



Maximo and Syclo in Northern Ireland Electricity

Mobilising the utility

PCTY2012 
Pulse Comes to You

Optimizing the World's Infrastructure
30th May 2012, Grange Tower Bridge,
London



Today's Presentation

- Within Northern Ireland Electricity (NIE), Maximo is critical in delivering effective Asset Management for substation plant.
- Building on our existing Syclo solution for substation inspections, we now wish to implement additional functionality around plant maintenance.
- NIE is also recognising further potential in Maximo and mobile deployment for managing other key areas of our business – beyond those originally planned for Maximo.
- We will look at the current Maximo implementation, the 'approved' developments, and some yet to be sanctioned.

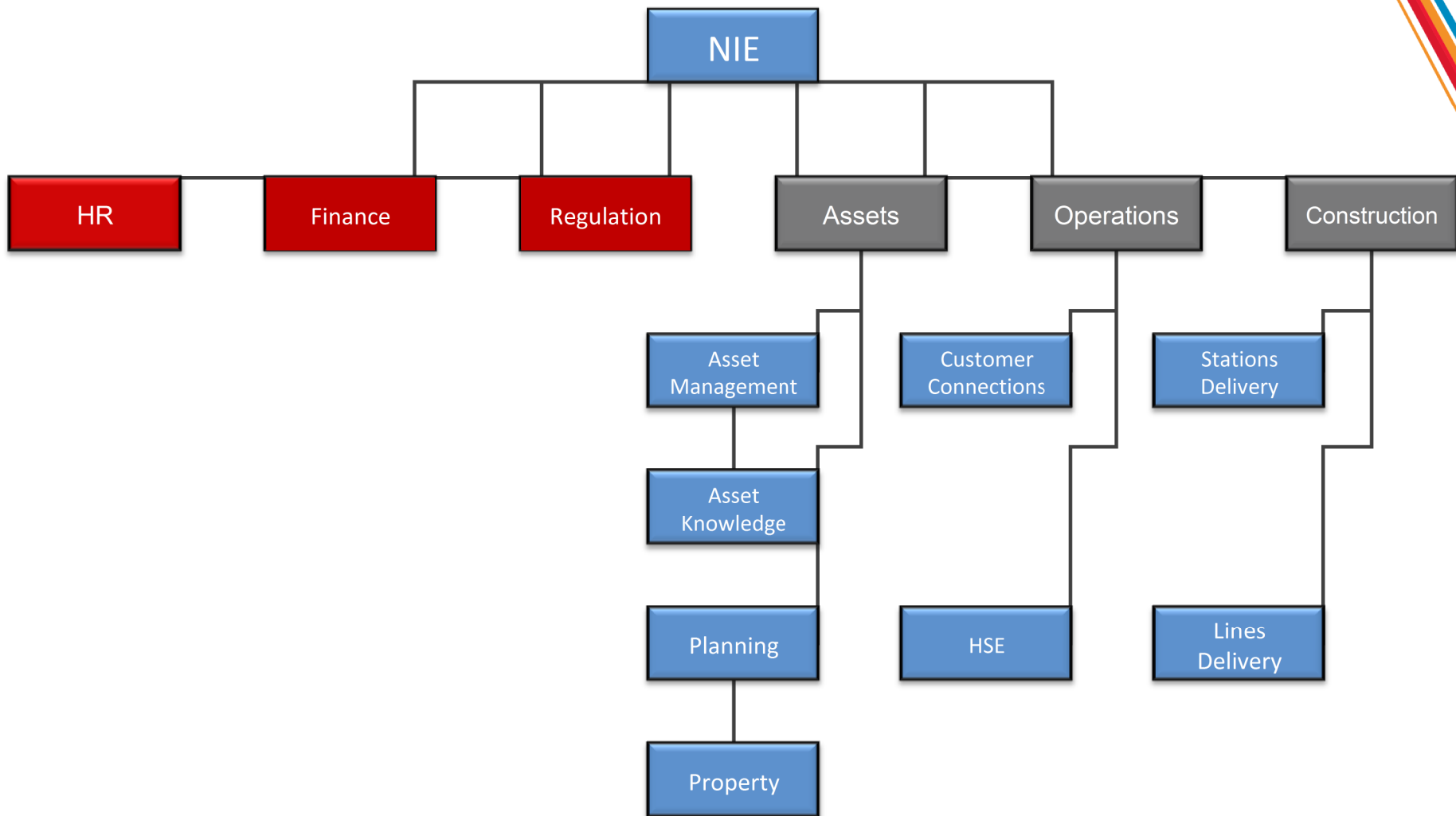
Northern Ireland

- Northern Ireland, part of the UK, population of 1.7M people. Capital city is Belfast, with a population of 580,000.
- Traditional industries: agriculture, textiles, shipbuilding and aircraft manufacture.
- Famous for...Bushmills Whiskey, the Titanic, the De Lorean, and golf!
- Modern industries: tourism, IT, aerospace and pharma.

Northern Ireland Electricity

- NIE is part of the ESB group of companies.
- ESB (Electricity Supply Board) is the semi-state owned generation, transmission and distribution company in the Republic of Ireland.
- ESB turnover was £2.3B in 2010, with an asset base of £10.5B.
- NIE turnover was £151M in 2010, with an asset base of £1B (aiming to double in ten years).
- NIE has sole responsibility for Transmission and Distribution of electricity to 800,000 customers in Northern Ireland.

