

xoom

Configuration, enlightened.

# Service Optimisation Tuning (SOT)

What is it?

- ▶ **ClickSchedule is a complex system with many capabilities, facets and features**
- ▶ **In order to get maximum benefit, its configuration needs to be finely tuned**
  - to reflect business objectives
  - to accommodate actual data
  - to work around potential product limitations

# SOT challenges

## 1. Understanding the data

- ▶ geographical distribution, skills balance etc.

## 2. Understanding the configuration

- ▶ rules and objectives, logic domains, BGOs, agents

## 3. Optimisation tuning

- ▶ running the optimisation, collecting and quantifying the results, storing the schedules for future analysis

**SOT Toolkit provides tools that  
address all these challenges**

# SOT Toolkit overview

- ▶ **Easy and quick to use**

- all common tasks are available for immediate use through ready scripts, you just fill in the particulars

- ▶ **Uses Xoom**

- full access to all facets of the configuration, including configuration reporting

- ▶ **Extensible by design**

- you can add your own queries, measurements, optimisation workflow steps, design templates

# Windows PowerShell

SOT Toolkit is used through Windows PowerShell, taking advantage of all its capabilities

- ▶ **familiar technology for many Windows administrators**
- ▶ **interactive scriptability**
- ▶ **powerful tools and development environments**
- ▶ **ability to automate just about anything**

# Understanding the data

Any number of SQL queries that can be run repeatedly and results saved in an Excel document for analysis

```
[SOT] Zany Ants Service Optimisation Tuning Toolkit 1.0.0.10
[SOT]> New-W6DatabaseQuerySpreadsheetFromXml -QueryXmlPath .\SQLs-Oracle.xml -TemplateSpreadsheetPath .\Templates.xlsx -
ResultSpreadsheetPath SQLAnalysis.xlsx
District sizes (non-empty)
Number of tasks scheduled outside of district
Number of region violations by task and engineer region
Number of district violations by task and engineer district
Tasks by status
Tasks by priority
Tasks by priority and common time window (more than 20 tasks)
Tasks by priority and common duration (more than 20 tasks)
Date property use by tasks
Date property use by tasks (by priority)
Date property use by tasks (by status)
Tasks with date violations (AS<DD, AF<ApF)
Tasks by appointment
```



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2	<b>District sizes (non-empty)</b>													
3														
4		Region	District	Engineers	Active	Contractors	Tasks	Scheduled						select
5		C01	C01B	99	99	2	11978	375						r.name as "Region",
6		C02	C02A	99	99	2	10445	0						d.name as "District",
7		C03	C03C	81	81	2	10097	0						e.cnt as "Engineers",
8		C03	C03D	79	79	2	9356	0						e.active as "Active",
9		C04	C04E	68	68	2	10131	0						e.contractors as "Contractors",
10		C05	C05A	110	110	2	10725	0						t.cnt as "Tasks"

# Understanding the configuration

Xoom reports are created from live configuration and saved for analysis and future reference

```
[SOT] Zany Ants Service Optimisation Tuning Toolkit 1.0.0.10
[SOT ]> New-ReportsForXoomXml -QueryName DEFAULT -TransformsPath .\Reports -ResultPath XoomReports
- processing report ActiveScheduleAgentsReport.xml
- processing report AgentsManagerReport.xml
- processing report AgentsTimeLine.xml
- processing report BadReferencesReport.xml
- processing report BGOReport.xml
- processing report DecompositionByGeography.xml
- processing report ExtractComponents.xml
- processing report GroupByGeography.xml
- processing report LogicDomainMatrix.xml
- processing report ObjectivesReport.xml
- processing report ReferencesReport.xml
- processing report RulesReport.xml
- processing report SchedulingWorkflowReport.xml
- processing report SchemeCustomisationsReport.xml
```



