



Approval

WRITTEN PROCEDURE 2014 - 09 for adoption of the CS2 List of Additional Activities planned in 2014-2015 by the Private Members

Brussels, 9/12/2014

On November 17, 2014 the Executive Director of Clean Sky JU launched the written procedure 2014 – 08 in accordance with the Rules of Procedure of the Governing Board, to adopt the CS2 List of Additional Activities planned in 2014-2015 by the Private Members.

The written procedure 2014 - 09 on the said documents has received the majority of votes.

The CS2 List of Additional Activities planned in 2014-2015 by the Private Members is adopted.

Brussels December the 9th, 2014

Eric Dautriat
Executive Director
Clean Sky 2 Joint Undertaking

A handwritten signature in black ink, appearing to be "ED", written over the printed name and title of Eric Dautriat.

Annex: CS2 List of Additional Activities planned in 2014-2015 by the Private Members



WRITTEN PROCEDURE 2014 - 09
for adoption of the
CS2 List of Additional Activities planned in 2014-2015 by the Private Members
of the Clean Sky 2 Joint Undertaking

Brussels, 17/11/2014

The Executive Director of Clean Sky 2 Joint Undertaking hereby launches the written procedure in accordance with the Rules of Procedure of the Governing Board for the adoption of the CS2 List of Additional Activities planned in 2014-2015 by the Private Members of the Clean Sky 2 Joint Undertaking

The approval is done through written procedure.

Annex I
Written procedure form

Annex II

- CS2 List of Additional Activities planned in 2014-2015 by the Private Members of the Clean Sky 2 Joint Undertaking



WRITTEN PROCEDURE 2014 - 09
FOR ADOPTION OF THE
CS2 LIST OF ADDITIONAL ACTIVITIES PLANNED IN 2014-2015 BY THE PRIVATE MEMBERS
OF THE CLEAN SKY 2 JOINT UNDERTAKING

Annex I

Written procedure form

To be sent to Governing-Board@cleansky.eu

The Undersigned
(name of the representative)

Name of the organisation

	Accept	Does not accept
CS2 LIST OF ADDITIONAL ACTIVITIES PLANNED IN 2014-2015 BY THE PRIVATE MEMBERS OF THE CLEAN SKY 2 JOINT UNDERTAKING		(1)

(1) Indicate here the reason

Done at

Date

Signature

CS2 List of Additional Activities planned in 2014-2015 by the Private Members of the Clean Sky 2 Joint Undertaking

A. Additional Activities planned in 2014

Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Agusta Westland	No activity planned.	N.A.	0
Airbus	<p>A) Placing a duly qualified A340 test aircraft at disposal for the perimeter of research activities, integration/modification, testing and demonstration. Ensuring the vehicle is available in operative, airworthy condition, and that the required infrastructure to support flight test (telemetry, etc.) is in available and certified to the appropriate standards.</p> <p>B) Accompanying activities as well as Research and Technology to develop manufacturing methods for laminar wings, not funded in Clean Sky / Clean Sky 2</p>	<p>Test aircraft will be required in LPA Platform 1, different demonstration</p> <p>Airframe ITD: Extended laminarity, LPA Platform 1</p>	10



Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Alenia Aermacchi	<p><u>Innovative Aircraft Wing Structures</u></p> <ul style="list-style-type: none"> Development of technologies for the central wing box of regional a/c <p><u>Fuselage and Tail Planes</u></p> <ul style="list-style-type: none"> New technologies for the Rear Fuselage and Tail Planes of regional a/c New technologies for the cockpit of regional aircraft Development of technologies for hybrid fuselage (metallic/composite) <p><u>Advanced on-board systems for regional a/c</u></p> <ul style="list-style-type: none"> Aircraft integration requirements for pax seats, cabin lining panels and cargo linings, focused on regional a/c 	<p>R-IADP WP2.1</p> <p>R-IADP W 3.2, AIRFR. ITD WP B-4.3</p> <p>AIRFR. ITD WP B-4.4, R-IADP WP 3.2</p>	1,4
	<p>Dassault Aviation</p> <ul style="list-style-type: none"> Aircraft architecture design process New manufacturing and assembly techniques Protection without chromates Composite manufacturing processes Technologies and concept for innovative passenger cabin 	<ul style="list-style-type: none"> AIRFRAME ITD Concept design / optimisation processes: AIRFRAME ITD structures: <ul style="list-style-type: none"> Eco Design Composite structures AIRFRAME ID Novel Travel Experience Technology Stream 	0,7
DLR	No activity planned.	N.A.	0
Airbus Defence and Space SP (EADS Casa)	Electrical Management Distribution Systems	Lower fuel consumption & CO2 emission	0,382
	Centralized Monitoring and Health Monitoring Systems	Competitiveness, with lower operating and life cycle cost	0,138
	Electrical Ice Protection Systems	Competitiveness, with lower operating and life cycle cost	0,240
	Miniaturization and Integration of Antennas	Lower fuel consumption & CO2 emission	0,210
	CFRP new manufacturing processes	Lower fuel consumption & CO2 emission/- Competitiveness, with lower recurring cost	0,089

Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
	FOREST - Additive Layer Manufacturing	Lower fuel consumption & CO2 emission/- Competitiveness, with lower recurring cost	0,060
	FT4B Flight Turboprop Transport Technology Test Bed	Test Platform preparation for Clean Sky 2 Flight Test Bed 2	5,8
	New Turboprop Transport Family Configurations/Aircraft Configuration Optimization tools	Competitiveness, with lower operating and life cycle cost	0,718
	IEDS Integrated Engine Display Systems	Competitiveness, with lower operating and life cycle cost	0,980
	Composite Material Fire Resistance Characterization	Safety. Competitiveness, with lower operating and life cycle cost	0,293
	EOLO (Design and Manufacturing Processes- Virtual reality)	Competitiveness, with lower non-recurring operating and life cycle cost	0,540
	GEOLIA (i-DMU Collaborative engineering)	Competitiveness, with lower operating and life cycle cost	0,640
	COSSTA (Superplastic forming)	Competitiveness, with lower operating and life cycle cost	0,460
	SILENCIO (Innovative Materials for Noise Protection)	Competitiveness, with lower operating and life cycle cost	0,560
	HW/SW validation (Systems V&V)	Competitiveness, with lower operating and life cycle cost	0,280
	COMDUCT (Composite Technologies for Systems installation)	Lower fuel consumption & CO2 emission	0,150
	LUS (Laser Ultrasound inspection NDT)	Competitiveness, with lower operating and life cycle cost	0,090
Airbus Helicopters	- Aerodynamic and aeroacoustic design of main rotor blades - New structural concept, materials & manufacturing process for rotor blades	The results, if successful, could be further implemented as test kits to be test flown on the LifeRCraft demonstrator after completion of Clean Sky 2 campaign, aiming at: - Lower fuel consumption & CO2 emission - Reduced noise at source - Greener life cycle - Competitiveness , with lower recurring costs	3,5
	- Tools for improving prediction of rotor flight loads: methodology developments	If research is successful, the tools could be implemented for LifeRCraft airload estimations, increasing reliability of sizing and	1,1



Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Evektor	No activity planned.	N.A.	0
Fraunhofer	ecoDESIGN	Non(GAM)-funded contribution IADP, ITD	0,12
Liebherr	Research and Technology development of architectures, technology bricks and other enablers for: <ul style="list-style-type: none"> • Advanced Actuation Systems • Electro-Mechanical and Electro-Hydrostatic Actuators (EMA & EHA) • Landing Gear Systems • Vapour cycle System • Air Quality • Wing Ice Protection Systems • Control and Power Electronics 	Support of the following demonstrator development activities in the SYSTEMS ITD: <ul style="list-style-type: none"> • Smart integrated Wing • Electrical Nose Landing Gear • Rotorcraft Landing Gear System • Power Management Center • Next Generation Cooling Systems • Advanced electrothermal Wing Ice Protection System 	2,5
MTU	Development and testing of HPC technologies for efficiency and structures improvements	Supporting Compression System Technology Development	2
Piaggio	Development aero-acoustic model and test for low noise propeller pusher	Airframe ITD low noise small aircraft configuration	0,2
Rolls-Royce	Development and testing of advanced component technologies, modelling, control systems and materials systems	Provision of high technology components into engine demonstrator programme	20
SAAB	Advanced manufacturing facilities and capital equipment	Manufacture of high technology components for engine demonstrator programme	0
SAAB	Research and Technology development of architectures, technology bricks and other enablers for:	Internal and national technology development programs that lays the foundation for the technology development and demonstrators that will be developed in the Clean Sky 2 ITD Airframe, WP A3.1	2,9



Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Safran	<ul style="list-style-type: none"> Technology development for Design for manufacturing and assembly. Low cost manufacturing, highly integrated structures and multifunctional material 	and WP A3.3	
	CR Open Rotor related activities (novel gas generator technologies, complementary propulsor & low pressure activities, open air test facility)	CROR flight test (WP 1.1 LPA IADP)	5
Thales	Landing Gears related activities	Advanced Landing Systems (WP 4 ITD Systems)	6
	In-kind performed on ALICIA, FENICS & FUMSECK studies.	Cockpit and display activities in Systems ITD. Building blocks, technologies, functions.	1,5
	Cockpit simulation environments for fixed wing and helicopters (PROTEUS)	Availability of simulated environment for integration of early developments targeting LPA and FRC needs in SYSTEMS ITD.	
	In-kind performed in GENOME for electrical test benches	Environment to support work on energy generation, conversion, distribution, motors, loads activities in Systems ITD	
TOTAL			78,55



