



RiverWare Integration with Delft-FEWS

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What is Delft-FEWS?

Deltares

Enabling Delta Life 

Common Platform and Interface

- Integrate multiple models
 - Automate workflows
- Manage data
 - Automated data streams
 - Edit inputs
- Visualize data and other model feedback
- Archiving

What is Delft-FEWS?

File Tools Options Help

Forecasts

- Test Data
 - Import test files
 - Pre-Process test data
 - Process Data
- Preparation
- Real-Time
 - Data
 - Big10 Main
 - RTC-Tools
 - RiverWare (RBS)
 - Run model
 - SH1 Report
 - RiverWare (Opt)
 - Publish
 - SpecialPublish
 - Short Term Planning
 - Upstream Basins
 - Big10
 - Mid-Columbia
 - Lower Snake
 - Lower Columbia
 - FCRPS
 - RTC-Tools
 - Riverware (RBS)
 - Riverware (Opt)
 - Report
 - Publish

Warm state selection

Time zero: 09-18-2013 07:00

Forecast length: 09-20-2013

edit run options

PST/PDT	A	B	C
GN_Sim (MW)		FB_Req (FT)	FB_Sim (FT)
Chief Joseph CHJ		Chief Joseph CHJ	Chief Joseph CHJ
RiverWare_Big10 [1]		User_Input_RT	RiverWare_Big10 [1]
Mean	775	952.8	952.6
Sum	39522	2858.5	48584.9
Min	141	952.5	951.9
Max	1300	953.5	953.7
09-18-2013 04:00	236		952.2
09-18-2013 05:00	195		952.3
09-18-2013 06:00	301		952.4
09-18-2013 07:00	432		952.2
09-18-2013 08:00	539		952.1
09-18-2013 09:00	581		952.1
09-18-2013 10:00	609		952.1
09-18-2013 11:00	534		952.2
09-18-2013 12:00	668		952.2
09-18-2013 13:00	781		952.0
09-18-2013 14:00	810		951.9
09-18-2013 15:00	819		951.9
09-18-2013 16:00	910		952.0
09-18-2013 17:00	884		952.0
09-18-2013 18:00	987		951.9
09-18-2013 19:00	1007		951.9
09-18-2013 20:00	985		951.9
09-18-2013 21:00	1023		951.9
09-18-2013 22:00	659	952.5	952.2

Chief Joseph

[1] GN_Sim

FB_Req [1] FB_Sim FB_Min user FB_Max user

[1] QO_Sim [1] QS_Sim

Big10_RiverWare_RT: [1] Run model 09-18-2013 07:00:00 PDT Current

[1] Run model 09-18-2013 07:00:00 PDT Current

Map Data Forecast Management System Monitor Modifiers Model run tables

Buttons

RTC	RW-RBS	RW-OPT	
GCL	FB	FB R	FBMax
CHJ	dFB	FB Stable	FBMin
MidC	FB Guide	FB+FB R	dFB Up
			dFB Dn
LWG	TW	TW R	dTW Up
LGS	dTW		dTW Dn
LMN			
IHR	QI	QI R	QOMax
	QO	QO R	QOMin
MCN	QT	QT R	QSMMax
JDA	QS	QS R	QSMMin
TDA	QS %	QS % R	dQO Up
BON	dQO	QO+QO R	dQO Dn
	Flows	Flows R	
MCOL			
LSNK	GN	GN R	GNMin
LCOL	Cap	1% Flag	GNMax
Big10	HK		
BPA	Project Sim	Project R	Constraints
	ALL Sim	ALL R	Gen.Hours
	FedLoad	LoadAdj	ALL Load
	INC	INC Min	INC Max

Logs

08-04-2016 14:10:15 INFO - ***** Workflow Big10_RiverWare_RT Completed *****

08-04-2016 14:10:15 INFO - Start time: 2016-08-04 21:10:00 End time: 2016-08-04 21:10:15 T0: 2013-09-18 14:00:00 User Id:Mitch Anthony Clement