Logic Domain Rules/Objectives/BVFs matrix

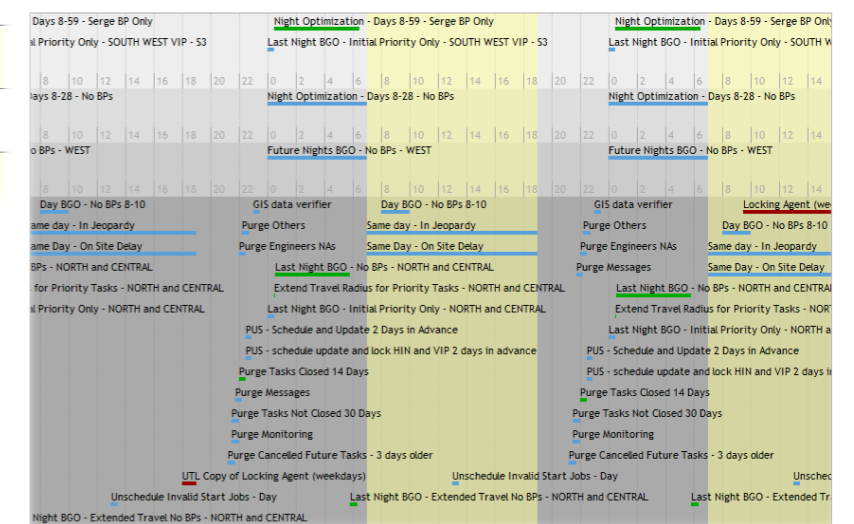
	[BSR] Night Optimization	Appointment Booking	Extended Appointment Booking
1 hours Max Travel from Home Base			
15 Mins Max Travel from Home Base			
30 Mins Max Travel from Home Base			
45 Mins Max Travel from Home Base			
60 Minutes Max Travel from Home Base			
Appointment Booking Finish Rule			YES
Appointment Booking SHS Travel Time Gap Rule			YES
Appointment Booking Start Rule			YES
Assignment duration equals task duration	YES	YES	YES
Balanced Slots All Day			
Balanced Slots AM PM	YES		
Business Partners Travel Time Gap Rule (NOT IN USE)			
Click Plan - Reduce NA's			
Do not schedule trainees to complex jobs	YES		YES
Do not allocate NIF to SCE engineers			YES
Do not schedule before now	YES	YES	YES
Do not schedule before now (AB - Do not get next Day slots for EXCLUDED Engineers)			YES
Do not schedule before now (AB - Only get next Day slots for INCLUDED engineers)			YES
Do not schedule before now (Users - get only backfilling slots for the same day)			
Do Not Schedule Excluded Engineers	YES	YES	YES

Rules report

Rule	Category	Type	Family	Eval. order	Relevance group	Settings
1 hours Max Travel from Home Base	Geography Rules	Travel From Home Base Rule	DR	6	SHS Relevance Group	Distance/Travel Time = Travel Time Allow 01:59 Use engineer property = false
15 Mins Max Travel from Home Base	Geography Rules	Travel From Home Base Rule	DR	6	SHS Relevance Group	Distance/Travel Time = Travel Time Allow 00:25 Use engineer property = false
30 Mins Max Travel from Home Base	Geography Rules	Travel From Home Base Rule	DR	6	SHS Relevance Group	Distance/Travel Time = Travel Time Allow 00:40 Use engineer property = false
45 Mins Max Travel from Home Base	Geography Rules	Travel From Home Base Rule	DR	6	SHS Relevance Group	Distance/Travel Time = Travel Time Allow 01:05 Use engineer property = false

Schedule agent	Decomposition	Optimisation steps
Day BGO - No BPs 10-12	Day BGO - No BPs Task index: District,AppointmentFinish	2. Complex Extended Optimizer   Night Optimization - No BPs
Day BGO - No BPs	Time intervals: 3-3, 4-4, 5-5, 6-6, 7-7, 8-8, 9-9, 10-10, 11-11, 12-12, 13-13, 14-14, 15-15, 16-16, 17-17, 18-18, 19-19, 20-20, 21-21	
Day BGO - No BPs	Territories: C01B, C02A, C03C, C03D, C04E, C05A, E01A, E02A, E03A, E04A, E05A, E06A, N01A, N01B, N01D, N01E, N01Q, N01X, N02A, N02E, N02G, N02Q, N03A, N03H, N03K, N04A, N04J, N04L, N05A, S01A, S01B, S01E, S01J, S02A, S02B, S02C, S02Q, S03A, S03K, S03L, S03M, S04A, S04F, S04Q, S05A, S05B, S05H, S06A, S06B, V1PM, W01A, W01F, W01M, W02A, W02B, W02G, W02H, W03A, W03L, W04A, W04J, W04Q, W05M, W05N, W06A	

Agents timeline





# Optimisation tuning

Multiple scenarios can be run automatically, with automated collection of results

```
Tuning iterations.ps1 X
1 Invoke-W6TuningIteration -Context $context `
2   -District Brooklyn, Dorchester, Avondale `
3   -LogicDomain Standard, 'OP1 Urban', 'OP1 Rural', 'OP2 Urban', 'OP2 Rural', 'OP3 Urban'
4
```