B. Additional Activities planned in 2015

Leading Member		Activity	Link with Clean Sky 2	Estimated value (M€)
Agusta Westland	Airbus	<p>Optimization of tiltrotor external aerodynamics</p> <p>A) Placing a duly qualified A340 test aircraft at disposal for the perimeter of research activities, integration/modification, testing and demonstration.</p> <p>Ensuring the vehicle is available in operative, airworthy condition, and that the required infrastructure to support flight test (telemetry, etc.) is in available and certified to the appropriate standards.</p>	<p>Supporting aerodynamic design of NGCTR in FRC IADP</p> <p>Test aircraft will be required in LPA Platform 1, different demonstration</p>	<p>0,45</p> <p>20</p>
Alenia Aermacchi		<p><u>Innovative Aircraft Wing Structures</u></p> <ul style="list-style-type: none"> Further development of technologies for the central wing box of regional a/c <p><u>Fuselage and Tail Planes</u></p> <ul style="list-style-type: none"> Further development of new technologies for the Rear Fuselage and Tail Planes of regional a/c Further development of technologies for the cockpit of regional aircraft Further development of technologies for hybrid fuselage (metallic/composite) Repair techniques for composite structures <p><u>Advanced on-board systems for regional a/c</u></p> <ul style="list-style-type: none"> Definition and analysis of regional turboprop landing gear architecture. Landing gear A/C integration requirements definition, with focus on electrical actuation of L/G functionalities. Finalization of Aircraft integration requirements for interiors 	<p>R-IADP WP2.1</p> <p>R-IADP W 3.2, AIRFR. ITD WP B-4.3</p> <p>R-IADP WP 2.3, AIRFR. ITD WP B-4.4, R-IADP WP 3.2</p> <p>R-IADP WP 2.1, AIRFR. ITD WP B-4.3</p>	<p>5,6</p>

Leading Member		Activity		Link with Clean Sky 2	Estimated value (M€)
Dassault Aviation	Value of infrastructures and test facilities				
	Manufacturing and research development facilities				
	<ul style="list-style-type: none"> Business Jet characteristics (aerodynamic, structural) data base Multidisciplinary design lab Aircraft architecture design process Advanced models in aerodynamics, flight control & noise New manufacturing and assembly techniques Protection without chromates Composite wing box and composite structures Composite manufacturing processes Technologies and concept for innovative passenger cabin 		<ul style="list-style-type: none"> AIRFRAME ITD Concept design / optimisation processes: Flight Demonstration Wind Tunnel Tests Substantiation process & reference test cases for substantiation/validation IADP/ITD interface management : requirement elaboration, interface definition, progress measurement capability AIRFRAME ITD structures: <ul style="list-style-type: none"> Eco Design Composite structures AIRFRAME ID Novel Travel Experience Technology Stream 	4,3	
	No activity planned.		N.A.	0	
	Electrical Management Distribution Systems		Lower fuel consumption & CO2 emission	0,645	
	Centralized Monitoring and Health Monitoring Systems		Competitiveness, with lower operating and life cycle cost	0,490	
	Electrical Ice Protection Systems		Competitiveness, with lower operating and life cycle cost	0,232	
	Miniaturization and Integration of Antennas		Lower fuel consumption & CO2 emission	0,350	
	CFRP new manufacturing processes		Lower fuel consumption & CO2 emission/- Competitiveness, with lower recurring cost	0,275	
	FOREST - Additive Layer Manufacturing		Lower fuel consumption & CO2 emission/- Competitiveness, with lower recurring cost	0,180	
DLR	FT4B Flight Turboprop Transport Technology Test Bed		Test Platform preparation for Clean Sky 2 Flight Test Bed 2	8	
	New Turboprop Transport Family Configurations/Aircraft Configuration Optimization tools		Competitiveness, with lower operating and life cycle cost	1	

Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Airbus Helicopters	IEDS Integrated Engine Display Systems	Competitiveness, with lower operating and life cycle cost	0,921
	Composite Material Fire Resistance Characterization	Safety. Competitiveness, with lower operating and life cycle cost	0,025
	EOLO (Design and Manufacturing Processes- Virtual reality)	Competitiveness, with lower non recurring operating and life cycle cost	0,285
	GEOLIA (i-DMU Collaborative engineering)	Competitiveness, with lower operating and life cycle cost	0,440
	COSSTA (Superplastic forming)	Competitiveness, with lower operating and life cycle cost	0,498
	SILENCIO (Innovative Materials for Noise Protection)	Competitiveness, with lower operating and life cycle cost	0,149
	CIEN Superficies cuasiplanas - LRI Technologies	Competitiveness, with lower operating and life cycle cost	0,350
	CIEN Termoplásticos - CFRP New Manufacturing Processes	Competitiveness, with lower operating and life cycle cost	0,350
	CIEN Sistemas - Development of Fluid Systems Modelling Tools	Greener life cycle	0,150
	HW/SW validation (Systems V&V)	Competitiveness, with lower operating and life cycle cost	0,280
	LUS (Laser Ultrasound inspection NDT)	Competitiveness, with lower operating and life cycle cost	0,135
	Ground testing of main rotor blades, new design (follow-on of 2014 design work)	The results, if successful, could be further implemented as test kits to be test flown on the LifeRCraft demonstrator after completion of Clean Sky 2 campaign, aiming at: <ul style="list-style-type: none"> - Lower fuel consumption & CO2 emission - Reduced noise at source - Greener life cycle - Competitiveness , with lower recurring costs 	2,8
	Tools for improving prediction of rotor flight loads: validation phase	If research is successful, the tools could be implemented for LifeRCraft airload estimations, increasing reliability of sizing and enlarging the flight envelope. For future rotorcraft products, better competitiveness, with shorter time-to-market, reduction of vibration at high speed	2,2

Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
Evektor	Self-funded R&D activities	EMC Simulations for on fields of - avionic systems HIRF protection - lightning effects on composite structures Passenger comfort activities in ITD Systems Rapid prototyping techniques – hybrid materials Effective production documentation	0,03
Fraunhofer	ecoDESIGN	Non(GAM)-funded contribution/IADP, ITD	8,46
Liebherr	Research and Technology development of architectures, technology bricks and other enablers for: <ul style="list-style-type: none"> • Advanced Actuation Systems • Electro-Mechanical and Electro-Hydrostatic Actuators (EMA & EHA) • Landing Gear Systems • Vapour cycle System • Air Quality • Wing Ice Protection Systems • Control and Power Electronics 	Support of the following demonstrator development activities in the SYSTEMS ITD: <ul style="list-style-type: none"> • Smart integrated Wing • Electrical Nose Landing Gear • Rotorcraft Landing Gear System • Power Management Center • Next Generation Cooling Systems • Advanced electrothermal Wing Ice Protection System 	4,5
MTU	Development and testing of HPC technologies for efficiency and structures improvements	Supporting Compression System Technology Development	4
Piaggio	Electro-Mechanical actuation for primary Flight Control	System ITD FbW for small A/C	0,1
	Composite wing for next generation small aircraft	Airframe ITD low cost composite manufacturing	0,1
	Aerodynamic design methods	Airframe ITD small aircraft winglet configuration	0,1
Rolls-Royce	Development and testing of advanced component technologies, modelling, control systems and materials systems	Provision of high technology components into engine demonstrator programme	15
	Advanced manufacturing facilities and capital equipment	Manufacture of high technology components for engine	18



Leading Member	Activity	Link with Clean Sky 2	Estimated value (M€)
SAAB	<p>Research and Technology development of architectures, technology bricks and other enablers for:</p> <ul style="list-style-type: none"> • Technology development for Design for manufacturing and assembly. • Low cost manufacturing, highly integrated structures and multifunctional material 	<p>demonstrator programme</p> <p>Internal and national technology development programs that lays the foundation for the technology development and demonstrators that will be developed in the Clean Sky 2 ITD Airframe, WP A3.1 and WP A3.3</p>	2,6
Safran	<p>CR Open Rotor related activities (novel gas generator technologies, complementary propulsor & low pressure activities, open air test facility)</p> <p>Landing Gears related activities</p>	<p>CROR flight test (WP 1.1 LPA IADP)</p>	20
Thales	<p>In-kind performed on FENICS & FUMSECK studies.</p> <p>Cockpit simulation environments for fixed wing and helicopters (PROTEUS)</p> <p>In-kind performed in GENOME for electrical test benches</p>	<p>Advanced Landing Systems (WP 4 ITD Systems)</p> <p>Cockpit and display activities in Systems ITD. Building blocks, technologies, functions.</p> <p>Availability of simulated environment for Integration of early developments targeting LPA and FRC needs in SYSTEMS ITD .</p> <p>Environment to support work on energy generation, conversion, distribution, motors, loads activities in Systems ITD</p>	6
TOTAL			130,50
TOTAL for 2014 and 2015			209,05