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AHM Adoption in MSG-3

- Update for IMRBPB from MPIG AHM WG -

Presented by:

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MPIG AHM WG Secretary**

**IMRBPB Meeting
Cologne, April 2017**

Introduction

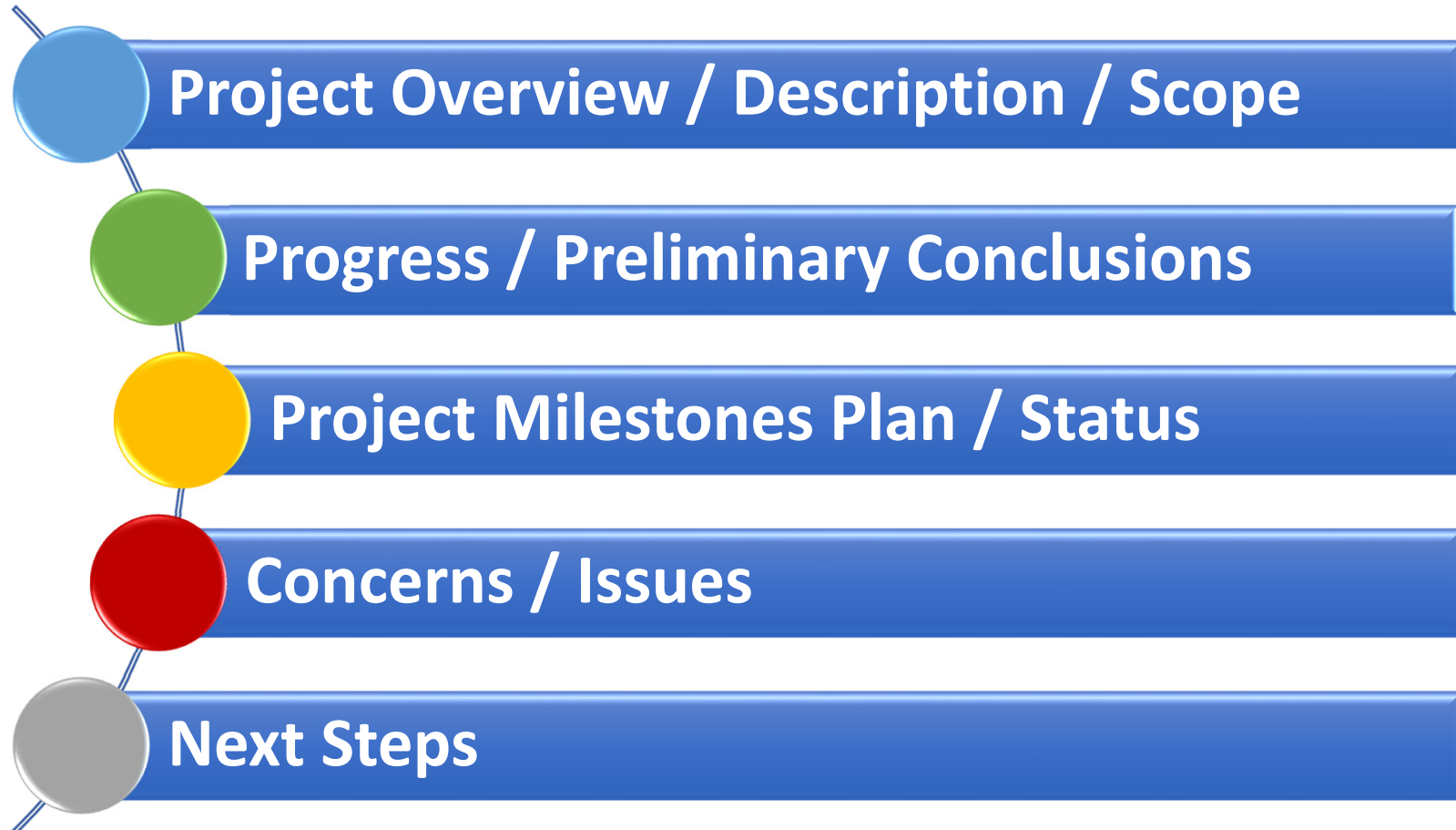
➤ Objective

- ✓ Inform IMRBPB on the AHM Initiative
- ✓ Share the depth and complexity of issues being considered
- ✓ Seek IMRBPB acknowledgement, comment and advice on the envisaged direction of work and deliverables

