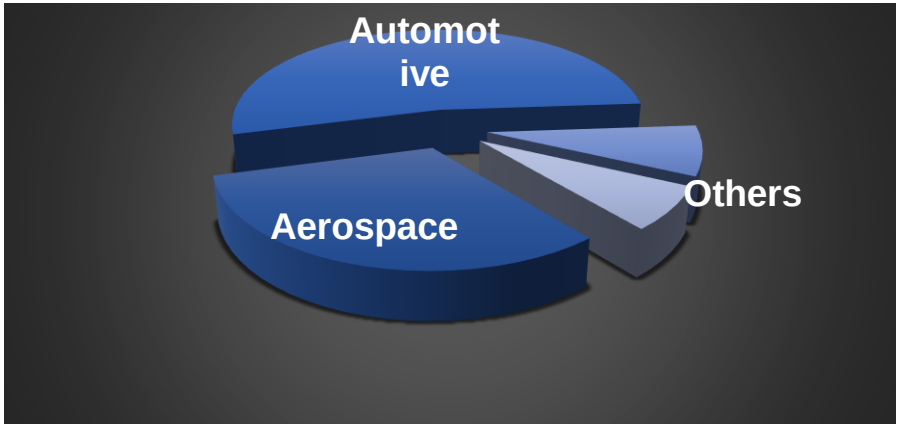
iKAPA Technology Services GmbH

Aerospace and Automotive Clients, Industries and Employers of iKAPA engineers



Aerospace, Space, Defense

- AIRBUS
- AIRBUS Military
- AEROLIA
- AIRCELLE
- AERNOVA
- DIEHL
- LABINAL
- DASSAULT
- LATECOERE
- ASTRIUM
- CNES
- SAGEM
- SNECMA

Automotive, Railways, Energy

- PSA
- RENAULT
- BMW
- DAIMLER
- VOLVO
- SAAB
- VOLKSWAGEN
- ALSTOM
- CONTINENTAL
- BOMBARDIER
- FRAMETOME/ADVENA

Contractual Concept

Temporary Workforce – AÜG On-site	Consulting On-site	Consulting/Service Deliverables On-site	Service level agreement Near-/Off-shore	Fixed-price project Near-/Off-shore
Supplementary workforce on temporary basis	High level experts for duration of specific project phases	Service agreement with experts with deliverables	Agreement on results and performance	Fixed-price projects based on deliverables, milestones, fixed price and deadlines
Integrated in client teams under client supervision Rates dictated by client agreements	Consulting and training roles Rates dictated by consultant agreement	Off-site activities with on-site teams and representatives Hourly Rates	Deliverables and service agreement based on hours and results	Full control with supplier and full responsibility for overall project


