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WEMS IT User Group

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20 March 2015



AGENDA

WEMS 3.12 – an overview

SHA-1 / Internet Explorer 8

Web service retirement – old versions

Software development processes at the IMO

Feedback





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WEMS 3.12 – An Overview



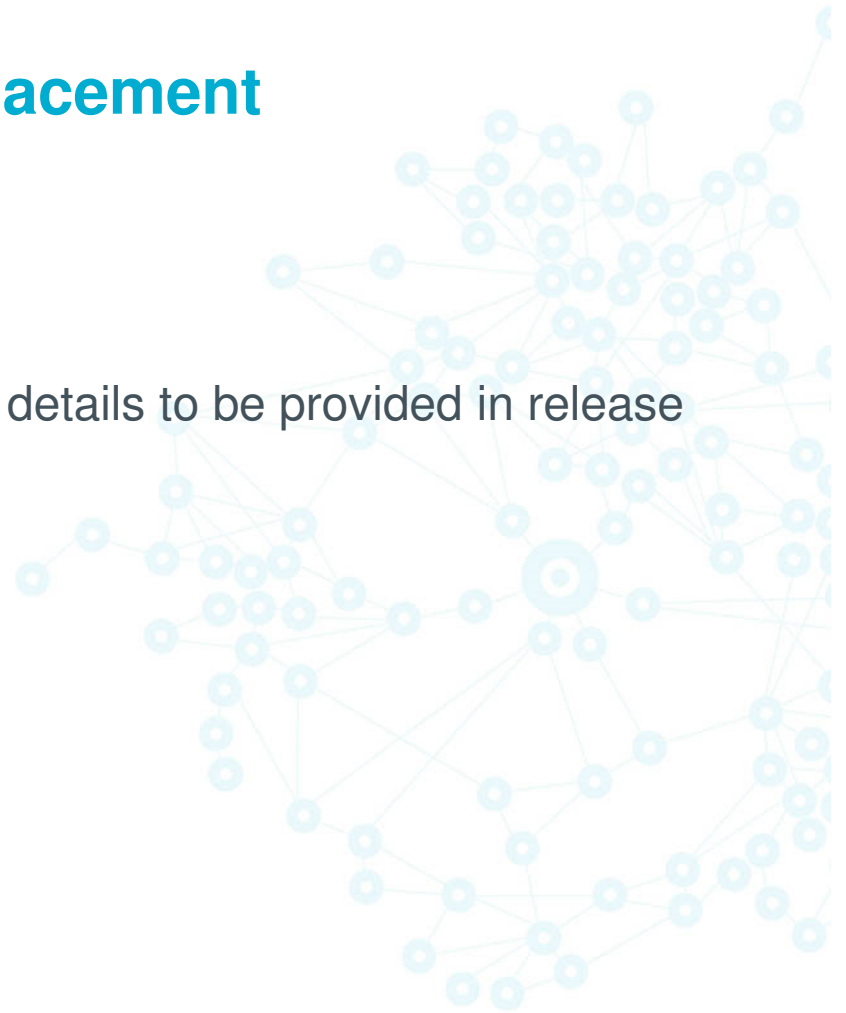
WEMS 3.12 – an overview

- Showcase - settlement portal replacement
- WEMS 3.12 – summary of changes
- Release timeline



Showcase - settlement portal replacement

- MPI - user interface (DEMO)
- Web service API
- Improve invoice to include prepayment. More details to be provided in release notes.



