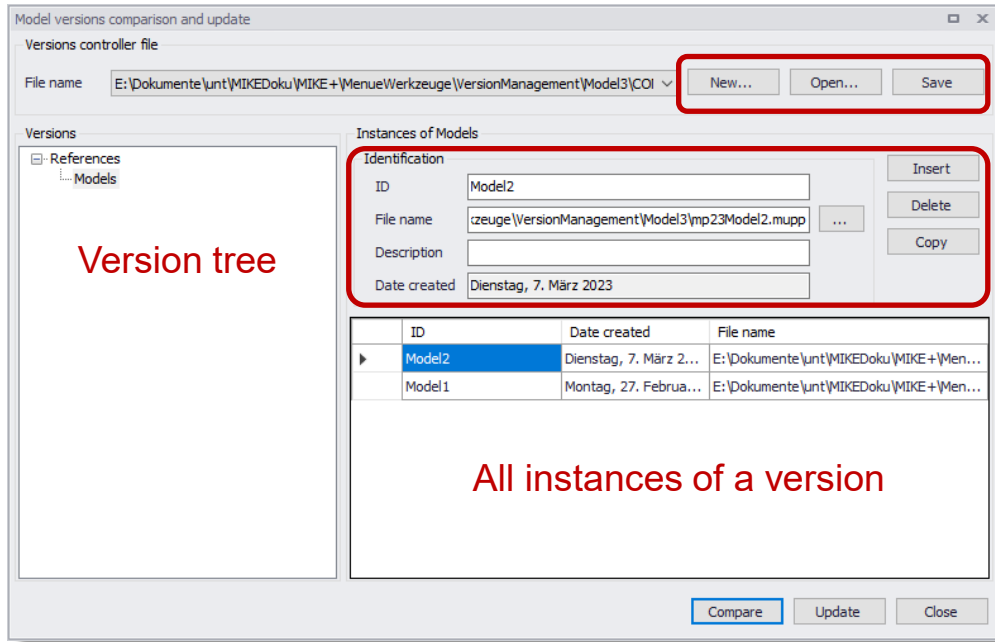
# Conflict management

Change in Model1 vs Reference1	Change in Reference2 vs Reference1							
	Added	Deleted	Updated	Unchanged				
Added	<table border="1"> <tr> <td>no diff »</td> <td>keep model unchanged</td> </tr> <tr> <td>with diff »</td> <td>update from reference keep model unchanged</td> </tr> </table>	no diff »	keep model unchanged	with diff »	update from reference keep model unchanged			
no diff »	keep model unchanged							
with diff »	update from reference keep model unchanged							
Deleted		keep model deleted	keep model deleted insert from reference	keep model unchanged				
Updated		delete in model keep model unchanged	<table border="1"> <tr> <td>no diff »</td> <td>keep model unchanged</td> </tr> <tr> <td>with diff »</td> <td>keep model unchanged update from reference</td> </tr> </table>		no diff »	keep model unchanged	with diff »	keep model unchanged update from reference
no diff »		keep model unchanged						
with diff »	keep model unchanged update from reference							
Unchanged	delete in model keep model unchanged	update from reference						
NotExist	insert from reference keep model unchanged							

# 02.

## MIKE+ Implementation

# Configuration



Start Compare or Update



# Compare model versions

Compare model versions

Settings

Reporting

Compared version

Version ID: Models

Instance ID: Model2

Filter on model type

Compare all data

Compare data from active features and modules only

Reference version

Version ID: Models

Instance ID: Model1

Report file

File name: E:\Dokumente\unt\MIKEDoku\MIKE + \MenueWerkzeuge\VersionManagement\Model3\Con

Configuration

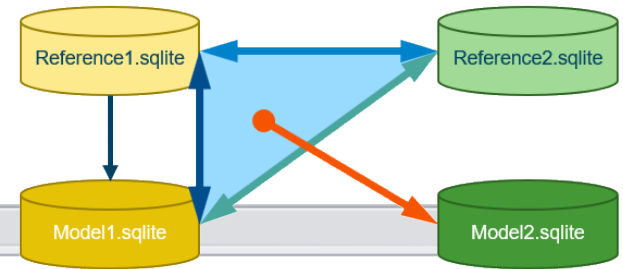
Open... Save Run Close

new instance

old instance

create report

# Update model versions



Update model versions

**Settings**

Reference version  
Find changes in reference version, between the former and the updated instances

Version ID: References

Former Instance ID: Reference1

Updated instance ID: Reference2

**Conflicts**

**Reporting**

Updated version  
Create new version instance by applying changes to former instance

Version ID: Models

Former Instance ID: Model1

New instance ID: Model2

New Instance file: E:\Dokumente\unt\MIKEDoku\MIKE + \MenueWerkzeuge\VersionManagement\Model3\mp23Model2.mupp