➤ Outcome

- ✓ Gain IMRBPB strategic concurrence in support of the AHM initiative

AGENDA

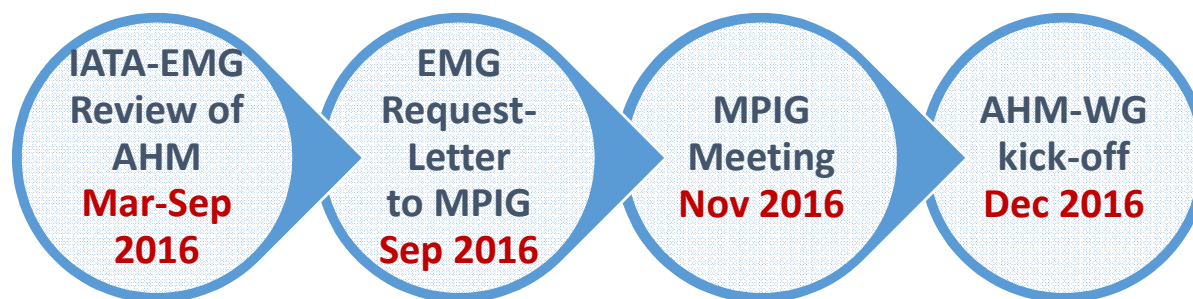


Project Overview / Description / Scope

Start-up Background

- ✓ AHM is successfully proven
- ✓ AHM adoption in MSG-3 is appropriate and timing is perfect
- ✓ Industry motivation is high and teamwork among all stakeholders is favorable

Initiation Timeline



EMG = (IATA) Engineering and Maintenance Group

Project Overview / Description / Scope

➤ Participating Team (entities directly involved in the WG)

✓ Airlines:



✓ TCHs:



✓ Regulators:



✓ Other Stakeholders:



Project Overview / Description / Scope

➤ Participating Team (representatives in the WG)

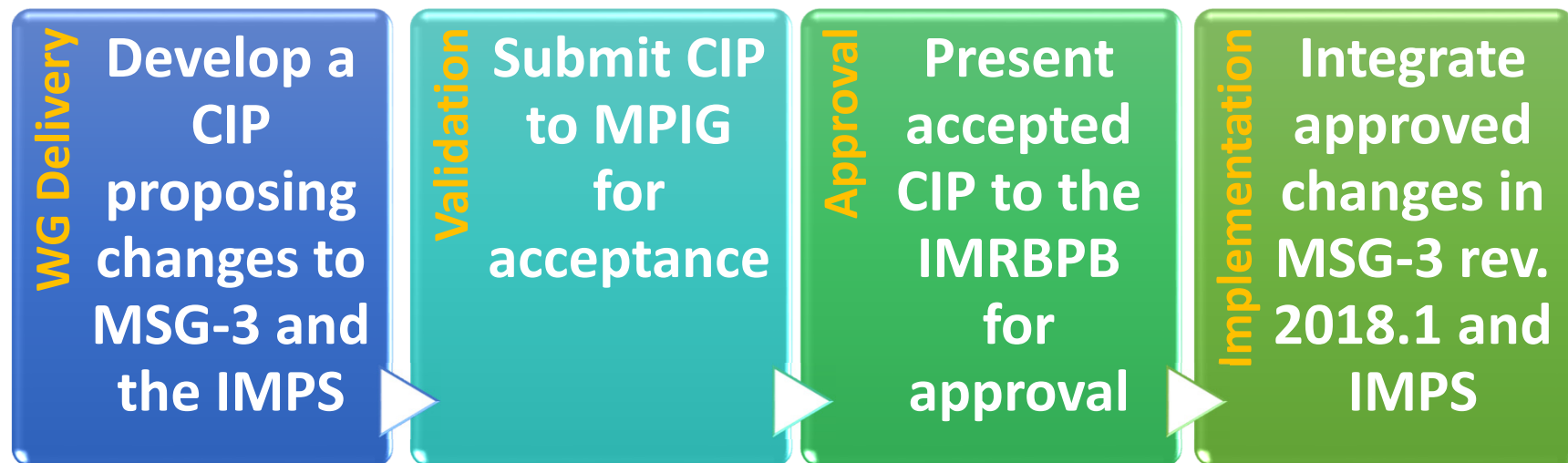
Operators	TCHs	Regulators
<u>American Airlines</u> - Karen ELLIS / RP BROWN	<u>Airbus</u> - Oliver WEISS	<u>EASA</u> - Ralf SCHNEIDER (FS.1.5 MRB Section)
<u>Air Canada</u> - Richard OLENIK **	<u>Airbus Defence & Space</u> - Ana ERDOZAIN	<u>FAA</u> - Marcus LABAY (AFS 360 Avionics)
<u>Fedex</u> - Kevin BERGER *	<u>Boeing</u> - Nyssa HOZENGGA / Jeff MILLER	<u>FAA</u> - Mark BAYLES (Seattle AEG)
<u>KLM</u> - Arjan OTTEN	<u>Bombardier</u> - Francis PELOQUIN / Jessica ALLARD BERNIER	<u>TCCA</u> - Gary VOGHT
<u>Turkish Airlines</u> - Seref DEMIRCI	<u>Embraer</u> - Wagner CAZZANIGA / Elizabeth de SOUZA	
MSG3 Consultant		IATA
<u>Aeronovo</u> - Manny GDALEVITCH		Dragos BUDEANU ***

Note: Additional SMEs from Airbus, Bombardier, Embraer and FAA were directly involved in WG proceedings

* Chair ** Vice-Chair *** Secretary

Project Overview / Description / Scope

➤ Project Description



Project Overview / Description / Scope

↗ Project Scope

To use AHM capability to redefine MRBR tasks.