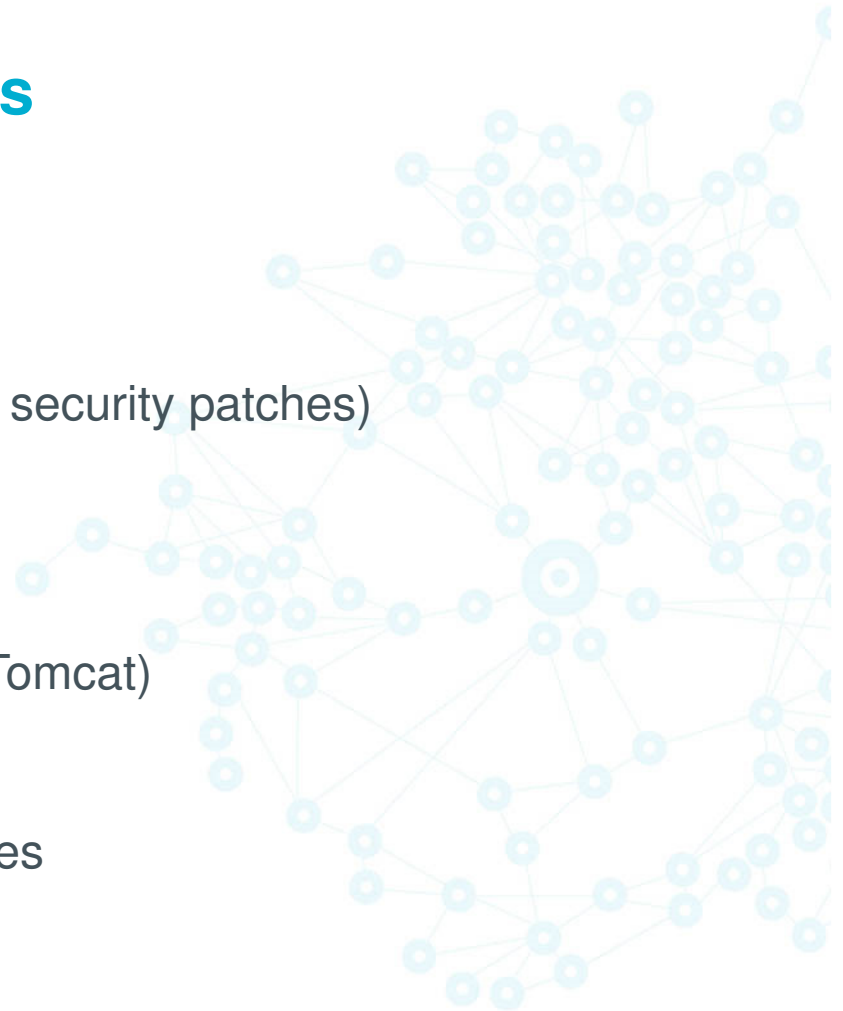
Settlement web services API - examples

- REST (Representational State Transfer) – JSON documents and files
- HTTP 'GET', client certificate authentication
- Examples:
 - o Get a list of all invoices in 2014:
<https://wems.imowa.com.au/mpi/ws/rest/v1/settlement/invoices?from=2014-01-01&to=2014-12-31>
 - o Get a list of all STEM invoices ...
<https://wems.imowa.com.au/mpi/ws/rest/v1/settlement/invoices/STEM/tradeWeek/2014-05>
 - o Get a list of all NSTEM invoices ... trade month May 2014
<https://wems.imowa.com.au/mpi/ws/rest/v1/settlement/invoices/NSTEM/tradeMonth/2014-05>
 - o Get invoice '1234'
<https://wems.imowa.com.au/mpi/ws/rest/v1/settlement/invoices/1234>

WEMS 3.12 – summary of changes

‘Technical debt’ resolution release

- Upgrade to Java 8
- Upgrade of stale / obsolete libraries (includes security patches)
- Consolidation of WEMS components
- Removal of all code warnings
- Web services to use CRUX (Jetty instead of Tomcat)
- Removal of XA transactions
- Legacy ABB components into separate libraries



WEMS 3.12 – summary of changes (continued)

- Various registration improvements:
 - Standing data change requests – differences are now shown
 - Standing data change requests – reason is no longer copied
 - Change request search now remembers search parameters
 - Display order is now oldest-first
- PERL market events have been removed (technical)
- Retirement of trading web service (legacy URL):

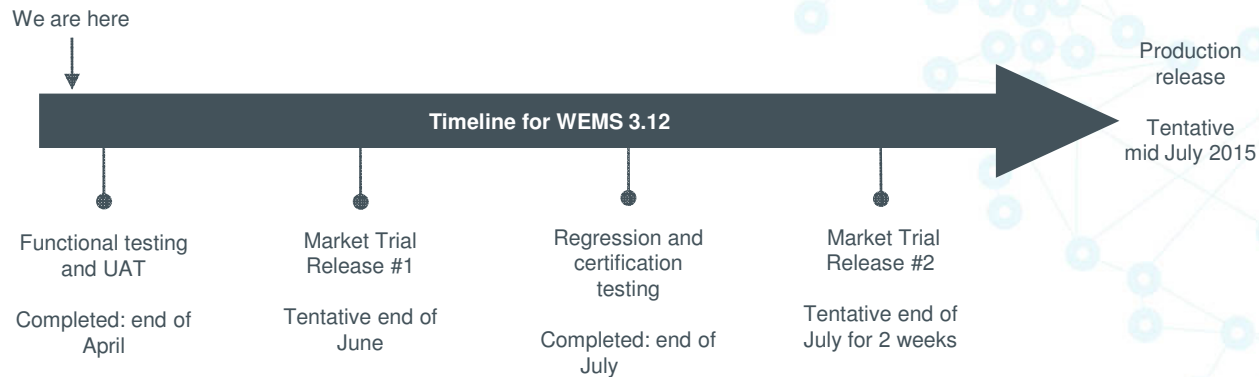
<https://wems.imowa.com.au/mpi/trading/ws/v1?wsdl>

Please use:

<https://wems.imowa.com.au/mpi/ws/trading/v1?wsdl>

WEMS 3.12 – release timeline

- Functional testing and UAT (SPARTA invoice and settlement portal replacement, event manager changes)
- Full regression and certification testing (3 months)
- Planned Market Trial extension (2 stages)





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SHA-1 (SSL Certificates) Internet Explorer 8