Filter on model type

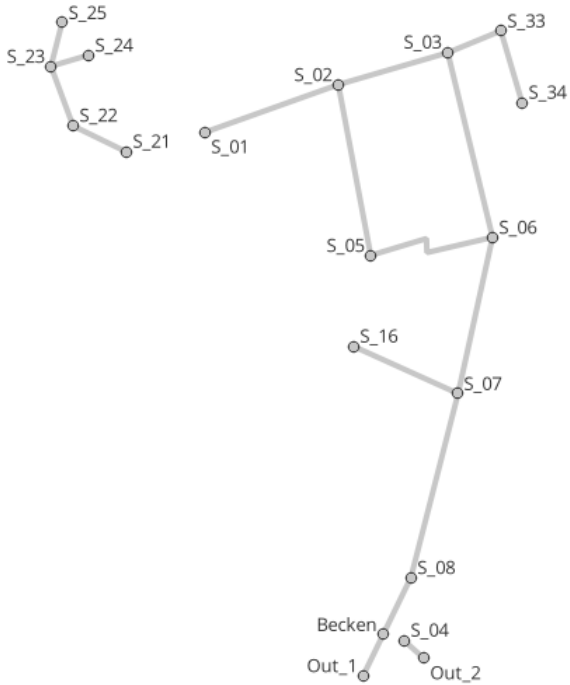
- Update all data
- Update data from active features and modules only