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC				
1						Standard				OP1 Urban				OP1 Rural				OP2 Urban				OP2 Rural				OP3 Urban							
2						2015-04-24T00:18:39				2015-04-24T00:23:05				2015-04-24T00:27:32				2015-04-24T00:31:59				2015-04-24T00:36:37				2015-04-24T00:41:26							
3						Count	Dur	Avg dur		Count	Dur	Avg dur		Count	Dur	Avg dur		Count	Dur	Avg dur		Count	Dur	Avg dur		Count	Dur	Avg dur					
4	All		146	290:54	1:59:33	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt	92	45:54	0:29:56	from Opt
5	By priority	1																															
6		5	2	0:36	0:18:00	1	0:18	0:18:00	32:17	1	0:18	0:18:00	10:03	1	0:18	0:18:00	8:43	1	0:18	0:18:00	10:03	1	0:18	0:18:00	16:24	1	0:18	0:18:00	8:03				
7		6	51	13:18	0:15:39	48	12:24	0:15:30	28:44	48	12:24	0:15:30	30:07	48	12:24	0:15:30	26:56	48	12:24	0:15:30	30:07	48	12:24	0:15:30	34:07	48	12:24	0:15:30	17:24				
8		7	17	9:48	0:34:35	7	5:06	0:43:43	18:25	7	5:06	0:43:43	19:51	7	5:06	0:43:43	25:07	7	5:06	0:43:43	19:51	7	5:06	0:43:43	28:31	7	5:06	0:43:43	33:11				
9		8	76	267:12	3:30:57	36	28:06	0:46:50	16:39	36	28:06	0:46:50	17:09	36	28:06	0:46:50	32:03	36	28:06	0:46:50	17:09	36	28:06	0:46:50	25:35	36	28:06	0:46:50	36:22				
10	By job type					P5 from start of day (h)				P5 from start of day (h)				P5 from start of day (h)				P5 from start of day (h)				P5 from start of day (h)				P5 from start of day (h)							
11		EM																															
12		NA																															
13		NB	14	37:00	2:38:34																												
14		ND	4	1:12	0:18:00	2	0:36	0:18:00		2	0:36	0:18:00		2	0:36	0:18:00		2	0:36	0:18:00		2	0:36	0:18:00		2	0:36	0:18:00		2	0:36	0:18:00	
15		NE	45	10:06	0:13:28	45	10:06	0:13:28		45	10:06	0:13:28		45	10:06	0:13:28		45	10:06	0:13:28		45	10:06	0:13:28		45	10:06	0:13:28		45	10:06	0:13:28	
16		NG	1	0:12	0:12:00	1	0:12	0:12:00		1	0:12	0:12:00		1	0:12	0:12:00		1	0:12	0:12:00		1	0:12	0:12:00		1	0:12	0:12:00		1	0:12	0:12:00	
17		NH	1	0:18	0:18:00	1	0:18	0:18:00		1	0:18	0:18:00		1	0:18	0:18:00		1	0:18	0:18:00		1	0:18	0:18:00		1	0:18	0:18:00		1	0:18	0:18:00	
18		NI	3	0:54	0:18:00	2	0:36	0:18:00	8:19	2	0:36	0:18:00	10:05	2	0:36	0:18:00	8:45	2	0:36	0:18:00	10:05	2	0:36	0:18:00	16:26	2	0:36	0:18:00	8:05				
19		NL	10	3:00	0:18:00																												
20		NM	12	23:48	1:59:00	5	8:48	1:45:36		5	8:48	1:45:36		5	8:48	1:45:36		5	8:48	1:45:36		5	8:48	1:45:36		5	8:48	1:45:36		5	8:48	1:45:36	
21		NN	6	8:00	1:20:00	5	6:00	1:12:00		5	6:00	1:12:00		5	6:00	1:12:00		5	6:00	1:12:00		5	6:00	1:12:00		5	6:00	1:12:00		5	6:00	1:12:00	
22		NT	6	5:42	0:57:00	2	1:48	0:54:00		2	1:48	0:54:00		2	1:48	0:54:00		2	1:48	0:54:00		2	1:48	0:54:00		2	1:48	0:54:00		2	1:48	0:54:00	
23	Travel					avg per assignment				avg per assignment				avg per assignment				avg per assignment				avg per assignment				avg per assignment							
24		all				50:43	0:33:05			55:07	0:35:57			45:39	0:29:47			55:07	0:35:57			49:41	0:32:25			69:19	0:45:13						
25		between				31:44				28:58				15:19				28:58				17:11				46:37							
26		from home				7:33				9:02				14:26				9:02				13:46				10:37							
27		to home				11:26				17:06				15:53				17:06				18:43				12:05							
28	Utilisation					38.5%				40.2%				36.5%				40.2%				38.1%				45.9%							

# ... and much more

- ▶ **high-level abstractions across a broad spectrum of installations**
  - any version from Service Optimization 7.5.4 on
  - both Oracle and SQL Server based installations
- ▶ **support for many operations outside of the core SOT domain**
  - scriptable control of both Xoom and Service Optimization
  - suitable for more advanced users

# Contact

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