

From Russia with love



Civil Aviation in Russia



AirTN

Air Transport Net



An overview on behalf of Air TN
London, 13/14 March 2008
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Topics

- History
- Restructuring of the industry
- Future plans
- Research establishments
- Current European collaboration
- National RTD program
- Topics for RTD collaboration

History

- Russia has a proud history in aviation
- Russian fighter aircraft (SU -27 family) are still a successful export product.



History

- Russia has a **long history** in civil aviation as well.
- After the War, Russian domestic air transport benefited from government subsidies provided to ensure that mobility in Russia was guaranteed. The air transport system included more than **1000 airfields** reaching out to the harsh environment in Siberia. Aeroflot was the official airline operating Russian/ Warsaw Pact built aircraft.
- Most Russian aircraft were modelled after their western counterparts
- Russian built aircraft did not have a good safety and comfort reputation in the West.



- During the economic downturn in the 1990's, air transport had **no priority or political support**. The passenger volume was reduced by a factor 3. Only 6% of the Russian population is now using air transport as air fares have substantially increased. Air fares are higher than train fares. Less than **140 airfields** remain operational.
- 55.000 communities are no longer connected to air transport.
- More than 200 airlines were established once **privatisation and liberalisation** was introduced. These mainly operate Western built aircraft. (108 Western built versus 882 Russian built in the inventory). Plans predict a further swap.



- Deliveries of Russian built transport aircraft nearly stopped in the past years. During 1996-2005 the Russian industry delivered less than 1% of the new aircraft worldwide. Production was 6-9 aircraft per year.
- As a result less than 30% of the Russian production capacity is used.
- The separation of the Ukraine meant that Antonov is no longer a Russian company. Russia also lost its test facilities in the Baltic states.
- Aviation attracts few young people to seek a career in RTD as the IT and oil business can provide higher salaries.

Restructuring of the industry

- Russian industry was structured quite different from the Western counterpart. There were several design bureaux, several production plants, central flight test facilities, export organisations, research establishments structured along technologies , several universities etc.
- The supply chain was not very well developed.
- After sales was badly organized.



- In 2001 the Russian government agreed on a plan to revitalize the Russian civil aircraft industry. The plan focused on the restructuring of the Russian industry by creating one single aircraft industry (United Aircraft Corporation UAC/ OAK) and one single rotorcraft industry which includes design, manufacturing, sales and after sales. These are shareholder companies.
- This policy has been affirmed by President Putin recently again.
- New targets have been set for the Russian aircraft industry, whereby the trend to buy Western equipment has to be reversed and the Russian industry should become a dominant local supplier again.