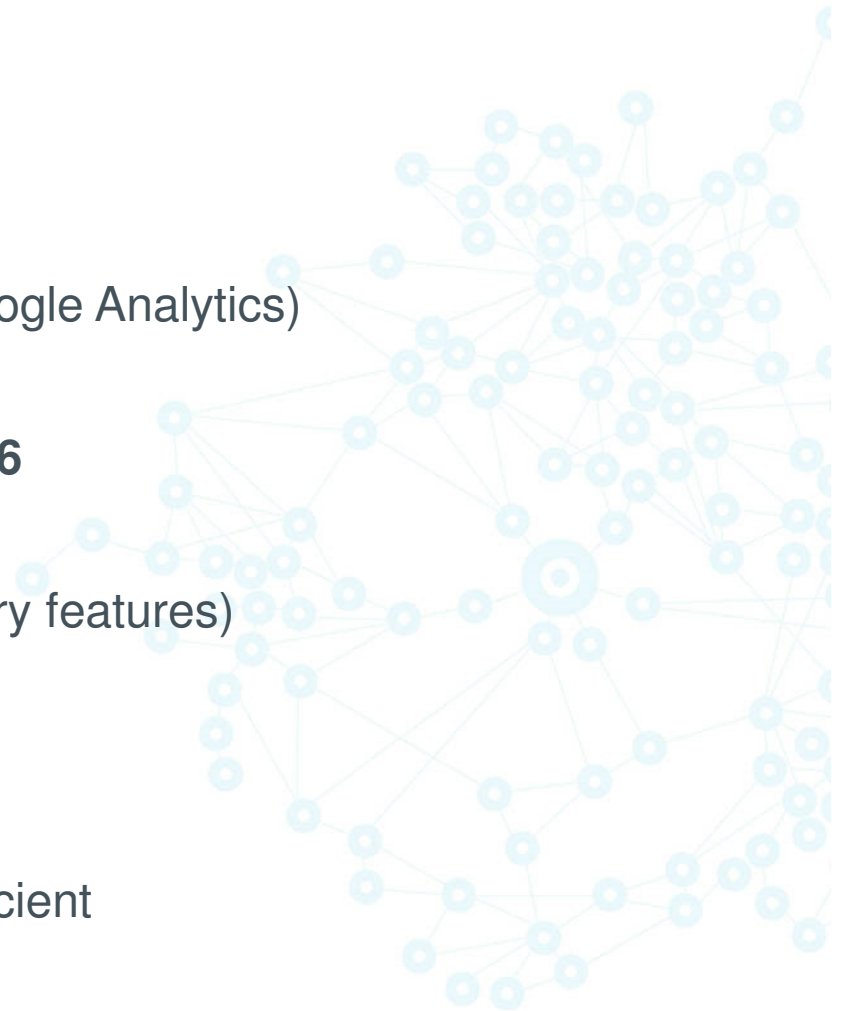


SHA-1 (SSL Certificates) deprecation

- SHA-1 is an encryption algorithm used in SSL certificates (https)
- SHA-1 is dangerously weak
- Google and Microsoft are actively ‘sunsetting’ SHA-1:
 - *Why Google is Hurrying the Web to Kill SHA-1*
 - *Microsoft TechNet - SHA1 Deprecation Policy*
- We plan to upgrade our certificates to SHA-2 by June 2015
- You will need to ensure that your environment is compatible with SHA-2
 - Windows XP - SP3 at a minimum
 - IE8 needs TLS 1.1 at a minimum – not enabled by default

Internet Explorer 8

- Worldwide – 2.8% of browsers are IE8
- WEMS – 22% of users have IE8 (source: Google Analytics)
 - Windows XP? (already end-of-life)
- Microsoft: End-of-Life for IE8 in **January 2016**
- 6 years old, increasingly difficult to support
 - Development costs (lack of contemporary features)
 - Testing costs
- End of support in WEMS?
 - Notice to participants – how long is sufficient





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Web service retirement – old versions



Web service retirement – old versions

- WEMS web services are versioned
- Latest version is always more complete (additional information)
- Expanding / contracting releases – the new way to manage
- Retirement of old versions - WEMS 3.12 (contracting release)

<https://wems.imowa.com.au/mpi/trading/ws/v1?wsdl>

- Retirement of old versions - WEMS 3.13 (contracting release)
 - o We will proactively contact participants using old versions

<https://wems.imowa.com.au/mpi/ws/balancing/v2?wsdl>

<https://wems.imowa.com.au/mpi/ws/balancing/v2.1?wsdl>

<https://wems.imowa.com.au/mpi/ws/sm/v2?wsdl>

<https://wems.imowa.com.au/mpi/ws/sm/v2.1?wsdl>



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Software development processes at the IMO




Project management

- Based on industry standards: PMBOK and SCRUM (agile)
- Project management framework used in all projects since MEP including:
 - GBB
 - SPARTA
 - CAST



