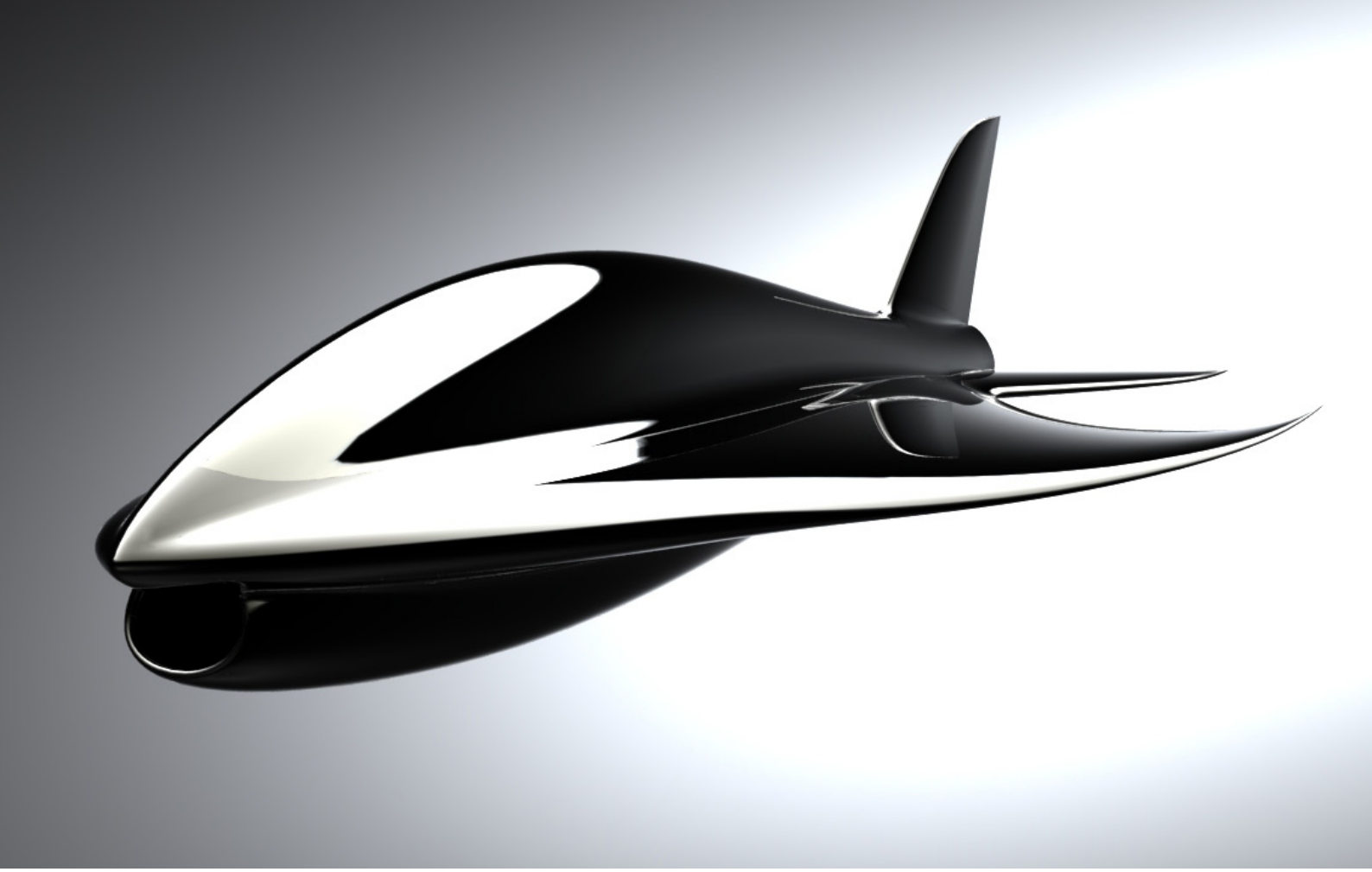

"Men will never fly"
"Men will never fly faster than sound"
"Men will never walk on the moon"

There is no difference to back then. Without the proper background, some things are just too good to be true.

SmartFish is a revolutionary new airplane concept that was inspired by the cornering capabilities of the tuna. SmartFish differs from conventional aircraft by its innovative and efficient aerodynamic design, while relying on standard technologies for construction materials, avionics, systems and propulsion.