Targets

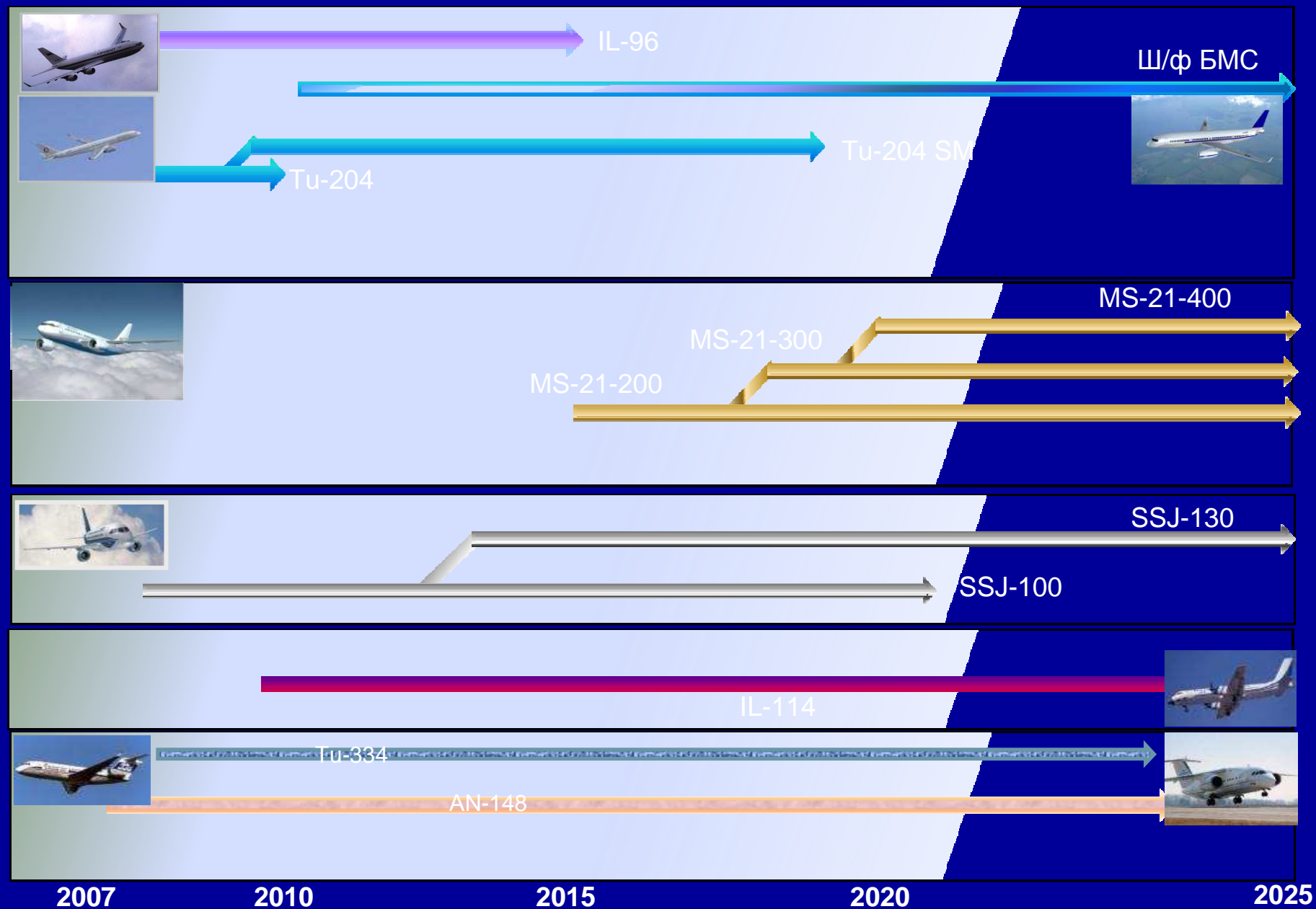
- UAC to be competitive on a global basis.
- UAC to secure 5% of the global market for the 50-plus-seat aircraft, and 10% by 2025.
- UAC's income should increase from \$4 billion to \$ 12-14 billion in 2015 and to \$ 20-25 billion in 2025.(both civil and military). Gradual increase in civil production share versus military, from 50 to 70%.
- Production of 300 airliners annually by 2025.
- “ The cost of commercial aircraft development will be prohibitively high for the domestic market customers alone so it is vital to attract foreign partners on the condition that UAC will retain a position of systems integrator”