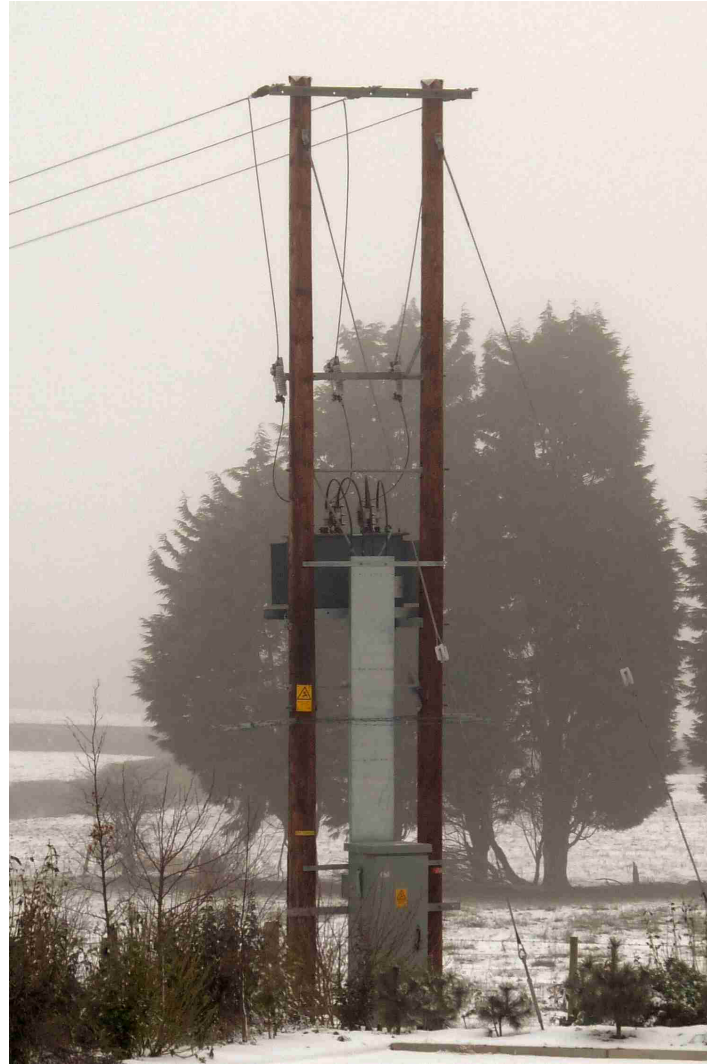
NIE Structure and Maximo



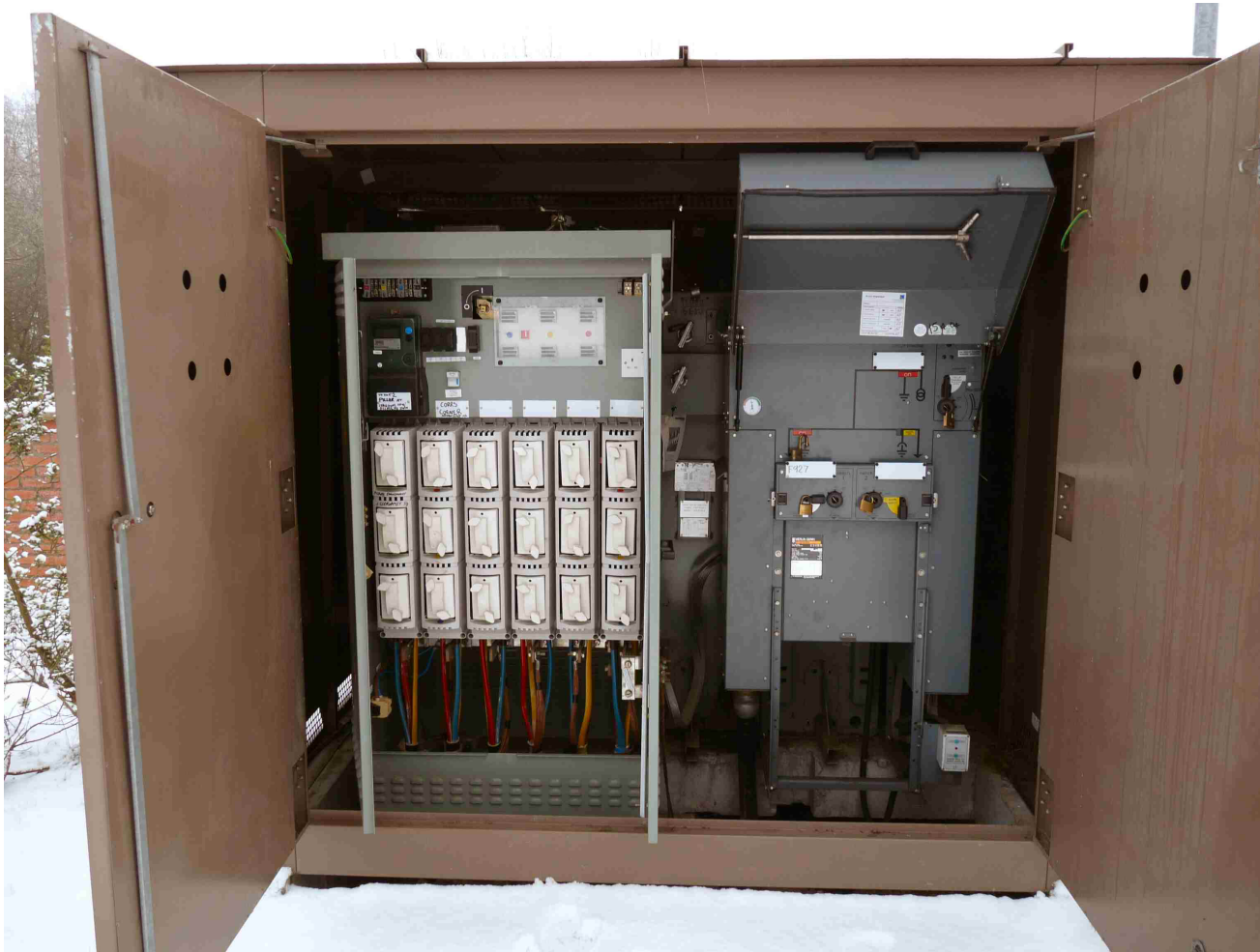
Maximo in NIE

- Substation network:-
 - 9 x 275/110 kV (with 2 new sites planned)
 - 42 x 110/33kV (with 6 new sites planned)
 - 210 x 33/11kV
 - 8,500 Secondary Distribution (Ground Mounted)
 - 75,000 Secondary Distribution (Pole Mounted)
- 200,000 locations, 150,000 assets, 57,000 PM records, circa. 40,000 Work Orders / year.
- 4,500 tools under calibration / test.

Pole-mounted substation



Package substation (indoor)



Package substation (outdoor)



Primary substation



Transmission substation



Sam Gibson

- Asset Knowledge Manager, responsible for all Asset Management support systems (Maximo, Smallworld, Grade One etc.)