Automotive expertise

ENGINEERING CENTRES
Off-SHORE and NEAR-SHORE DELIVERY CENTRES
and
ENGINEERING SERVICE PARTNERS

France:
- **Paris**

Germany:
- **Hamburg**
- **Bremen**
- **Munich**

Romania:
- **Bucharest**

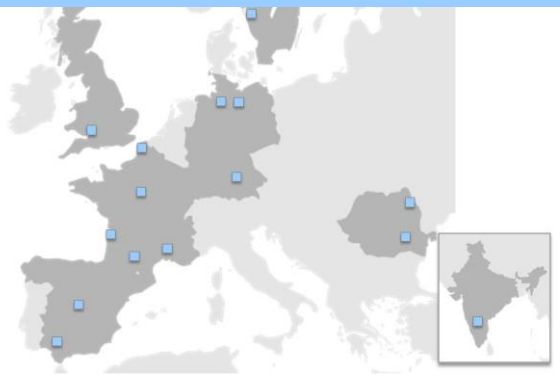
India:
- **Bangalore**

Egypt:
- **Cairo**

Poland:
- **Krakow**

Czech Republic:
- **Prague**

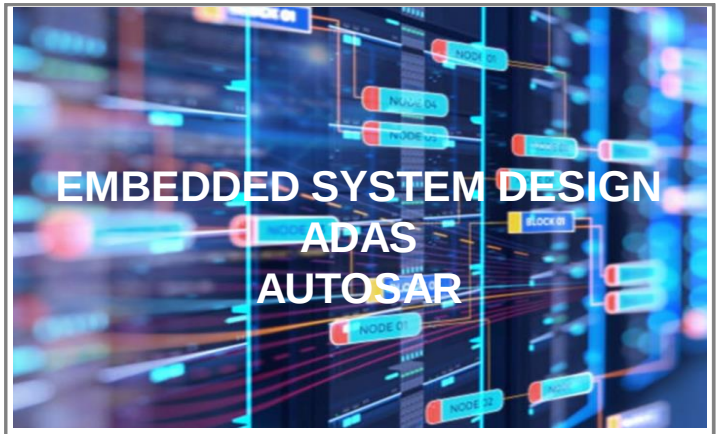
Italy:
- **Naples**



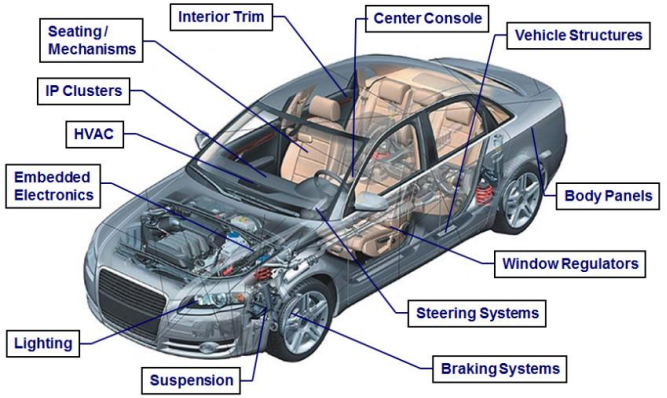
OEM Expertise

- VOLKSWAGEN
- BOSCH
- DAIMLER
- CONTINENTAL
- SAAB
- RENAULT

PRODUCTS & SERVICES



Spectrum of Competencies



ENGINEERING SERVICES

DESIGN ENGINEERING

- CONCEPT/ STYLING
- PRELIMINARY DESIGN
- DESIGN FEASIBILITY ANALYSIS
- ERGONOMIC / OCCUPANT MANAGEMENT
- DETAIL ENGINEERING
- KINEMATICS / STRESS ANALYSIS
- DFM
- PROTOTYPING