08-04-2016 14:10:15 INFO - TaskRun.Completed: Task Big10_RiverWare_RT with ID 208 completed in 14s

08-04-2016 14:10:15 INFO - TaskRun.TimeSpend:TransformationModule 2s 13% GeneralAdapter (without executables) 2s 11% SecondaryValidation 0s 2% C:\Program Files\CADSWES\RiverWare 6.9\riverware.exe 9s 61%

C:\Program Files\CADSWES\Working\2016_06_27_P2_27.1_MC_Dev\rcbin\liver.exe 2s 12% detectors 1s 5% cache files 0.0% database 0s 0% (0 mc/lgsr: 65 kB - 6.4 MB/e: 62 queries: 27 rows): loaded 0.0 time series read 8405 (unique=2950)

Logs 2 : Forecaster Notes

Mitch Anthony Clement | Current system time:09-18-2013 07:00 PDT | 21:13:09 GMT | 15:13:09 MDT | Stand alone | -133.743 , 42.398 | 0.0 MB/s | 150 MB

RiverWare Adapter for FEWS

- Pre-adapter
 - Converts FEWS data files to RW format
 - Reads run info – model selection, run range, run type (RBS, Opt)
 - Writes RCL batch script file
- Post-adapter
 - Converts RW outputs to FEWS format
 - Writes RW diagnostics to FEWS log file

RiverWare Integration in BPA HERMES

- High level of collaboration




- Concurrent development
 - FEWS configuration – BPA and Deltares
 - RiverWare Adapter – CADSWES
 - RiverWare Models – CADSWES
- Joint Solutions