- Electrical Engineer / Six Sigma Black Belt.
- Part of the original team delivering Maximo v3.
- Founder committee member Maximo UK & Ireland User Group (Tivoli Premier User Group).
- Member of GTUG Committee.

Maximo history in NIE

- Introduced as v3 in 1997 then v4 for Y2K compliance.
- Transmission data transferred from En Garde in 2002.
- Integrated with Job Management System in 2004.
- Upgraded in 2008 to v6 (now 6.2.8) over Citrix.
- Syclo rolled out in autumn 2011 for substation inspections.
- Protection and Control assets added winter 2011/2012 (with Cal).
- Integrated with SAP-ISU winter 2011/2012.

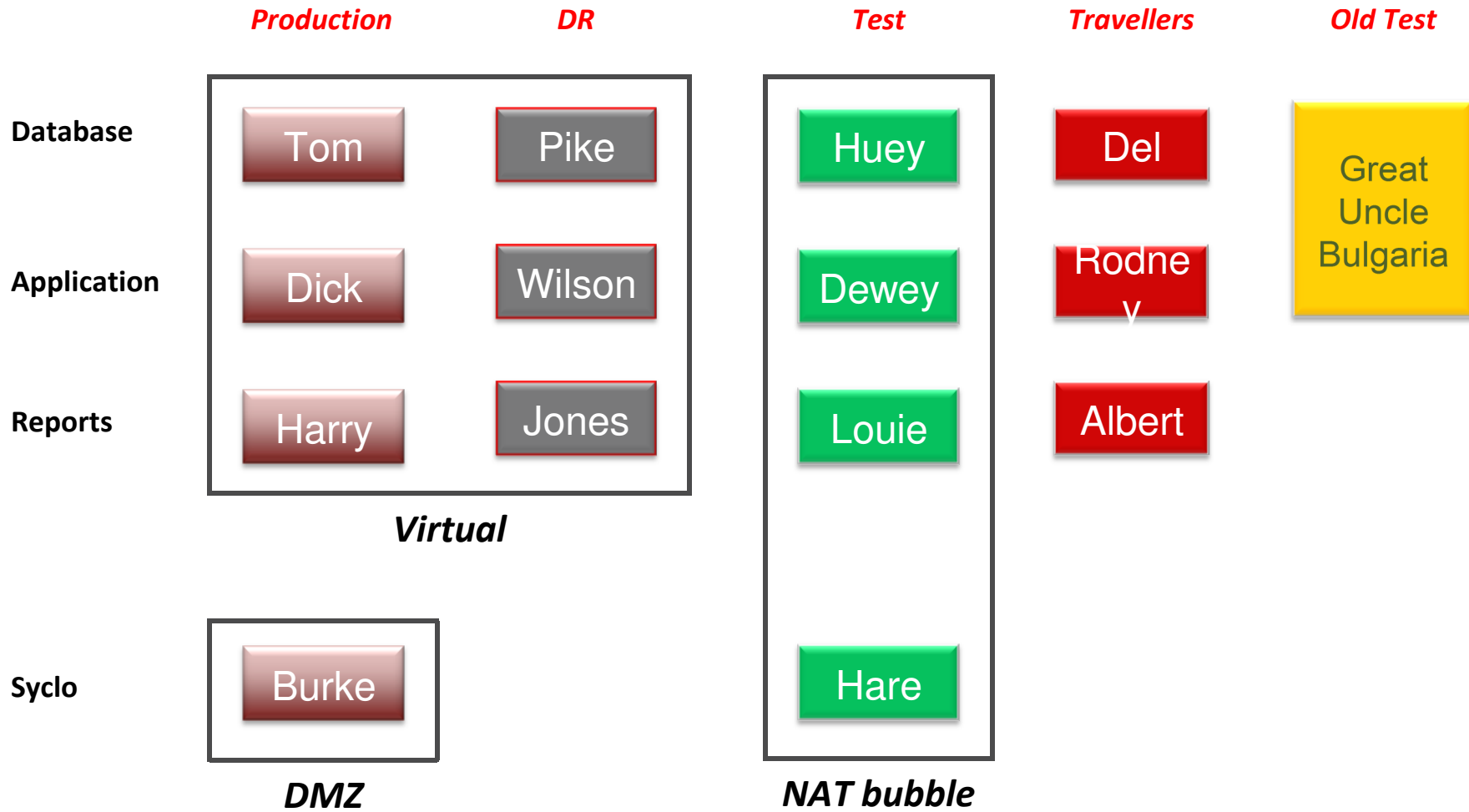
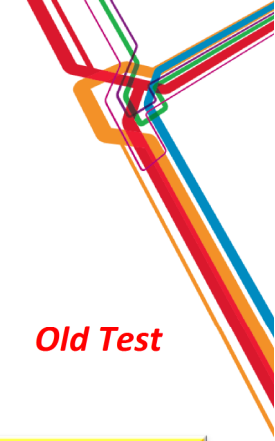
So what does Maximo do?