Short term planning till 2012

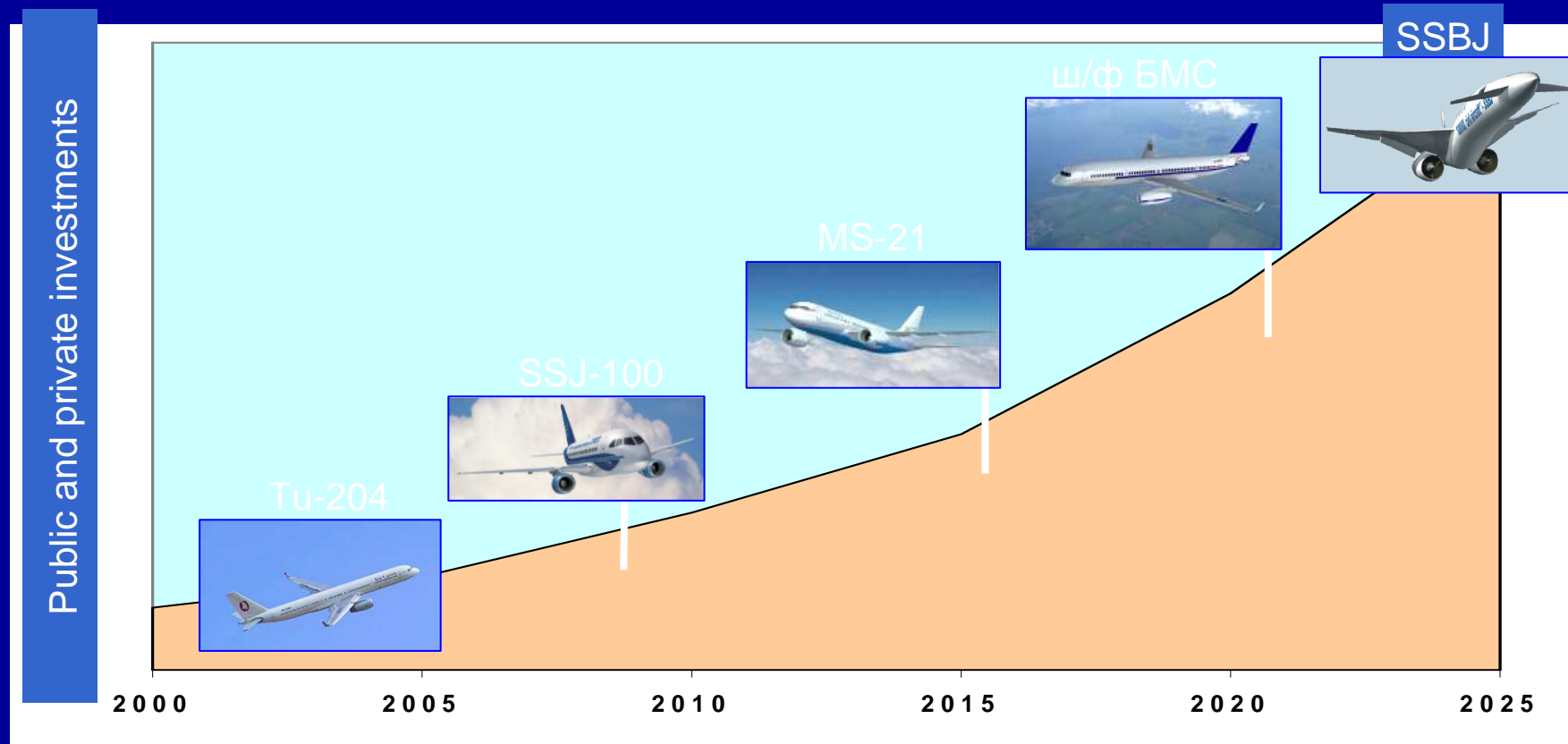
- 50 IL-96 aircraft
- 84 TU-204 aircraft, including the upgraded TU-204/114 SM
- 230 of the new SU-100 superjet
- Support to the An-148, Tu-334, Il-114 and the Beriev Be-200. Upgrade of the AN-124 and Il-76.



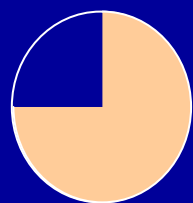
Longer term planning



Roadmap of aircraft development

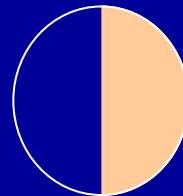


Competences of the Russian aircraft industry



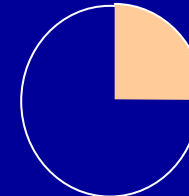
New integrator projects

Design, aerodynamics, control, etc.