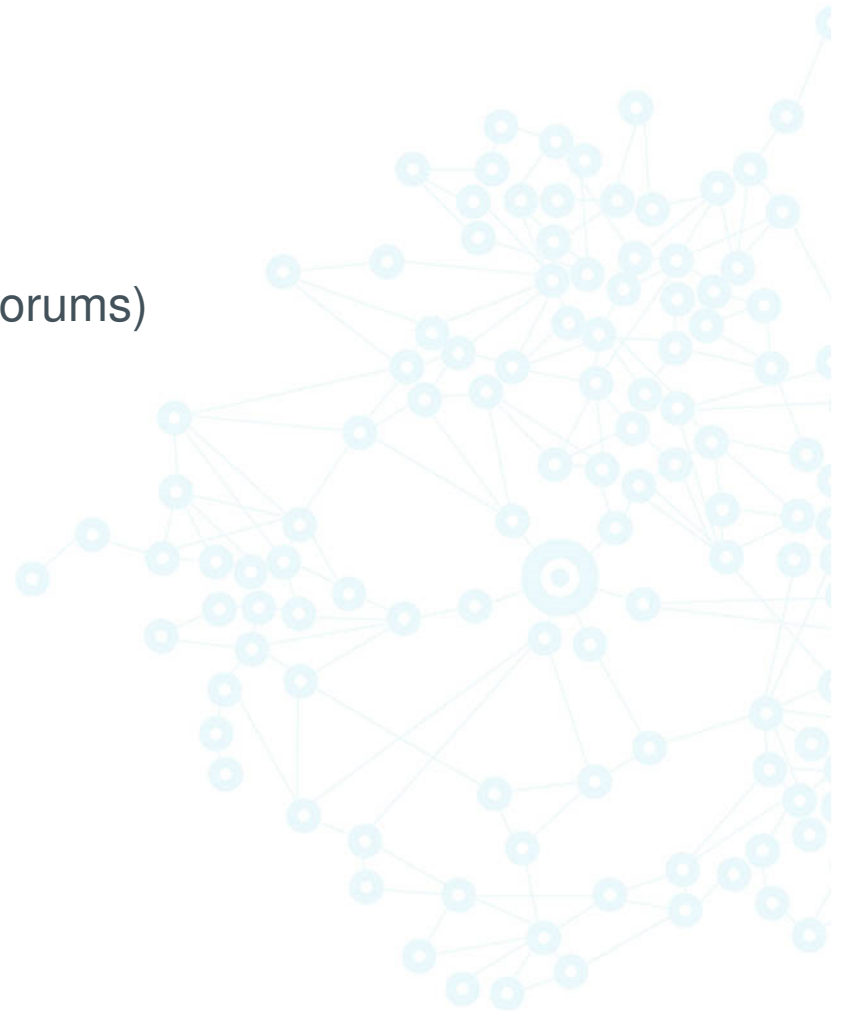
Process groups

 INDEPENDENT MARKET OPERATOR	Initiate	Plan	Execute	Monitor & Control	Close
Project Focus	<i>Provide a high level understanding of the project for project approval.</i>	<i>Refines the scope, schedule and budget of the project.</i>	<i>Performing the work to meet the Project objectives.</i>	<i>Capturing and measuring the project performance and controlling the cost / time/ scope of the project.</i>	<i>Formally closes the project and receives approval of the project work.</i>
Tasks ■ Mandatory deliverable □ Optional deliverable Roles ■ Business owner ■ Product owner ■ Project manager ■ Development team ■ Test team ■ Release team Symbols ◡ Iterative ++ If applicable	Define at a high level the project scope, deliverables, costs and benefits ■ Business owner ■ Product owner ■ Project brief (IC1)	Define project requirements ■ Business owner ■ Product owner □ Business requirements (P01)	Project kick-off meeting ■ Project manager ■ Kick-off meeting (E01)	Project reporting ◡ ■ Project manager ■ Project status report (M01) □ KPI report (M02)	Go live preparation ■ Project team ■ Deployment plan (C01) ■ Project handover checklist (C02) ■ Test summary (C03) ■ UAT acceptance (C04) ■ Go / no go decision
		Project team planning session ■ Project manager □ Story board into JIRA ■ Product backlog into JIRA ◡	Sprint planning ◡ ■ Project manager ■ Sprint backlog in JIRA	Sprint retrospective ◡ ■ Project team ■ Product showcase	Product release ■ Release team ■ Release checks and signoff
		Develop test strategy ■ Project manager ■ Test strategy (P02)	Develop stories ◡ ■ Development team ■ Design notes in Confluence ■ Working software ■ Automated tests	Certification / audit ++ ■ Project manager □ External audit certification	Project review and closure ■ Project manager ■ Project closure meeting □ Post implementation review (C05) □ Lessons learned (C06)
		Create project plan ■ Project manager ■ PMP (P03) or PMP waiver (P04) □ Definition of Done into JIRA □ Risk and issues register ◡ (P05)	Test planning and execution ◡ ■ Test team ■ Functional tests □ SIT ■ UAT		Project Acceptance Confirmation to Vendors ■ Business owner ■ Product owner □ Confirmation of Project Acceptance
			System documentation ◡ ■ Project team □ Release notes (E02) □ Training materials □ User guides (E03) □ Procedures □ System Overview Document (E04) □ Applications Support Process (E05) □ Applications Support Guide (E06)		



How are changes proposed?

- Rule change process
- Participants (via Market Operations or other forums)
- Market Operations
- Testers
- Technical team (development, support)
- Technical, independent security reviews
- End of life technology updates



Change control (CCB)