- Initially introduced to act as...
 - Plant register.
 - Plant work management system.
- However the world has moved on.
- Maximo now needs to...
 - Support legislation (EAW / WAH / ESQCR).
 - Deliver asset management excellence (supporting PAS 55, CRO, CBM).
 - Integrate. Become a knowledge system...adding value to data.

Maximo development / support

- Maximo (and Syclo) supported under our Managed Service contract with Northgate Information Systems.
- Northgate back-end support with Vetasi.
- NIE development framework (2 years) separately awarded to Vetasi for both Maximo and Syclo.
- System Dynamics also retained on framework.
- All development delivered on Test system(s) by partners.
- Documentation delivered to Northgate.
- Re-applied by Northgate on Test.
- Only then, deployed on Production by Northgate.

Maximo Server Family



Maximo Mobile Working

- Initially to replace 10,000 paper inspections per year.
- Now, seeking to add some 1,000 maintenance tasks.
- Deployment of 40 devices.
- Digital image collection, for immediate action on defects.
- 3G infrastructure, backed up by docking as required.
- Maps, diagrams, ISO procedures in the field.
- Deployed using Syclo Mobile Work Manager.
- Highly customised, Syclo v4.

Motion F5

- Semi-rugged.
- Excellent handwriting recognition.
- With spare battery, full day working.
- Integrated camera.
- Integrated 3G / GPRS / wi-fi.
- View Anywhere display.
- Windows XP or W7.
- Solid State Drive.



Phase 1 - delivered

- Substation inspections.
- Acquisition of devices, inclusion into Managed Service.
- Development of solution (customisation of Syclo).
- Testing, training, and pilot scheme.
- Full deployment.

Defect management

- Coded, rather than free text, output from Mobile.
- Defects attached to relevant assets and locations.
- Escalations and Workflow used to route defects to the relevant resource.
- Where defects are not resolved, Maximo provides escalation through the organisation.
- Visibility of defect issues not currently available, and some of these defects will be safety critical.
- Longer term – integrated GIS to allow effective area working.

Defect management

MAXIMO - Work Order Tracking - Windows Internet Explorer provided by NIE.

http://mxesapp/maximo/ui/maximo.jsp?sc=1338222990062&event=loadapp&value=wotrack

reflective solutions

Work Order Tracking NIE Production

Find: Select Action

List Work Order Plans Related Records Actuals Safety Plan Log Failure Reporting

Work Order	1309357	OP17 HV CABLE BOXES ROTTEN, NEED REPL	CS Centre	DOWNPATRICK	Attachments
Location	10082218	ARDGLASS C	Town	ARDGLASS	Job Plan
Asset			E600 number		PM
Parent WO			AMI number		NIE Batch ID
Generation Memo			Internal Order number		Status
Reported By	DNJHB		Work Type	CM	WAPPR
Reported Date	22/05/09 14:19		Failure Class		Status Date
			Problem Code		22/05/09 14:19
					Inherit Status Changes?
					Accepts Charges?
					Is Task?

MAXIMO - Work Order Tracking - Windows Internet Explorer provided by NIE.

http://mxesapp/maximo/ui/maximo.jsp?sc=1338214639281&event=loadapp&value=wotrack

reflective solutions

Work Order Tracking NIE Production

Find: Select Action

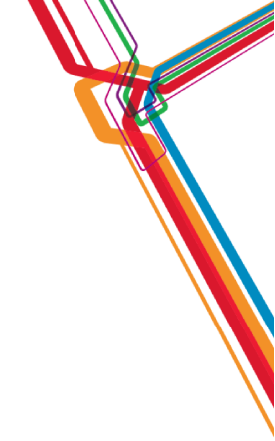
List Work Order Plans Related Records Actuals Safety Plan Log Failure Reporting

Work Order	3838914	OP17 - Cable box compound / oil leak	CS Centre	BALLYMENA	Attachments
Location	10174637	V395 BRIDGE STREET (BALLYMENA) RMU	Town	BALLYMENA	Job Plan
Asset	50101479	G.E.C. T3GF3 11KV RMU	E600 number		PM
Parent WO			AMI number		NIE Batch ID
Generation Memo			Internal Order number		Status
Reported By	9810243		Work Type	CM	WAPPR
Reported Date	05/09/11 13:12		Failure Class	FAIL10	Status Date
			Problem Code	OP17	05/09/11 13:12
					Inherit Status Changes?
					Accepts Charges?
					Is Task?

Phase 2

- Upgrade to Syclo v6.
- Implementation of Mobile Device Management, in conjunction with Northgate Service Desk.
- Transfer of circa. 200 work procedures from ISO paper based system to Maximo Job Plans.
- Application of new Job Plans to circa. 10,000 asset PMs.
- Testing, training and pilot scheme.
- Full deployment.

