Certify and Fly Right: Preparing for DO-297 Certification

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Esterline Control Systems - AVISTA
Boeing 777
Integrated Modular Avionics (IMA)

Images courtesy of avionicszone.com and Trade India
IMA Time Partition

/* Single Application */
switch(timeSlice)
{
    case 0:
        ReadLabels();
    case 1,3,5,7:
        MainProcess();
    case 2,4:
        SaveLog();
}

/* IMA System of Systems */
switch(timeSlice)
{
    case 0:
        Maintenance_Sys();
    case 1,3,5,7:
        Autopilot_Sys();
    case 2,4:
        CDU_Sys();
}
Application Certification Today

Cert #1
Level D Device
Real-time OS
HW Resources

Cert #2
Level A Device
Real-time OS
HW Resources

Cert #3
Level B Device
Real-time OS
HW Resources
IMA Certification

- Level D Device
- Level A Device
- Level B Device

API (ARINC 653)

Real-time OS

Shared Resources (e.g. CPU, memory, power, I/O)
IMA Advantages

» More complex systems
» Consolidation of low-level development
» Lower cost & weight
» Flexibility & modularity
» Reuse
» Maintenance
» Growth
DO-297 Certification Steps

Task 1
Platform
Module Module

Task 2
Application
App-specific H/W

Task 3
IMA System (off aircraft)

Task 4
Aircraft integration

Task 5
Change of modules or applications

Task 6
Reuse of modules or applications
Challenges
…look for opportunities for DO-297
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