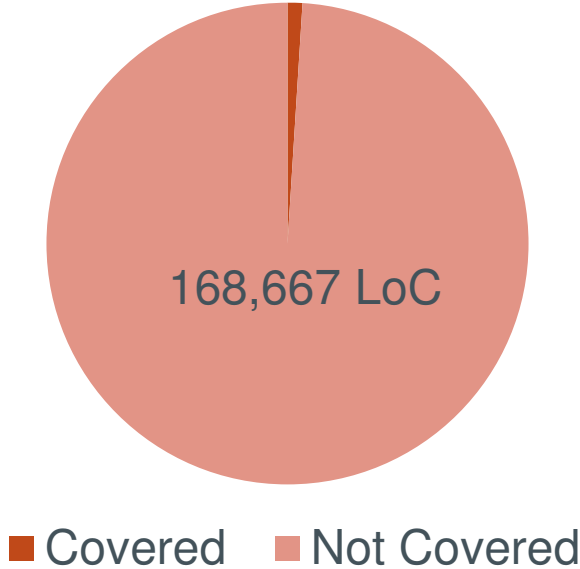
- IMO Change Control Board (CCB):
 - IMO business, testing, technical, support
 - Reviews all issues (JIRA)
 - Allocates and manages priorities
 - Reviews and assesses risk and timeframes
 - 'Broadly' schedules issues; manages the backlog
- The WEMS backlog:
 - How many open issues in the backlog? **216** (53 minor)
 - How many open issues in the long term backlog? **392** (249 minor)

Development process

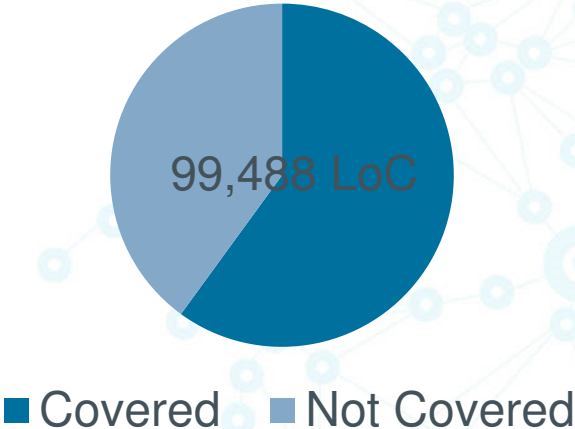
- Work only starts after issues are allocated (after CCB)
- Iterative, peer review
- Automated testing – unit, integration, and system tests
- Target test coverage – minimum 80%
 - WEMS (largely legacy code), ~ 20% coverage overall
 - GBB (new system), ~90% coverage
- New in WEMS 3.12 – automated certification testing (Cucumber trial)

WEMS – some statistics

ABB – Lines of Code



WEMS – Lines of Code



Continuous build, release and deployment

- Mercurial for source control
- Bamboo for automatic build and quality control (brief demo)
- Each commit that passes automated testing produces a release
- Each release can be deployed to an environment (test or live)
- WEMS environments:
 - 8 lightweight test environments (LTEs)
 - 4 preliminary test environments
 - Market Trial
 - Live (production) – both data centres
 - Production support testing (PST)

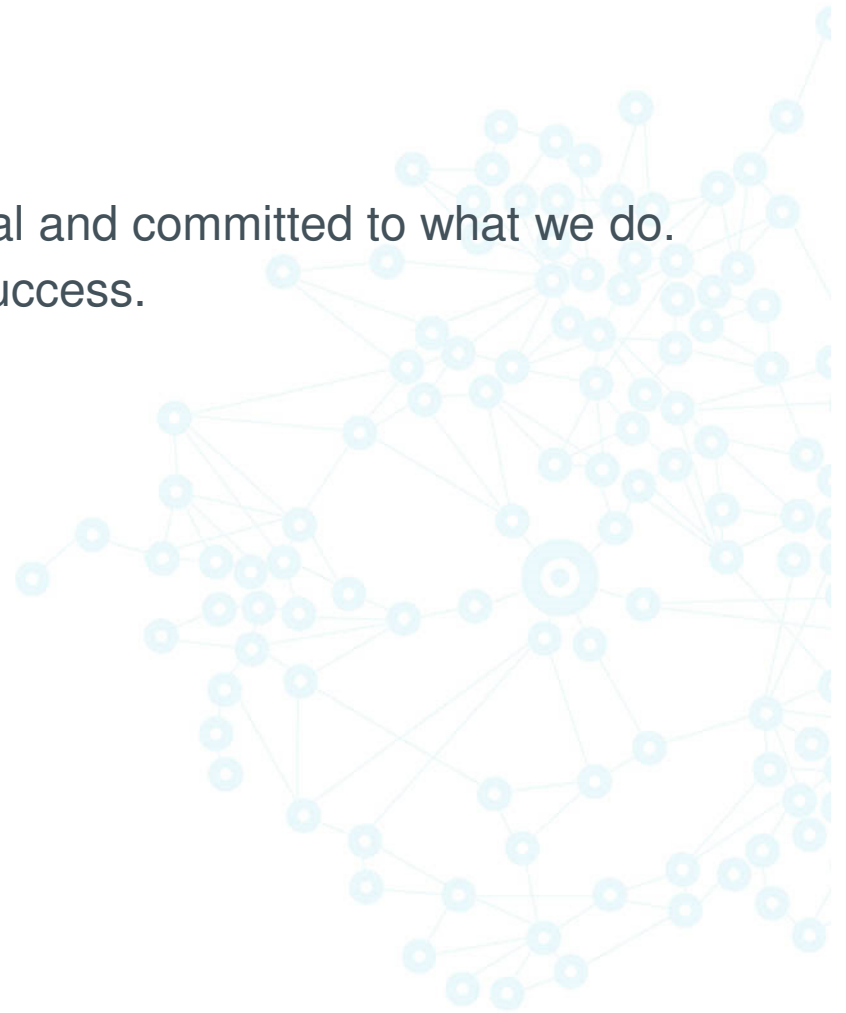


How we deploy WEMS

- The old way –
 - Checklists, Word documents, lengthy instructions
 - Error prone and slow
- The new way –
 - Bamboo initiates and tracks the deployment (Green or Red)
 - PowerShell does the work
 - All scripts are version controlled and tested
 - Repeatable, fast, and auditable
 - Last deployment (18 March) – done remotely, 20 minutes – no BMOs missed
 - Continually evolving and improving

