Walk-in Slide: AU 2014 Social Media Feed

1. Click on the link below, this will open your web browser

http://aucache.autodesk.com/social/visualization.html

2. Use “Extended Display” to project the website on screen if you plan to work on your computer. Use “Duplicate” to display same image on screen and computer.

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Making Gatwick SAFE

Simon Richardson
CAD/GIS Manager Gatwick Airport

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Class summary

- This Presentation aims to describe the existing systems that were in place at Gatwick, along with the issues that have arisen as a result of having incorrect geospatial data on buried utilities.
- We aim to describe how we realized the solution to this problem using Autodesk technology, which we will host in a cloud environment utilizing mobile tools in the field to view and update incorrect data.
- We hope to illustrate the enhancements we have planned to support the Airport operation, linking it to third-party systems such as Maximo and making it an integral part of our resilience planning.

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Key learning objectives

At the end of this class, you will be able to:

- Learn about the issues of converting historical drawings / data sets into a usable format
- Learn how to share and integrate CAD and Geographic Information System (GIS) data using the Infrastructure Map Server platform
- Learn how to integrate an Infrastructure Solution with third-party applications
- Discover the importance of creating a service-avoidance culture

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GATWICK AIRPORT: THE PRESENT

LONDON Gatwick OBVIOUSLY.

- Busiest single runway airport in the world supporting 55 movements an hour
- Current world record holder for most Aircraft movements in a single day (906)



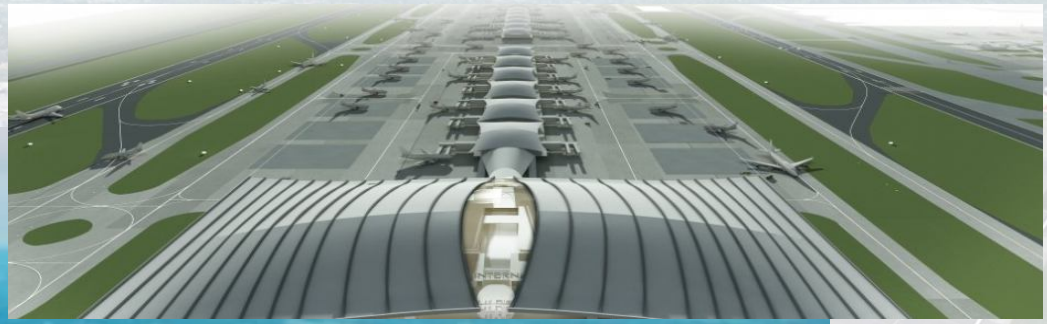
Estate covers 1520 Hectares

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GATWICK AIRPORT: THE FUTURE

LONDON Gatwick OBVIOUSLY.

UK Government decision in 2015 on where new runway capacity will be delivered. Choice between Gatwick and Heathrow





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A VISUAL REPRESENTATION OF THE EXISTING SITUATION

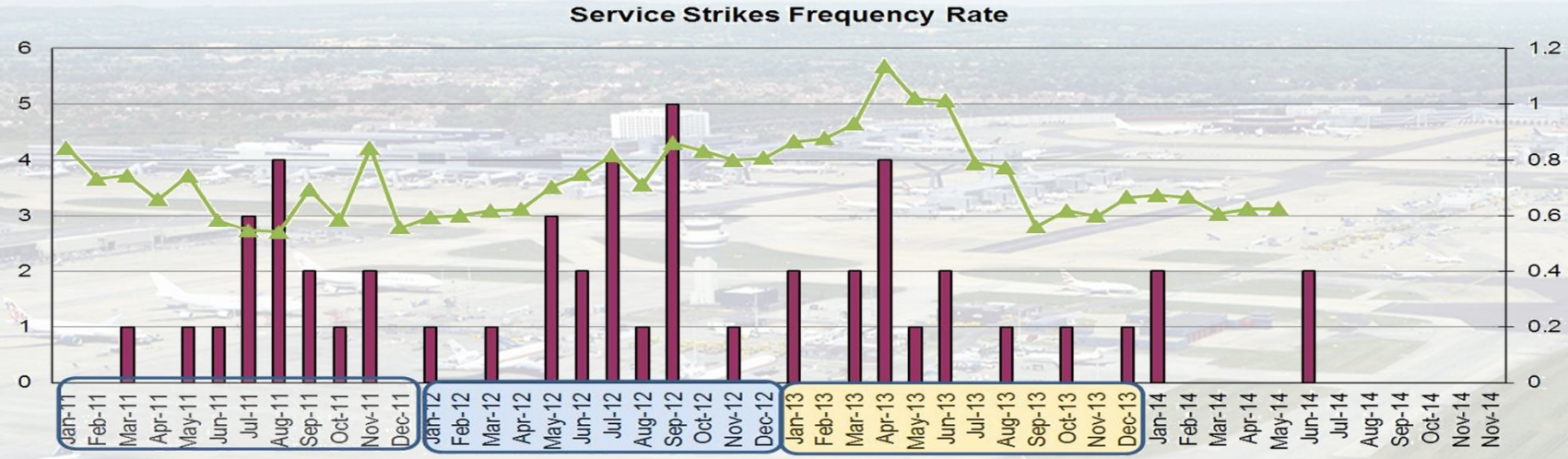
LONDON Gatwick OBVIOUSLY.

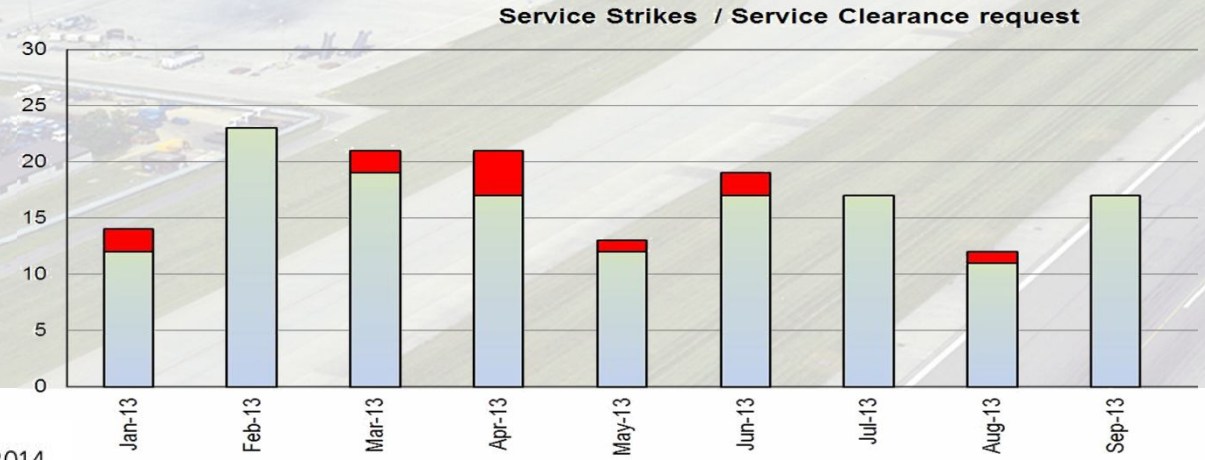


Would you like to dig here ??

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A PERCEIVED CULTURE OF DIG AND HOPE





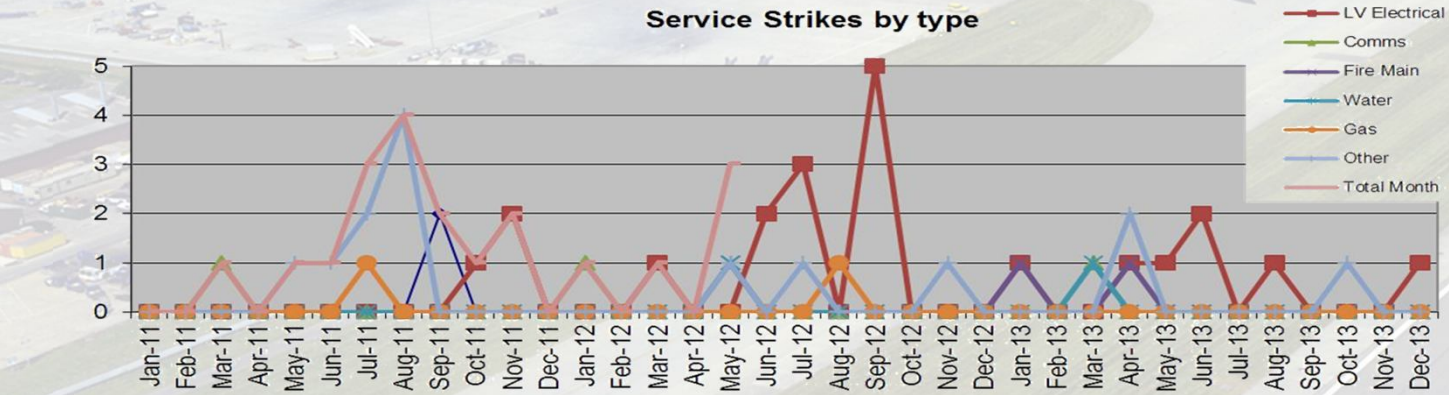
	Number of Service clearences applied for	Number of service strikes
Jan-13	12	2
Feb-13	23	0
Mar-13	19	2
Apr-13	17	4
May-13	12	1
Jun-13	17	2
Jul-13	17	0
Aug-13	11	1
Sep-13	17	0

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WHAT LIES BENEATH



Service	Linear Distance
AGL	109km
BT	98km
HV	68km
LV	88km
Street Lighting	15.5km
Fibre Optic	13km
Fire main	25km
Foul Drainage	34km
Fuel Main	21km
Gas Main	37km
Potable Water	80km
Surface Water Drainage	189.5km
TOTAL	778km



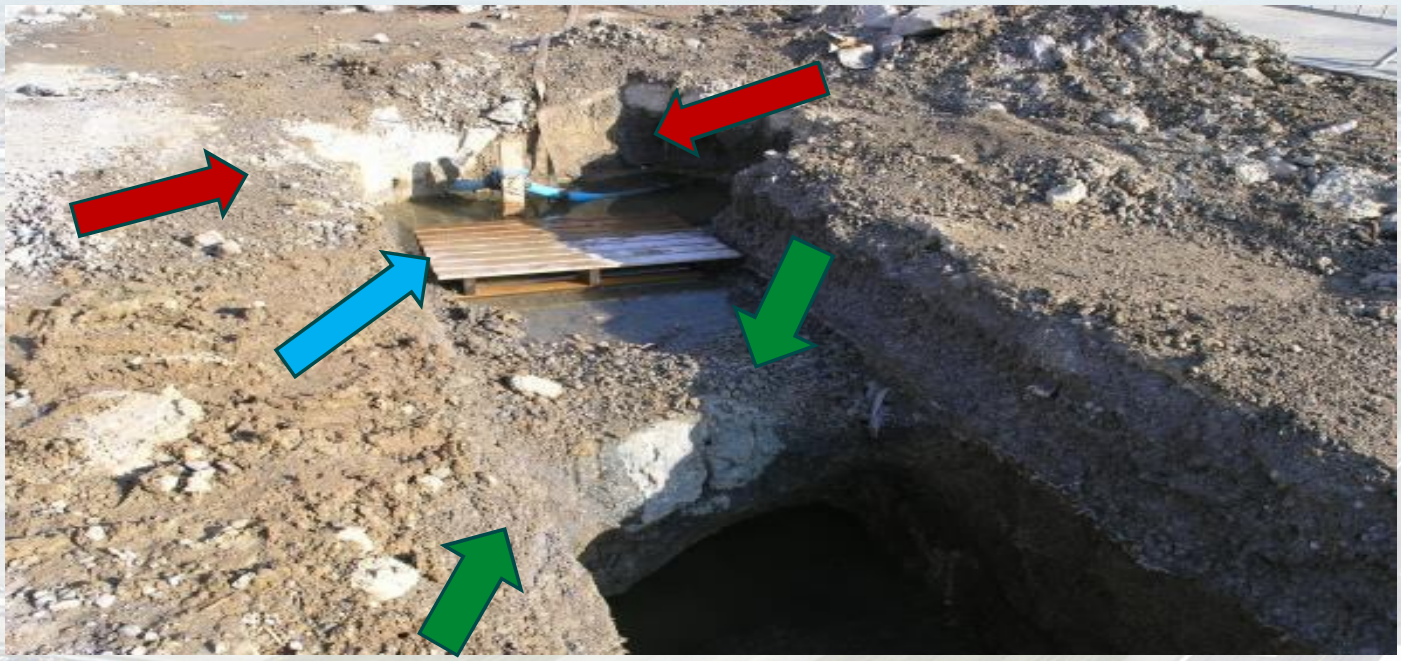
And this is just what we know about !