Current checksheet



Maintenance Procedure No C05A1 Appendix 1 Issue 1 Page 1 of 1
CHECK SHEET FOR REYROLLE LM23/36T CIRCUIT BREAKER

DISTRICT _____ SUBSTATION _____

SWITCH NO _____

*Delete where applicable

MAIN DOCUMENT

REYROLLE LM23/36T Serial no.		Circuit Breaker Rating A		Trip Coil Voltage V	
*Initial Electrical Trip	*YES	*NO	*Coil Profile Recorded	*YES	*NO
Ambient Temperature	°C	Equip Serial No		Cyclometer Reading	
Oil changed				*YES	*NO
Fibre content check (using polarized lamp)		Equip Serial No		*PASS	*FAIL
Oil moisture content	ppm	Equip Serial No		*PASS	*FAIL
Oil breakdown test	kV(average)	Equip Serial No		*PASS	*FAIL

TICK BOXES AS WORK PROGRESSES

*Delete where applicable

5	GENERAL INSPECTION	12	FIXED CONTACTS
	Clean out enclosure		Check and dress if wear is not excessive
	Check shutters and linkages & lubricate pivot points		*Replace contacts if badly worn or damaged
	Lubricate selector gate mechanism hinges & handles	13	DASHPOT BUFFERS
	Check panel bush		Check plungers operate freely
6	EXTERNAL CONDITION OF C/B BREAKER		Remove dashpot and renew buffer rubber washer
	Clean down circuit breaker		Replace dashpot and check operation
	Lubricate carriage wheels/ lifting screw / guides	14	GAS VENT
	Lubricate locking bolt and linkage		Check for obstruction
	Check interlocks		Check sealing collar moves freely against springs
7	ISOLATING CONTACTS AND BUSHINGS	15	TANK LININGS BARRIER AND GASKETS
	Clean and inspect contacts		Clean and inspect tank linings
	Check security of contacts and grease		Inspect Gasket and renew if required
	Inspect bushings for damage or scratches		Check tank is clean and fill with clean oil

Phase 2

- More effective deployment of maintenance teams.
- Direct allocation of work and tracking against labour.
- Capture of condition information from maintenance.
- Capture of defects from maintenance, and routing of same automatically to relevant engineering staff.
- Immediate reconciliation of labour and costs...no more chasing of paperwork.
- Ownership! Changing the culture through effective tools.

Calibration – the Cinderella project!

- 4,500 line MS Excel spreadsheet.
- One clerical resource, trawling spreadsheet each day, updating records, and issuing e-mails.
- Assets transferred to Maximo. Automatic WO generation, notification, and escalation.
- Standardised BIRT management reports, for all senior managers. Positive visibility of Maximo throughout NIE!

Calibration – the Cinderella project!

The screenshot displays the MAXIMO web application interface within a Windows Internet Explorer browser. The browser address bar shows the URL: `http://mxesapp/maximo/ui/maximo.jsp?sc=1338214639281&event=loadapp&value=startcntr&uniqueid=2449`. The page title is "MAXIMO - Start Center - Windows Internet Explorer provided by NIE".

The interface includes a navigation menu with options like "Welcome Page", "Calibration Administrator", "Calibration Technician", "Transmission Maintenance", and "Welcome Page". The main content area is titled "Not Received, Overdue" and contains a table of calibration records. Below this, there is another table titled "Not Received, Due 0 - 7 Days" and a third table titled "Sent for External Calibration".

Not Received, Overdue Table:

Serial #	Asset Description	Certificate	Description	Calibration Due	Team Mgr / Eng	Equipment Owner
CN-0009	LEVEL GENERATOR	3318840	CALIBRATION - EXTERNAL	16/04/11 00:00	Andy Gillespie	
CO-0034	SELECTIVE LEVEL METER	3319871	CALIBRATION - EXTERNAL	16/04/11 00:00	Andy Gillespie	
94440495	MODEL 87V DIGITAL MULTIMETER	3317158	CALIBRATION - MULTIMETER (APP 5)	11/04/11 00:00	Andy Gillespie	
1046M094326	8MK.7 METER	3315834	CALIBRATION - EXTERNAL	11/04/11 00:00	Andy Gillespie	
4619	18112 CLAMP ADAPTOR	3316912	CALIBRATION - EXTERNAL	11/04/11 00:00	Andy Gillespie	
0711074637	MIT230 INSULATION TESTER	3345356	CALIBRATION - INSULATION AND CONTINUITY (APP 3)	14/04/11 00:00	Andy Gillespie	NO FURTHER INFO
DF-0018	OPTICAL POWER METER	3792028	CALIBRATION - EXTERNAL	01/10/11 00:00	Andy Gillespie	NO FURTHER INFO
DF-0019	OPTICAL POWER METER	3792029	CALIBRATION - EXTERNAL	01/10/11 00:00	Andy Gillespie	NO FURTHER INFO
94440316	87V DIGITAL MULTIMETER	3861942	CALIBRATION - MULTIMETER (APP 5)	01/11/11 00:00	Andy Gillespie	NO FURTHER INFO
82610027	189 MULTIMETER	4022474	CALIBRATION - MULTIMETER (APP 5)	26/01/12 00:00	Andy Gillespie	NO FURTHER INFO