Testing at the IMO

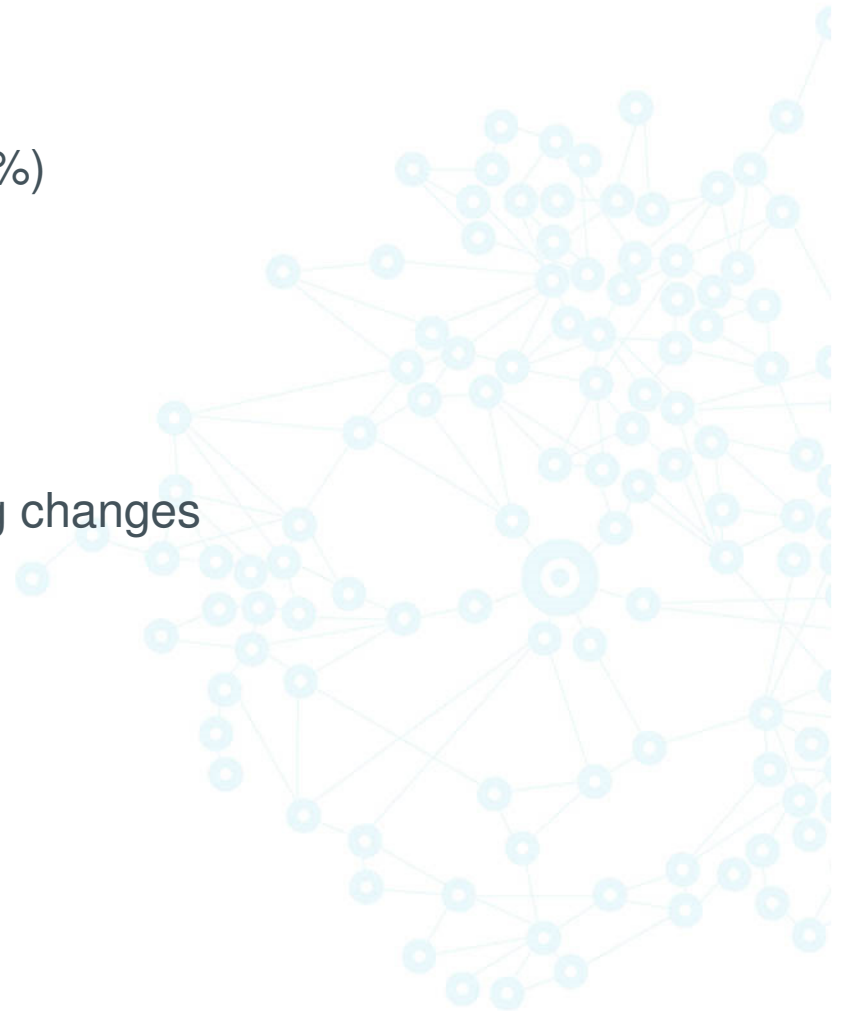
- **Quality and Excellence** - we are professional and committed to what we do. We deliver quality outcomes and celebrate success.



Testing greenfield projects

High automated test code coverage (target >80%)

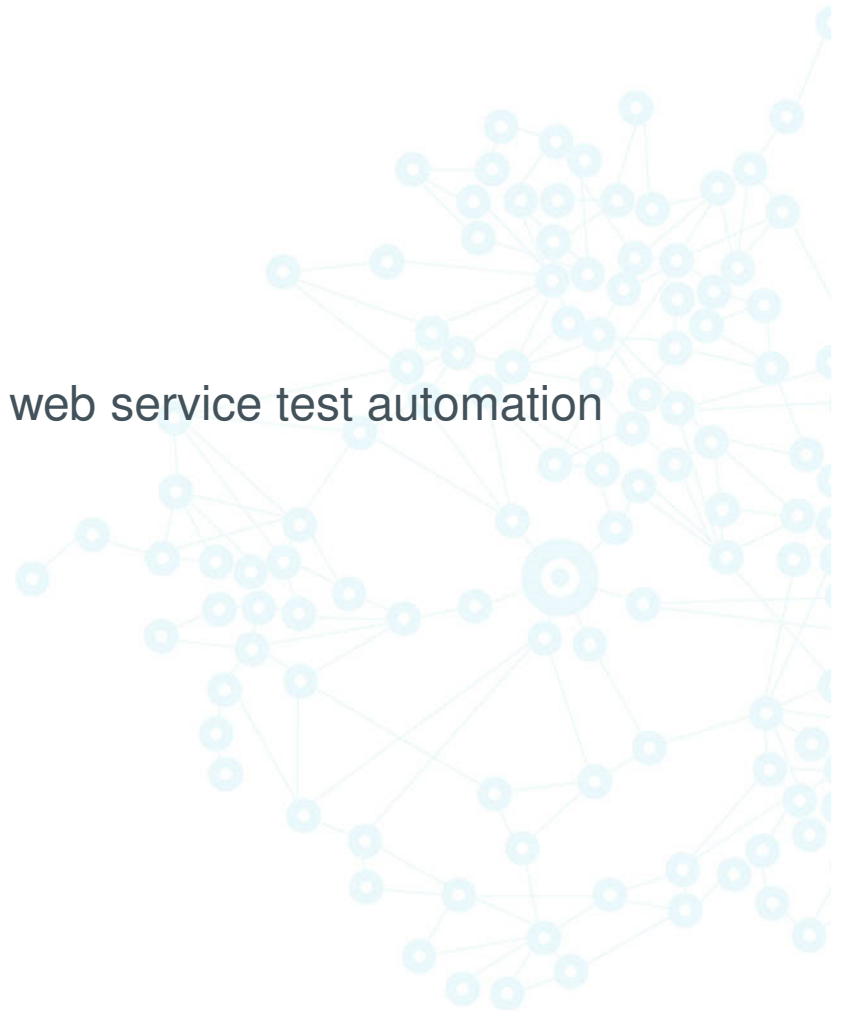
- Unit and integration tests
- Automated browser testing (eg Selenium)
- Pros:
 - Lower defect counts when manually testing changes
 - Lower ongoing support costs
 - Regression testing is largely automated
- Cons:
 - Greater upfront cost (must write tests)
- Gradual move to QA review / demo



