*S*ATURN

ATKINS
Member of the SNC-Lavalin Group

Dirck Van Vliet

UNIVERSITY OF LEEDS

2017 User Group Meetings

Leeds

Thursday 16rd November 2017

20 November 2017

1

Programme

ATKINS
Member of the SNC-Lavalin Group

Morning Session

11.00 - SATURN News

11.30 - Presentations

- SatGPU – Rapid Assignments using GPU-based hardware
  Atkins & University of Sheffield

- Latest SATURN v11.4 & v11.5 Releases
  Dr Dirck Van Vliet

12.45 - Lunch

Afternoon Session

14.00 - Presentations

- Modelling Ultra Low Emission Zones with SATURN , *TfL*

- What a Noise! Assignments, Variability & Fixed Cost Flow 101*, Atkins*

15.15 – Coffee Break

15.35 – Presentations

- TUBA, TEMPro, WITA & DIADEM Update, *Atkins*

16:00 – User Requests

16.15 – Close

20 November 2017

2

Software Releases

3

Release Schedule
Recent SATURN Core Releases

Continuation of 11.3.xx series

Current release v11.3.12W

- Standard for HERTMs & HAMs
- Floating Point Errors
- Resolves issues when skimming UFO files for $T_{ij} = 0$

Next (overdue) release = v11.4

- Likely to be either v11.4.05R or S
- Updates to simulation
- Improved convergence
- Resolves UFC hanging

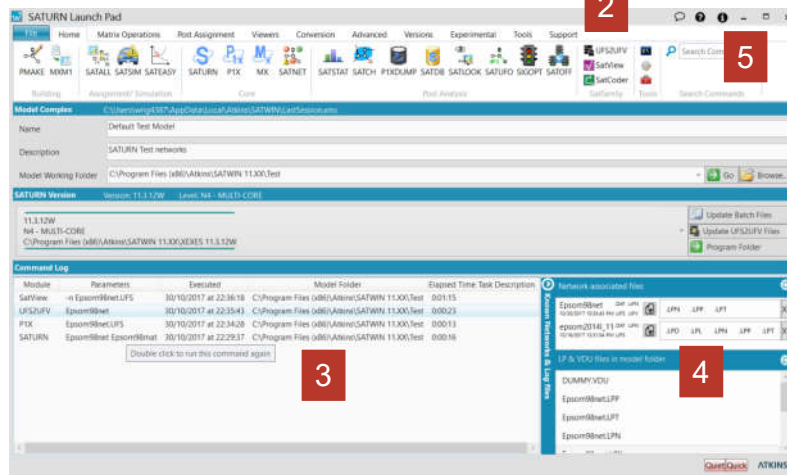| Version	Date	Release
11.3.12U	Nov'15	XEXES + Installer
11.3.12V	Apr'16 onwards	Hot fixes for specific users
11.3.12W	May'17	Full Installer
	Followed by	Hot fixes for specific users
11.4.05R or 11.4.05S	Nov'17 (target)	Full Installer

4

2

Welcome to SatWin v11.4

A spring clean

ATKINS
Member of the SNC-Lavalin Group

Improvements include:

1. General refresh
2. Links to SatView, UFS2UFV & SatCoder
3. Expanded Command Panel
4. Short-cut to recent output files
5. Improved links to SATURN support & website

20 November 2017   To update footer go to 'Insert' Tab > Header & Footer   5

SATVIEW Update

ATKINS
Member of the SNC-Lavalin Group

Current Release v1.18

Published in July 2017

- Trace bendy updates
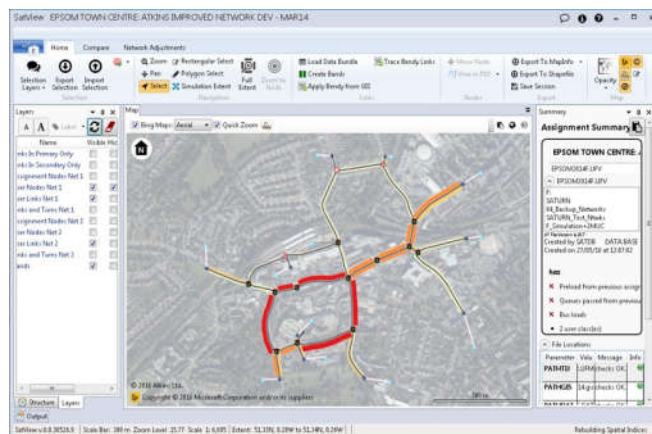- Selections / Zooms
- Minor bug fixes

