

Forecast (Bizjet, SAT, Rotorcraft) calls for CS2 TE

Information Day
November 30th 2016

3 Forecast calls

List of Topics for Calls for Partners (CFP05)

Identification Code	Title	Type of Action	Ind. Value (Funding in M€)	Topic Leader
JTI-CS2-2016-CFP05-TE2-01-03	ATS Level business jet 2035 forecast	CSA	0,120	DLR
JTI-CS2-2016-CFP05-TE2-01-04	ATS Level Rotorcraft 2035 forecast	CSA	0,150	DLR
JTI-CS2-2016-CFP05-TE2-01-05	ATS Level SAT 2035 forecast	CSA	0,150	DLR

Demand and movement forecasts up to 2035:

- Business Jets
- Small Air Transport (SAT)
- Rotorcraft (FRC)



General Background

The main function of the Technology Evaluator

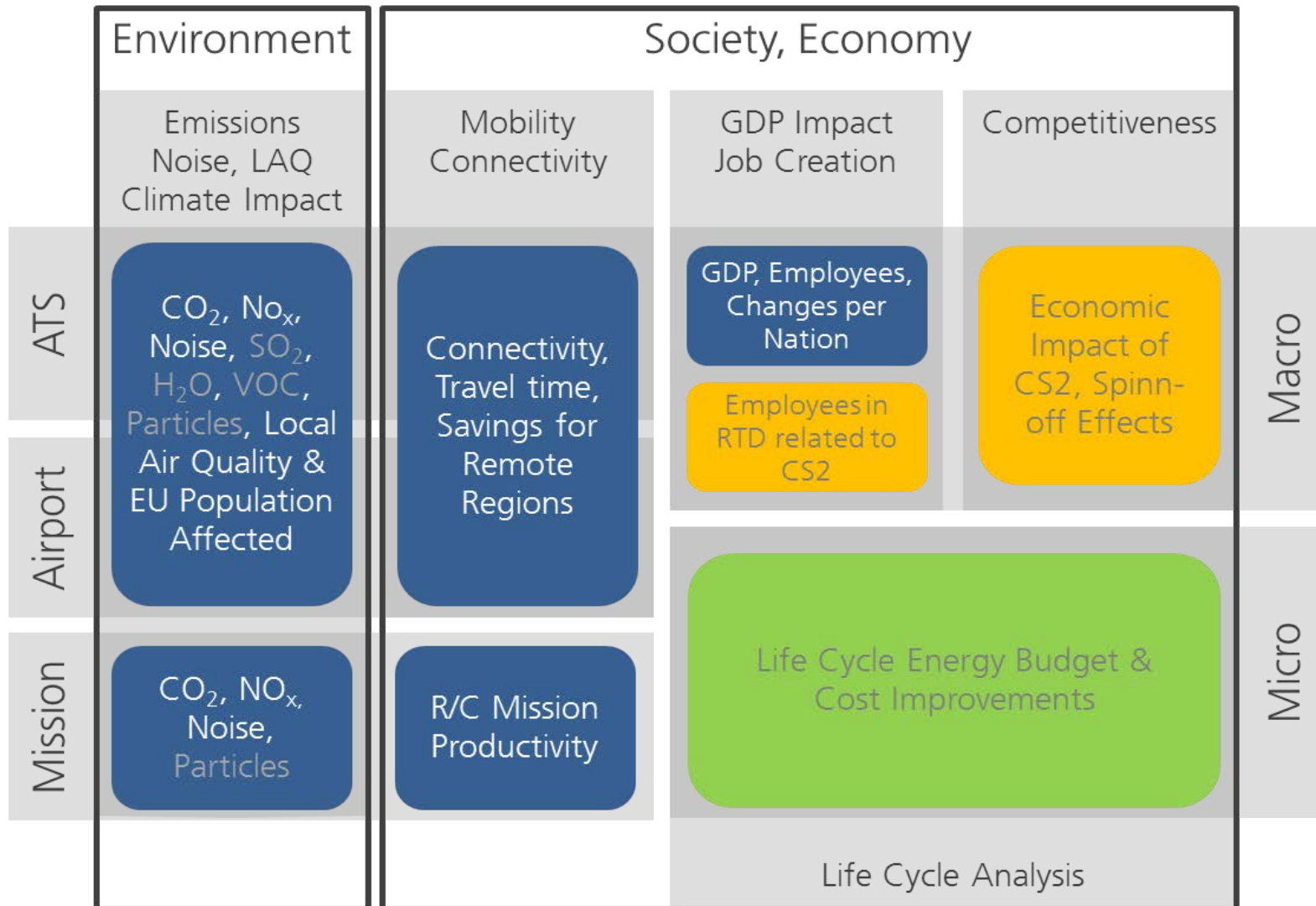
- To assess the Clean Sky technological improvements and enable an evaluation of such improvements via assessing related impacts on three assessment levels:
 - Mission
 - Airport
 - ATS
- Assessments will be performed with respect to
 - all CS technologies
 - For specific vehicles (related to the manufacturer vehicle models)
 - For the whole fleet, i.e. for mainliners, regional aircraft, business jets, small air transport and rotorcraft



Function of ATS Level Assessments

- While the airport level assessments measure, how much of the technical improvements can be realised in daily practice, ATS level assessments **consider global impacts and quantify the benefits of CS technologies for the whole air transport system and describe the aviation footprint.**
- The assessments will provide **comparisons between old and new technologies** and with this different time horizons. The identification of improvements will be performed against the 2000 base year for:
 - Clean Sky 1 contribution (requiring comparisons 2000 vs 2014/2015)
 - First ACARE goals (requiring comparisons 2000 vs 2020)
 - Clean Sky 2 contribution (requiring comparisons 2014/2015 vs **2025**)
 - ACARE Flightpath goals (requiring comparisons 2000 vs 2050 with an interim check for **2035**)
- Consequence: all forecasts need to provide information for the years 2025 and 2035

Kind of TE Assessments



ATS Level Assessments requirements – ENVIRON.

