CAST, RASG-PA Update:
Loss of Control – Inflight (LOC-I)
Safety Enhancement

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Presented to: AP-RAST, SEI Team

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Presentation Objective

- **Information provided here shows current work of RASG-PA to address LOC-I safety enhancements – with aim for consideration by the APRAST, SEI Team, to undertake project in developing LOC-I SEs *where practical***

CAST Study:
Airplane State Awareness

- Loss of Control–Inflight is, and has historically been, one of the largest categories of commercial aviation fatal accidents.
- In August 2010, the Commercial Aviation Safety Team (CAST) chartered the Airplane State Awareness Joint Safety Analysis Team as a follow-on activity to previous CAST work into LOC (2000).
- Final report on Skybrary.aero

Overview of *PA*-RAST Approach

- Reviewed all LOC-I CAST SEs and identified subset that may contribute to a near-term reduction of LOC-I fatality risk in the region
  - The subset of SEs to be evaluated is largely focused on training enhancements
    - Upset and stall recovery training (SE 196)
      - AC 120-109
    - Policy and training for non-normal situations (SE 197)
    - Scenario-based training for go-around maneuvers (SE 198)
    - Enhanced Crew Resource Management (CRM) training (SE 199)

The LOC-I SET TEAM

- Team members include:
- IATA*
- ALTA
- FAA
- CAST
- ICAO
- Embraer
- Boeing
- Airbus

•*Champion - IATA; Captain Robert Smith

Safety Enhancement Team Process

1. Review and analysis of accident risk
2. Review of applicable safety enhancements
3. Start preparing DIPs
4. Review DIPs with PA-RAST
5. Present DIPs to ESC for information
6. Coordinate DIP Implementation at PA-RAST
7. Monitor progress (ASIAS, FDX for metrics)

Completed

Today

Planned

Safety Enhancement SE 192
Design – Low Airspeed Alerting

- A RASG-PA study of 10 loss-of-control accidents and incidents showed that, in many situations, the flight crew failed to properly respond to and recover from an unexpected upset, approach to stall, or stall situation resulting from flight crew loss of airplane state awareness (ASA).
- In order to improve early flight crew awareness of decreasing energy state, manufacturers should develop and implement multisensory low airspeed alerting at the caution level in existing transport category aircraft, as practical and feasible.
- The intent of this SE is for operators to incorporate existing service bulletins from manufacturers that provide this functionality.

Safety Enhancement SE 196
Training - Effective Upset Prevention and Recovery Training, Including Approach-to-Stall

- A RASG-PA study of 10 loss-of-control accidents and incidents showed that, in many situations, the flight crew failed to properly respond to and recover from an unexpected upset, approach to stall, or stall situation resulting from flight crew loss of airplane state awareness (ASA).
- Air carriers should review, incorporate, and adopt the best practices recognized by the aeronautical community with regards to upset prevention and recovery training, including the following:
  - Airplane and simulator manufacturers ensure that training devices in the region satisfactorily represent aircraft characteristics for proposed scenarios
  - Approach-to-stall training in realistic scenarios
  - Upset prevention and recovery training in realistic scenarios

Safety Enhancement SE 197
Training - Policy and Training for Non-normal Situations

- A RASG-PA study of 10 loss-of-control accidents and incidents showed that in many situations the flight crew did not make controlling the airplane their primary objective during non-normal situations.
- In many of these events, the flight crew did not apply workload management or crew coordination skills and did not initiate or complete the appropriate non-normal checklist after the airplane entered an upset.
- To improve flight crew proficiency during upsets or non-normal situations, air carriers should emphasize through training and standard operating procedures (SOPs) the importance of controlling and stabilizing the airplane before evaluating non-normal situations.

Safety Enhancement SE 198
Training – Scenario-Based Training for Go-Around Maneuvers

- A RASG-PA study of 10 loss-of-control accidents and incidents that go-arounds, in some situations, contributed to flight crew loss of airplane state awareness (ASA).
- Air carriers should incorporate scenario-based go-around training (both initial and recurrent) that matches realistic situations.
- In addition, air carriers should perform an assessment to identify additional improvements to go-around procedures and training.
- This assessment would include a review of ongoing go-around initiatives, research planning, review of flight data metrics (FDX & ASIAS), and review of air traffic control go-around procedures.