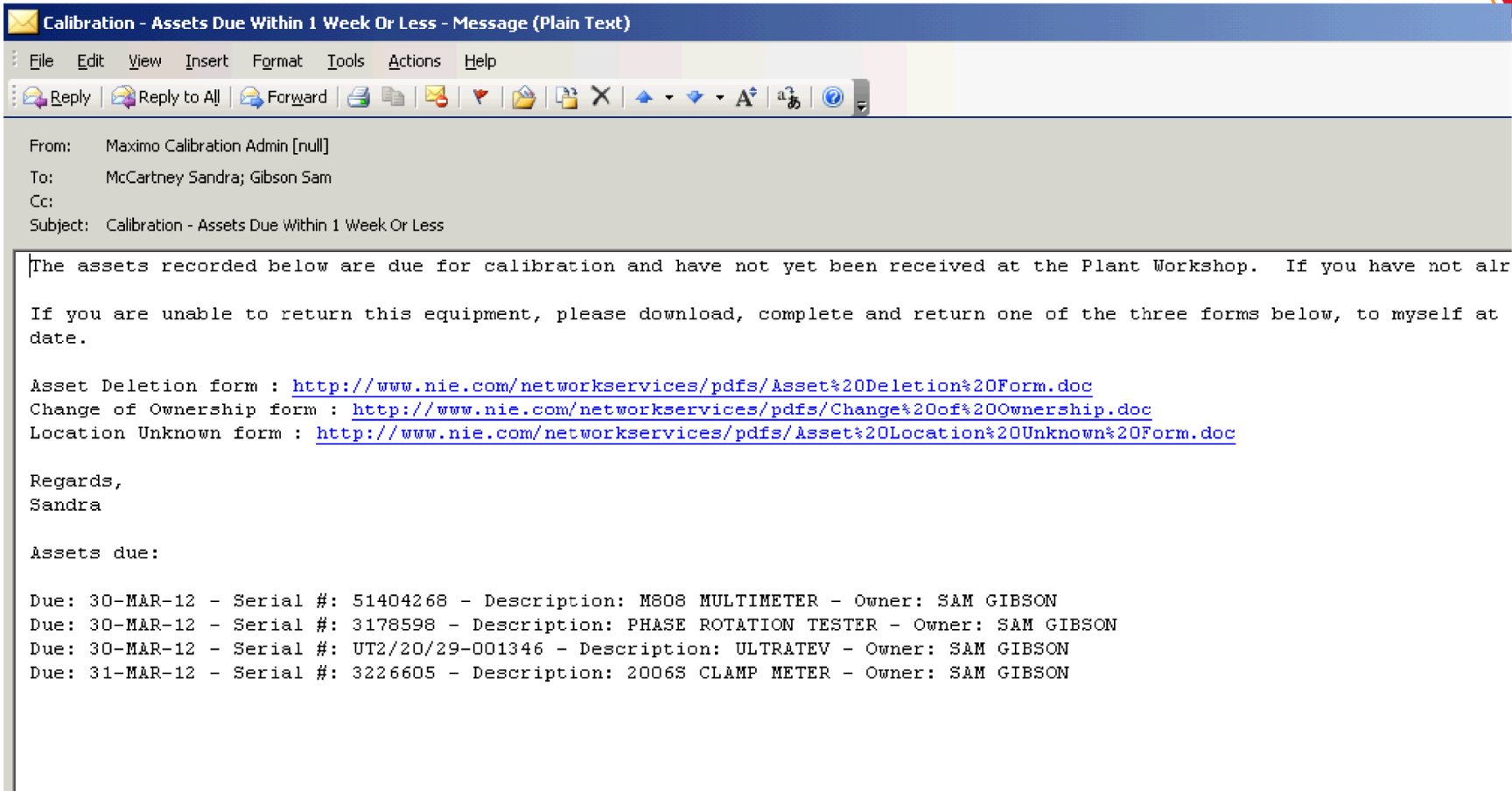
Not Received, Due 0 - 7 Days Table:

Serial #	Asset Description	Certificate	Description	Calibration Due	Team Mgr / Eng	Equipment Owner
1000346	MEGGER EARTH TESTER	4758211	CALIBRATION - LOOP TESTER (APP 4)	02/06/12 00:00	Jim Henry	
6110-994/981298/1291	LT6 LOOP TESTER	4756857	CALIBRATION - LOOP TESTER (APP 4)	01/06/12 00:00	Allister Scott	ALLISTER SCOTT
9923592	G10TS CRIMPER	4757756	CALIBRATION - GENERAL (APP 2)	02/06/12 00:00	Sean Mallon	Aiden McGuigan
0805005	LIVELINE TESTER	4757761	CALIBRATION - HIGH VOLTAGE DETECTOR (APP 9)	01/06/12 00:00	Keith Patterson	NO FURTHER INFO
67480539	87 MULTIMETER	4757474	CALIBRATION - MULTIMETER (APP 5)	03/06/12 00:00	Michael Best	MICHAEL BEST
6020041	KT35 INS/CON TESTER	4757774	CALIBRATION - INSULATION AND CONTINUITY (APP 3)	02/06/12 00:00	Davey Wilson	SEAN WEIR
KA411-1085335	BW Gas Alert Microclip	4758073	CALIBRATION - EXTERNAL	30/05/12 00:00	Gordon Taylor	Carn Workshop
KA411-1085881	BW Gas Alert Micro Clip	4758074	CALIBRATION - EXTERNAL	30/05/12 00:00	Gordon Taylor	Carn Workshop
0014854	2002PA CLAMP METER	4757793	CALIBRATION - CLAMP TESTER (APP 7)	01/06/12 00:00	Cameron McQuillan	CAMERON MCQUILLAN
67480538	DIGITAL MULTIMETER	4757526	CALIBRATION - MULTIMETER (APP 5)	03/06/12 00:00	Stephen Dunn	STEPHEN DUNN

Sent for External Calibration Table:

Serial #	Asset Description	Certificate	Description	Vendor	Quotation Date	Quotation Number

Calibration – the Cinderella project!