Top Tips:

1. Use existing DA codes for SLA reporting
2. Re-use session logs for repeating processes

See Webinars for more information

As part of v11.4, revised UFS2UFV gives:

1. Additional 11.4 Data Fields
2. Data Fields for SLAs and User Calculated by SATDB

20 November 2017   To update footer go to 'Insert' Tab > Header & Footer   6

SATcoder Update

ATKINS
Member of the SNC-Lavalin Group

Current Release v1.3

Published in October 2016

Latest Beta is SatCoder v1.5

- Release Candidate May'17
- Mitigates issue of memory leakage on certain projects
- Available on request under FY17/18 SATURNnext Programme

Often used within Atkins as a Network Coding Review tool
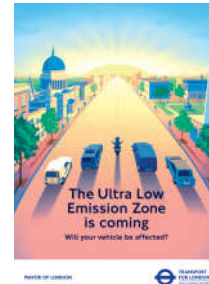

Other Software Developments

ATKINS
Member of the SNC-Lavalin Group

Recent Development Collaborations ΛTKINS
Member of the SNC-Lavalin Group

Area Tolling

- Developed in collaboration with TfL for ULEZ
- New multi-cordon based equilibrium assignment method
- Works with independent and/or additive cordon charging systems

SATGPU

- Collaborative R&D Project using GPU-based hardware
- Proven during Phase 1, Optimised with Phase 2
- <u>Substantially</u> faster than SATURN Multi-Core

© FutureMark (2017)
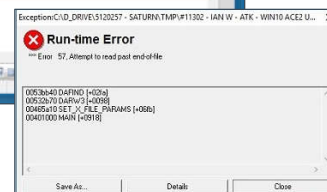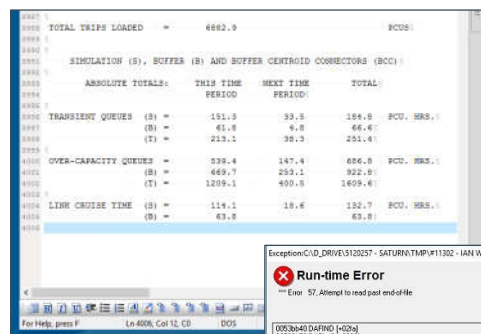
See following Presentations

20 November 2017

9

UFC Hanging … finally solved!!! ΛTKINS
Member of the SNC-Lavalin Group

Technically challenging

Symptoms:

- Whilst SATALL appears to finish …
  - Truncated LPT file
  - Corrupted UFS / UFC
- Appears to be a random event
- Increased probability if:
  - More recent Windows 10
  - More recent Intel processors
  - Greater frequency with Atkins hardware (?)
- Resolved with migration to 2017 Salford / IVF compilers
- Adopted for SATURN v11.4 onwards

20 November 2017

10

Technical Support

11

OMX - Open Matrix Data Format (i)

ATKINS
Member of the SNC-Lavalin Group

Have we overlooked this?

What is OMX?

- Open Matrix Data Format standard using HDF5 compression standard
- Originated in the US (www.sites.google.com/site/openmodeldata/)
- Loose-linkages to existing transport packages (e.g. EMME, TransCAD, VISUM)
- Already available in CUBE v6.4.2 & SATURN v11.3.12W onwards

Why use OMX rather than CSV?

- Smaller file sizes & faster read/write
- CUBE / SATURN revision handles stacked matrices
- Increased data precision (i.e. not fixed dp!)

Applications:

- TfL New Demand Model
- Available with WITA v2.0 ???