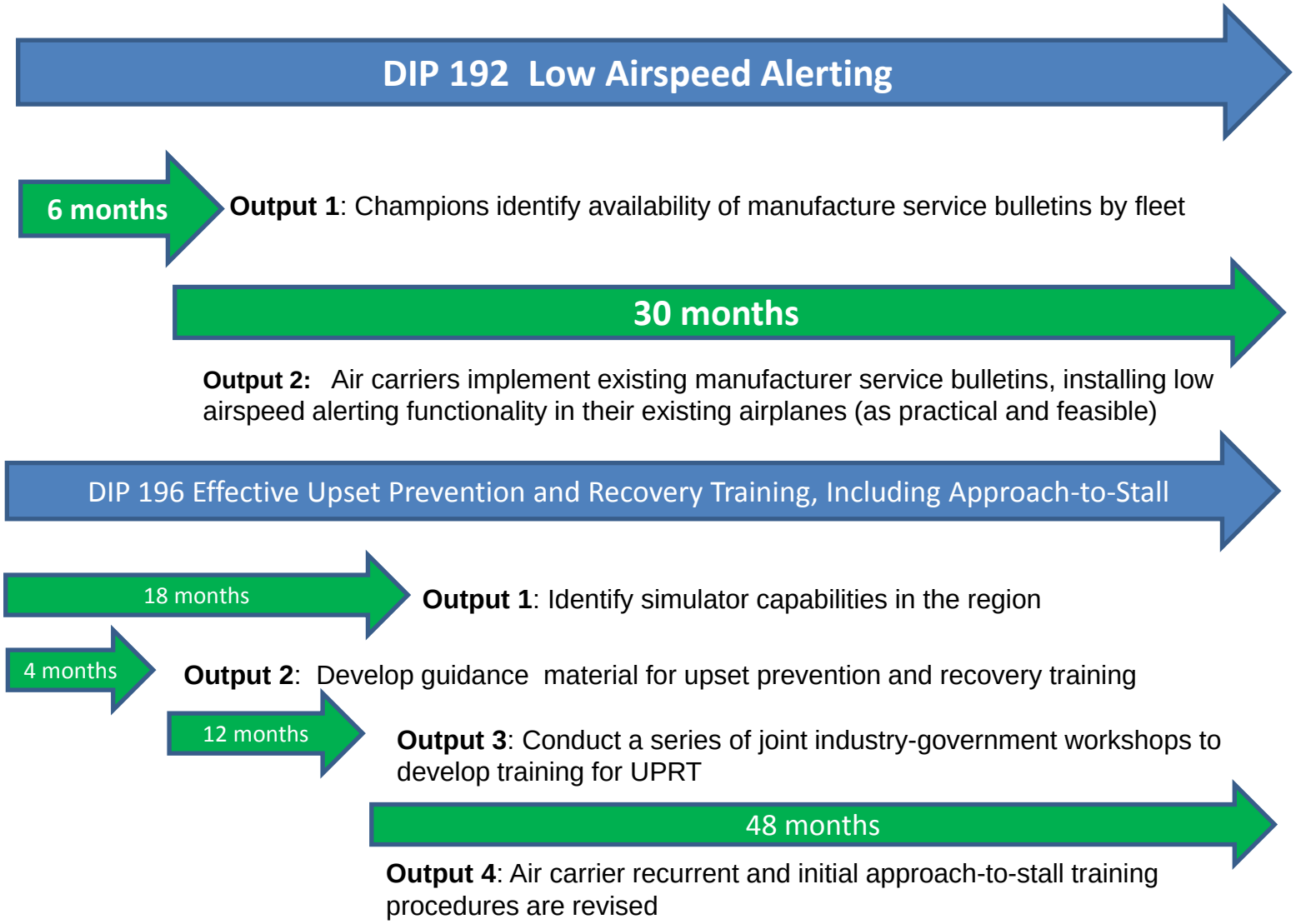
Safety Enhancement SE 199
Training - Enhanced Crew Resource Management Training

- A RASG-PA study of 10 loss-of-control accidents and incidents that in many situations CRM was not effective when it was needed most.
- Additionally the PM was often unable to clearly communicate the seriousness of the situation to effect a change in the behavior of the PF.
- To reduce accidents and incidents due to loss of airplane state awareness (ASA), air carriers should integrate, and regulators should encourage formal CRM training in initial and recurrent classroom and simulator sessions in accordance with the latest version of guidance material (i.e. FAA Guidance Material).
- This enhanced CRM Training should include but not be limited to :
  1. The importance of the team concept and recognition and impact of flight deck authority gradient
  2. The responsibility of both pilots to effectively communicate information relating to the current or future state of the aircraft and any required corrective actions.
  3. Situation awareness and decision making skills, and task prioritization
  4. Active PM roles with emphasis on detecting, challenging and correcting errors committed by the PF
  5. Employing “progressive intervention strategies” from communication to direct intervention