PROCESS ENGINEERING

- NPI/NPD PROCESS IMPLEMENTATION

MANUFACTURING

- COMPONENTS/SUB ASSEMBLY
- TOOLING/FIXTURES

TECHNICAL MANUALS

- OPERATOR/ MAINTENANCE/ IPL/IPC

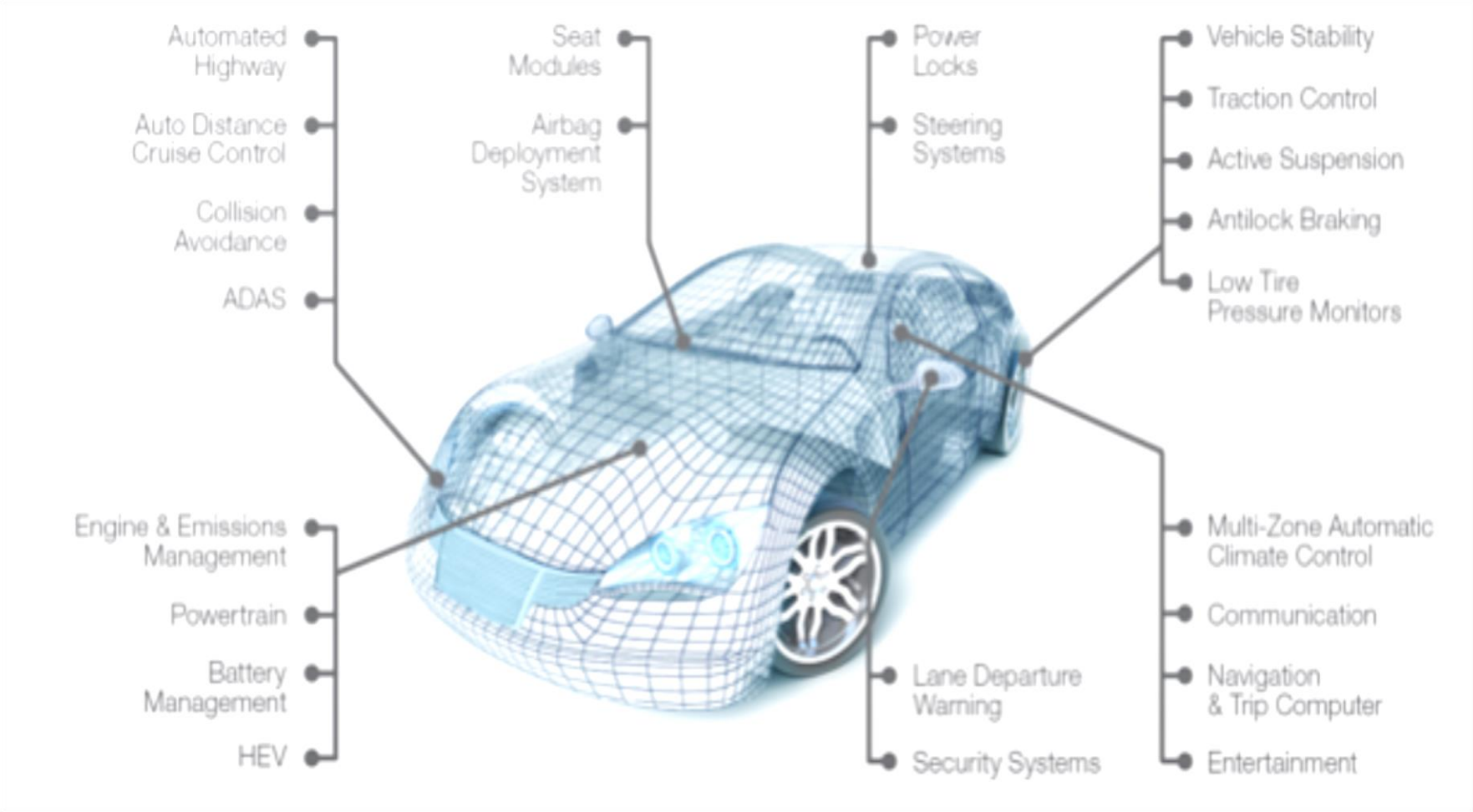
AUTOMOTIVE TRAINING SOLUTIONS

- VEHICLE ARCHITECTURE
- OCCUPANT MANAGEMENT
- SUB SYSTEM DEVELOPMENT
- GROUND VEHICLE THEORY/ METHODICAL PROCESS OF VEHICLE DEVELOPMENT
- VEHICLE ELECTRONICS

RESOURCE DEPLOYMENT

- ENGINEERING
- MANUFACTURING
- MATERIALS/SCM

EMBEDDED SYSTEM DESIGN



Our Expertise

- **Experience in C/C++** - iKAPA TECHNOLOGY SERVICES employees have many years' experience in C / C++ in projects for BOSCH, VW, Continental, ZF, OHB

- **Experience in automotive area** – iKAPA TECHNOLOGY SERVICES employees have many years' experience with companies such as BOSCH, ZF, Delphi, Continental, VW, Daimler, BMW, Audi, Porsche and many more.

- **Experience in working with versioning systems – GIT & ClearCase** – GIT and Clearcase has been in use in many projects locally as well as internationally

- **Knowledge and experience with SPI-Interface** – iKAPA TECHNOLOGY SERVICES employees have experience in this field

- **Experience with Wakeup-Functionality & Powermanagement** – iKAPA TECHNOLOGY SERVICES employees have experience

- **Experience with implementation of bootloader/SW-Update including Security-Check (preferred SHA-256)** – iKAPA TECHNOLOGY SERVICES employees have experience with VW

- **Experience with Dual-Processor architecture preferred with iMX6 and V850/RH850 and INC (Inter-Node-Communication)** – iKAPA TECHNOLOGY SERVICES employees have experience

- **Experience with Greenhills Development Environment v5.1.7 (incl. GHS Multi Debugger)** – iKAPA TECHNOLOGY SERVICES has experience on a GM project with Greenhills

Our Expertise

- **Knowledge in the area of CDG AUTOSAR Operating System for RH850/V850** – iKAPA TECHNOLOGY SERVICES has a AUTOSAR experts in the team from different projects over the last years

- **Knowledge with specific device drivers for CDG AUTOSAR (known as Complex Device Drivers in AUTOSAR)** - iKAPA TECHNOLOGY SERVICES has AUTOSAR experts in the team from different projects over the past few years

- **Experience with CDG CUBAS configuration-tool-suite** – iKAPA TECHNOLOGY SERVICES have employees with such expertise

- **Experience with CDG build toolchain** – iKAPA TECHNOLOGY SERVICES have employees with such expertise on several projects with BOSCH during the past few years

- **Experience with RBCM Platform Gen3/Gen4** – iKAPA TECHNOLOGY SERVICES employees have been working on projects of the Gen 3 / Gen 4 platform for several years

- **Experience with CM development processes (regarding ASPICE level 1)** – iKAPA TECHNOLOGY SERVICES employees have experience working on ASPICE Level 1