Materials and Technology

Experimental facilities

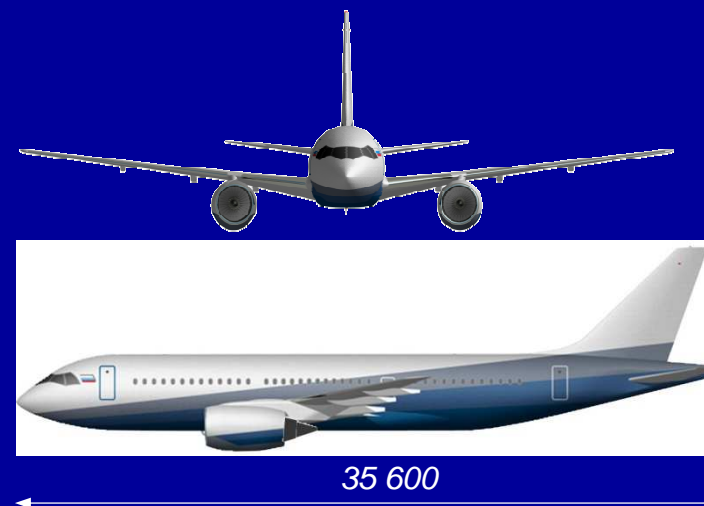


Electronic Components

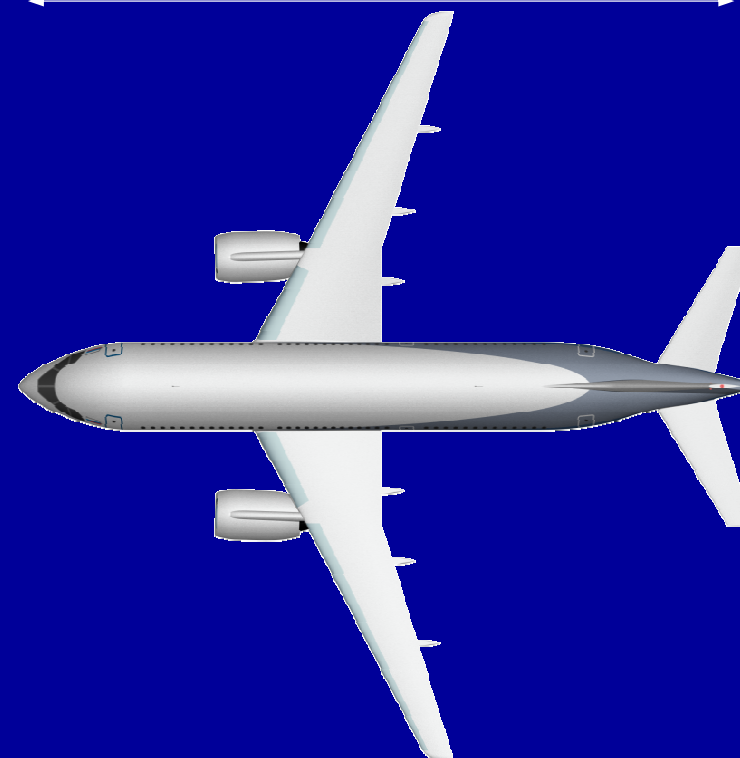
After Sales Support

● High ○ Low

Project MS-21



	MS-21-200
Year	2016
MTOW, (ton)	68,5
Payload (ton)	18
Max. Number of Pax	150
Cruise speed, km/h	870
Range, with Pax, km	4500
Fuel efficiency , gr/pass.km	15,05



Wide Body short range aircraft



	Ш/Ф БМС
Year	20XX
MTOW, (ton)	112
Payload (ton)	27
Max. Number of Pax	250-300
Cruise speed, km/h	820
Range with Pax, км	3200-4000
Fuel efficiency , gr/pass.km	19

Helicopter/ engine industry

- Like in the aircraft business, the helicopter sector in Russia will be merged into one single company. The major Russian companies like MIL, Kazan and Kamov are merged in a single company Oboronprom in which the Federal state is the major shareholder. Ultimately the company will be responsible for design, production lease and servicing.
- The state owned Salyut engine company will develop a new generation of aircraft engines.