Testing WEMS

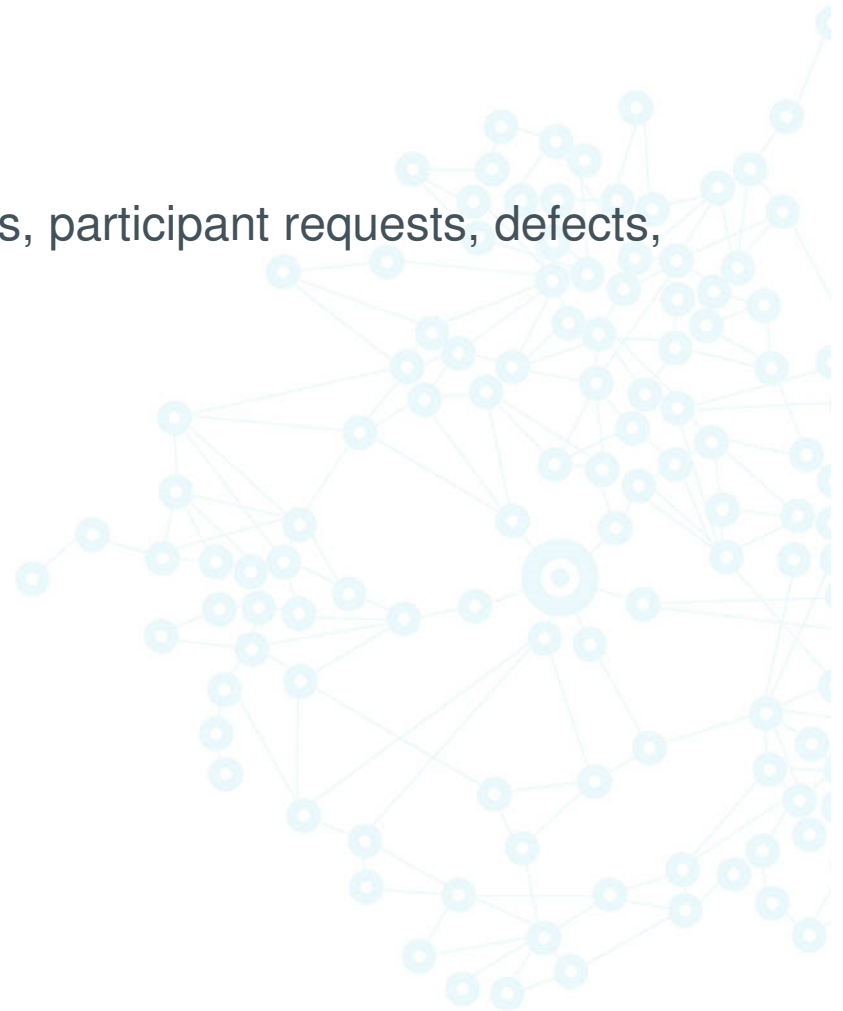
MPI, MOP, MOI

- Low automated test code coverage (~20%)
- Improvements over time... file exchange and web service test automation
- Predominately manual testing cycle
- Plan / Test / Release



Plan

- CCB – defines release scope (rule changes, participant requests, defects, new features, etc.)
- Test Strategy – What, where, when