- **Written and spoken skills in English** - iKAPA TECHNOLOGY SERVICES is an international company, working for international companies on transnational projects. English, with many others, is our standard language

Aerospace Expertise

ENGINEERING CENTRES
Off-SHORE and NEAR-SHORE DELIVERY CENTRES
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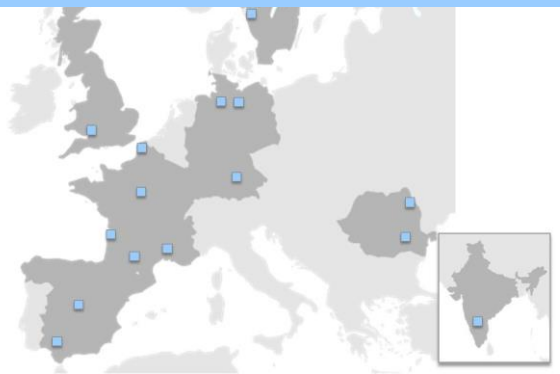


Aerospace main customers

AIRBUS

AIRBUS Military

DASSAULT

SAAB

MAHINDRA

STA Singapore Aerospace

ENGINEERING SERVICES

MECHANICAL STRUCTURAL

ELECTRONICS ELECTRICAL Design

TESTS & INTEGRATION

Project management

Configuration Management

Methods and tools

SYSTEMS DESIGN

STRUCTURAL DESIGN

STRUCTURAL Analysis

FATIGUE & DAMAGE TOLERANCE

CABIN DESIGN

MANUFACTURING ENGINEERING

Jig & Tools

Technical Publications

CUSTOMER SUPPORT

Structural Experience: FUSELAGE

A380 Fuselage

Design and Stress analyses