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smartfish

Vision & Mission

"Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away."
–Antoine de Saint-Exupery

The objective of the SmartFish Team is to sell or license this revolutionary general aviation and Unmanned Aerial Vehicle (UAV) aircraft technology, once the prototypes have been successfully tested, to an established aerospace company.

SmartFish's highly innovative technology regarding safety, economy and design can be used for a variety of aircrafts, covering from drones over high performance sport aircrafts to business jets and even to suborbital spacecrafts.

Unmanned Version / UAV
Versatile drones for surveillance missions such as:

- Surveillance of vast sea areas
- Weather observation, climate research
- Environmental monitoring (water pollution, bushfires, deforestation etc.)
- Border control
- Monitoring of pipelines, transmission lines, etc.

Manned Version / UAV
Inexpensive jet aircraft for:

- Flight training and education
- Landing-experience and manual piloting training for long haul pilots
- Recreational aviation
- Business jets
- Flying doctors
- Suborbital space flights

USP of the SmartFish Project

Economy
- Long range cruise speed of Mach 0.88
- Long range of up to 4'000 km
- Low fuel consumption
- Low CO^2 emissions
- Exeptional large internal volume and therefore a spacious cabin
- Lower manufacturing cost compared to conventional design due to lower number of individual parts
- Lower operating and maintenance cost than conventional designs

Safety
- Reduced number of moving parts / simplified control system
- Stall almost impossible
- Simple maintenance
- High crashworthiness

Emotional
- Attractive / sleek design
- High marketing potential

Prototypes

In order to validate the concept of SmartFish, a manned Proof of Concept (PoC) prototype will be developed, built and tested. The design of this PoC will be optimized using Computational Fluid Dynamics (CFD) coupled with Multi Objective Design Optimization software. The excellent flight qualities and performances that have been proven with the flying RC models will also be found on a manned prototype.

Design Features
Two seater, single engine leisure / utility high performance aircraft. All-composites, lifting body aerodynamic configuration, single turbofan in pusher configuration. Overall shape is optimized for low drag at cruising speed.

Structure
Wing and fuselage are one single integrated unit. The primary structures are built with carbon fiber composite and honeycomb sandwichtechnology, special parts are reinforced with kevlar. Primary structures built from carbon prepreg fabric laid up on CNC milled all-composites female moulds, all exterior shells of co-cured carbon and honeycomb sandwich. Flaps and control surfaces are made out of carbon fibre and kevlar.

Flight Controls
Conventional mechanical flight controlls via push / pull rods for both tail mounted roll and pitch controls, steel cables for rudder control. Electric trim tab for roll and pitch control.

Landing Gear
The tricycle landing gear retracts electrically rearward into the fuselage contours. The nosewheel is steereable. The main landing gears are equipped with hydraulic brakes and parking brakes.

Propulsion
One Williams FJ-33-19 Turbofan with 1800-1900lbs of thrust. The engine is mounted below the passenger cabin and the air inlet is in the nose of the aircraft. Fuel is stored in two integral wing tanks with a total of 500 liters.

Accommodation
Pilot and co-pilot or passenger in tandem configuration in individual cockpits, with dual stick controls.

Specifications

Length	6.9 m
Wingspan	5.4 m
Aspect ratio	1.7
Height	2.1 m
Max. takeoff weight	1'200 kg
Empty weight	500 kg
Fuel capacity	400 kg
Payload	300 kg
Takeoff and landing distance	700 m
Vso	71 kts
Vne Mach	0.92

Technology Transfer
The giants of the aviation industry tend to buy innovative solutions from dynamic companies. As a licence purchaser like Airbus, Antonow, Boeing, Embraer, Cessna, Dassault, Bombardier, General Atomics, Hawker Beechcraft, Pilatus, Northrop Grumman, New Piper, Iljuschin, etc. are within scope, as well as even NASA and ESA. A first research project with ESA has been started in April 2012. In October 2015 multiple successful airdrops from 32'000 masl. have been conducted.

Schedule
The established schedule foresees that the first flight of SmartFish **Prototype 1** will take place two years after seed capital is available. **Prototype 2** will be airborne one year afterwards. The technology licensing starts with the development of the prototypes mentioned above.

Planned project partners:

esa · P&TS · SAAB · RUAG Aerospace · DLR · LIEBHERR · EXTRA · Leichtwerk AG