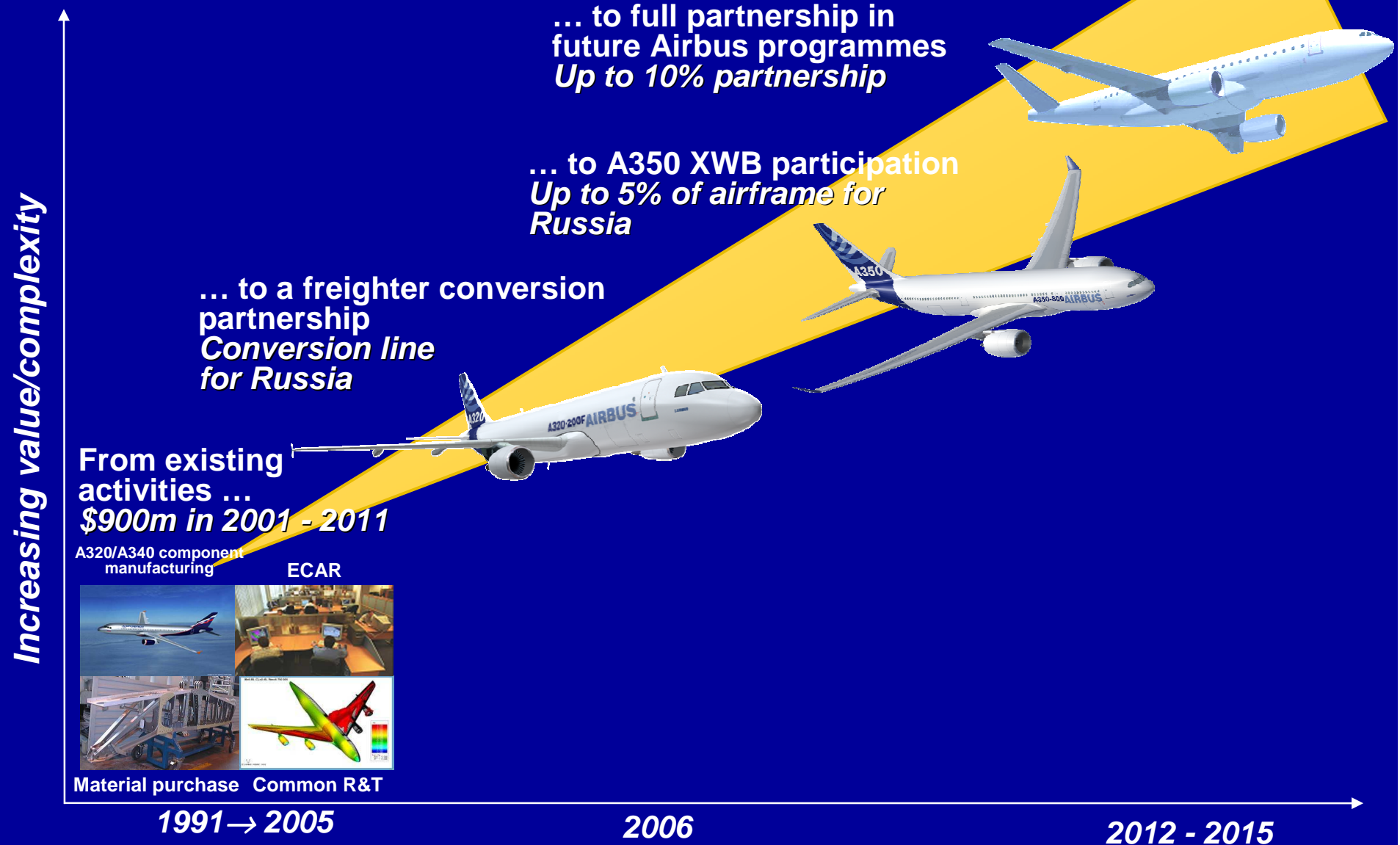
Research establishments

- Russia has a number of well known, dedicated research establishments:
 - TSAGI (aerodynamics, flight dynamics, advanced concepts, test facilities etc.)
 - CIAM (RTD for engines)
 - VIAM (Aviation materials)
 - GosNIIS (Aviation systems, ATM etc.)
 - ILL-GROMOV (Central flight test institute)
 - in contrast to most Western European institutes the Russian RE's are directly involved in the product development in close cooperation with industry.