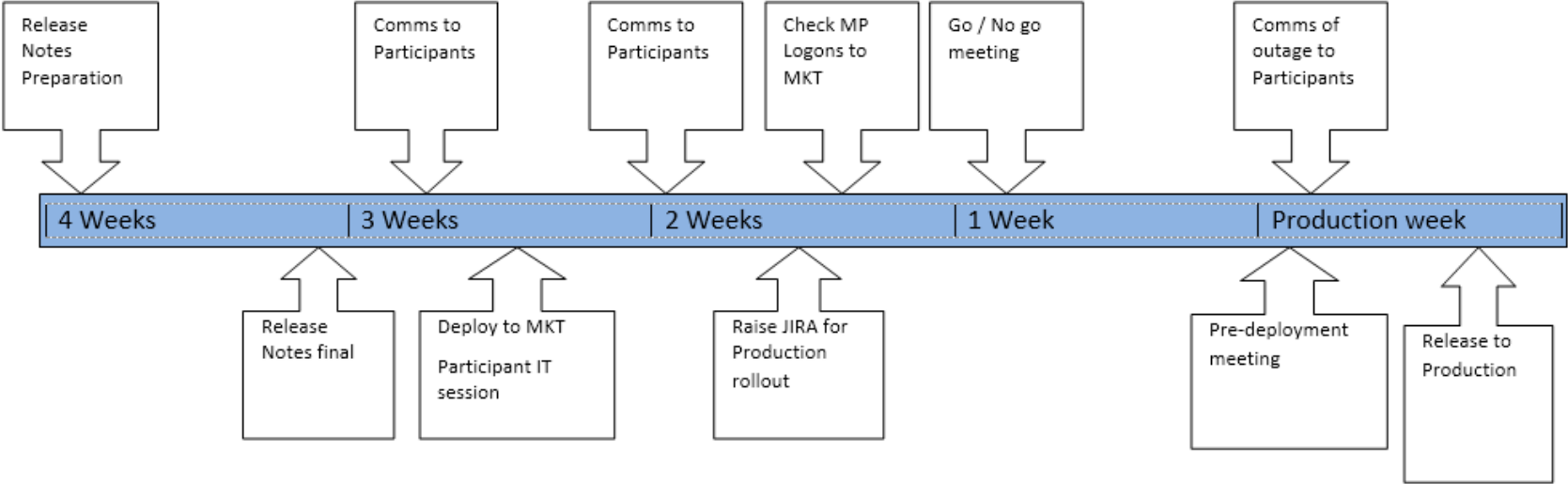


Test

- Functional testing – test plans and results
- Regression testing
 - Balancing / LFAS
 - STEM
 - Web services
 - File exchange submissions
- Systems integration testing (if required)
 - IMS (the interface between IMO and System Management)
 - Settlements
- Showcases
- User Acceptance Testing: test review, scenario testing



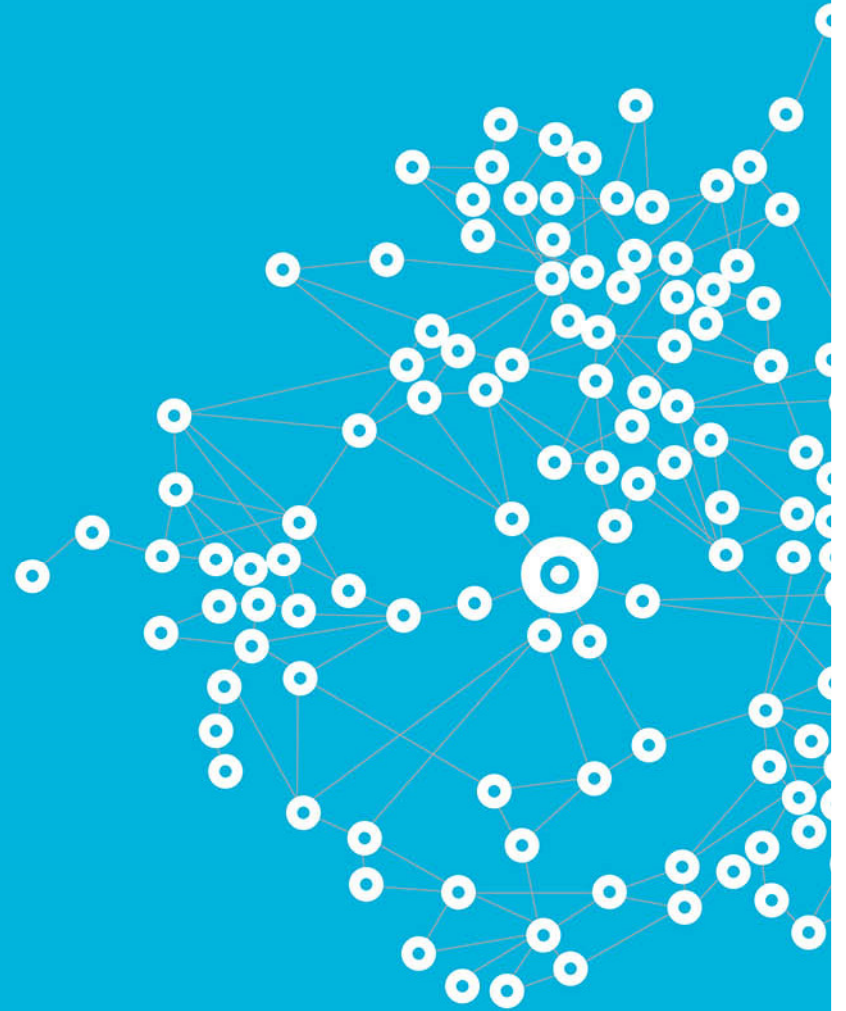
Release



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Feedback



Q & A

- Release notes format?
- Questions?
- Other items?