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THE INCIDENT THAT HIGHLIGHTED THE ISSUE

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THE SCENARIO

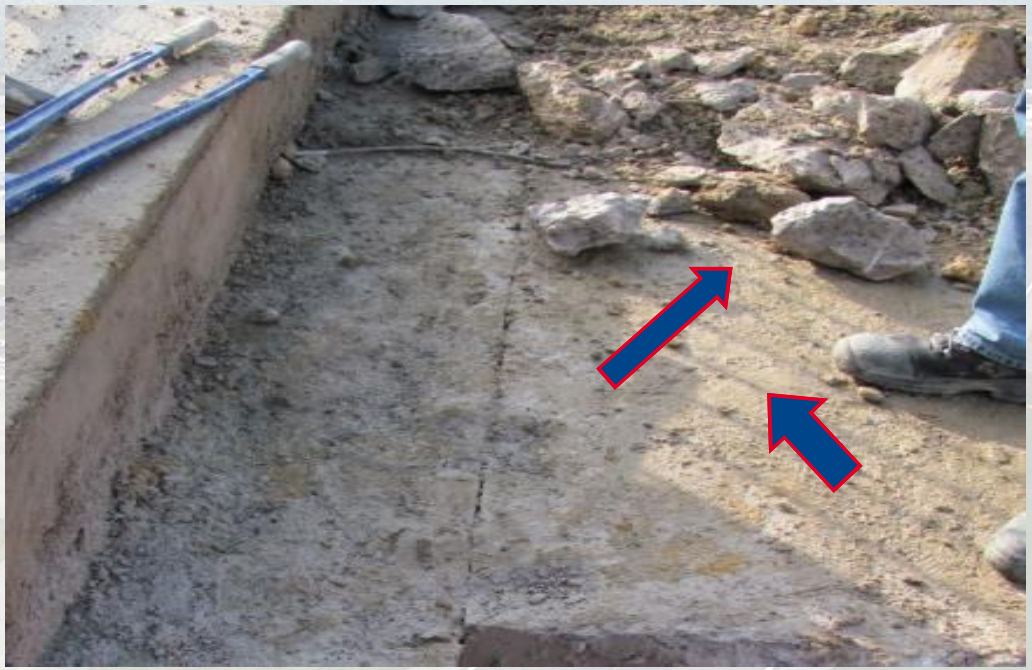


- Legacy Water main Poorly Installed Failed Previously when exposed
- Previously exposed Concrete structure presumed to be Telecoms ducts
- Reinforced PQ Concrete Mass to be removed to allow drainage connection

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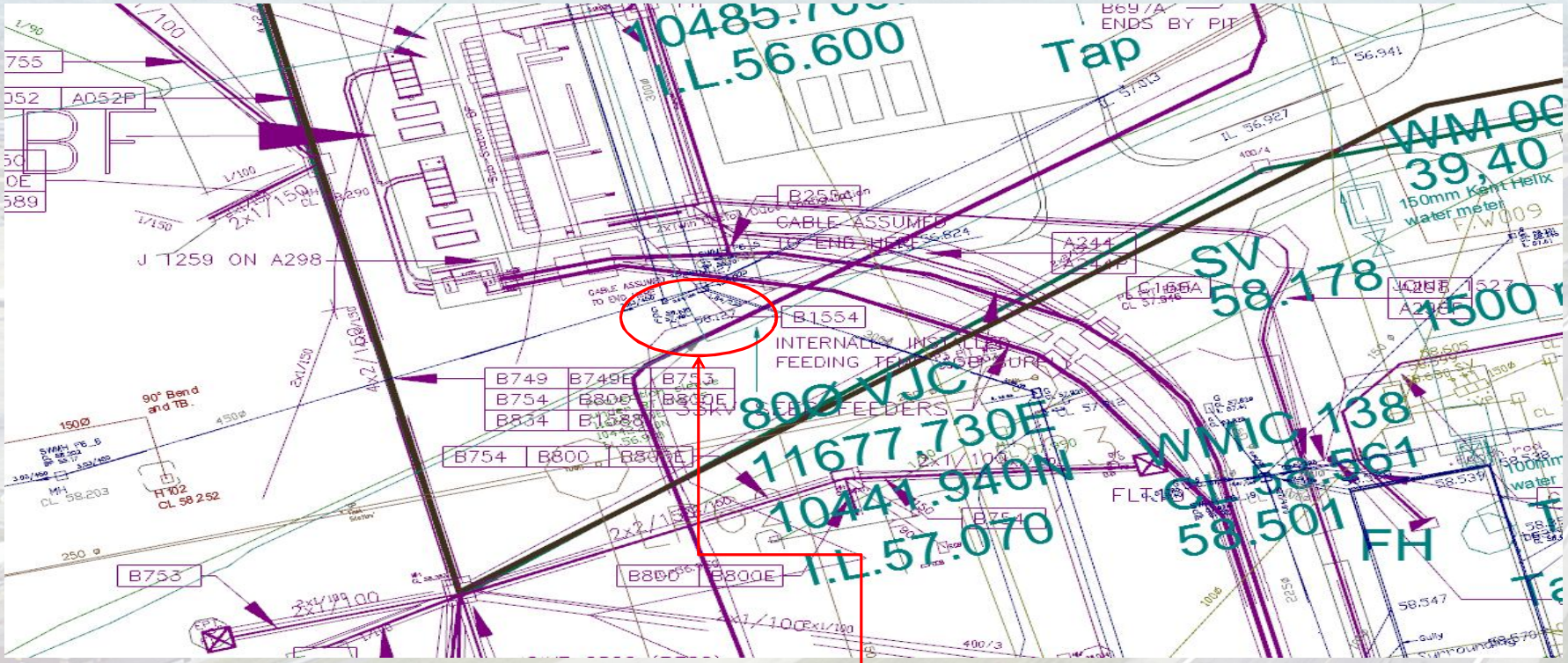
THE PROCEDURE

- Task Focussed on avoiding further disruption to the water main
- Saw Cutting the mass was selected to enable the removal in pieces
- CAT Scanning undertaken on RF but no significant output
- Signal Generator used above but reinforcement deflects signal
- Cables cut through by floor saw



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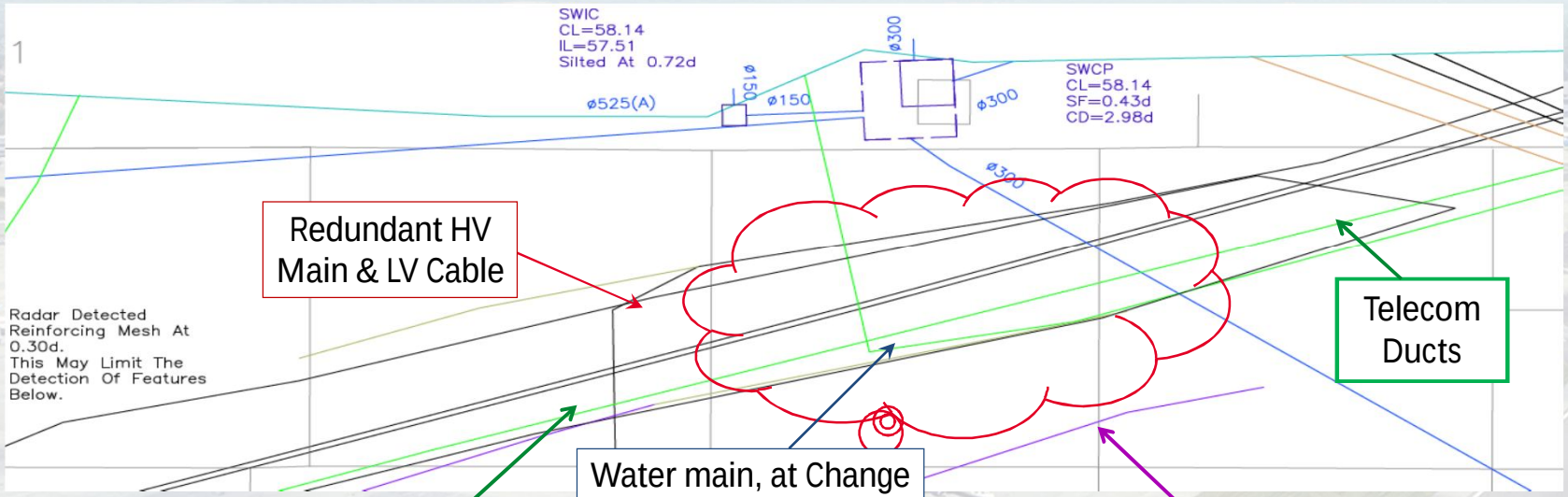
EXISTING RECORD INFORMATION



- YES, Topographically accurate
- Lacked the Detail, record identifies 1/90 diameter duct
- Now known to be 3 x 2 /90 diameter duct cluster

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WAS THE RECORD INFORMATION TRUSTED



- NO, the project commissioned a Ground Penetrating Radar survey
- All services marked on PQ, surveyed and drawn. GPR detects 2 Ducts / voids
- Information collated and shown on Services works production drawings
- Easily Set out from local features, Bay Joints, Manhole, Water main

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HOW COULD IT POSSIBLY GO WRONG ?

LONDON Gatwick OBVIOUSLY.

- TASK FOCUSSED, avoid any further disruption to the water main
- FAMILIARITY with the Services,…. Assumed Knowledge, Confidence
- TRUST, Everybody had worked together successfully for a long period of time
- TRUST, nobody doubted anyone or checked the assumptions and decisions
- TRUST, led to the Permits being regarded as Academic
- The Controls of the Permits were not Maintained (MARK & REMARK)
- Therefore one persons lapse was not challenged Resulting in …….
- 14 services severed,

8 live Copper + 4 redundant Copper + 2 Live Fibre-optic







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THE IMPACT AND RECOVERY

- NAT's circuits affected removing redundancy and taking out airfield equipment
- Loss of Phone / IT services to the North side
- Loss of IT services to Parts of Crawley / Manor Royal
- The Full extent remains un-quantified

- 24 hours to break out the PQ to expose the damage
- Emergency BT resources Mobilised from Herefordshire
- BT resources Diverted locally for Logistics





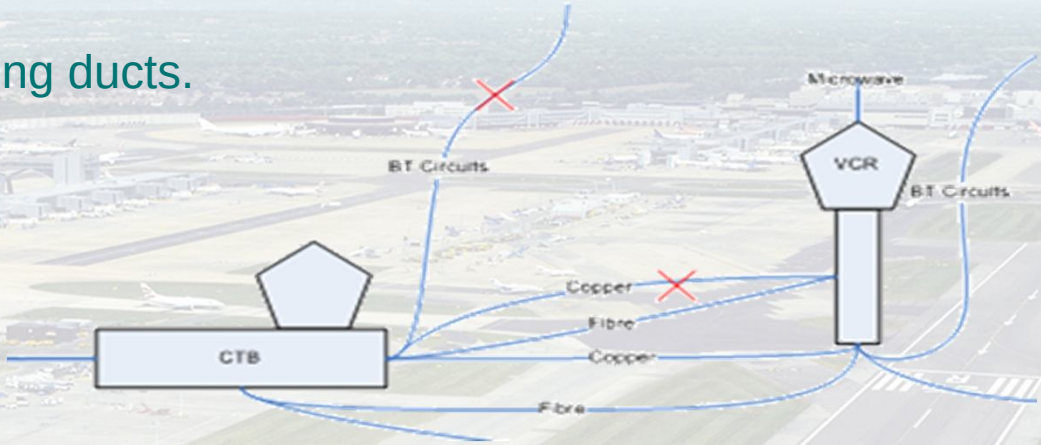
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THE CABLE STRIKE

LONDON Gatwick OBVIOUSLY.

