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Revolutionizing CNS

Art Feinberg and Dres Zellweger



Revolutionizing CNS

Key R&T Issues



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- Identify key research and technology issues of both near-term (now to 2010) and far-term (beyond 2010) impact.
- **Near Term**
- Driver is capabilities/benefits
- Constraint is transition, cost, integration
- (CNS integration is required to reduce costs and enable transition)
- Avionics integration costs must be reduced.
- (we need to develop ATM capabilities to incentivize user to equip)
- We have all the technologies that we need for CNS at this point (CNS is not a technology problem)
- Top level Systems engineering needed to coordinate CNS elements.
- Human factors is critical.
- Security needs to be addressed.
- Explore low cost, portable communications for all classes of aviation.



Long term

- we need CNS OPS concept and road map consistent with ATM OPS concepts.
- Explore integrated intelligent CNS systems, transparent to operators
- Take advantage of systems developed outside of civil aviation community that have CNS applications
- We can identify certain characteristic already i.e. common situational awareness, security needs.
 - Knowledge of airspace
 - Airspace constraints (traffic flow, weather, SUA etc.)
- Understand safety implications to enable certifications.
- Make human factors an integral part for any research.



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- **General comments:**
 - Look at things in terms of “currencies” people are willing to buy. (Broad base desirable)
 - Think about what advances rapidly (CPU) and slowly (standards and spectrum allocation).



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Current Work



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- Identify known work being done to address R&T issues in the topical area being discussed, and organizations doing the work.
- OEP
- NAS architecture
- AMCP working groups
- Common global infrastructure beyond 2015 (Eurocontrol, EC, Boeing)
- Long term ATM concepts (NASA, Boeing, Eurocontrol, ICAO ATMCP)



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Unaddressed Issues



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- Identify issues not being addressed by any known R&T effort, as well as areas where current work is inadequate or underfunded.
- Integrated CNS functionalities (3)
 - CNS value proposition (business case)
- Automated health monitoring and support ability(6)
- CNS OPS concepts and technology road map (1)
- Long term CNS secure and robust architecture issue (2)
- Human factors related to user performance of integrated CNS (5)
- CNS integration in software radio (such as open RF architecture for avionics)(4)



Revolutionizing CNS Recommended Approach



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- Recommend approaches to address the key R&T needs, organizations which might address these needs, needed collaborations or cooperative efforts, etc.
- Integration
- Leverage technology
- Transition