2018 User Group Meeting - Introduction

Dirck Van Vliet

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UNIVERSITY OF LEEDS

November 2018

Final 03/12/18 - UGM2018 Introduction

Programme
- Morning Session

10:30 - SATURN News

11:00 - Latest on SATURN 11.5

SATURNnext Programme

- Area Charging
- SATGPU

12:15 – DfT Software Update

- TUBA, TEMPro, WITA & DIADEM

12.30 - Lunch

- Afternoon Session

13:30 - SATURN Simulation 101

- Part 1 – Understanding Simulation Capacities
- Part 2 – Coding Signalised Roundabouts

15.00 – Tea / Coffee

15:20 - SATURN Simulation 101 *continued*

- Part 3 – Improving Convergence

16.00 – User Requests

16.15 – Close

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Software Releases

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Release Schedule – SATURN 11.4

Continuation of SATURN 11.4.xx series

Current release 11.4.07H

- New SAT10KEY Licence File
- Expected to provide similar but not identical results to 11.4.06D
- Accumulated fixes to August 2018 including:
  - Significant revisions to the post-assignment SATUFC / SATUFO processes
    - *SATALL / P1X / SATLOOK – problems with secondary analysis outputs if CLIMAX option used (#133)*
    - *SATUFC - ensure consistency with original SAVEIT assignments (#134)*
  - SATALL Hanging and/or UFS+LPT corruption addressed (#131)
  - Various Floating Point Errors (eg #118, #128 and Fixed Cost Flow Function with #130)

Version	Date	Comment
11.3 12F	May'15	
11.3.12W	May'17	**Ancient!**
	Followed by	Hot fixes for specific users
11.4.06D	Feb'18	Using new style installer & sub-folder names & locations
	Followed by	Hot fixes etc
11.4.07H	Aug'18	Full installer
	Followed by	Limited number of hot fixes

See "Appendix E Latest"

- Provides detailed summary
- Latest version on website

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Release Schedule – SATURN 11.5

Focus on SATURN 11.5

- Simulation updates already included in 11.4.07H Release
  - Smaller step-up from 11.4
- Focus on:
  - new Area Charging options for TfL (& more widely)
    - *See UGM presentations*
  - SATOMX compatibility
  - SATGPU Add-on

Timetable

- November 2018 – TfL + their P4 Development consultants
- December 2018 – Under SATURNnext
- Spring 2019 – Full release

Other Software Releases

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Other Products

SatView

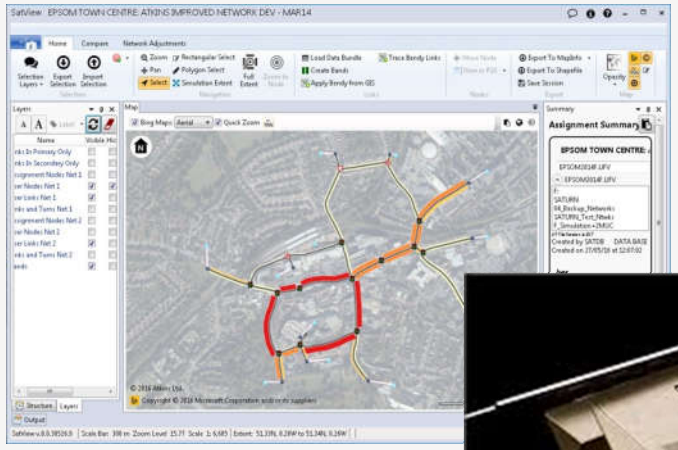
- Current Release v1.20 (Apr'18)
  - Minor Updates
- In-development v1.30
  - Focus on improved layers / general user-ability
  - Response to user feedback