Matrix   Data

6

OMX - Open Matrix Data Format (ii)

ΛTKINS
Member of the SNC-Lavalin Group

An example using ELHAM

Stats: 2,358 zones, 4 Time Periods, 5 User Classes, 2 Forecast Years, 2 Scenarios

Measure		TUBA Format 2	CSV	OMX	UFM
# of Files		400	400	80	80
Time Taken (mins)	Export	59	28	6	
	Import	517	9	2	
	Total	**576**	**36**	**8**	
Time Ratio		**71.1**	**4.5**	**1.0**	
Total Size (Gb)		50.0	16.4	5.1	6.4
Size Ratio		**9.9**	**3.2**	**1.0**	

SATUFO Files (Another reminder!)

ΛTKINS
Member of the SNC-Lavalin Group

We should be using them by default …

Store path (origin-based) information

Secondary analysis undertaken using UFO files

Advantages:

- Paths **extracted** rather than **recreated** from existing link costs (UFC)
- Secondary analysis only takes a few minutes
- Same levels of accuracy as the UFC file
- Available in SATLOOK, SATCH, SLAs & SATPIJA
- Create during the assignment (SAVUFO=T) or post-assignment (SATUFO)
  - but for larger models, recommend calling SATUFO separately

Disadvantages:

- Assignments will take longer (an extra process)

  but available with Multi-Core (& SatGPU soon!)

© *www.waterdesalinationplants.com (2013)*

HIGHLY
Recommended

SATURNnext Programme

Early Access for Users

ATKINS
Member of the SNC-Lavalin Group

As a SATURN*next* member:

- early hands on experience of potential new features
- chance to influence development
- working more closely with SATURN development team
- potential resolution of in-house IT "problems" before Release

Reduced scale in FY17/18

Tasks undertaken in last 12 months include:

- SatView and SatCoder Release Testing
- SATURN v11.5 Area Tolling

20 November 2017

15

Admin & Training

ATKINS
Member of the SNC-Lavalin Group

20 November 2017

16

Training Material & Courses

ATKINS
Member of the SNC-Lavalin Group

Webinars

- SatView: Full set of "How to .." series created in Apr'17
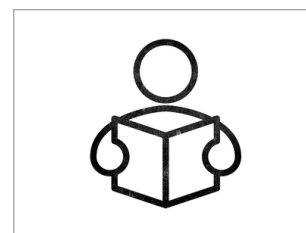- SatCoder: Basic introduction produced

Introduction to SATURN Course

3-day course for new and beginner users

Forthcoming dates:

- 6th – 8th February 2018
- September 2018

Further details on the SATURN Website

- www.saturnsoftware.co.uk -> Events

© Richard de Ruijter, Dribbble.com (2013)

20 November 2017

17

Administrative Details

ATKINS
Member of the SNC-Lavalin Group

Housekeeping

E-mails:

- Support e-mail: saturnsoftware@atkinsglobal.com
- Next programme: saturnnext@atkinsglobal.com
- Mailing List: saturnmail@atkinsglobal.com

SATURN support telephone number 01372-756755

FTP site available to exchange model files for support queries

Key Dates

Christmas Break: Closing Thu 21st Dec, Re-opening Wed 3rd Jan

November 2017:	User Group Meetings
	- Epsom (3rd Nov) & Leeds (16th Nov)
	v11.4 Release
January 2018:	SatGPU Release
February 2018:	Introduction to SATURN Course

20 November 2017

18

Programme

ATKINS
Member of the SNC-Lavalin Group

Morning Session

11.00 - SATURN News

11.25 - Presentations

- SatGPU – Rapid Assignments using GPU-based hardware
  Atkins & University of Sheffield

- Latest SATURN v11.4 & v11.5 Releases
  Dr Dirck Van Vliet

12.45 - Lunch

Afternoon Session

14.00 - Presentations

- Modelling Ultra Low Emission Zones with SATURN , *TfL*

- What a Noise! Assignments, Variability & Fixed Cost Flow 101*, Atkins*

15.15 – Coffee Break

15.35 – Presentations

- TUBA, TEMPro, WITA & DIADEM Update, *Atkins*

16:00 – User Requests

16.15 – Close

20 November 2017

19

SATURN

ATKINS
Member of the SNC-Lavalin Group

2017 SATURN User Group Meeting
- Morning Presentations

20 November 2017

20