Current European collaboration

- Many Western European companies have joint offices in Russia and collaborate with Russian scientists.
- The EU has a cooperation agreement and a European-Russian working group to develop joint calls for proposals.
- There are participations of Russian research in the EU-Framework program.
- European research establishments work together with their Russian counterparts.
- Dassault has a long standing collaboration with Sukhoi on the SSBJ.
- Russia has a 5% stake in EADS and UAC has a 5% share in the A-350 whilst a 10% share in the A-320 successor is offered. EADS has a 10% stake in parts of the UAC.
- Alenia is a partner in the SU-100 whilst SAFRAN is a partner in the development of the 146 engine for that aircraft.
- UAC will execute halve of the A-320 freighter conversion program.
- Airbus has announced a policy whereby a more structural cooperation with UAC is looked for, involving the Russian counterparts in the design cycle of future aircraft.

Airbus strategy for co-operation with Russia



National R&D program

- The last known government decision on the development of aviation equipment in Russia during the years 2020-2015 dates from October 15, 2001. The R&D program is administrated by the Ministry of Economic Development and Trade. The program starts with closed competition.
- Total budget is €4.793 million of which the Central government is funding € 1.081M and companies and private investment the rest.
- According to AWST of March 3d 2008, President Putin agreed on the plans by UAC in February 2008, stating that:” If we are talking about the innovative character of Russia’s development, we can’t do it without aviation. It will require a lot of resources...and we can afford it. I want this to become an all-national project”.

Development plans

- The government decision mentions:
 - The 3 aircraft development projects (regional, 150 seater, 300 seater) as well as the development of a new freighter [with India]
 - Upgrading existing helicopters and a new 2 ton helicopter and a convertible tilt rotor aircraft and a number of small general purpose helicopters
 - Upgrading existing engines and the development of 3 new engines (for the MS21, the SU-100 and a new helicopter engine)
 - New avionics and systems compatible with Western products
 - A ground infrastructure for storage and refuelling by LNG
 - Upgrading production facilities

Technology topics

- The plan calls for enabling technologies in different domains like advanced honeycomb structures, polymer composite material, new aluminium alloys, techniques for large welded parts, forging, two phased titanium alloys, ceramic engine blade technologies, technologies for improved engine seals, FADEC technology, engine control and monitoring, diagnose and inspection systems, ignition systems, sensor and actuator technology, electric systems for the all electric aircraft, advanced propellers, IMA, integrated aircraft control, cabin systems, new landing gear and aircraft steering, maintenance free systems, survivability, HUMS, APU's, ground support equipment
- The program also provides funding for basic research at the Russian institutes.

Other programs

- AirTN noted that there are 2 additional state programs:
 - The special purpose program 2007-2011 to foster the technology base administrated by the Ministry of Industry and Power Engineering. This amounts to €1.500 million and mentions aviation as one of the research areas
 - The program of the Ministry of Transport, focusing on the modernisation of the ATM, enabling a 2 fold increase in 2010. The program is €11.588 million of which 99% is allocated for capital investments and €39 million is for R&D. The federal government is contributing 17% whilst the rest has to be mainly funded by the private sector.

Topics for RTD collaboration

- Air TN could not obtain a clear listing of topics for collaboration but collaboration in the past covered a broad range of technologies like aerodynamics, materials, structures, modelling, knowledge management, virtual testing, nano-technologies, surface treatment etc. It seems that basic research is more accessible than applied RTD
- It is recommended to pay a visit to the Russian Academy of Science, the institute for advanced systems research IRIAS, to discuss future collaborative topics.