# 03.

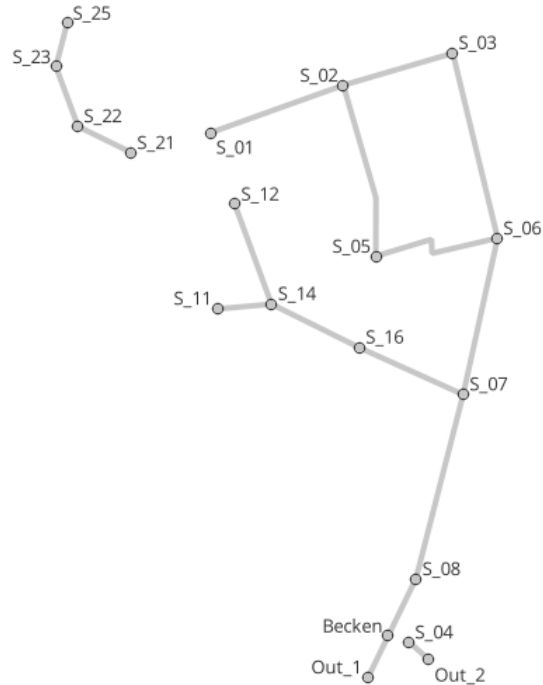
## Tutorial

# Compare

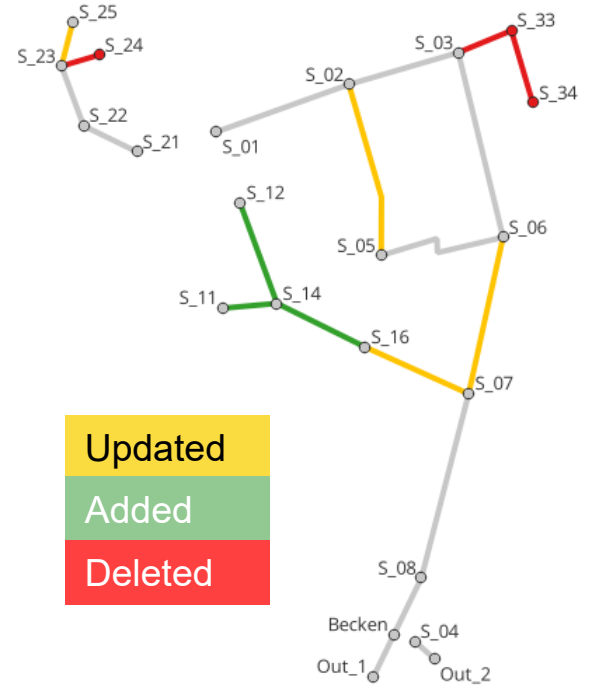
# Reference2 - Reference1



Reference1

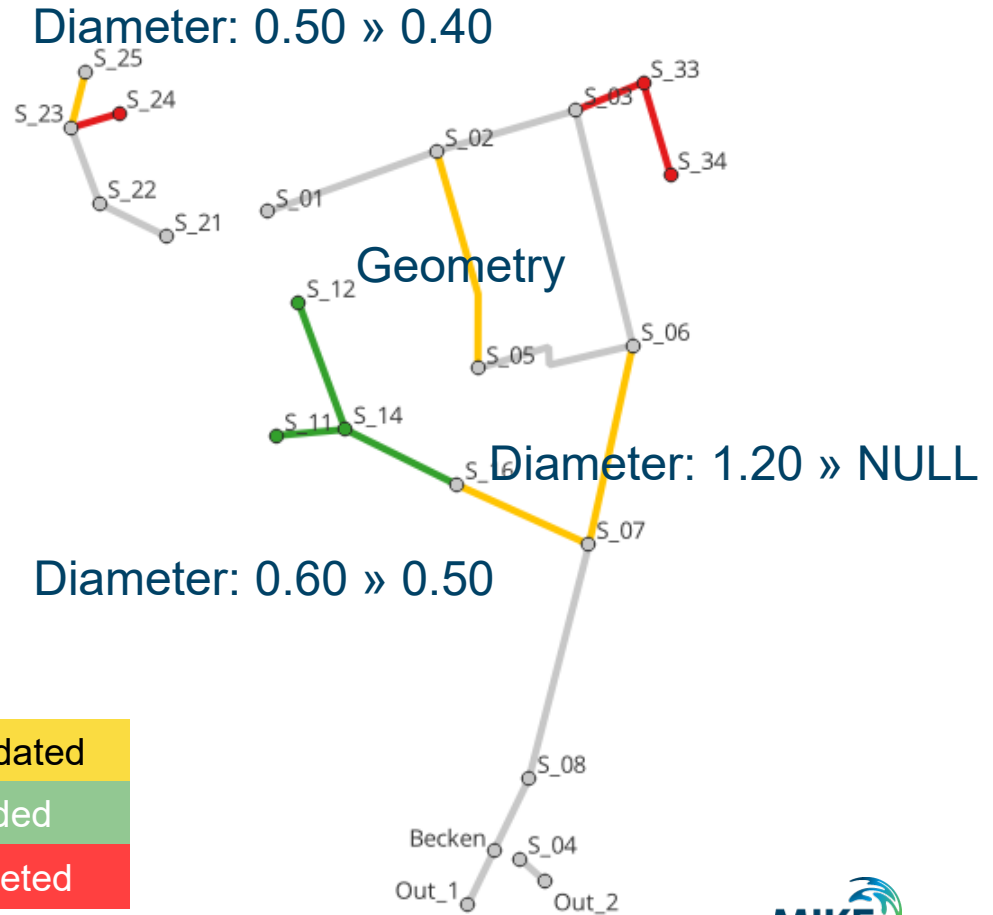


Reference2

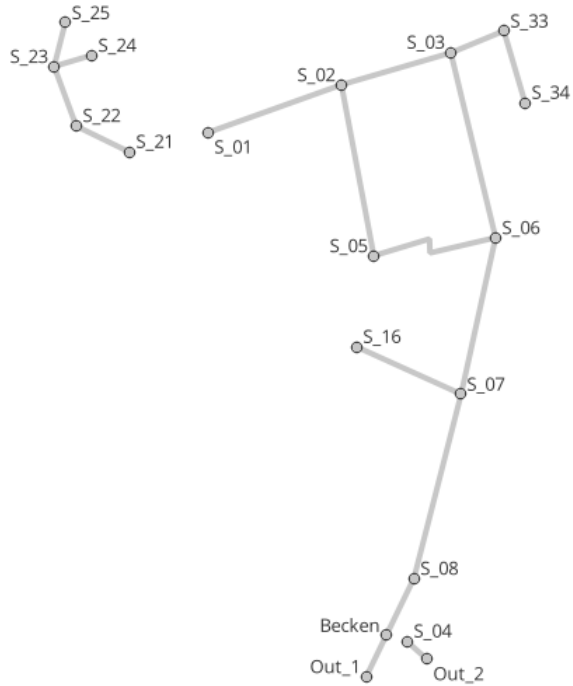


Reference2 - Reference1

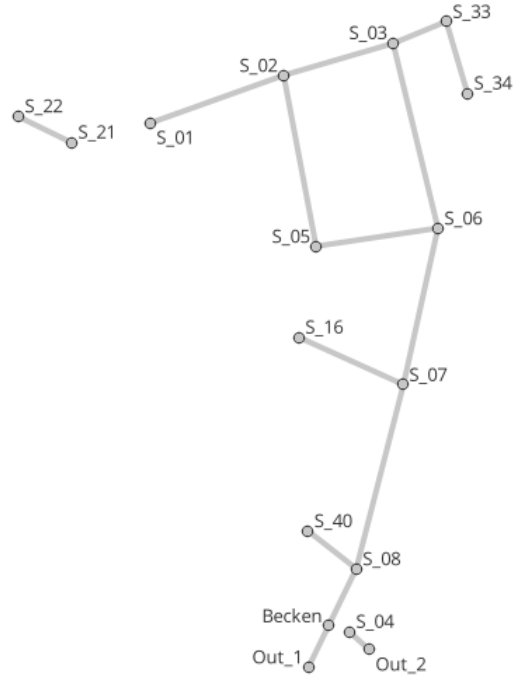
# Reference2 - Reference1



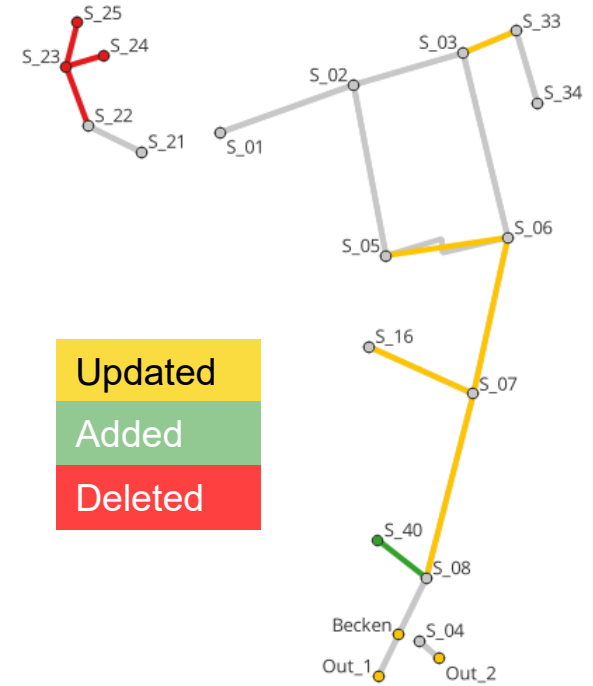
# Model1 has been developed from Reference1