Introduce language to permit the use of AHM

- ✓ as an alternative to an MRBR task (preclude a “classic task”)
or
- ✓ as a means to introduce an alternative MRBR task with scope, interval and procedure making use of benefits of AHM

Project Overview / Description / Scope

↗ High-level Project Goals (1/2)

- ✓ Determine means where analysis of data acquired from AHM systems can be used to define, improve or allow an alternative to a scheduled maintenance task
- ✓ Develop logic for AHM candidate tasks
- ✓ Preserve the option for operators to decide if they will or will not use AHM for scheduled maintenance

Project Overview / Description / Scope

➤ High-level Project Goals (2/2)

- ✓ In support of MSG-3, identify operator criteria needed to use AHM for scheduled maintenance

Examples of Envisaged Criteria

- > Qualification / certification standard of ground based equipment
- > Minimum frequency to analyse data received
- > Scheduling of maintenance after data receipt
- > Qualifications of personnel analyzing the data
- > Response to AHM capability downgrade

Progress / Preliminary Conclusions

- MSG3 and IMPS document content must be amended to include AHM
- AHM interface with MSG3 logic will principally occur at level 2 analysis
- All AHM “alternatives” must be in the MRBR in an appendix with reference to the “classic tasks” (or vice versa) for traceability

Progress / Preliminary Conclusions

- For AHM “alternatives” instructions may require identification of:
 - ✓ The usage parameter associated with degradation
 - ✓ The interval range and limits between potential failure and functional failure
 - ✓ The parameter selected to take corrective action
- The AHM information in the MRBR will specify the baseline configuration (e.g. mod #, option #, as applicable) for AHM usage

Progress / Preliminary Conclusions

- The AHM information in the MRBR will provide operators with all required instructions pertaining to AHM usage
- WG efforts should consider the outcome of IMRBPB (session April 2017) regarding CIP “HUMS for credit”
- WG should harmonize concept and wording with existing regulation and requirements to facilitate approval of operators maintenance programs making use of AHM

Project Milestones Plan / Status

➤ **Target Completion: CIP draft submission to MPIG by Sep 2017**

WG f2f meetings

- Dec 2016 and Feb 2017

WG Webex conferences

- 1xDec/ 2xJan/ 1xFeb/ 3xMar/ 1xApr

Updates provided to MPIG

- Monthly Jan - Mar

Project Milestones Plan / Status

➤ **Target Completion: CIP draft submission to MPIG by Sep 2017**

Refinement of WG Tasking Statement

- Completed Feb 2017

Use case examples presented by TCHs

- Feb 2017; adopted as proof of concept for AHM

Preliminary MSG3 revisions identified

- Feb 2017; on going

Multiple conclusions/issues/risks documented

- Feb 2017; on going

Concerns / Issues

↗ Uncertainty regarding DAL required for AHM:

✓ Level E currently accepted for some systems:

- Weight and Balance systems
- Aircraft Performance systems
- EFB
- EAML

↗ Define criteria to be used if AHM capability is downgraded,

- ✓ Depending on tasks being credited by AHM and lowest interval
- ✓ Potential methods to manage (e.g. MEL)
- ✓ Should also understand flight deck effect of failure

Concerns / Issues

➤ For each AHM candidate, an AHM analysis worksheet will be created. Details will reside in the PPH. Methods will reside within the MSG3 document. Criteria to be considered include:

- ✓ Criticality of task
- ✓ The analysis of the AHM “Mx function”
- ✓ Instructions to be followed if AHM capability is downgraded
- ✓ Definition of limit for allowable continued operation

➤ Certification approach for AHM needs to be clarified for fixed wing

Concerns / Issues

↗ Open Issues

- ✓ Monitor outcome of CIP FAA 2017-03 ECM
- ✓ Evaluate applicability of AC 29-2C MG15 content - for CIP and any related revision to MSG3 / IMPS
- ✓ Consider (if necessary) to launch AC focused on post data acquisition processes and management

Next Steps

By end of Mar 2017 **finalized; validate in April**

- Highlight IPs / CIPs potentially interfacing with or impacting the AHM approach

By end of April 2017 **started and on-going**

- Create draft definition of AHM for MSG-3 / IMPS based on TCHs input

By end of June 2017 **started and on-going**

- Create edits and proposed changes to MSG3
- Create edits and proposed changes to IMPS

By end of Sep 2017 **not started**

- Prepare and brief draft CIP to MPIG

Thank you for your attention !

Questions and Comments