Calibration - Assets Due Within 1 Week Or Less - Message (Plain Text)

File Edit View Insert Format Tools Actions Help

Reply Reply to All Forward

From: Maximo Calibration Admin [null]
To: McCartney Sandra; Gibson Sam
Cc:
Subject: Calibration - Assets Due Within 1 Week Or Less

The assets recorded below are due for calibration and have not yet been received at the Plant Workshop. If you have not already returned this equipment, please download, complete and return one of the three forms below, to myself at date.

Asset Deletion form : <http://www.nie.com/networkservices/pdfs/Asset%20Deletion%20Form.doc>
Change of Ownership form : <http://www.nie.com/networkservices/pdfs/Change%20of%20Ownership.doc>
Location Unknown form : <http://www.nie.com/networkservices/pdfs/Asset%20Location%20Unknown%20Form.doc>

Regards,
Sandra

Assets due:

Due: 30-MAR-12 - Serial #: 51404268 - Description: M808 MULTIMETER - Owner: SAM GIBSON
Due: 30-MAR-12 - Serial #: 3178598 - Description: PHASE ROTATION TESTER - Owner: SAM GIBSON
Due: 30-MAR-12 - Serial #: UT2/20/29-001346 - Description: ULTRATEV - Owner: SAM GIBSON
Due: 31-MAR-12 - Serial #: 3226605 - Description: 2006S CLAMP METER - Owner: SAM GIBSON

Statutory Equipment Inspections



Statutory Equipment Inspections

- 3rd party inspector, inspecting circa. 16,000 assets, and using 3rd party database.
- Paper process, with issues around missing / duplicated assets.
- Manual notification of defects to statutory bodies.
- Data to be transferred into Maximo, with automated dispatch to 3rd party inspectors.
- Maximo Mobile / Syclo Work Manager Lite to be used to configure specific screens for I-Pad / Blackberry.
- Immediate notification and automated reporting of high-priority defects.

Property Management

- Regulatory Period 5 (RP5) will see significant Capital Expenditure on the substation population. This will require significant land acquisition / lease / negotiation.
- RP5 programme, and renewable expansion will see significant growth in staff numbers.
- Tririga under consideration for Maximo to provide management tool for both network and corporate properties.

HSE module

- Group Safety require a system for managing incident investigation and resolution, risk assessment, and staff authorisations.
- HSE Module demonstrated, trialled with case studies.
- Co-ordinated with existing Maximo asset base.
- NIE would leverage end-to-end incident managing capability, FMEA tracking, risk matrix, and AOR management.

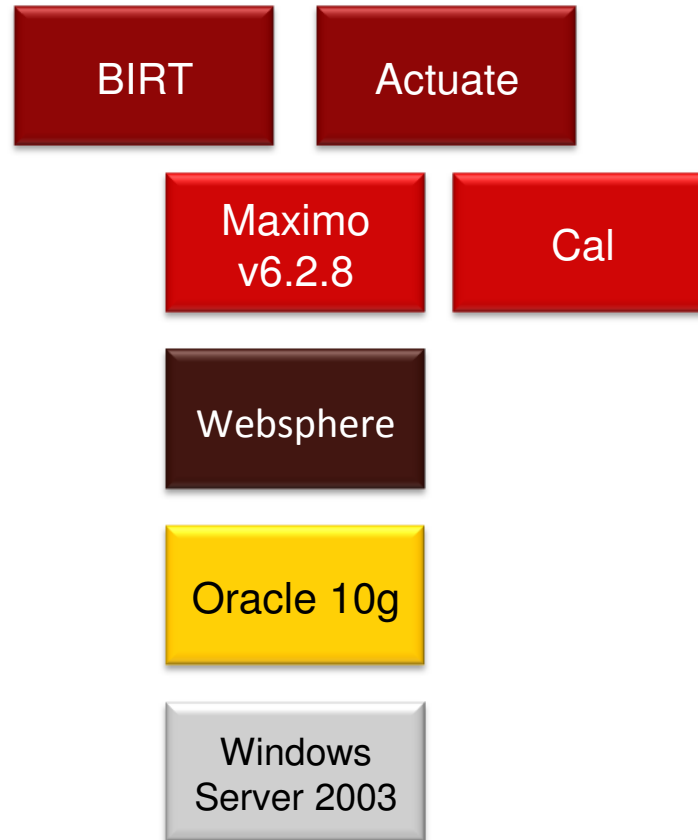
So what do we need to do?

- Mobile phase 2 – budgeted for 12/13
- Statutory inspections – budgeted for 12/13 (but urgent)
 - Maximo Mobile? (Maximo v7.5)
 - ~~Maximo Everyplace? (Maximo v7.5)~~
 - Syclo Lite? (Maximo v6.2.8, but Syclo v6)
- HSE Module – under consideration only
 - Maximo v7.5
- Maximo Property / Tririga – under consideration only
 - Maximo v7.5

And how do we get there?

- Can Syclo v4 and v6 co-exist on a Maximo v6 platform?
- Can Maximo Mobile co-exist with Syclo v4?
- Do we consider a fresh Maximo v7.5 / Syclo v6 implementation, and gradual transfer?
 - Maximo v6.2.8 for 'original' work, mobile phases 1 and 2, with Syclo v4.
 - Maximo v7.5 for HSE / Property / Statutory Inspections, with Syclo Lite / Maximo Mobile.
 - Move to Maximo v7.5 / Syclo v6 in a controlled manner.

Maximo environment today...