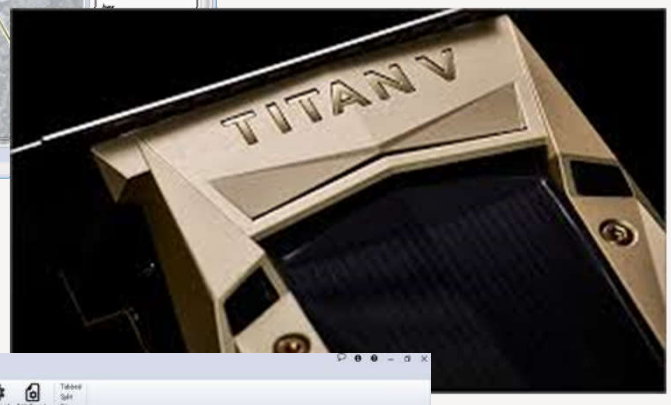
SATGPU

- Two pilot studies starting
  - Trans-Pennine Tunnel & M25 RIS2 Scheme
- Beta Release 11.3.26W available under SATURNnext programme
- Focus on migrating to SATURN 11.5
  - Users need to move away from SATURN 11.3.12W!

SatCoder

- Current Release v1.3 (Oct16), v1.5 Beta (May'17)
- Continued focus on SatView at the moment





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SATURNnext Programme

Early Access for Users

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

Underway for FY18/19

Similar format to previous years with focus on

- SATURN 11.5 Beta Release
  - Including Area Charging
- SATGPU Beta
- Next SatView v1.30 (2019 Q1)

See morning main presentations

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Technical Support

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Windows 10, P1X & disappearing mice

Several recent support queries

Symptoms:

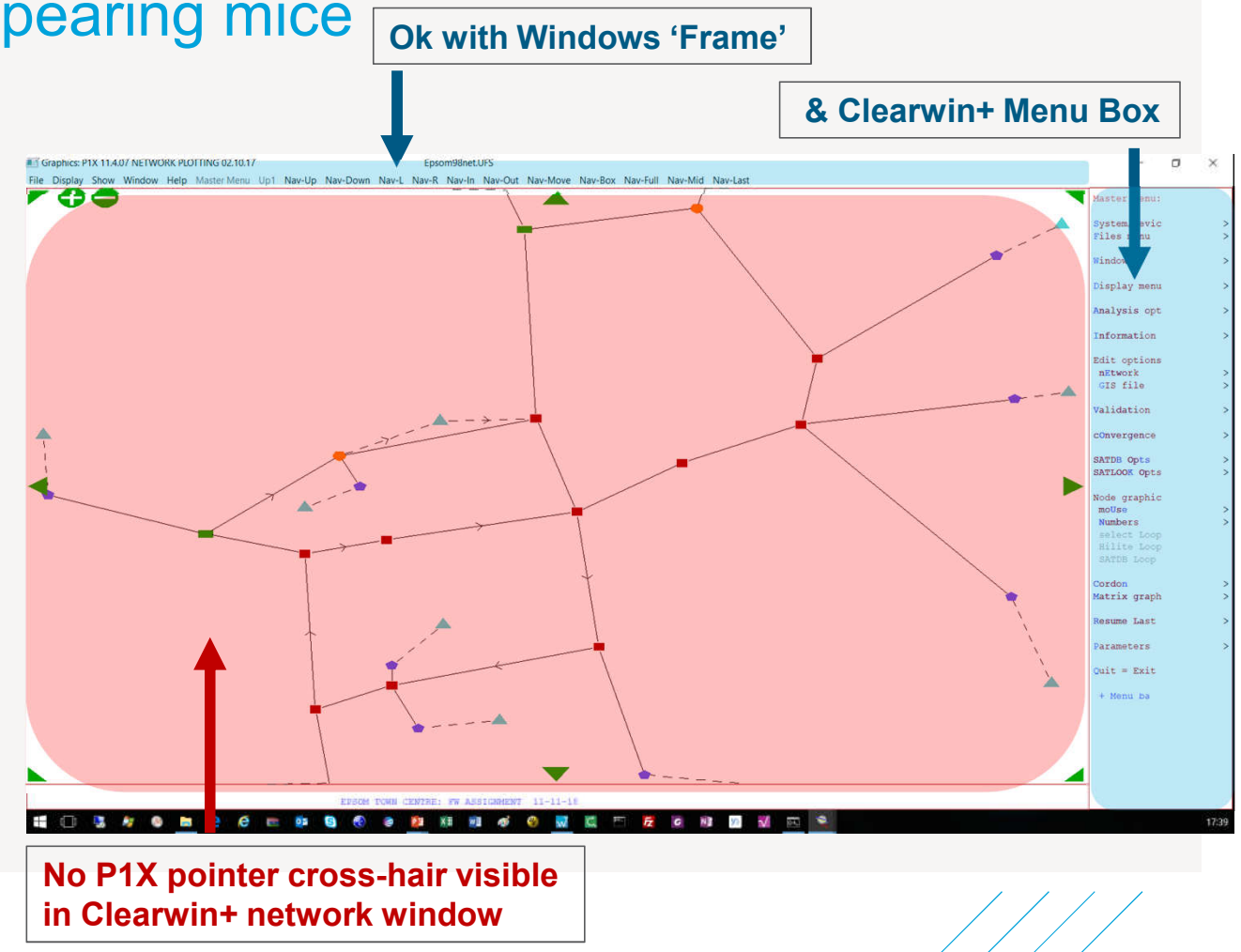
- Missing P1X cross-hairs on network display