Section 14, 15 Surround Shell

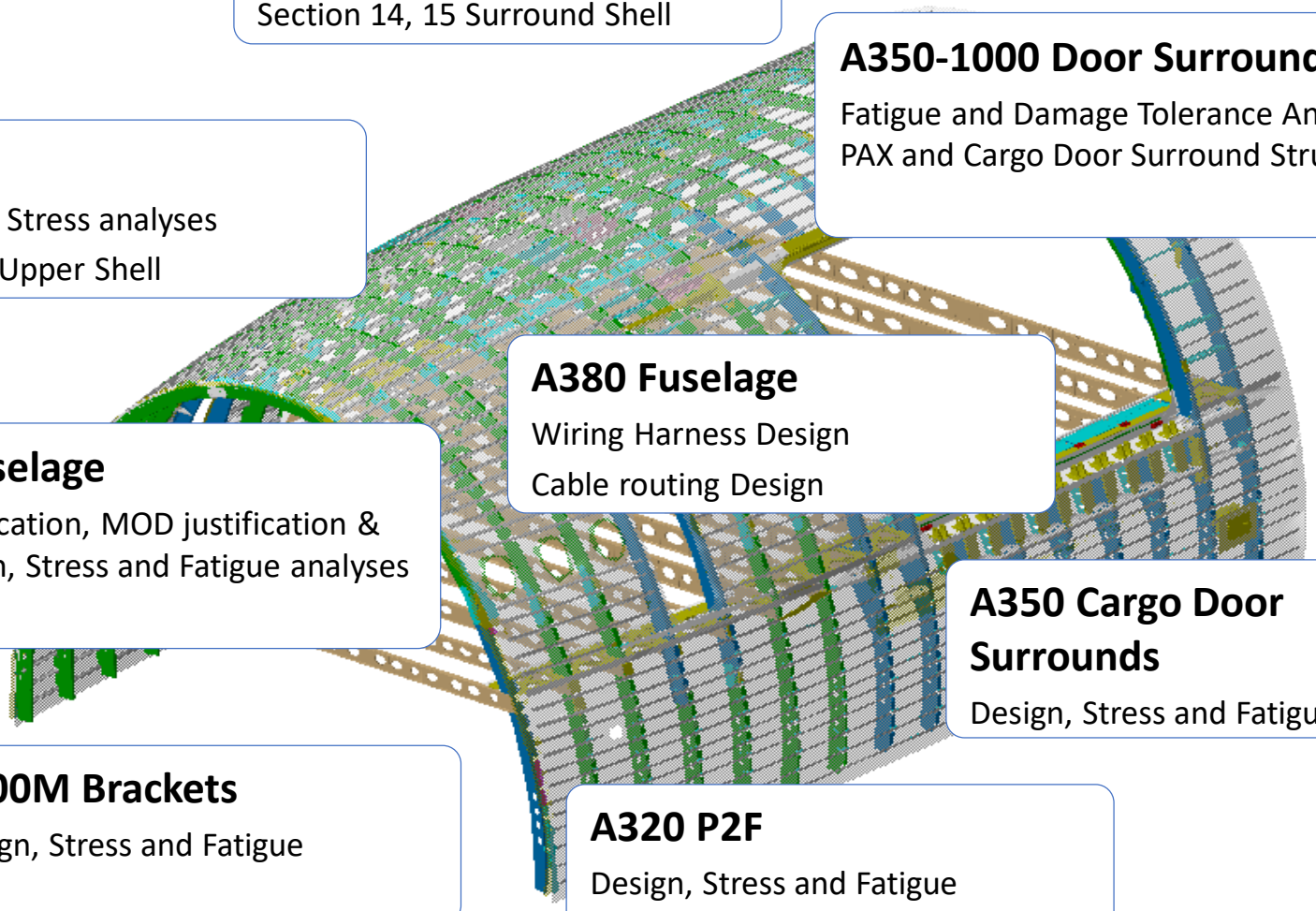
A350-1000 Door Surrounds

Fatigue and Damage Tolerance Analysis for PAX and Cargo Door Surround Structures

A380F

Design and Stress analyses

Section 13 Upper Shell



A380 Fuselage

Wiring Harness Design

Cable routing Design

A380 Fuselage

Type certification, MOD justification & certification, Stress and Fatigue analyses

Section 13

A350 Cargo Door Surrounds

Design, Stress and Fatigue

A400M Brackets

Design, Stress and Fatigue

A320 P2F

Design, Stress and Fatigue

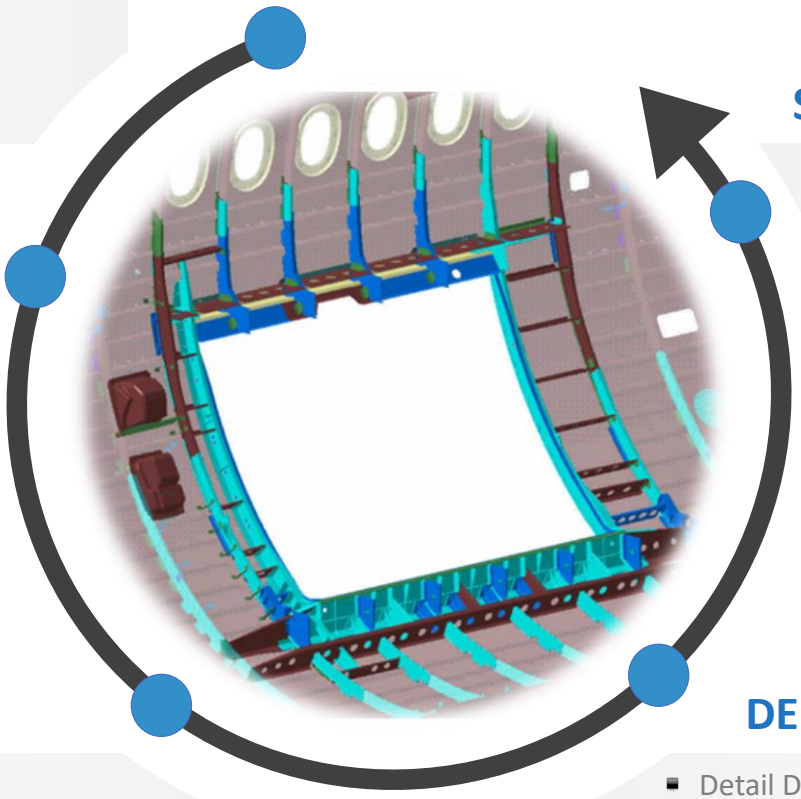
LIFE CYCLE SUPPORT

FEASIBILITY

- Research and development
- Pre-studies & preparation
- New technology development

CONCEPT

- Conceptual Design
- Cost & weight optimization
- Definition of interfaces
- F&DT Analysis



DEVELOPMENT

- Configuration management
- System optimisation
- Risk assessments
- Conceptual to Detail Design