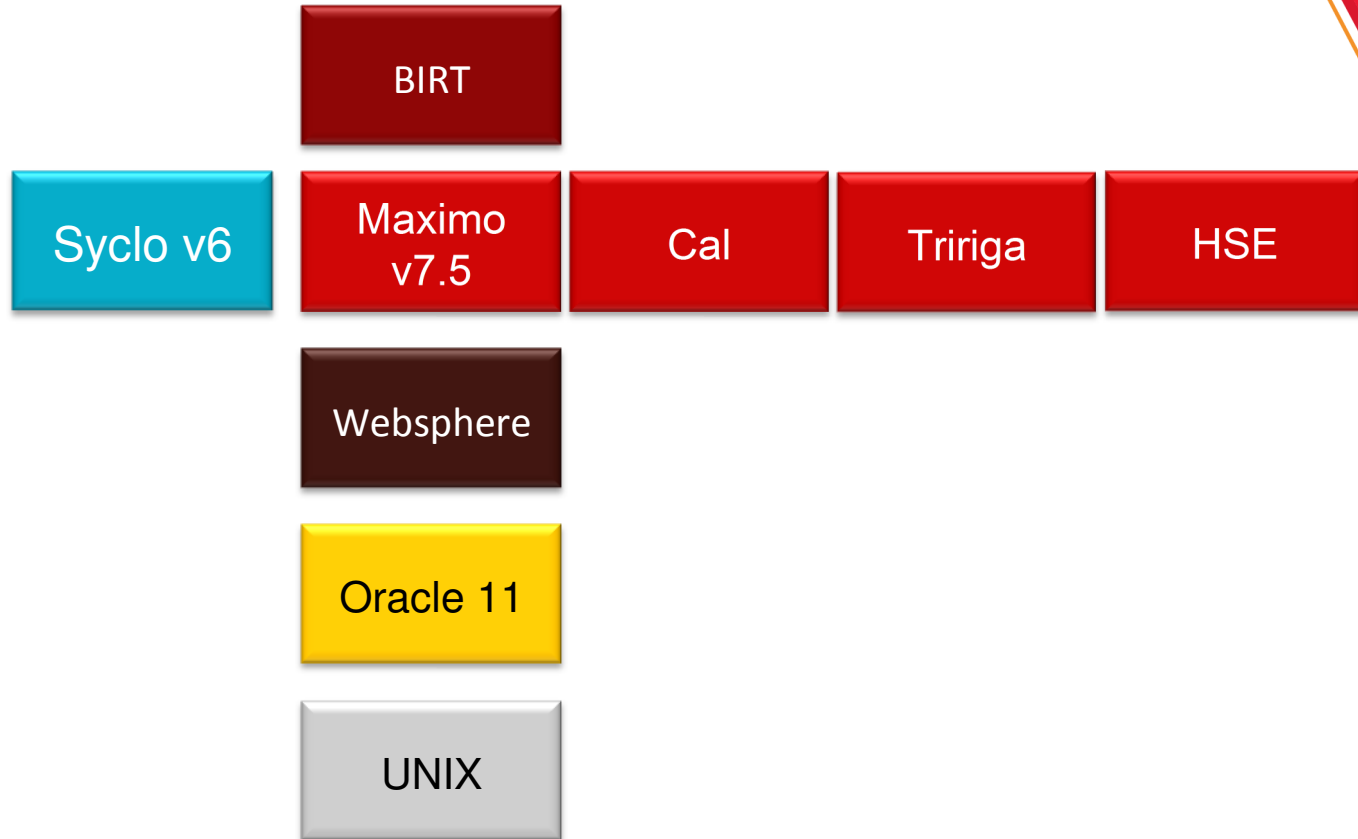
Architecture development

- Policy – latest release where possible, taking ‘bleeding edge’ into consideration.
- Syclo v6 already identified as beneficial.
- Maximo v7.5 providing baseline for HSE and Property solutions.
- UNIX server identified as performance benefit over Windows platform.
- Both Production and Test to be hosted on virtual machines.
- VPN to be considered for communications.

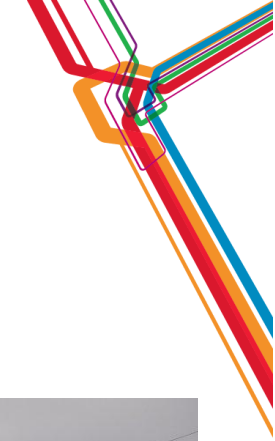
Maximo environment tomorrow...



VPN



Maximo for overhead lines?



Overhead lines

- NIE currently considering a replacement for Grade One, a bespoke overhead lines asset management application.
- To include vegetation management , underereaves management and helicopter patrolling.
- To support new ESQCR legislation.
- Required to interface with GE Smallworld GIS.
- Field inspections to be delivered remotely.
- ‘Scenario modelling’ required to cost different levels of refurbishment (Java customisation?)...or bespoke JMS link?
- Circa. 60 users.

Conclusions

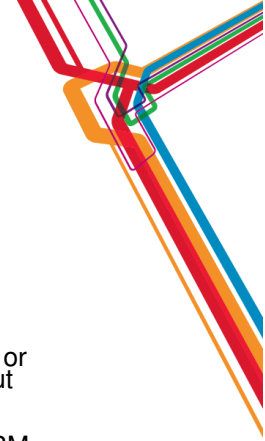
- Maximo provides the functionality and flexibility to manage the wide-ranging operations of an electricity utility.
- Syclo provides the functionality and connectivity to effectively mobilise our workforce.
- Mobile working elevates inspection and maintenance tasks to new levels. Data capture, prioritisation, escalation and resolution all gain major improvements.
- Why are we using a mobile solution – to reduce system risk and cost of delivery / defects processes - achieved!
- Maximo demonstrating a true EAM capability.

Thank you for your attention...

Any questions?

sam.gibson@nie.co.uk

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PCTY2012

Pulse Comes to You