Insufficient separation distance between cabling ducts.

Although believed to be diversely routed, these BT cables were in fact all housed in the same or adjacent pipes.





During the recent incident we were inches away from losing key services to the SMVCR that would have closed the Airport for a significant period of time.

These cables, located just below the range of the concrete-cutter, were undamaged.

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AN OPPORTUNITY

One positive thing that emerged from this near miss was that it raised awareness at how vulnerable Gatwick was to major disruption to our operation resulting in possible serious damage to our reputation

As a result of this incident I was able to sell the idea of a buried services GIS System based on the successful system that Heathrow utilises and was given the ok to produce a Proof of Concept of how this could look.

This led to our engagement with Autodesk in assisting Gatwick in producing the Proof of Concept which we named S.A.F.E

Service Avoidance Field Environment

The name came first with the acronym applied later

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THE APPROACH

LONDON Gatwick OBVIOUSLY.

Autodesk Approach

Autodesk would recommend the following four phase project is conducted to define, build and deploy an Infrastructure GIS at GAL. This proposal document is focused on describing Phase I.

Phase I: Proof of Concept

- Configure AutoCAD Map 3D and utility industry model
- Set-up Gatwick Grid coordinate system for AutoCAD Map 3D/AIMS (*optional*)
- Conduct limited data conversion (gas network) using AutoCAD Map 3D
- Configure Autodesk Infrastructure Map Server (AIMS)
- Align POC with feedback from the initial GAL Contractor Workshops

Phase II: Data Assessment

- Assess the quality and quantity of available infrastructure data
- Conduct data conversion exercise to determine potential to automate data conversion

Phase III: Requirements and User Case Capture and Validation

- Verify functional and non-functional requirements, including integration with Enterprise Asset Management and works management solutions, etc
- Participation in Contractor workshops and conduct stakeholder interviews to assist definition and confirmation of GAL specific requirements and Use Cases.

Phase IV: Scale POC to Production

- Design, build/configure, test and deploy production solution
- Data conversion activity
- Integration with EAM (e.g. IBM Maximo) to support on-going operation and maintenance of infrastructure and assets.

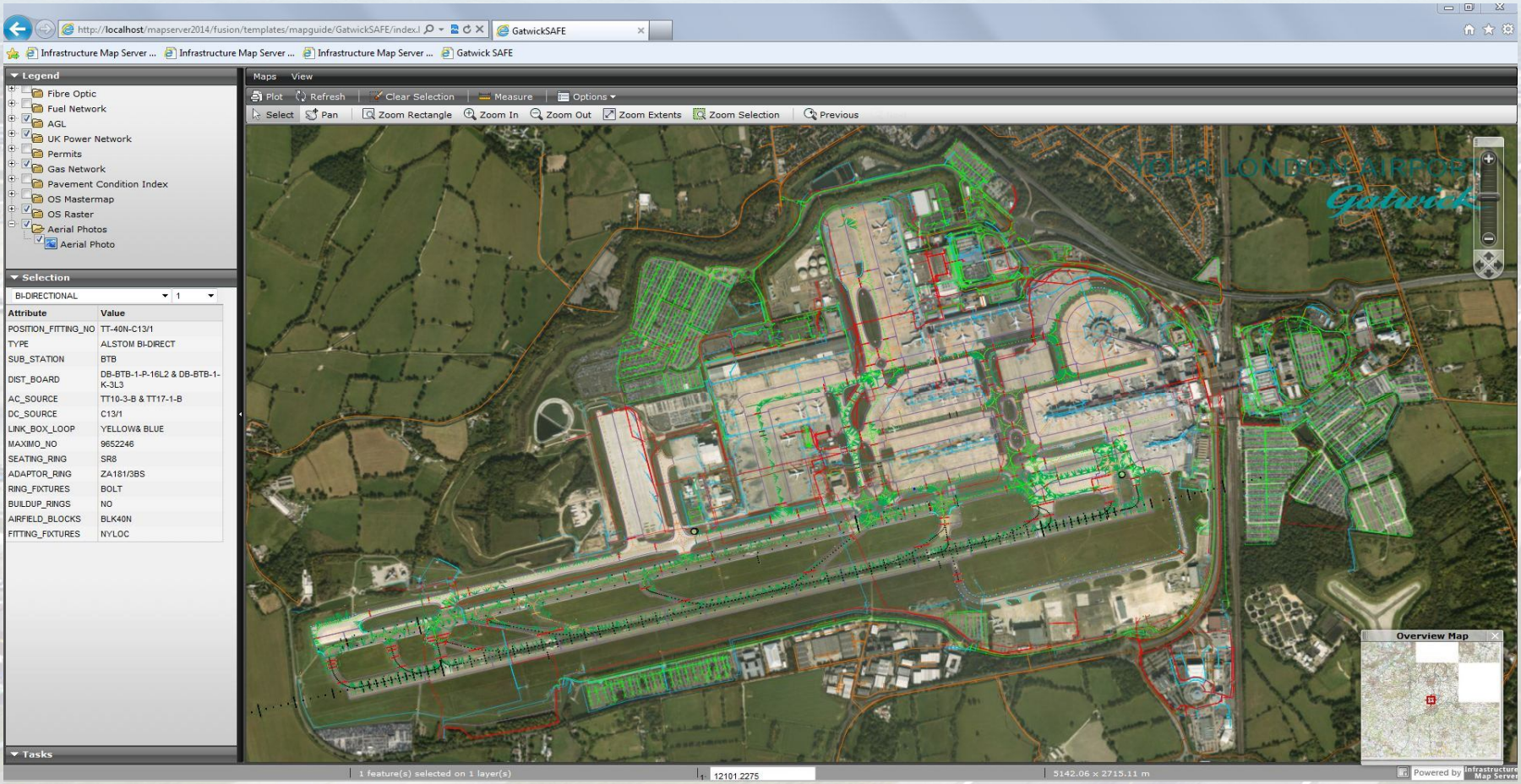
We chose the UK Power Networks HV/LV and street lighting datasets for the POC.

Proof of Concept Tasks

Task	Description
1	**Project Planning and Management** ▪ Project Planning and kick-off meeting, and project management
2	**Set-up and configure AutoCAD Map 3D** Create SQLite based data model in AutoCAD Map3D using standard industry model. This will include creating data model with associated assets e.g. pipes, pumps, etc; topology for trace analysis; and plot templates definition (basic)
3	**Data Conversion and Loading** This task will comprise: ▪ Populate data model with relevant attribute fields ▪ Load background data, e.g. Ordnance Survey base mapping ▪ Create map display, including themes, basic symbology
4	**Gatwick Grid Set-up (*Optional*)** Create and test the Gatwick Grid for AutoCAD Map 3D and AutoCAD Civil 3D
5	**Set-up System at GAL** Install and set-up AutoCAD Map 3D and AIMS on-site at GAL
6	**AIMS Configuration*** ▪ Install, set up and configure AIMS ▪ Connect to GAL asset data and base mapping
7	**User Training** Provide custom training on AutoCAD Map 3D focused on relevant features and functions required by GAL to use POC
8	**Technical Support for POC** Provide Technical Consulting to assist with testing and evaluation of POC solution. Technical support will comprise either on-site or off-site advice, which will need to be organised in advance and time deducted from the time available. The minimum call time will be 30 minutes.
9	**POC Evaluation Workshop** Conduct a one day evaluation workshop with GAL to capture findings and high level requirements.

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PROOF OF CONCEPT DELIVERABLE



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NEW RELATIONSHIPS

Relationships formed with some Infrastructure providers to provide quarterly updates of their latest datasets (Inc. attribution) in a format we can absorb

Southern Gas Networks
A Scotia Gas Networks Company

Sutton and East Surrey Water

UK Power Networks
Delivering your electricity

In discussions with others to bring them on-board

BT

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ENRICHING THE DATA - 1

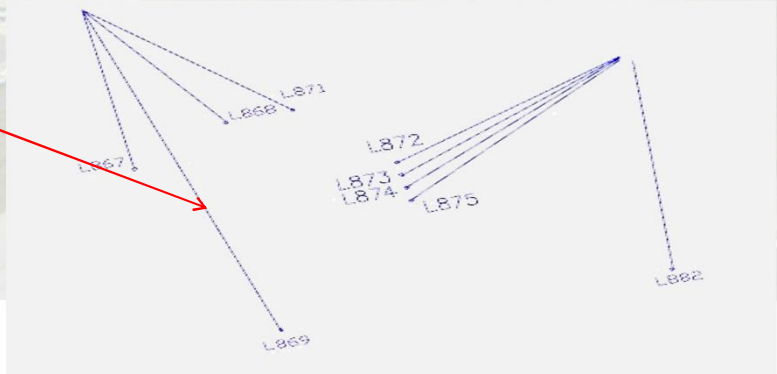
Maximo reference added to data as attribute

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	GEOM.X	GEOM.Y	#FID	LAYER_NAME	AIRFIELD_BLOCKS	POSITION_FITTING_NO	TYPE	SEATIN	ADAPTOR_	FITTING_F	RING_FIXT	BUILDUP_	SUB_STATI	DIST_BOAI	AC_SOURC	LINK_BOX_	DC_SOURC	MAXIMO_NO
2	526076.3	140379.7	497201	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/1	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/1	96549098
3	526204.7	140411.1	497210	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/10	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	BLUE	B10/10	96549107
4	526219	140414.6	497209	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/11	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/11	96549108
5	526233.3	140418.1	497207	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/12	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	BLUE	B10/12	96549109
6	526247.5	140421.6	497208	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/13	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/13	96549110
7	526261.8	140425.1	497213	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/14	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	BLUE	B10/14	96549111
8	526090.6	140388.2	497199	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/2	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	BLUE	B10/2	96549099
9	526104.8	140386.7	497200	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/3	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/3	96549100
10	526119.1	140390.2	497206	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/4	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	BLUE	B10/4	96549101
11	526133.4	140393.7	497202	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/5	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/5	96549102
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13	526161.9	140400.6	497204	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B10/7	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	BLUE	B10/7	96549104
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16	525846.1	140328.2	497097	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B9/1	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	YELLOW	B9/1	96549082
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18	525990.7	140358.7	497190	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B9/11	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	YELLOW	B9/11	96549092
19	526005	140362.2	497195	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B9/12	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT5-3-D	YELLOW	B9/12	96549093
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29	525932.4	140344.4	497067	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B9/7	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	YELLOW	B9/7	96549088
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31	525961.6	140351.8	497188	EF3413G4XX_AGLNWGL	BLK36SW	TT-36SW-B9/9	ADB LED STRAIGHT	N/A	ADB POT	M10 SNEP	N/A	NO	BTD	DB-BTD-J1	TT4-3-D	YELLOW	B9/9	96549090
32																		