HERMES Solution Path Displays

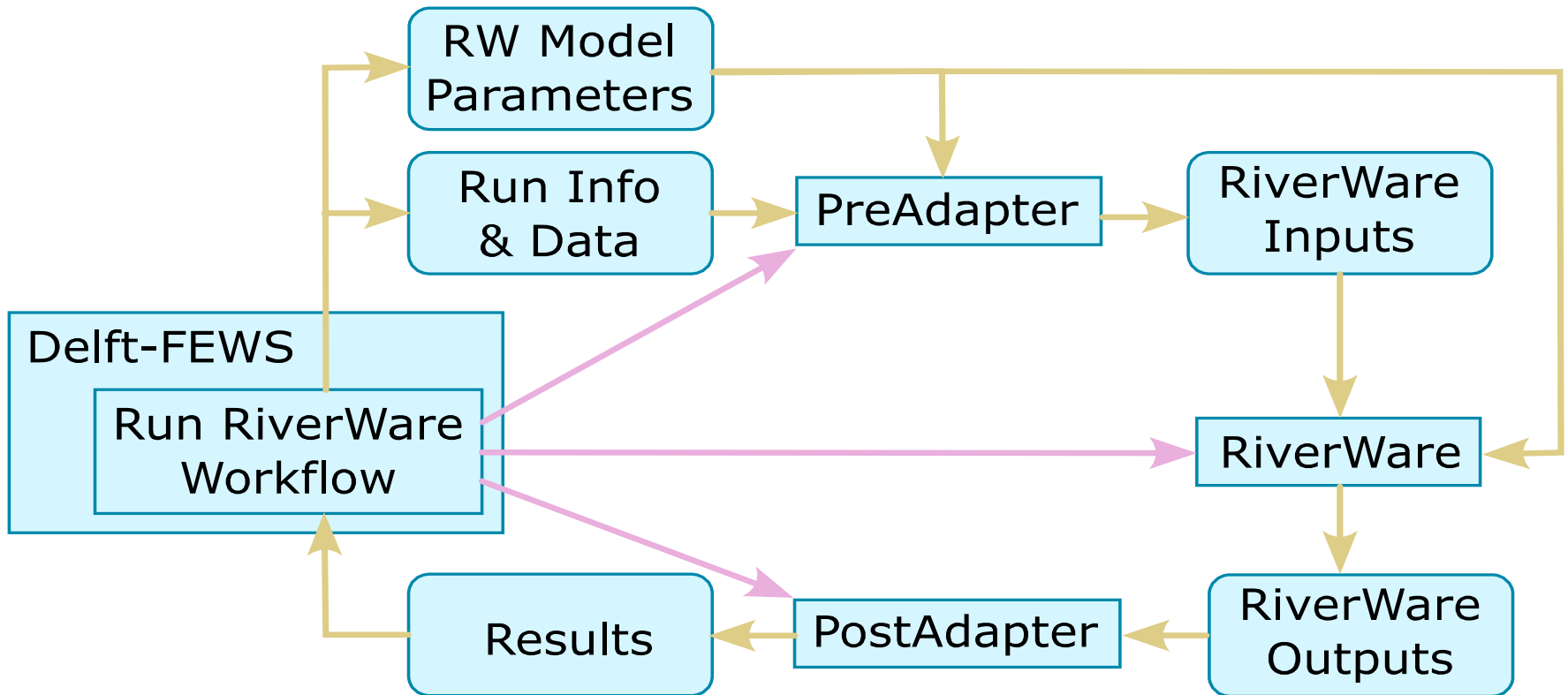
Constraint Violations

09-18-2013 07:00 to 09-19-2013 06:00													
	FB		TW		QO		QS		QT		GN		Mass Balance
GCL	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-
CHJ	B:2 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-
MIDC	B:4 V:0	0.0	B:- V:-	-	B:10 V:0	0.0	B:- V:-	-	B:- V:-	-	B:- V:-	0.0	-
LWG	B:2 V:1	0.6	B:0 V:0	0.0	B:4 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:6 V:0	0.0	-
LGS	B:2 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:4 V:0	0.0	-
LMN	B:3 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:3 V:0	0.0	-
IHR	B:5 V:0	0.0	B:0 V:0	0.0	B:3 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:3 V:0	0.0	-
MCN	B:2 V:0	0.0	B:0 V:0	0.0	B:5 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-
JDA	B:2 V:0	0.0	B:0 V:0	0.0	B:8 V:1	15.3	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-
TDA	B:2 V:0	0.0	B:0 V:0	0.0	B:10 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-
BON	B:2 V:0	0.0	B:0 V:0	0.0	B:33 V:0	0.0	B:23 V:0	0.0	B:0 V:0	0.0	B:0 V:0	0.0	-

Detailed Opt Solution Analysis

Goal Summaries	T0	Dispatch time	Workflow	What-if scena	
Violated Constraints Opt	 12-04-2013 24:00:00 03-01-2016 07:38:50 Big10_RiverWareOpt_ST_Planning						
Opt Solution Details							
Priority	Section	Goal	Frozen Constr Loc	Frozen Constr	DateTime	Constr Satis...	Frozen Constr Priority
72	New Constraints	Meet Load with Available...		Meet Load with Available ...	12-15-2013 24:00:00	100 %	72
72	New Constraints	Meet Load with Available...		Meet Load with Available ...	12-15-2013 24:00:00	100 %	72
74	Goal Summaries	QO_Req					0
74	Solutions	QO_Req					0
74	New Constraints	QO_Req	BON	QO_Req	12-05-2013 18:00:00	95.4632 %	74
74	New Constraints	QO_Req	BON	QO_Req	12-05-2013 19:00:00	100 %	74
74	Prior Constraints	QO_Req	BON	MaxdQOUp	12-05-2013 19:00:00	100 %	18
77	Goal Summaries	FB_Req					0
77	Solutions	FB_Req					0

