

TECHNOLOGY DEVELOPMENT ROADMAP PROPOSAL

	EUR/NAT	APAC	WACAF	NACC	SAM	MID	ESAF
<u>Communications</u> CPDLC	CPDLC will become compulsory in Europe in 2011 to assist in reducing frequency congestion.	CPDLC is in use in the APAC region in FIRs (e.g. Singapore, Australia, New Zealand, Japan, India, China, Myanmar, Etc.)	CPDLC is being implemented in WACAF States.		Brazil and Chile using CPDLC.		
ATN	ATN w/FANS 1/A exemptions for use in Europe by 2011. Implement ATN based ADS/CPDLC in 2012 in the NAT (subject to OPLINK Panel deliberations) – dependant upon European mandates.			ATN for use in USA by 2016.			
VDL2	VDL2 mandated above FL285 in ECAC airspace for aircraft delivered after 2008. Only if operating in Europe or elsewhere where required. Possible full mandate above FL285 by 2010.			VDL2 will be utilized more often as more aircraft become equipped with digital ACARS			
VDL3				VDL Mode 3 with data dates is tentative. In the US in the high/super-high en route structure			
VDL4							
SATCOM	Satellite <i>voice</i> communications (SATCOM) may some day enable Direct Controller Pilot Communications (DCPC) by voice in oceanic and remote airspace.						

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<u>Navigation</u> RNP	<p>PRNAV (RNAV1) for enroute 2010 and beyond in Europe. RNAV used for some arrivals and departures since 2007.</p> <p>Limited RNP4 operations in the WATRS starting 2011.</p> <p>RNP10 or better mandatory from 2011 in WATRS Plus airspace.</p> <p>Implementation of RNP based 25nm lateral separation in a defined geographical/vertical area of the NAT in 2012.</p> <p>RNP distance-based longitudinal separation implemented in the NAT between F285 and F415 in 2015.</p>			<p>RNAV above FL180 in USA by 2015 and all altitudes in continental USA by 2020.</p> <p>RNP2 at/and above FL290 in USA by 2015.</p> <p>RNP for busy enroute and terminal airspace by 2020.</p>	<p>RNAV and RNP10 is being used in Oceanic sectors of SAM States of Argentina, Brazil and Uruguay.</p>		<p>RNAV and RNP10 is being used in Oceanic sectors of Angola and South Africa</p>
PBN	<p>Currently there is no mandate in the European Union for P-RNAV, and conventional (non-RNAV) terminal area procedures will continue to be provided for the near future.</p>						
<u>Surveillance</u> ADS-C							
ADS-B	<p>Trials from Southern Greenland to and including Canadian east coast in 2010. Eurocontrol is mandating ADS-B out by 2015 and will have some "ADS-B in" by 2011.</p> <p>ADS-B-in to be mandated in the NAT in 2025.</p>	<p>Currently installed across the Australian continent in non-radar areas as a reliable form of surveillance. Being implemented in New Zealand, Japan, Oceanic, Indonesia, Etc.</p>		<p>Initial implementation in Canada - Hudson Bay Basin area in Jan 2009 to be followed by other regions.</p> <p>The USA intends to have significant ADS-B coverage by 2013 and full mandatory implementation by 2020.</p>	<p>ADS-B is being implemented in some SAM FIRs (e.g. Brazil)</p>		
<u>ATM</u>							
<u>Other</u> ELT	<p>After 1 February 2009 COPAS SRSAT worldwide will not support 121.5 or 243MHz. ELTs must transmit on 406 MHz. in all airspace. Pilots flying aircraft still equipped with 121.5 MHz ELTs after that date will have to depend on over flying aircraft and/or ground stations monitoring 121.5 to hear and report their distress signals. Some ICAO member states have indicated they will delay the compliance date for 406 MHz ELT equipage. For further information visit the NBAA web resource (<i>membership/password required for access</i>).</p>						