Reference1

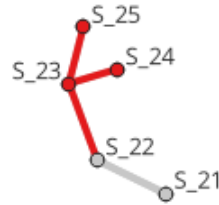


Model1

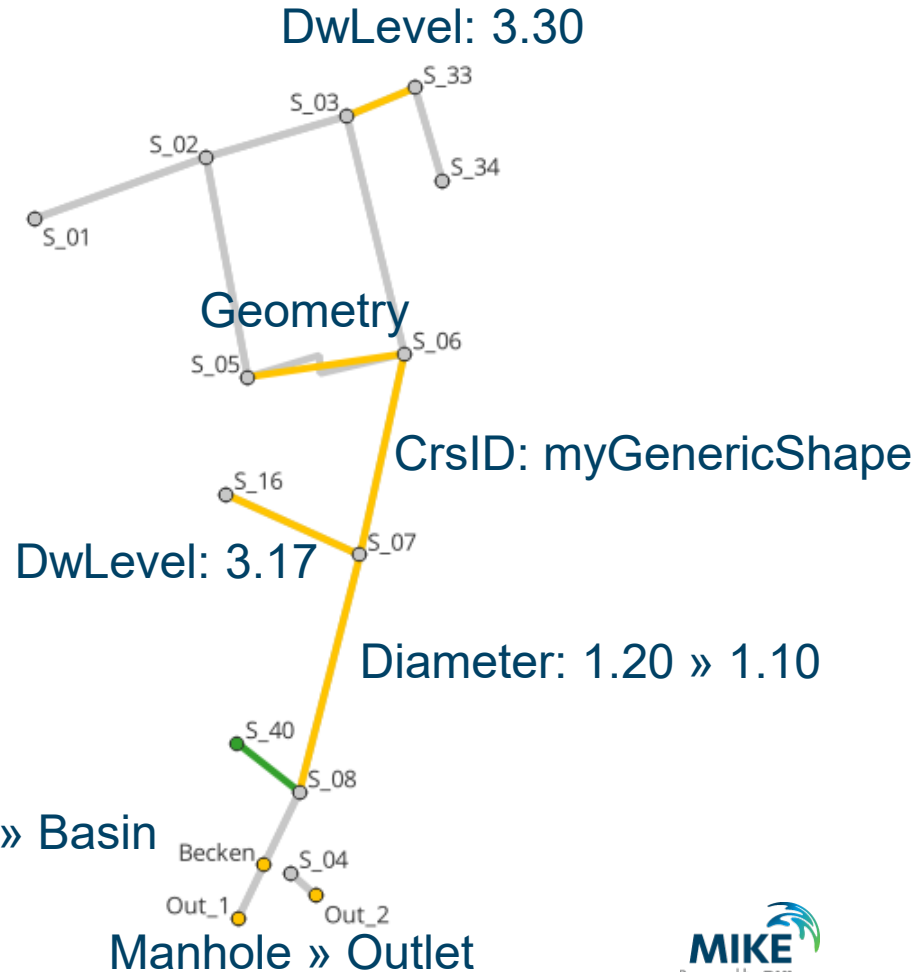


Model1 - Reference1

# Model1 - Reference1



Updated
Added
Deleted





# Compare Report for Model1 - Reference1

## Model version difference - msm\_Node

Differences of model 'reference version' and 'compared version'

Row	State	MUID	Enabled	GeomX	GeomY	TypeNo	Diameter	GroundLevel	InvertLevel	GeometryID	Br
1	Changed, compared version	Out_1	True	1751840.4619	5948169.0819	3	1	0.5	-0.5		
2	Original data, reference version	Out_1	True	1751840.4619	5948169.0819	1	1	0.5	-0.5		
3	Changed, compared version	Becken	True	1751867.2736	5948224.3725	2	1	3.65	1.4	meinBecken	
4	Original data, reference version	Becken	True	1751867.2736	5948224.3725	1	1	3.65	1.4		
5	Changed, compared version	Out_2	True	1751920.8185	5948192.9972	3	1	-0.65	-1.65		
6	Original data, reference version	Out_2	True	1751920.8185	5948192.9972	1	1	-0.65	-1.65		
7	Inserted in compared version	S_40	True	1751840	5948350	Manhole	1	3.3	1.7		
8	Missing in compared version	S_25	True			Manhole	1	3.9	3.2		
9	Missing in compared version	S_23	True			Manhole	1	3.7	1.95		
10	Missing in compared version	S_24	True			Manhole	1	3.8	2.1		

# Update

# Update dialog

Update model versions

**Settings**

Reference version  
Find changes in reference version, between the former and the updated instances

Version ID: References

Former Instance ID: Reference1

Updated instance ID: Reference2

**Conflicts**

**Reporting**

Updated version  
Create new version instance by applying changes to former instance

Version ID: Models

Former Instance ID: Model1

New instance ID: Model2

New Instance file: E:\Dokumente\unt\MIKEDoku\MIKE+\Menue\Werkzeuge\VersionManagement\Model3\yp23Model2.mupp

Filter on model type

Update all data

Update data from active features and modules only

Report file

Report file: E:\Dokumente\unt\MIKEDoku\MIKE+\Menue\Werkzeuge\VersionManagement\Model3\UpdateReport\_Model2.xml