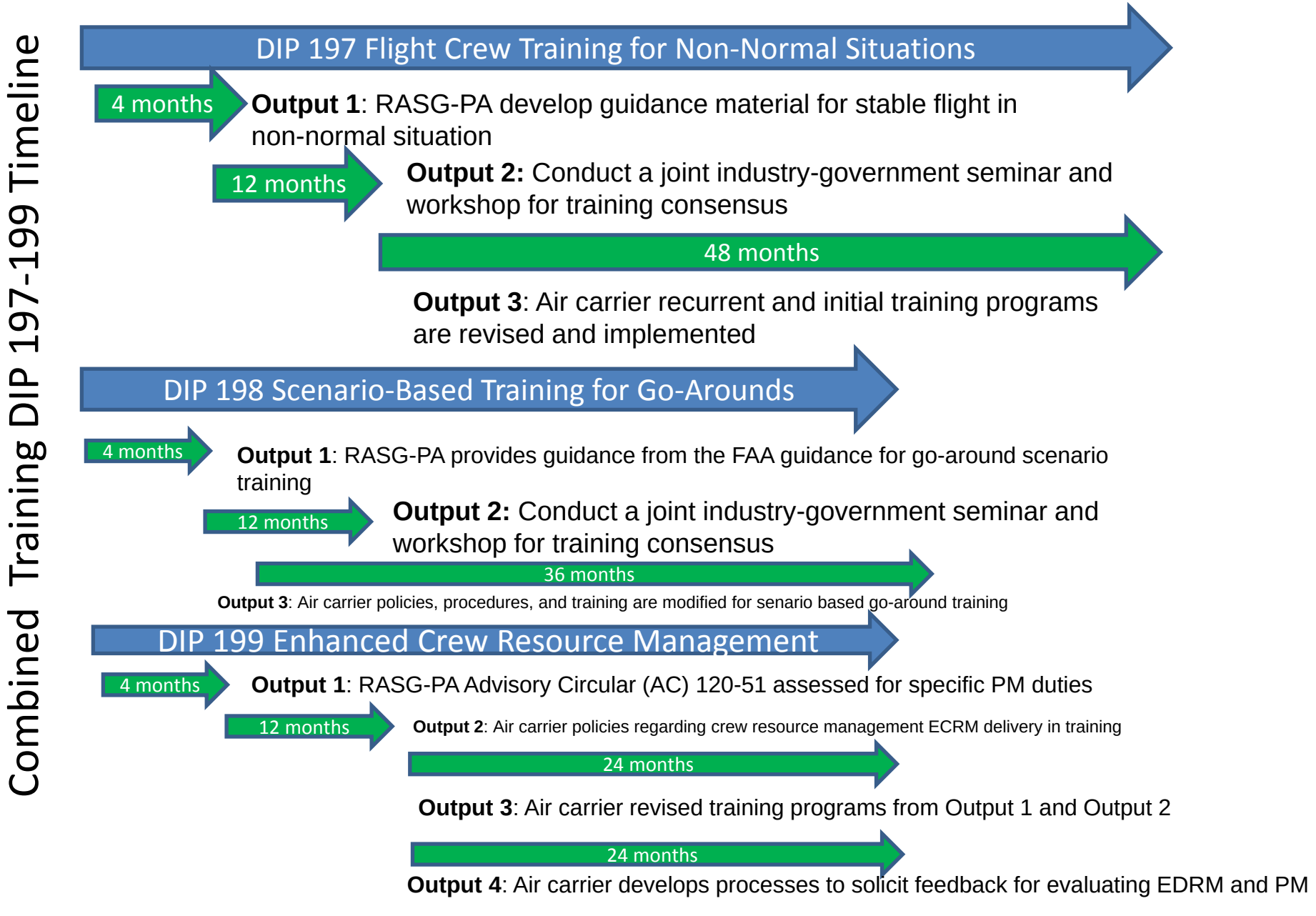
LOC-I DIP
Work Timelines

LOC-I Design DIP Work Timeline

Combined Training DIP 192 &196 Timeline



LOC-I Design DIP Work Timeline



Thank You