Sheet1 Sheet2 Sheet3 — Ready — 100%

Maximo extract of AGL Data

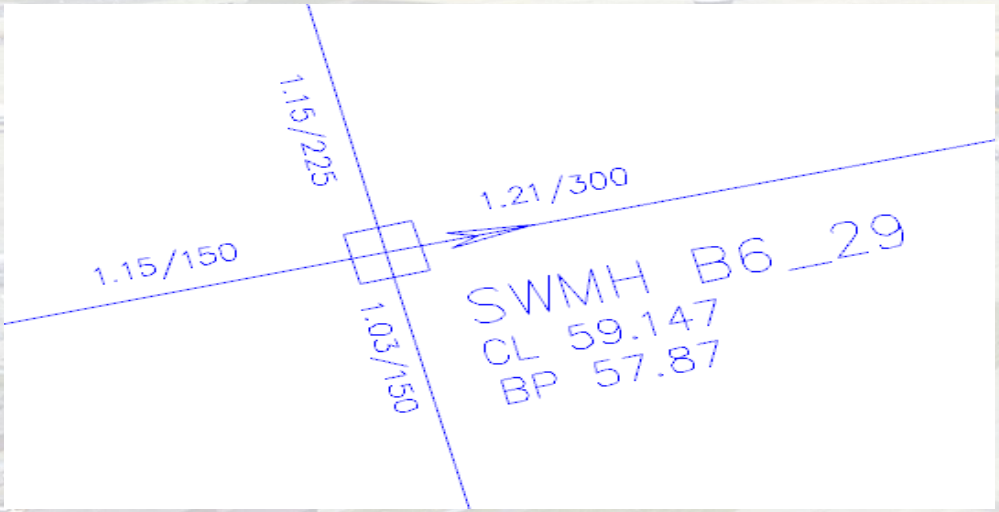
Data linked to geometry via spatial co-ordinates



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ENRICHING THE DATA - 2

Data linked via co-ordinates



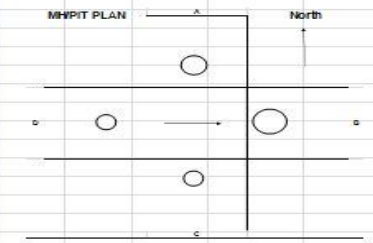
Data extracted from Excel spreadsheets and added to geometry as attribution

APPENDIX E MANHOLE/PIT/GULLY/SCHEDULE (Gully - asterisks only)

MANHOLE/PIT/GULLY Ref: SWMH B6_29	PROJECT NAME: 36629 - LGW-Storm Drainage Survey
SERVICE: Storm Water	CONTRACTOR: Mason Land Surveys Ltd
LOCATION: Across Grass	DATE INSTALLED: Unknown
MH/PIT/GULLY CENTRE CO-ORDINATE EASTING: 9516.602	MH/PIT/GULLY CENTRE CO-ORDINATE NORTHING: 10303.062
COVER LEVEL (M): 59.147	WALL THICKNESS (MM): Unknown
INTERNAL DEPTH (M) (cover level to bottom of pit): 1.33	WALL CONSTRUCTION (See list 3): Concrete
BOTTOM OF PIT LEVEL (M): 57.87	ACCESS (See list 13): No
COVER TYPE & SIZE (MM) (See list 3): Concrete Gatic 770 x 800 x 110	CONFINED SPACE (See list 5): Yes
COVER SLAB SIZE O/A (MM): 1200 x 1200	INTERNAL PLAN DIMS* (MM): 660 x 660
NUMBER OF COVERS: 1	CLEAR OPENING* (MM): 660 x 660
CONDITION OF MH/PIT: Good	COVER SLAB THICKNESS (MM) (COVER LEVEL TO UNDERSIDE OF SLAB): N/A

REMARKS: Water level @1.17m from cover level.

MH/PIT PLAN





In a duct cluster the depth is to bottom duct from cover level. Depth to pipe inverts are from cover level.

PIPE / DUCT	1		2		3		4		HAL FSM INFORMATION (Office Use Only)
FACE	DEPTH (M)	DIA (mm)	DEPTH (M)	DIA (mm)	DEPTH (M)	DIA (mm)	DEPTH (M)	DIA (mm)	FSM Local ID
A	1.15	225							FSM Asset ID
B	1.21	300							
C	1.03	150							PIT TYPE
D	1.15	150							MH/PIT/GULLY Ref
E									

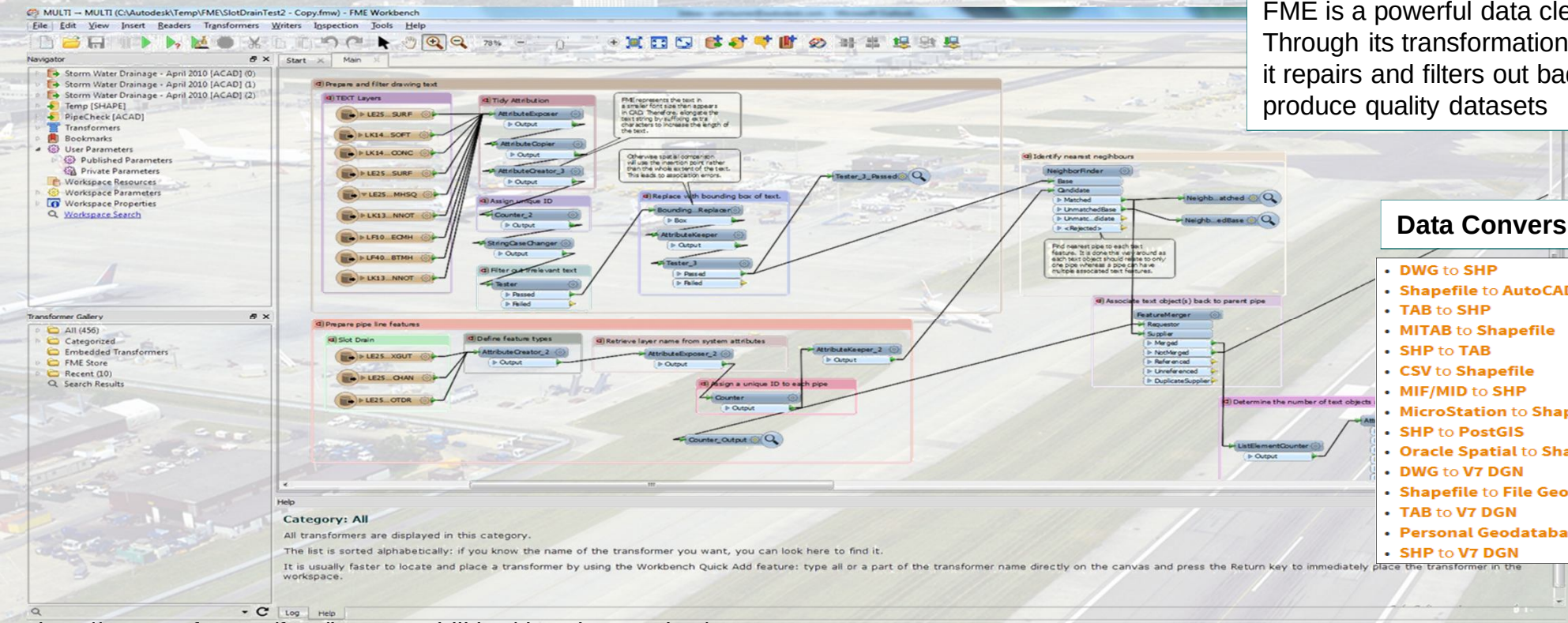
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FME Desktop

Data Integration

Data Transformation

Data Cleaning and Repair
In cases where problems are identified FME is a powerful data cleaning tool. Through its transformation capabilities, it repairs and filters out bad data to produce quality datasets



Data Conversion

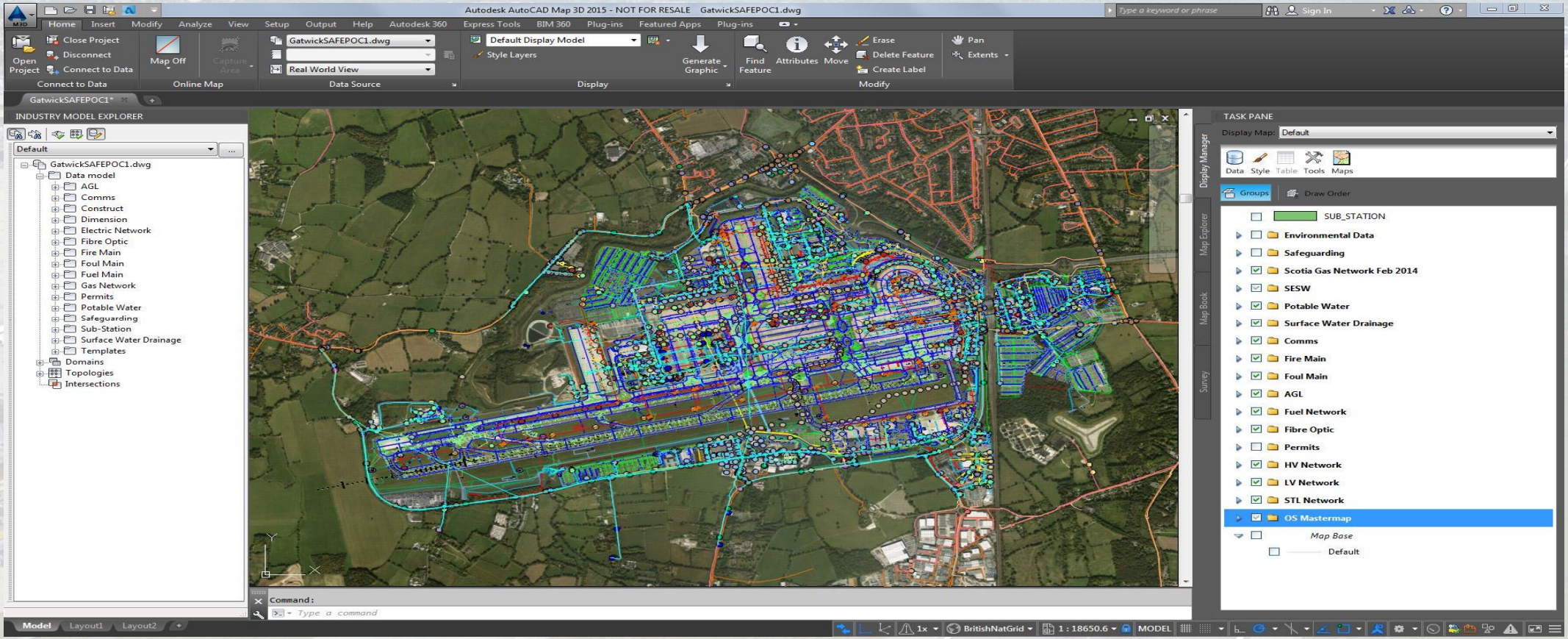
- **DWG** to **SHP**
- **Shapefile** to **AutoCAD**
- **TAB** to **SHP**
- **MITAB** to **Shapefile**
- **SHP** to **TAB**
- **CSV** to **Shapefile**
- **MIF/MID** to **SHP**
- **MicroStation** to **Shapefile**
- **SHP** to **PostGIS**
- **Oracle Spatial** to **Shapefile**
- **DWG** to **V7 DGN**
- **Shapefile** to **File Geodatabase**
- **TAB** to **V7 DGN**
- **Personal Geodatabase** to **Shapefile**
- **SHP** to **V7 DGN**

http://www.safe.com/fme/key-capabilities/data-integration/

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ENHANCED PROOF OF CONCEPT

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ENHANCED PROOF OF CONCEPT



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DEPLOYING SAFE ACROSS THE BUSINESS

LONDON Gatwick OBVIOUSLY.