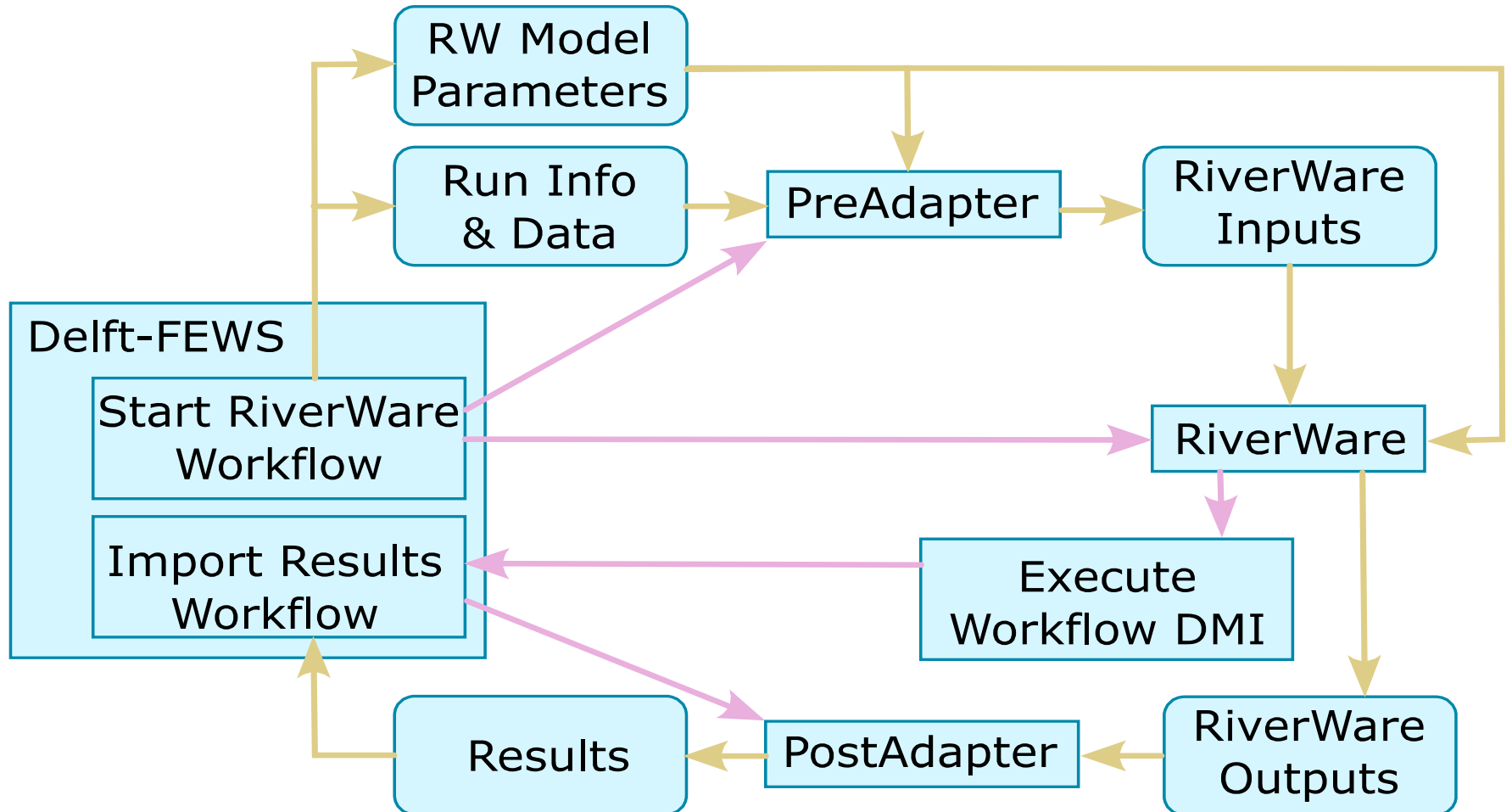
RiverWare Headless from FEWS



RiverWare Integration in TVA-FEWS

- Long history of RiverWare use
- Delft-FEWS enhancements and configuration to complement current use of RiverWare
 - FEWS workflow opens RiverWare workspace
 - Execute model runs from RiverWare
 - Execute FEWS workflows from RiverWare
- Same RiverWare Adapter

RiverWare Interactive from FEWS



Current and Future RW-FEWS Integration

- Idaho Power
- National Weather Service - CHPS