Configuration

Open... Save

Analyse Run Close

- Reference version
- Model version
- Report file
- Analyse
  - Conflicts
- Run

# Conflicts

Update model versions

Select the operation to perform for records with multiple choices

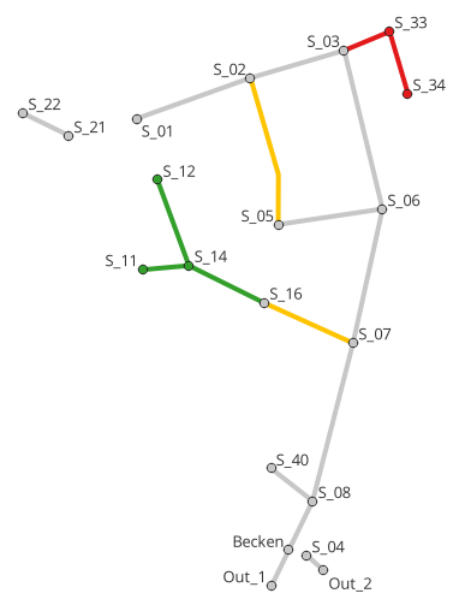
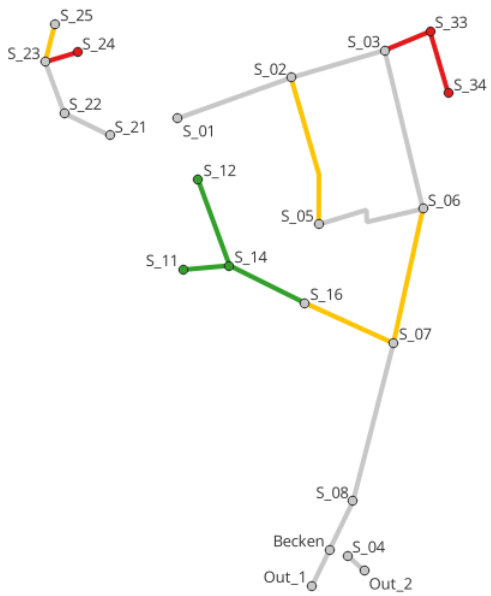
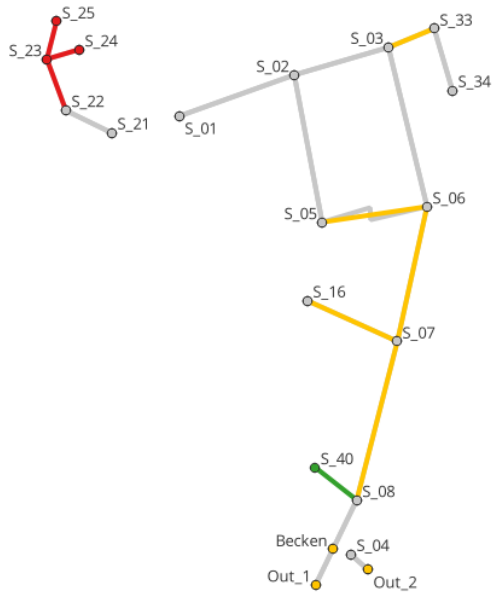
	Change in reference	Change in model	ID	Type	Action	Conflict comment
1	Updated	Updated	L_06	msm_Link	Update	Update with differen...
2	Updated	Updated	L_16	msm_Link	Update	Update with differen...
3	Updated	Deleted	L_25	msm_Link	Keep unchanged	
4	Added	NotExist	S_12	msm_Node	Insert	
5	Added	NotExist	S_11	msm_Node	Insert	
6	Added	NotExist	S_14	msm_Node	Insert	
7	Added	NotExist	L_12	msm_Link	Insert	
8	Added	NotExist	L_11	msm_Link	Insert	
9	Added	NotExist	L_14	msm_Link	Insert	
10	Deleted	Unchanged	S_33	msm_Node	Delete	
11	Deleted	Unchanged	S_34	msm_Node	Delete	
12	Deleted	Updated	L_33	msm_Link	Delete	
▶ 13	Deleted	Unchanged	L_34	msm_Link	Delete	