Cisco ASA 5510 Sec+ Firewall x 1
- 100 Mbps Connectivity
- 300 Mbps Aggregate and 130,000 Concurrent Connections
- Stateful packet inspection
- Cisco VPN Access - Client to Site: Five (5) included [SKU: 106239]
- Fully Managed Device, includes 24x7 Monitoring, Rule Changes and 1 Hour Replacement Guarantee

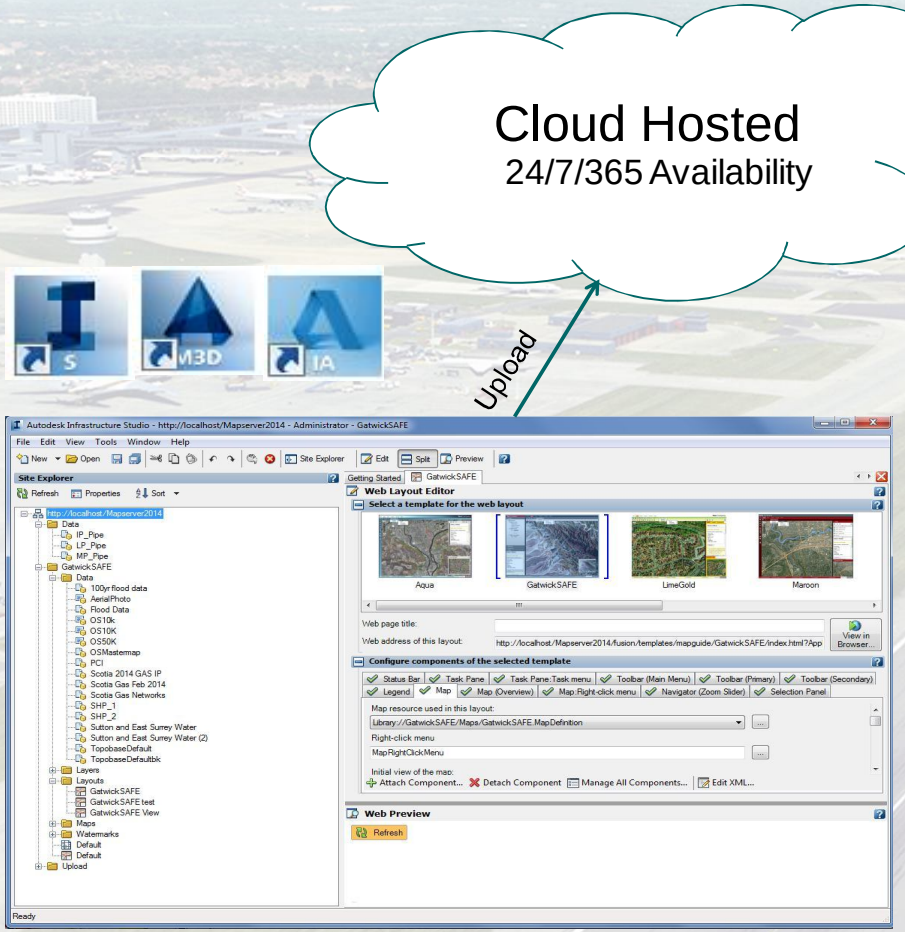
Brocade ADX 1000 Load Balancer x 1
- Service Level: Base + SSL - 50,000 connections per second, 2Gb throughput, 8x 1GbE ports, 7,168 SSL CPS

Int'l - Enhanced Two – Silver x 2
- **Operating System:** ESX
- **Processor:** Dual Processor Hex Core Intel Xeon E5645 2.4Ghz [SKU: 106301]
- **Memory:**48.0 GB - Enhanced [SKU: 105040]
- **Drive and RAID Configuration:**
  - RAID 1 [SKU: 102000]
  - 300 GB (15K SAS 3.5") - Qty: 2 [SKU: 103930, 106206, 106707]
- **Drive Partitioning:** Rackspace Suggested Partitioning
- **External Storage Connection(s):**HA Fibre HBA Connection (SAN) [SKU: 102025]
- **Network:**100 Mbps
- **Managed Backup:** Unmetered 2 week onsite / Weekly Full - Daily Diff [SKU: 104247]
- **Backup Agent:** Base Backup Agent [SKU: 103485]
- **Additional Features:** IMPORTANT NOTE: Subject to stock levels, we reserve the right to substitute Dell R710 Hex Core server(s) with server(s) from the Dell R720 Hex Core range that are of a standard which is equivalent to or better than the Dell R710 Hex Core server.
- **Operating System Options** Standard File System
- **Operating System Add Ons:** No OS Add-Ons

Web/App VMs x 2
Int'l Managed Virtualization VM (Windows on Dual Proc Hypervisor)
- **VM OS:** Windows Server 2012 Standard Edition (Licensed for 2 Processors) [SKU: 106824]
- **Drive Partitioning:** Rackspace Suggested Partitioning
- **Virtual Machine Resource Allocation:**
  - Amount of virtual memory (MB) - Qty: 1024
  - Number of virtual CPUs - Qty: 1
  - Amount of virtual disk space (vDisk1 GB) - Qty: 60
- **VM Backup Agent:** Base Backup Agent
- **Rackspace Managed Device:** Yes
- **Replication Manager Enabled:** No

SQL Active x 1
[Under Technical Review] Int'l Managed Virtualization VM (Windows on Dual Proc Hypervisor)
- **VM OS:** Windows Server 2012 Standard Edition (Licensed for 2 Processors) [SKU: 106824]
- **Drive Partitioning:** Rackspace Suggested Partitioning
- **Virtual Machine Resource Allocation:**
  - Amount of virtual memory (MB) - Qty: 1024
  - Number of virtual CPUs - Qty: 1
  - Amount of virtual disk space (vDisk1 GB) - Qty: 60
- **VM Backup Agent:** Base + SQL Server Backup Agent (Windows Only)
- **Database Licenses:**
  - [Under Technical Review] VM - MS SQL Standard Edition - 1x 2 Core - Qty: 2
  - MS SQL 2012
- **Rackspace Managed Device:** Yes
- **Replication Manager Enabled:** No

Hosting Specification



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GETTING SAFE MOBILE



Initially to be rolled out with Read only access to the data

Using 3G or Wi-Fi geo-locates the IPad

With a roadmap to include write access for external updating in the next phase.

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SAFE/MAXIMO INTEGRATION - PoC

- Gatwick have been using Maximo for many years and are considering migrating to Maximo 7.5 in early 2015
- We have also been using various Autodesk products and are actively trialling other offerings from Autodesk and Ordnance Survey
- IBM and Autodesk have worked with Gatwick on a BIM for FM PoC which we have previously shown
- We were introduced to the concepts of REST Web Services by IBM and have been considering various innovative approaches to their use within the business
- One such idea was to link SAFE and in particular our AGL dataset into Maximo using REST

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BASIC USE CASE

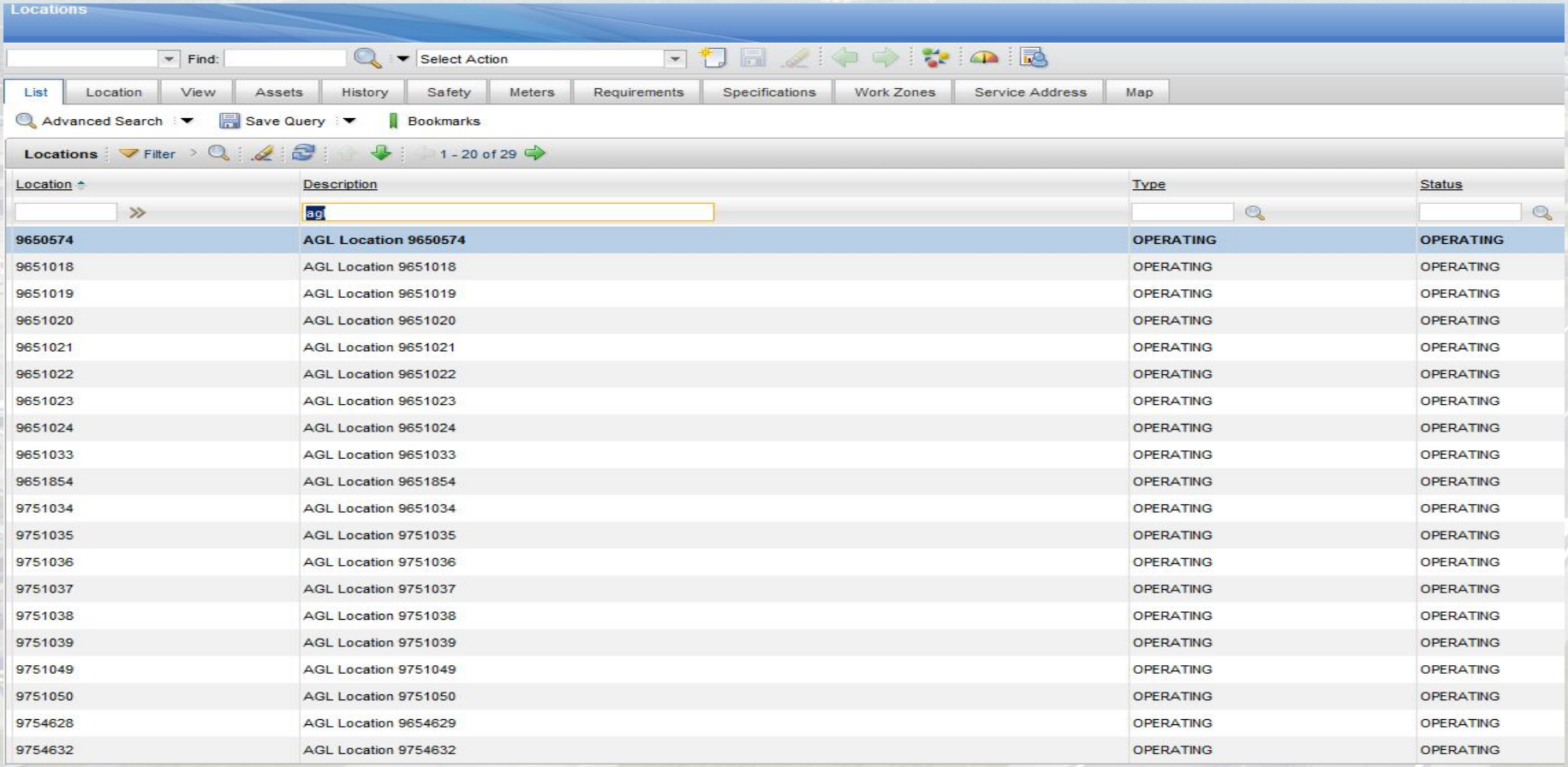
Very simple use cases developed to prove the concepts and show basic integration between Autodesk Maps and Maximo technology

1. Faulty Light reported → Work Order Raised in Maximo based on report and location ID of faulty light → Work Order Reviewed – location checked on map which is automatically loaded at correct location

2. Inspection carried out in field with tablet PC → Map loaded into PC → Faulty Light identified on Map and Work Order automatically generated

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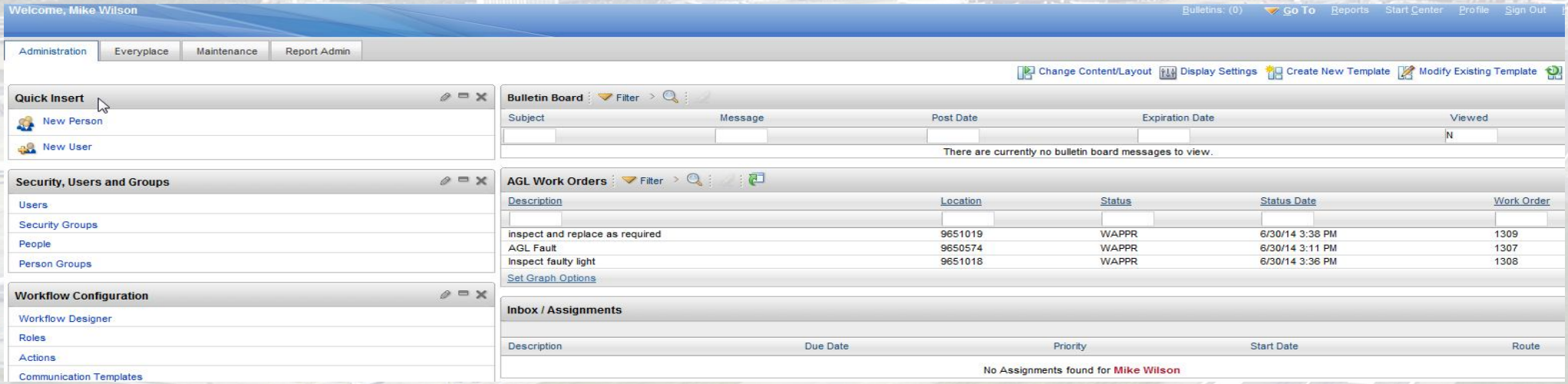
AGL LOCATIONS MAPPED TO MAXIMO LOCATIONS