Characteristics (from reported cases so far):

- Using P1X on Windows 10 Build 1709 or later
- Some Laptop users with dual displays (laptop + external monitor)
- Occasionally with Laptop display only
- Please contact *SATURN support* if encountered

Workaround:

- Boot / sign-in with laptop lid / display closed with external monitor attached
- Ok thereafter with dual monitor usage



UFC Hanging … finally solved (Appendix N.1)

Symptoms

Whilst SATALL appears to finish:

- Truncated LPT file
- Corrupted UFS / UFC

Appears to be random event

- Conflict between SATALL and Windows
- More prevalent with Windows 10 and latest Intel processors

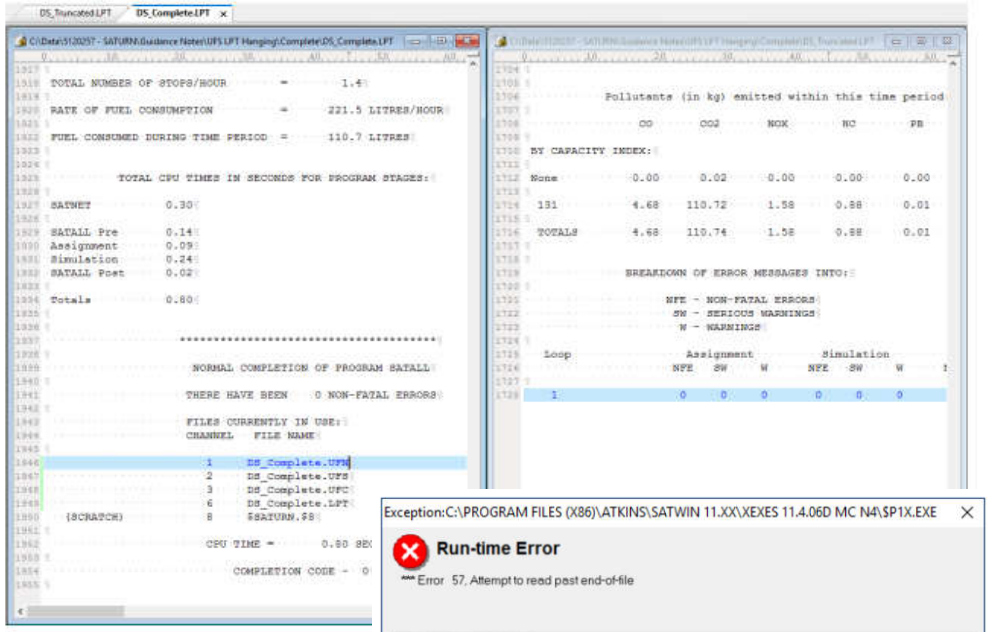
Resolved with SATURN 11.4.07H Release

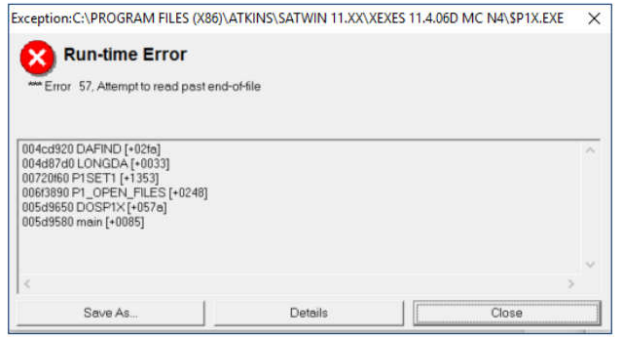
- No further errors reported since ….