- **Environmental Indicators**
 - CO2 and NOx - fleet emissions per 100 available seat km;
 - Noise - Surface area of acoustic noise level contours, Number of people exposed to those noise areas
- **Required inputs from forecasts**
 - Provision of fleet development
 - Whole fleet for Bizjet, SAT, Rotorcraft (Conventional, Compound, Tilt-rotor)
 - Share of Clean Sky Aircraft (Bizjet, SAT and Fast Rotorcraft)
 - Provision of movement development
 - Origin and Destination Airports of BizJet flights
 - Origin and Destination Airfields of SAT flights
 - Number of flights and flight hours for rotorcraft missions (passenger transport, air taxi charter, emergency and medical services (EMS), search and rescue (S&R), civil utility, law enforcement, oil and gas, transport of goods) incl. operator, operating country, heliports, airfields, airports, off-shore platforms and hospitals)



ATS Level Assessments requirements - ECONOMY

- **Economic indicators**
 - number of employed people in the aeronautical industry and their qualification level
 - Gross domestic product (GDP) will for Europe and all states worldwide
- **Required inputs from forecasts**
 - Movements per country

ATS Level Assessments requirements - MOBILITY

- **Indicators for Mobility, Connectivity, Productivity impacts**
 - All vehicles:
 - ACARE 4h goal (90% of EU citizens reach their destination within 4h)
 - Connection improvements for specific regions & city connections
 - For Rotorcraft
 - Number of r/c required to provide emergency services and search & rescue capabilities for a generic region;
 - How the application of FRC (instead of conventional r/c) reduces the flight times for emergency services and search & rescue capabilities for a generic region;
 - How many more trips per day to/from oil platforms can be achieved with FRC compared to conventional r/c.
- **Required inputs from forecasts**
 - Provision of fleet and movement development – a for environmental assessments



ATS Level Assessments requirements – COMPET.

- **Competitiveness Indicators**

- Currently not fully defined

However, proposed candidates (e.g. Export/import ratios, Productivity, Energy and resource intensities) need

- **Required inputs from forecasts**

- Provision of fleet development as for environmental assessments:
 - Whole fleet for Bizjet, SAT, Rotorcraft (Conventional, Compound, Tilt-rotor)
 - Share of Clean Sky Aircraft (Bizjet, SAT and Fast Rotorcraft)



Summary of Inputs required by forecasts

- **Provision of fleet development**
 - Whole fleet for Bizjet, SAT, Rotorcraft (Conventional, Compound, Tilt-rotor)
 - Share of Clean Sky Aircraft (Bizjet, SAT and Fast Rotorcraft)
- **Provision of movement development**
 - Origin and Destination Airports of BizJet flights
 - Origin and Destination Airfields of SAT flights
 - Movements per country
 - Number of flights and flight hours for rotorcraft missions (passenger transport, air taxi charter, emergency and medical services (EMS), search and rescue (S&R), civil utility, law enforcement, oil and gas, transport of goods) incl. operator, operating country, heliports, airfields, airports, off-shore platforms and hospitals)
- **Fleet and movement developments need to cover 2020, 2025, 2030 and 2035**
 - Provision of values for the years in between will be appreciated

Forecast assumptions

- To ensure consistency for all forecasts, the following assumptions will be provided by the topic manager and elaborated in cooperation with manufacturers:
 - Energy prices forecast
 - Population growth forecast
 - Overlapping markets (r/c pax missions, SAT, Bizjets, Mainliner/regional a/c)
 - Operational and technological parameters (productivity and fuel consumption improvements)
- Assumptions on economic development will use forecasts by Global Insight
- Forecasts will consider only those political measures, which are currently fixed
- Airports, airfields and heliports
 - All Airports reflected in OAG should be considered
 - Locations of heliports for EMS, S&R, off-shore platforms and law enforcement provided by the Topic Manager – bringing new data to these variables will be appreciated
 - All European airfields shall be considered in detail; publicly available data on world wide airfields shall be used – bringing new data to these variables will be appreciated



Activity Conditions

Review of available forecasts

The Partner should check & compare

- assumptions
- data sources
- relevance of drivers and variables

and highlight the most relevant existing statistical and information gaps.

Fine-tuning of the forecasting approach

- The Partner should agree with the Topic Manager which approach should be selected to pursue the forecasting, including the assumptions, drivers and especially market potentials targeted by other vehicles.
- When data is lacking for certain variables, the Partner should provide an approach to fill the gaps, which will be discussed and agreed with the Topic Manager and the relevant Clean Sky 2 Members (vehicle manufacturers).