Location	Description	Type	Status
	agl		
9650574	**AGL Location 9650574**	**OPERATING**	**OPERATING**
9651018	AGL Location 9651018	OPERATING	OPERATING
9651019	AGL Location 9651019	OPERATING	OPERATING
9651020	AGL Location 9651020	OPERATING	OPERATING
9651021	AGL Location 9651021	OPERATING	OPERATING
9651022	AGL Location 9651022	OPERATING	OPERATING
9651023	AGL Location 9651023	OPERATING	OPERATING
9651024	AGL Location 9651024	OPERATING	OPERATING
9651033	AGL Location 9651033	OPERATING	OPERATING
9651854	AGL Location 9651854	OPERATING	OPERATING
9751034	AGL Location 9651034	OPERATING	OPERATING
9751035	AGL Location 9751035	OPERATING	OPERATING
9751036	AGL Location 9751036	OPERATING	OPERATING
9751037	AGL Location 9751037	OPERATING	OPERATING
9751038	AGL Location 9751038	OPERATING	OPERATING
9751039	AGL Location 9751039	OPERATING	OPERATING
9751049	AGL Location 9751049	OPERATING	OPERATING
9751050	AGL Location 9751050	OPERATING	OPERATING
9754628	AGL Location 9654629	OPERATING	OPERATING
9754632	AGL Location 9754632	OPERATING	OPERATING

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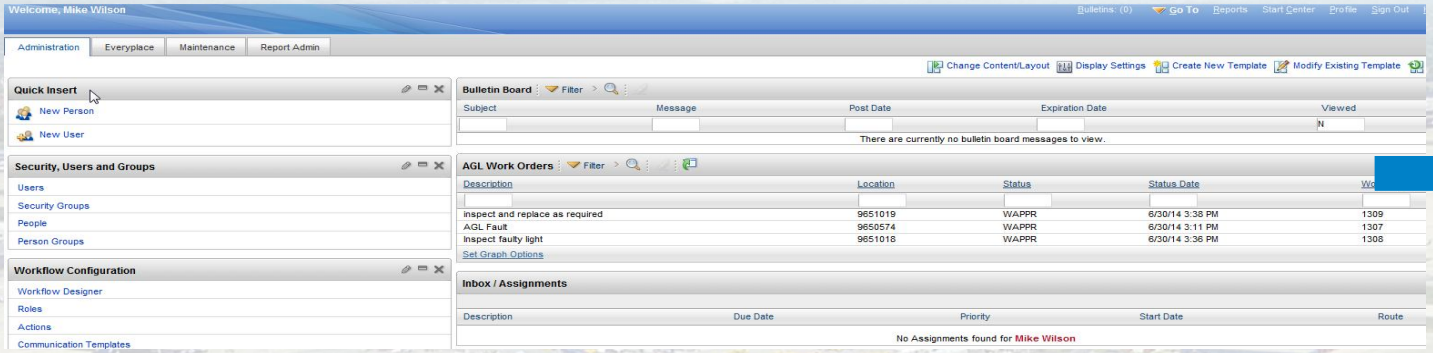
WORK ORDERS CREATED AS NORMAL IN MAXIMO

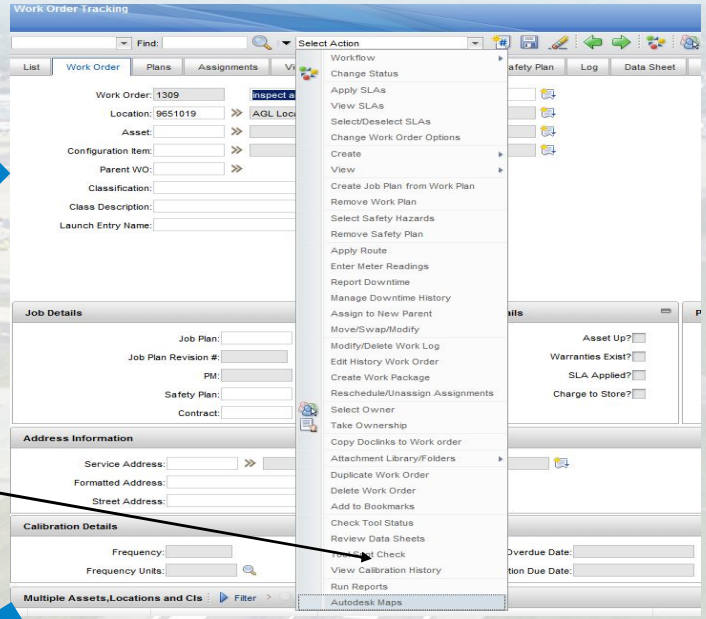


Simple query built on AGL related work orders – presented in the Maximo Start Centre as a result set.

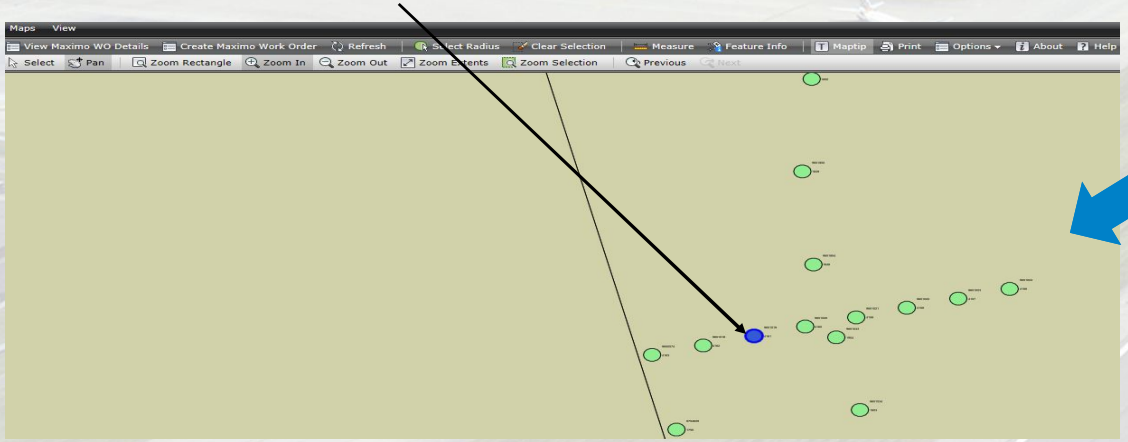
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VIEWING THE DATA



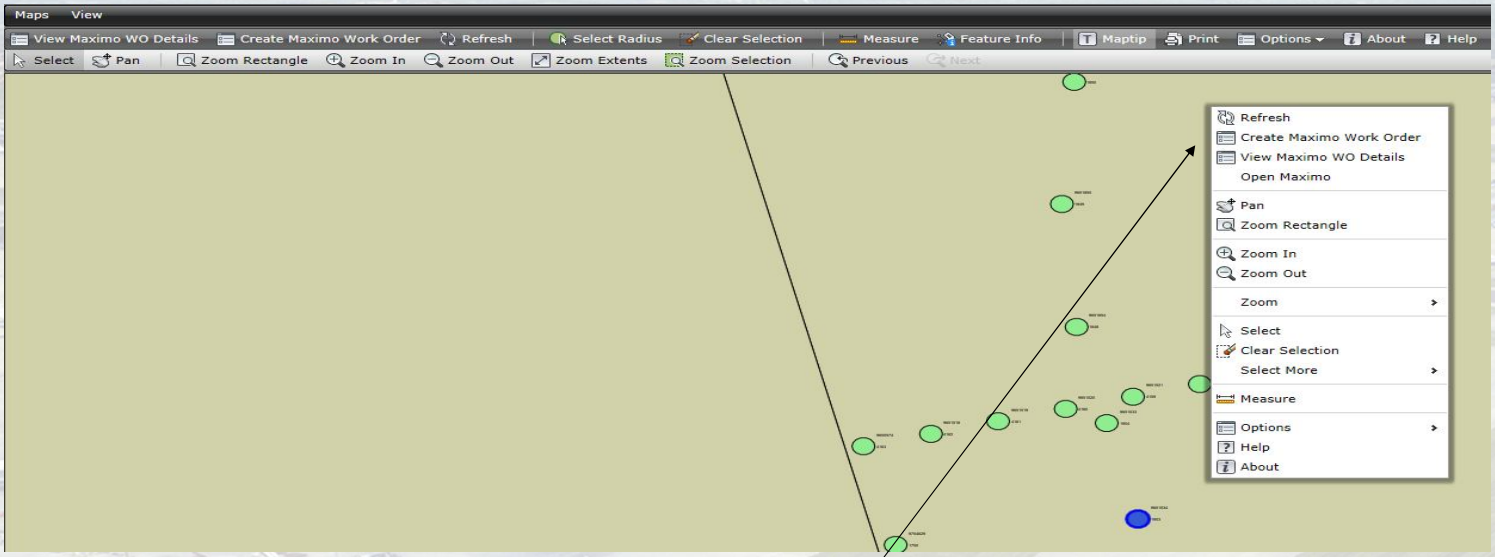


Selecting the Selection Action –Map option launches the map at the location specified in Maximo (which is mapped to the same location in Autodesk Maps

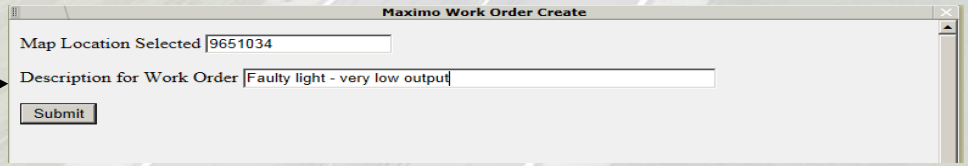


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CREATING A WORK ORDER

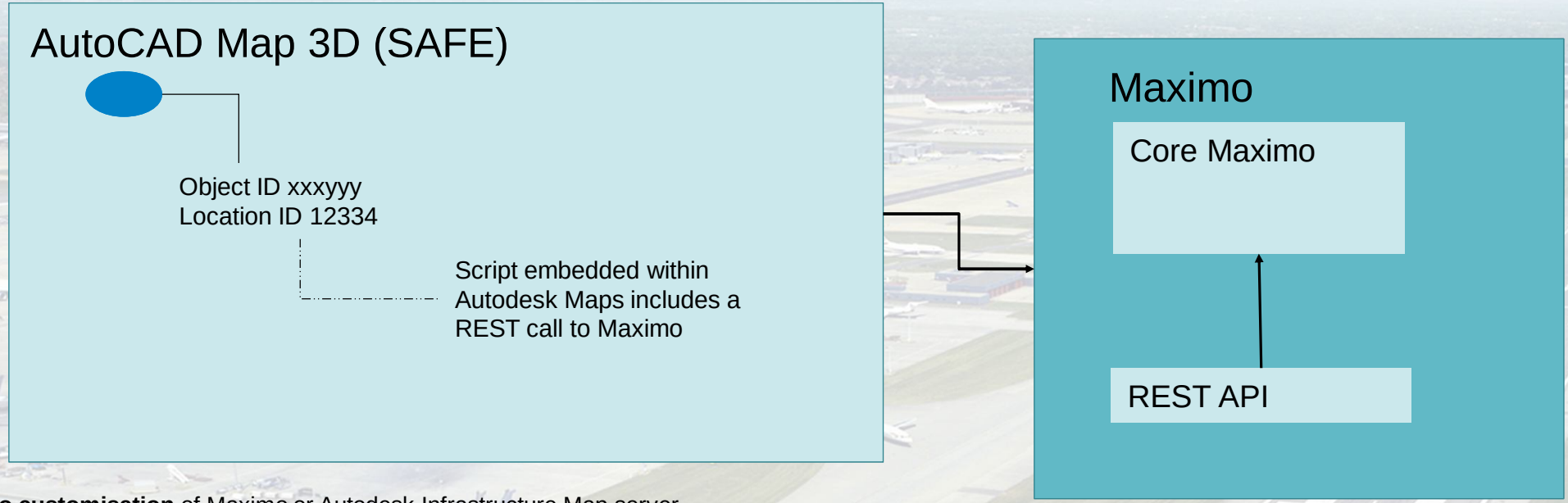


After selecting an object, when a 'right click' is actioned, the option to Create a Maximo work order is displayed.