Workaround for earlier SATURN versions

- Set WINDY=F in Network DAT file and/or
- Set QUIET=T in SatWin (/ batch file)
- See Appendix N.1 for further details

Example of Truncated LPT File





File Access Violation

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Updates to SATOMX (i)

What is OMX?

- Open Matrix Data Format standard using HDF5 compression standard
- Originated in the US (https://github.com/osPlanning/omx/wiki)
- Increasing adoption with Transport Modelling Packages

Why use OMX rather than CSV?

- Smaller file sizes & faster read/write
  - Testing shows: > 3x reduction in file size, >4 read-in time
- Accommodates stacked matrices
- Increased data precision (i.e. not fixed dp!)

Growing pains …

- Incompatible formats between software packages
  - SATOMX 11.3.12W – 11.4.07H ⇔ CUBE 6.4.2 only
- Key players implementing OMX v0.2 specification
  - Will be available with SATURN v11.5 Beta shortly

Compatible with OMX v0.2 Specification

PTV VISUM the mind of movement

Release: 14+

Cube

Release: 6.4.4

Matrix Data

Release: 11.5.03?

Emme

Release: 4.6.7

DfT Software

WITA v2.0:
- Scheduled for the full release

TUBA & DIADEM
- Under investigation

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Updates to SATOMX (ii) – Performance Comparison

Example using TfL 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**	

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Differences in UFO / UFC Files (Appendix N.2)

Several gremlins uncovered in SATURN 11.3 & 11.4

1. Truncated paths generated for specific cell ij pairs when no demand (ie Tij = 0)

- Status: likely benign in most cases unless using all OD-pairs costs (eg VDM distribution or WITA Productivity Impacts)
- Fixed for **11.3.12W (May'17)** using internal 'workaround' via new PLUFO seeding option
- Full fix for **11.4.06D (Feb'18)** with modified UFO algorithm
  - Don't mix & match UFOs !

2. Using SATUFC & SATUFO with CLIMAX option (see #133)

- Secondary analysis undertaken using UFC / UFOs generated post-assignment do not correctly take into account CLIMAX effects. Status: potentially serious - margin of error dependent on influence of CLIMAX on network costs & subsequent accumulation over path-building process)
- UFC / UFOs generated during the assignment are **not** affected

3. Using SATUFC (see #134)

- Post-assignment SATUFC may produce different paths to main assignment (when SAVEIT=T) as value of UNCRTS not correctly defined – long standing problem

Both fixed for **11.4.07H (Aug'18)**

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Updated Documentation

Appendix E – Latest SATURN Bugs in 11.3, 11.4 and 11.5

List of all known issues and if/when fixed & the release version(s)

› Published spreadsheet with column filters

Latest version on the website (support => FAQ)

Appendix F – Feedback & Technical Support

Helping us to help you ….