Configuration

Open... Save Analyse Run Close

- Copy to Spreadsheet
- Decide line by line
- Visualize in Map

# Model2 - Model 1



Model1 - Reference1

Reference2 - Reference1

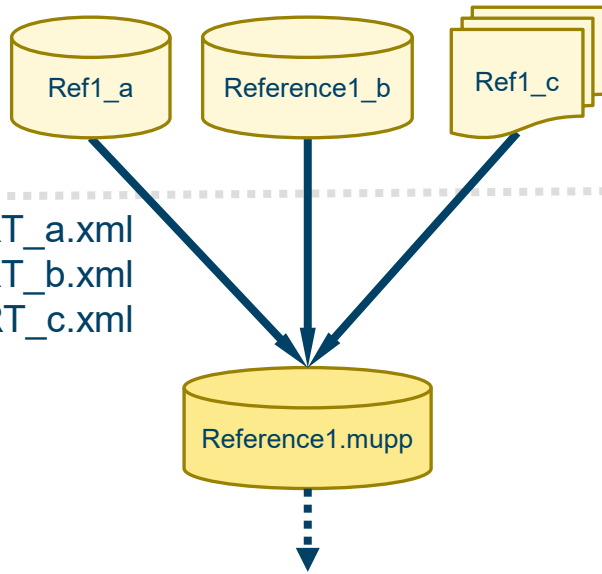
Model2 - Model1

# 04.

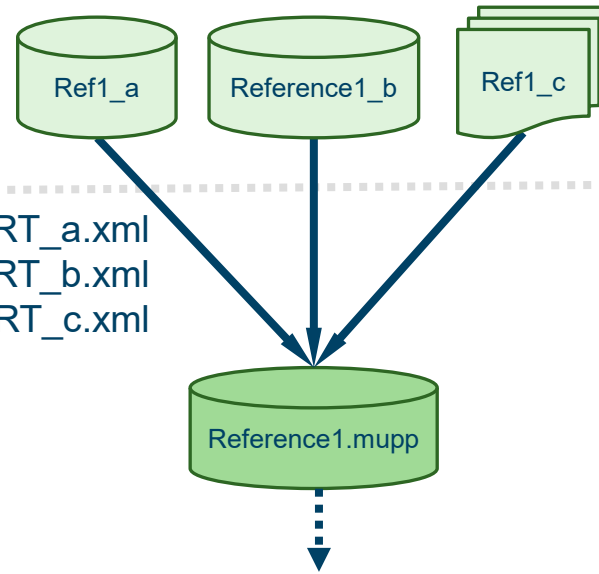
## Variations

# Managing more than one source

Date 1



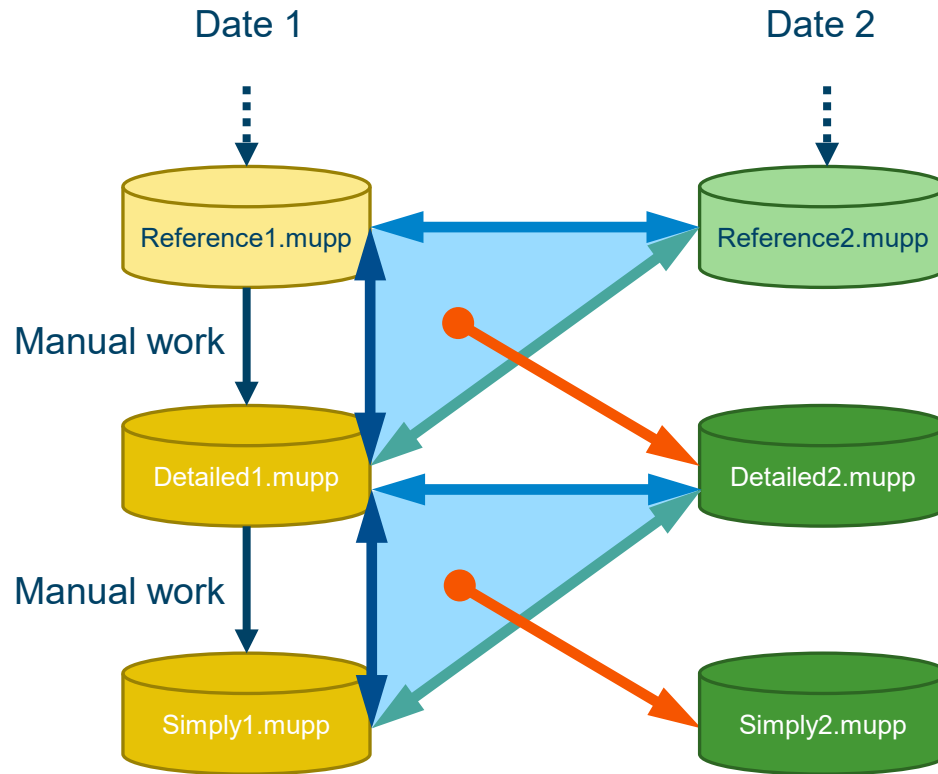
Date 2



Asset  
data

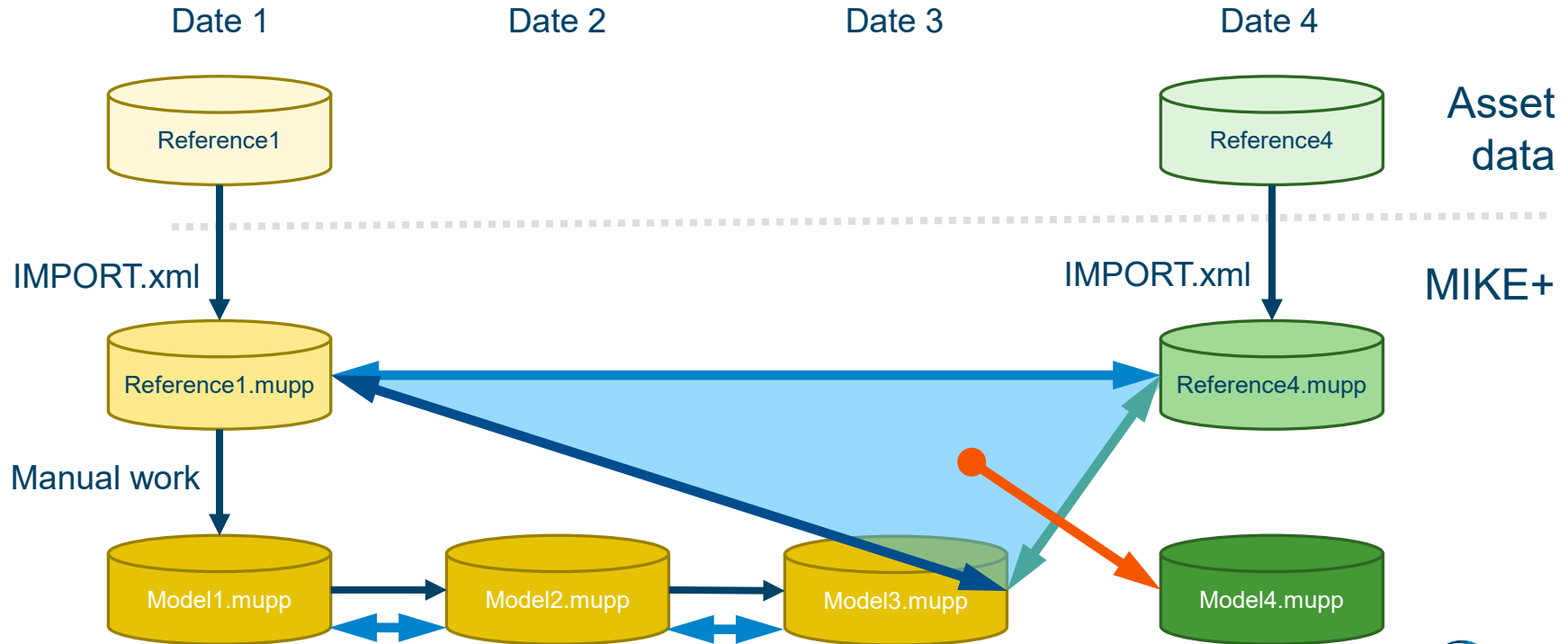
MIKE+

# Managing several models in parallel

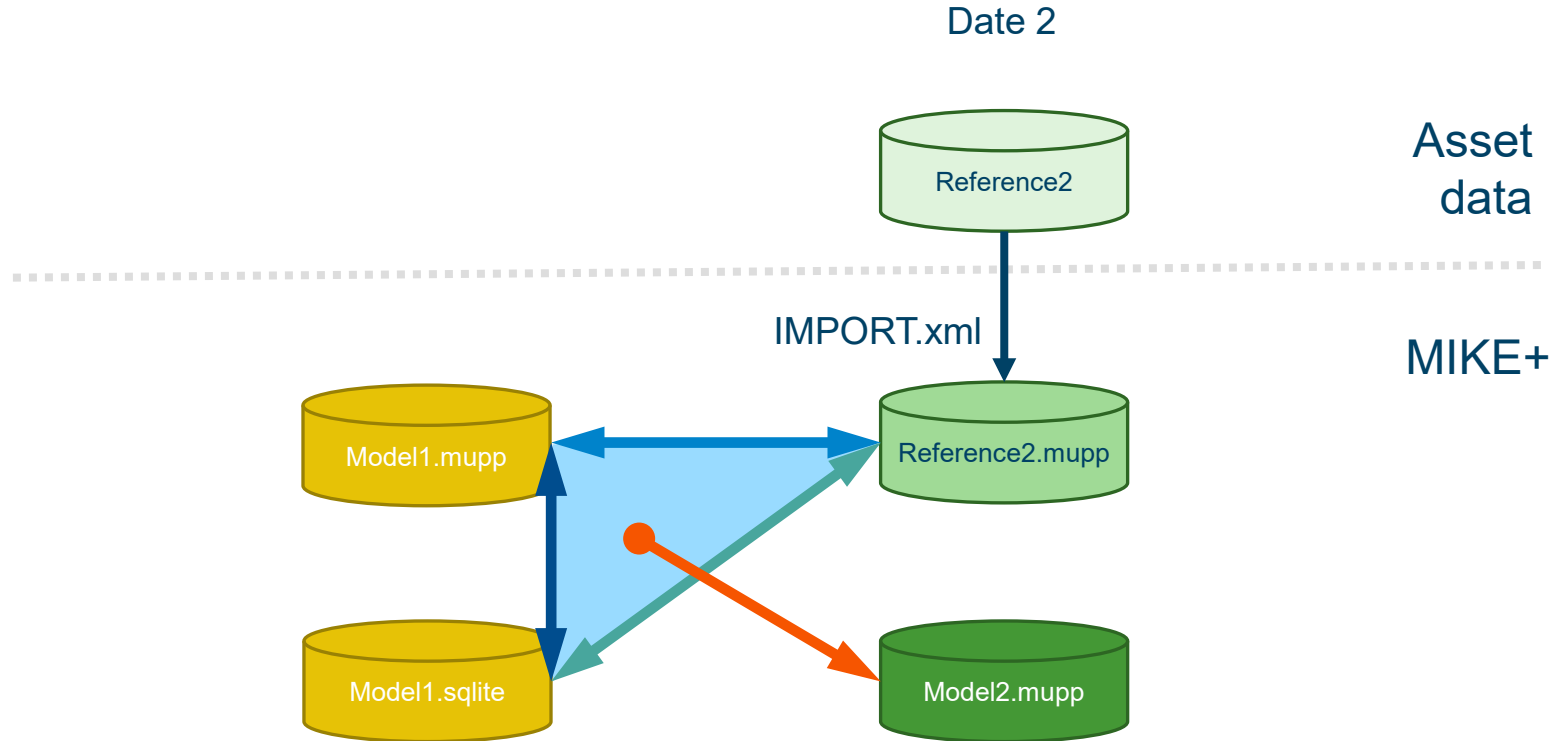




# Managing models over time



# If Reference1 is missing...



# If Reference1 is missing...

Change in Model1 vs Reference1	Change in Reference2 vs Reference1			
	Added	Deleted	Updated	Unchanged
Added	no diff »	keep model unchanged		
	with diff »	update from reference keep model unchanged		
Deleted			keep model deleted insert from reference	keep model unchanged
Updated	delete in model keep model unchanged		no diff » keep model unchanged with diff » keep model unchanged update from reference	
Unchanged			delete in model keep model unchanged	update from reference
NotExist	insert from reference keep model unchanged			