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BASICS OF HOW THE INTEGRATION PoC WORKS

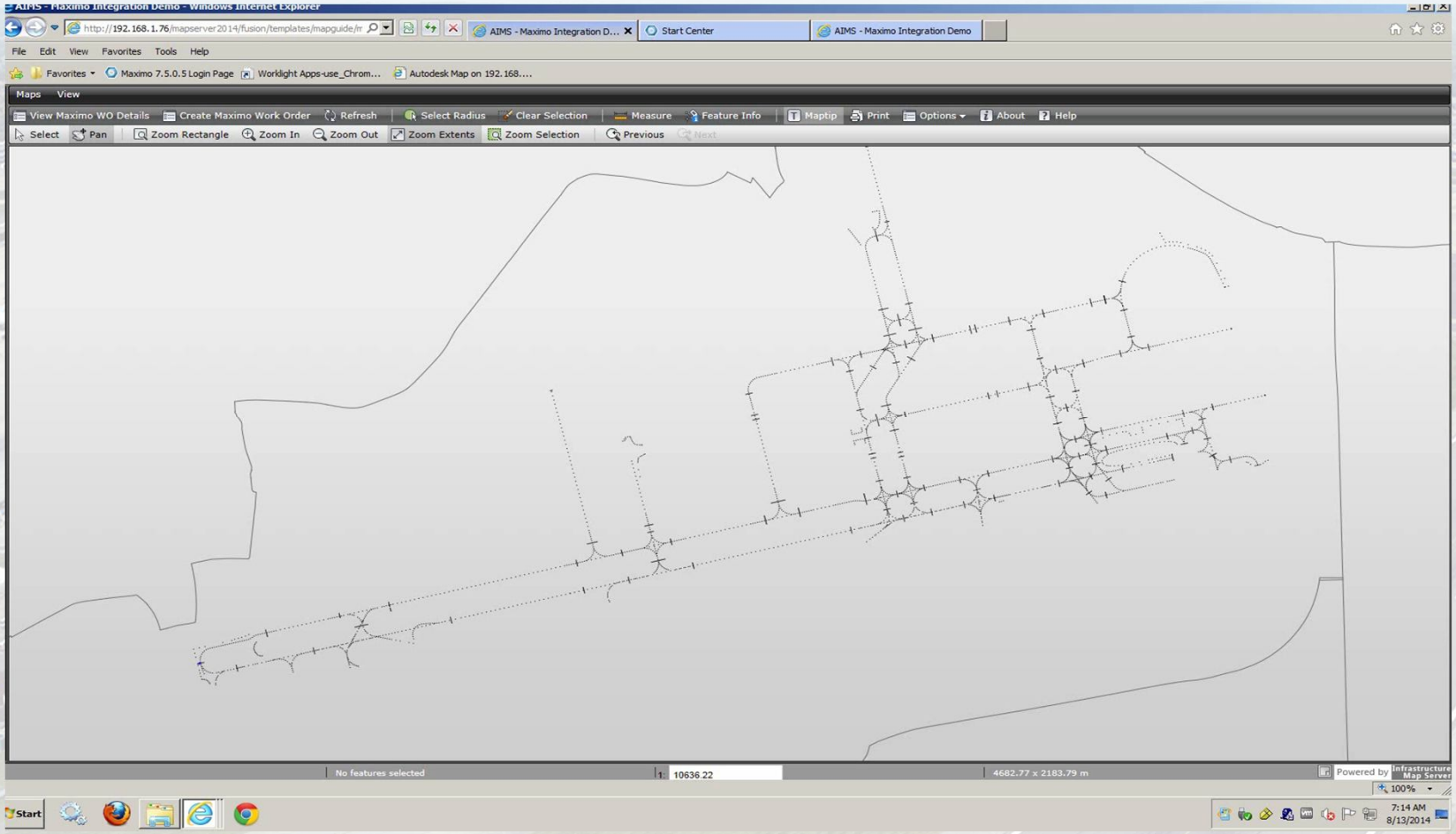


- **No customisation** of Maximo or Autodesk Infrastructure Map server
- Both Maximo and Autodesk Infrastructure Map Server have REST API's so bi-directional integration between the two products is possible.
- We used REST services available with Maximo to access Maximo information - basically a REST service call is attached to an 'event' that takes place in Autodesk Map Server - an event could be a mouse click. The event includes a parameter, so a mouse click on a specific location would generate a REST call to the location object in Maximo, with a parameter based on the location data in Map Server
- Whilst there is no customisation to either product, we did tailor the UI in Maximo by adding a few buttons and web calls, and in Autodesk, we embedded my REST calls that I have already shared with you an Julian to call the Maximo object and render it nicely in Autodesk Map Server

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A SHORT VIDEO

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SAFE AS A RESILIENCE TOOL





	North Terminal	South Terminal	Remote Stand	Total
Scheduled departures	132	112	16	260
Departed	65	108	15	188
Cancelled	67	4	1	72
Scheduled arrivals	134	121	45	300
Arrived	74	116	37	227
Cancelled	60	5	8	73

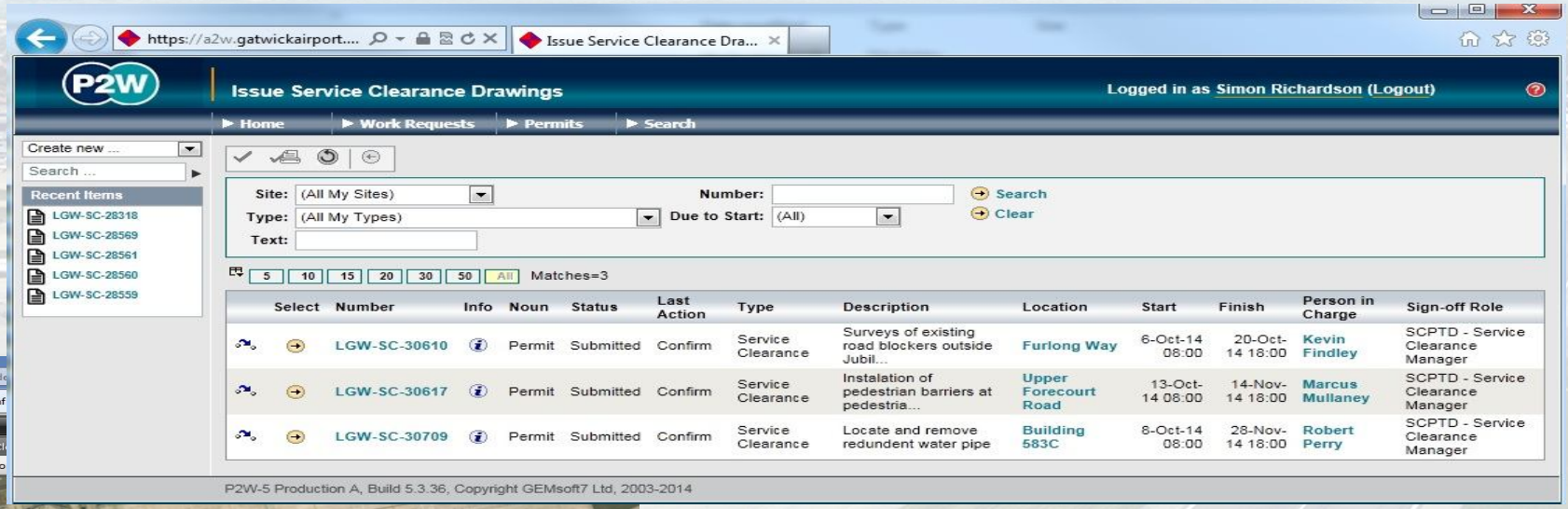
	North Terminal	South Terminal	Remote Stand	Total
Scheduled departures	21,786	16,179	361	38,326
Departed	11,074	15,585	361	27,020
Cancelled	10,712	594	0	11,306
Scheduled arrivals	12,451	11,683	1,020	25,154
Arrived	7,973	11,289	945	20,207
Cancelled	4,478	394	75	4,947

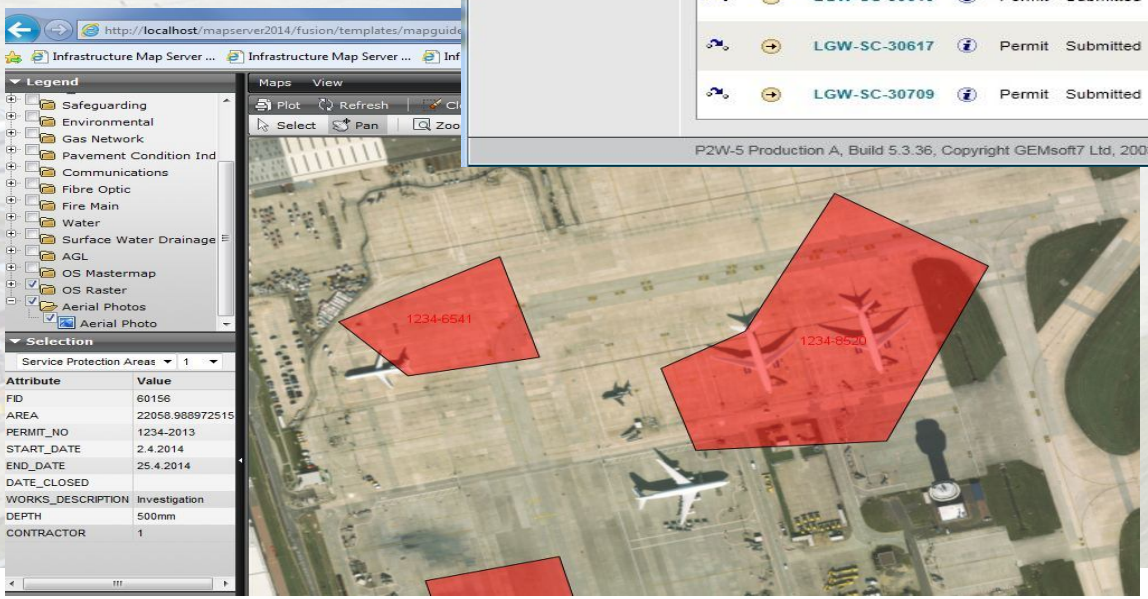
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LINK TO OUR PERMITRY SYSTEM