› Quickly raising a support query

› Sending all the files we need

Appendix N – Guidance Notes

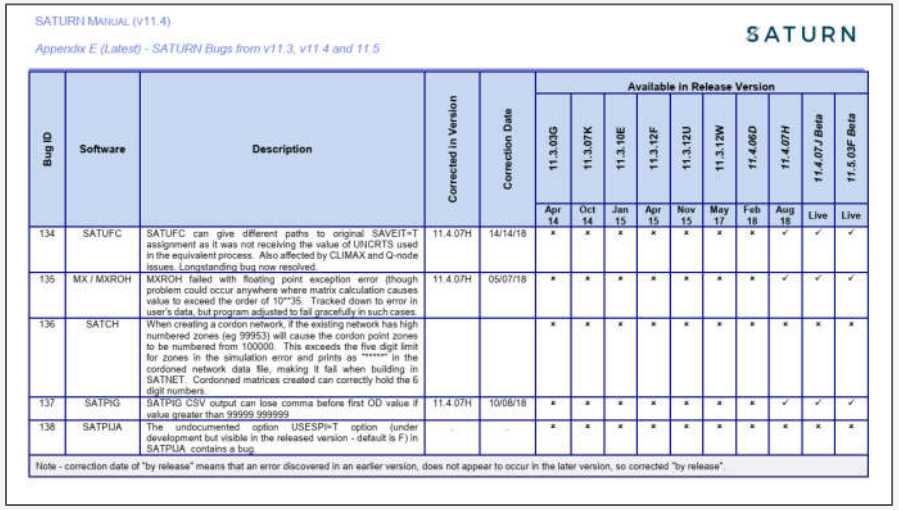
Expanding series. At the moment:

› N.1 – SATALL UFS LPT Hanging / Corruption – prior to 11.4.07H

› N.2 – SAVEIT Approximation

› N.3 – UFO Files & Pre-11.4.07H Release

Extract from Appendix E – Latest



SATURN MANUAL (v11.4)

SATURN

Appendix E (Latest) - SATURN Bugs from v11.3, v11.4 and 11.5

Bug ID	Software	Description	Corrected in Version	Correction Date	Available in Release Version									
					11.3.03G	11.3.07K	11.3.10E	11.3.12F	11.3.12U	11.3.12W	11.4.06D	11.4.07H	11.4.07J Beta	11.5.03F Beta
					Apr 14	Oct 14	Jan 15	Apr 15	Nov 15	May 17	Feb 18	Aug 18	Live	Live
134	SATUFC	SATUFC can give different paths to original SAVEIT=T assignment as it was not receiving the value of UNCRTS used in the equivalent process. Also affected by CLIMAX and Q-node issues. Longstanding bug now resolved.	11.4.07H	14/14/18	*	*	*	*	*	*	*	✓	✓	✓
135	MX / MXROH	MXROH failed with floating point exception error (though problem could occur anywhere where matrix calculation causes value to exceed the order of 10**35. Tracked down to error in user's data, but program adjusted to fail gracefully in such cases.	11.4.07H	05/07/18	*	*	*	*	*	*	*	✓	✓	✓
136	SATCH	When creating a cordon network, if the existing network has high numbered zones (eg 99953) will cause the cordon point zones to be numbered from 100000. This exceeds the five digit limit for zones in the simulation error and prints as "*****" in the cordoned network data file, making it fail when building in SATNET. Cordonned matrices created can correctly hold the 6 digit numbers.			*	*	*	*	*	*	*	*	*	*
137	SATPIG	SATPIG CSV output can lose comma before first OD value if value greater than 99999 999999	11.4.07H	10/08/18	*	*	*	*	*	*	*	✓	✓	✓
138	SATPUA	The undocumented option USESPI=T option (under development but visible in the released version - default is F) in SATPUA contains a bug.	-	-	*	*	*	*	*	*	*	*	*	*

Note - correction date of "by release" means that an error discovered in an earlier version, does not appear to occur in the later version, so corrected "by release".

Users should regularly check the website - Access via SatWin

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Oddities with Adjacent Zones - New Warnings for v11.4

Or the ‘Dual Carriageway Conundrum’

A little-recognised problem:

- ‘adjacent’ zones may not be adjacent

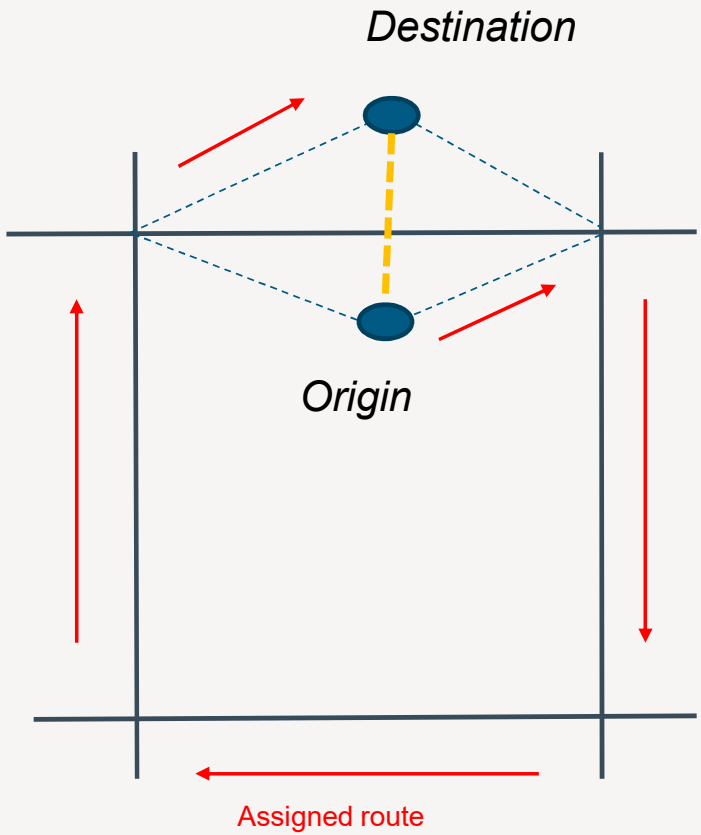
Function of the network structure:

- Assignment will build the shortest path available based on the permitted link and turning movements
- Unlikely to be direct in the simulation
- NB: U-turns permitted at Buffer Nodes & Roundabout Type 5

New Warnings in v11.4 release:

- See Warnings XXX

Direct ‘333’ coding of zone to zone connectors in v11.5



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SATUFO Files (Another reminder!)

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)
  - Recommend calling SATUFO separately for large models

Disadvantages:

- Assignments will take longer (an extra process)
  - but available with Multi-Core (& SATGPU 11.5)

HIGHLY Recommended

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Training & Administration

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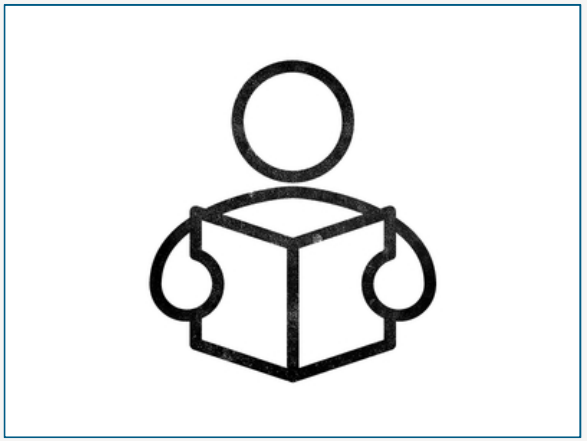
Training Courses & Materials



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Introduction to SATURN Courses

3-day course for new and beginner users

Forthcoming Dates

- 13-15th February 2019
- September 2019

Further details on the SATURN Website

- www.saturnsoftware.co.uk -> Events

Webinars

Reminders

- SatView: Full set of “How to …” series created in Apr’17
- SatCoder: Basic introduction

Requests?

Administrative Details

Housekeeping

E-mails:

- Support e-mail: saturnsoftware@atkinsglobal.com
- Outbound Mailing List only: saturnmail@atkinsglobal.com
- SATURNnext programme: saturnnext@atkinsglobal.com

SATURN support telephone number +44(0)1372-756755

FTP site available to exchange model files for support queries

Key Dates

Christmas Break:	Close end of **Thu 20th Dec**, Re-opening **Mon 7th Jan**
November 2018:	User Group Meetings - Epsom (Fri 16th Nov) & Leeds (Thu 29th Nov)
	SATGPU 11.3 Beta Release
13 December 2018:	Area Tolling Technical Webinar under SATURNnext programme
February 2019:	Introduction to SATURN Course
Spring 2019:	SATURN 11.5 & SATGPU 11.5