# 05.

## Challenges

# Challenges

- Need for a Reference1
- based on MUID
- no distinction between attributes when flagging changes
- Heavy with large number of differences

# 06.

## Result differences



# Result differences tool

MIKE+ Model Manager User Guide 2023, page 341 • Chapter 20 Result Differences Tool

Results differences

Configuration Reporting Comparisons

Identification

ID: Compare\_WaterLevels  Add to batch

Description:

Input results

Report criteria

Result file 1: 1\_BaseDefault\_Network\_HD.res id ... Description: new/changed/updated

Result file 2: b\_BaseDefault\_Network\_HD.res id ... Description: old/reference

Report format

Comparison

Comparison start: 17.06.1986 14:00:00

Comparison end: 17.06.1986 17:00:00

Compare items from selection only

Use model selection

Use selection file

ID	Description	File 1	Description 1	File 2	Description 2
Compare_Water...		E:\Dokumente\j...	new/changed/u...	E:\Dokumente\j...	old/reference

Configuration

Batch run  Create batch report

- compares two result files (res1d, res, out)
- one configuration per result item (water level, discharge etc.) – combine several configurations in batch
- computes various statistical parameters per element, based on MUID
- shows time series
- creates report as html or in „Comparisons“
- exports to shape file



# Next online course

<https://events.dhigroup.com/modelling-tanks-pumps-and-other-structures-in-collection-systems-online-course/>



THE ACADEMY  
by DHI

## Modelling tanks, pumps and other structures in collection systems

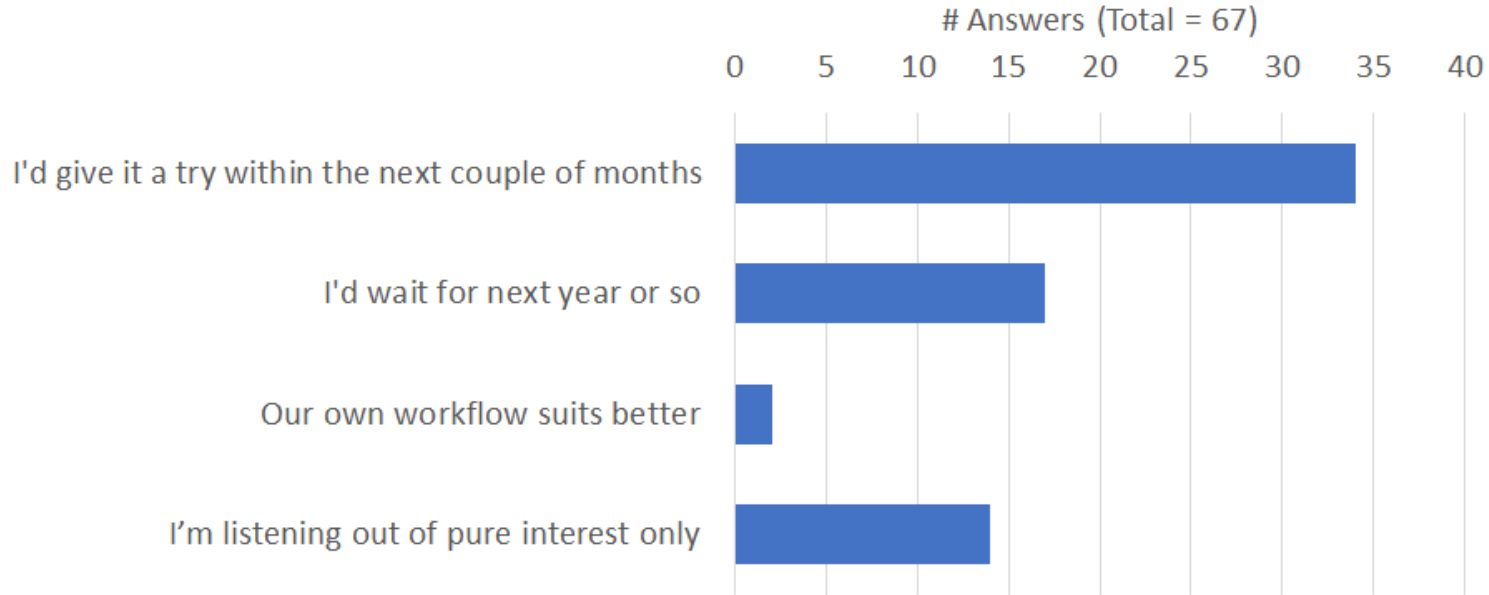
Using MIKE+

An instructor-led online course | 25 April-2 May 2023

Explore different urban drainage model elements and learn how to correctly implement them to create special structures that yield accurate hydraulic models in MIKE+.

Learn more

# Poll: Would you apply MIKE+ Version Management?





# Thank you – and if you enjoyed this webinar, please spread the word!

For questions or suggestions please contact

Training in general: [evaf@dhigroup.com](mailto:evaf@dhigroup.com)

Support questions: [mike@dhigroup.com](mailto:mike@dhigroup.com)

This webinar in specific: [tht@dhigroup.com](mailto:tht@dhigroup.com)

March 2023