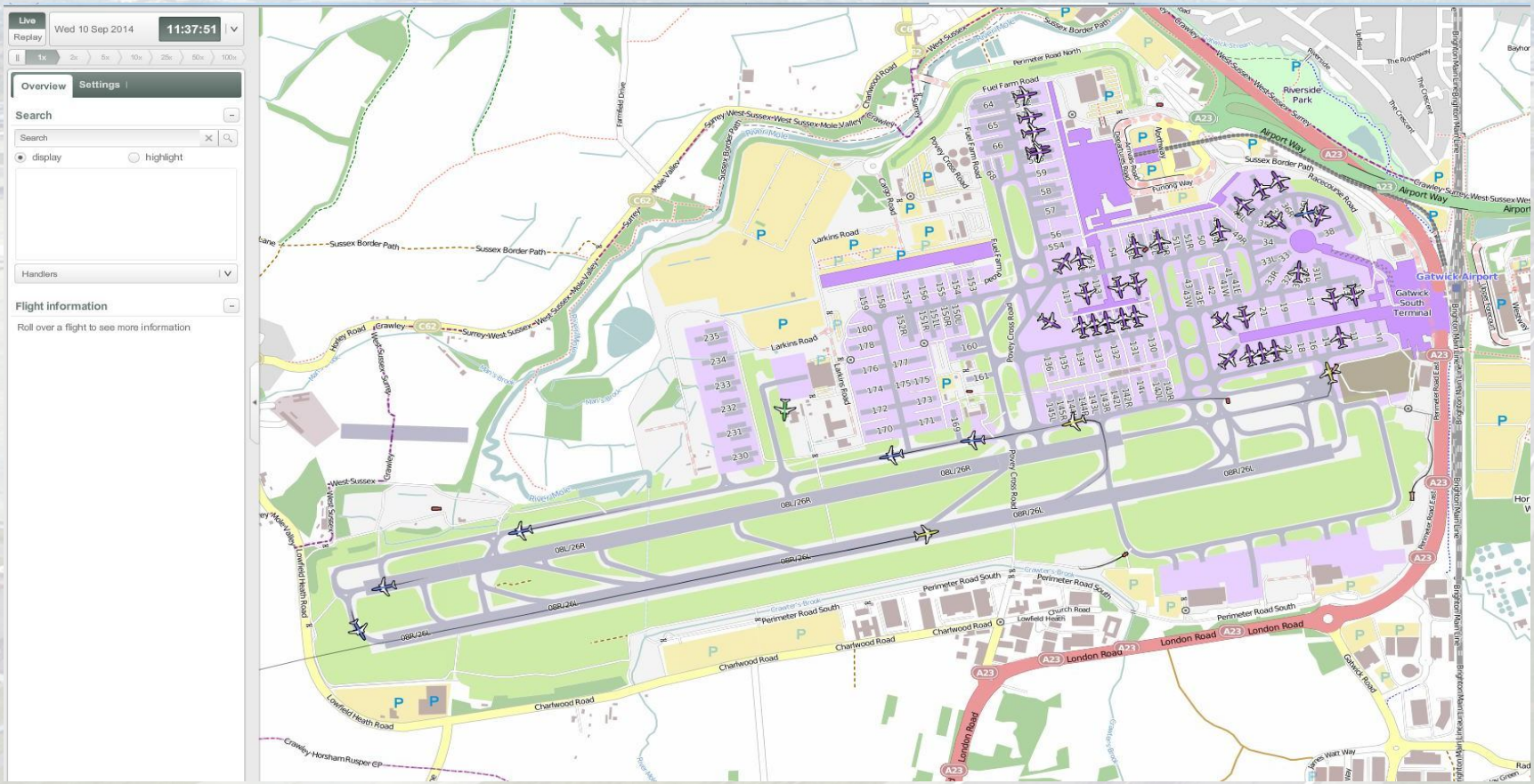




- Service Clearance
- Hot Works
- Crane
- Confined Spaces

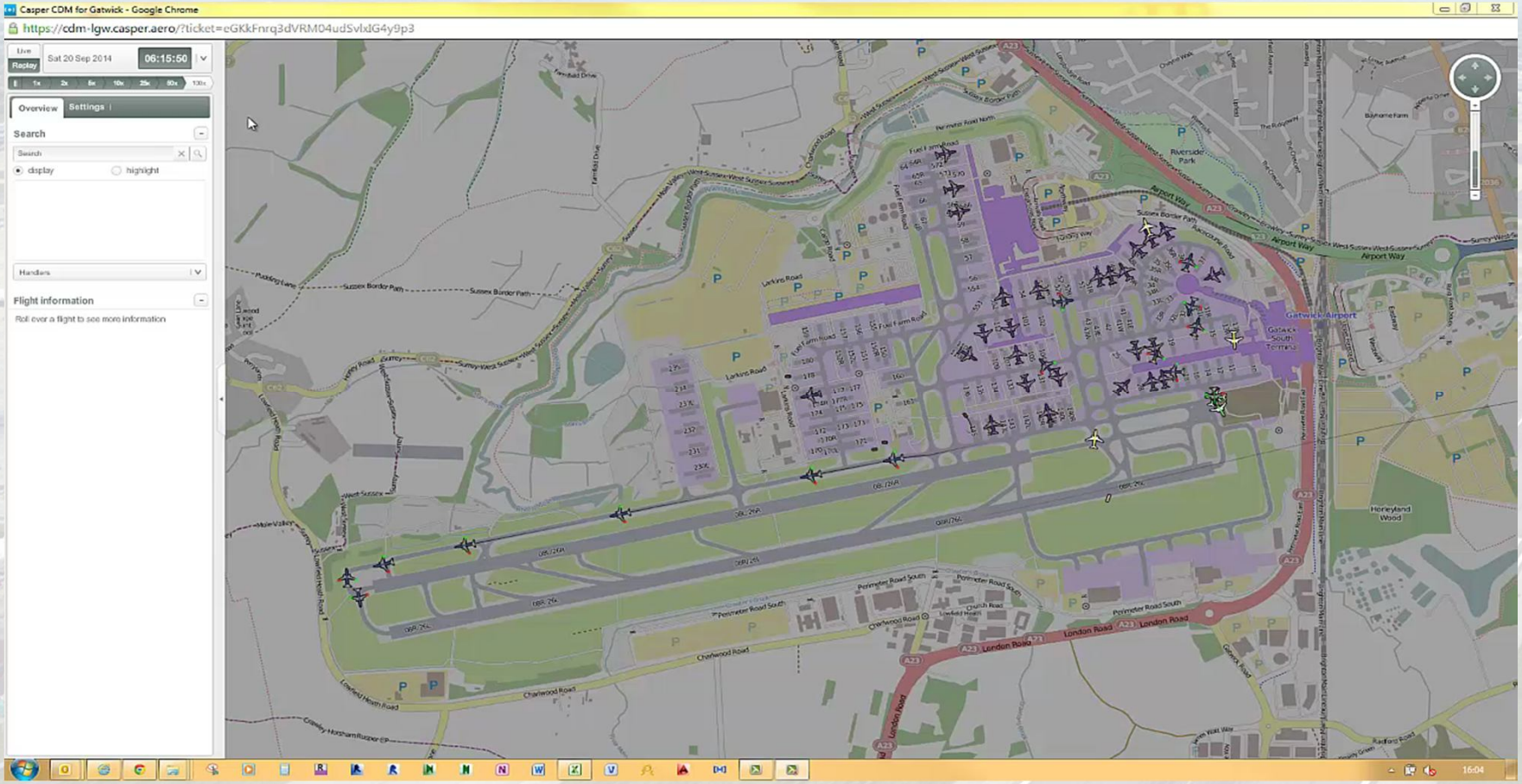
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A-CDM55 SITUATIONAL AWARENESS TOOL



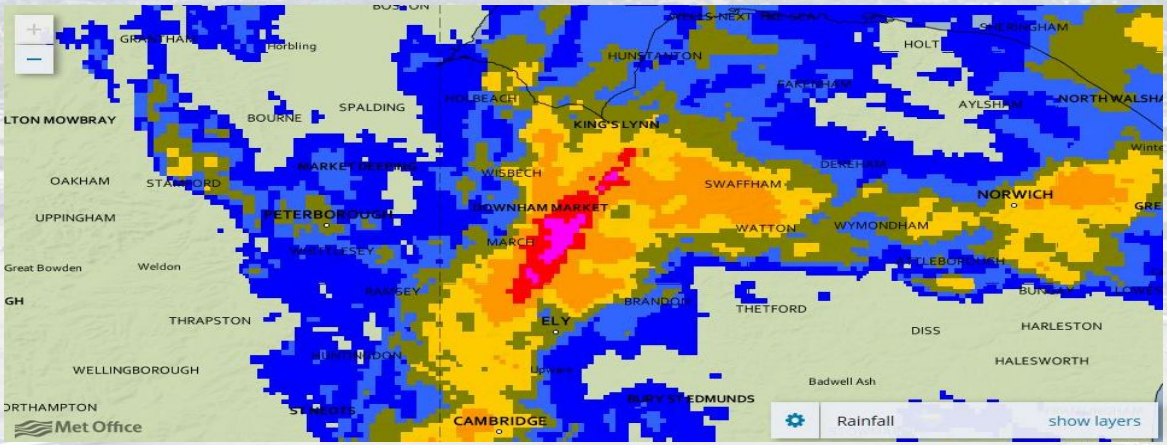
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A-CDM55 SITUATIONAL AWARENESS TOOL



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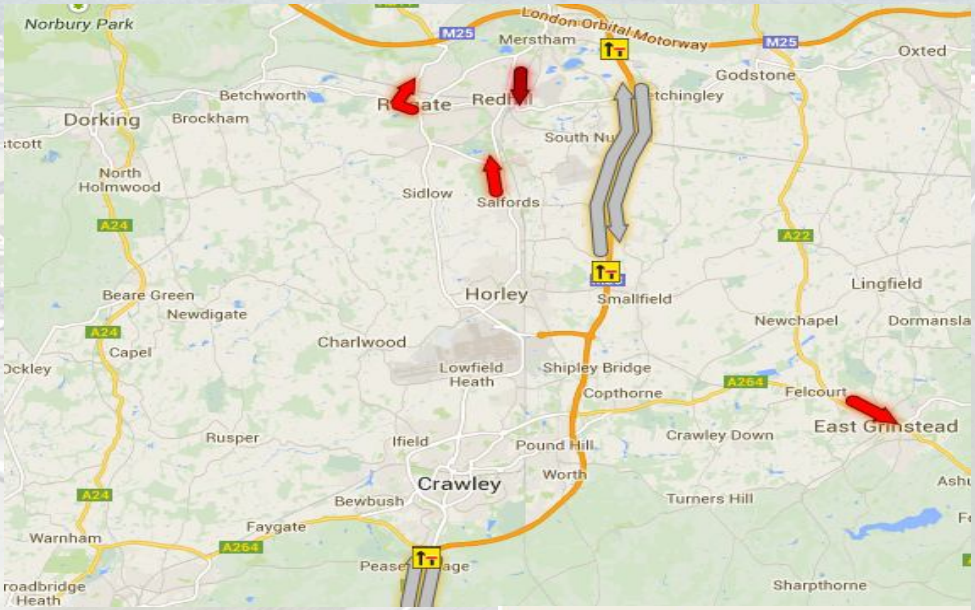
LIVE DATA FEEDS



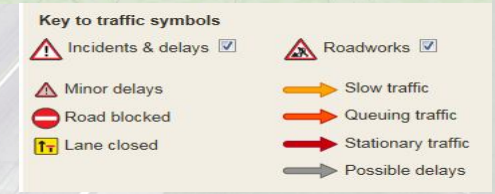
Met Office Rainfall Radar



Live CCTV Feeds



Live Traffic Data



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SAFE: THE FUTURE



Moving from 2d buried services data to 3d using newly developed tools from Autodesk such as Infra works 360

Data round tripping
allowing users to update the data in the field (using the power of the crowd to improve our datasets

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Any Questions ?

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Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time



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