SUPPORT

- DQNs & concessions
- Quality Assurance
- Customer Support

DEFINITION

- Detail Design Data transfer
- Manufacturing Engineering
- Production Support

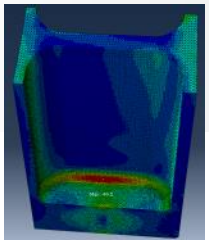
STRUCTURAL ANALYSIS

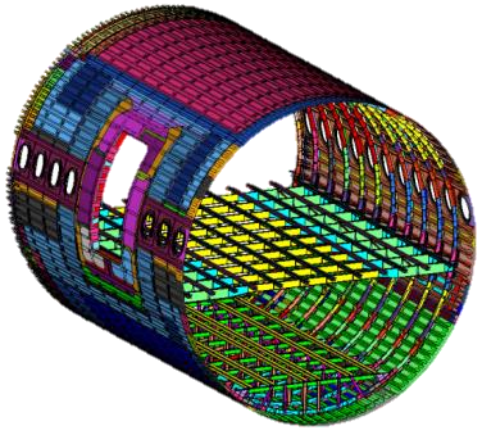
RESEARCH & DEVELOPMENT

- Development of methods
- Test support

LINEAR STATIC

- Static analysis (Metallic & Composite)
- Pre-sizing & sizing
- Preparation and check of certification and justification dossiers



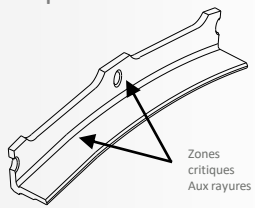


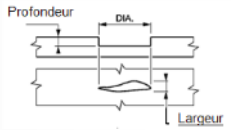
FATIGUE & DAMAGE TOLERANCE

- Damage assessment & Crack growth analysis
- Composite damage tolerance

SUPPORT

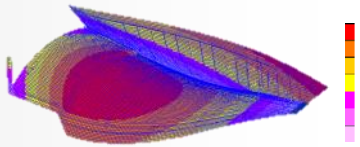
- Concessions
- SRM preparation
- Repairs





NON-LINEAR

- Sonic fatigue
- Vibration & resonance
- Crash & Vulnerability



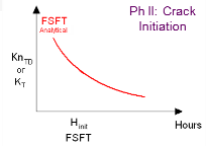
FATIGUE & DAMAGE TOLERANCE

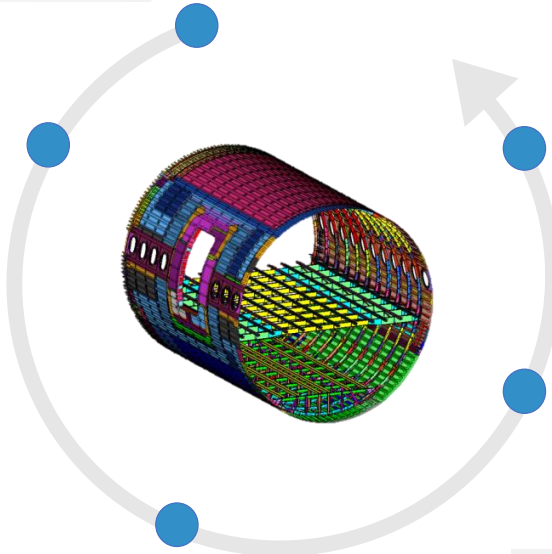
RESEARCH & DEVELOPMENT

- Development of methods
- Fatigue Test plan and result valuation of Coupon Test, Component Test, Full Scale Fatigue Test

F&DT ANALYSIS

- Durability / Initiation Fatigue Life Analysis
- Fracture Mechanics / Crack Propagation Analysis
- Residual Strength Analysis
- Fatigue Spectra Development





SUPPORT JUSTIFICATION

- Justification for metallic part certification, Stress Dossier, ACD6
- SRM Justification for Allowable Damage Limit and Repairs
- Justification for Concession and in-service damage finding
- Maintenance Program determination for the method, the threshold and the interval inspections.
- Principal Structural Element (PSE) definition and structure categorization
- Allowable fatigue stress definition for preliminary design
- Sonic Fatigue & Sustained Engine Imbalance

STRUCTURE

- Wing, Fuselage, Empennage, High Lift Devices, Control Surface, Landing Gear, Bracketing and secondary structures.

SOFTWARE

- ISAMI (Airbus)
- ISSY, SAFE (Airbus Germany)
- DAMTOL (Airbus UK)
- NASGRO (NASA)
- Repair 2000
- FML Tool

- NASTRAN
- PATRAN, FEMAP
- MATHCAD
- FORTRAN
- CATIA

Structural Experience

A320 P2F CONVERSION Design & Stress

Customer

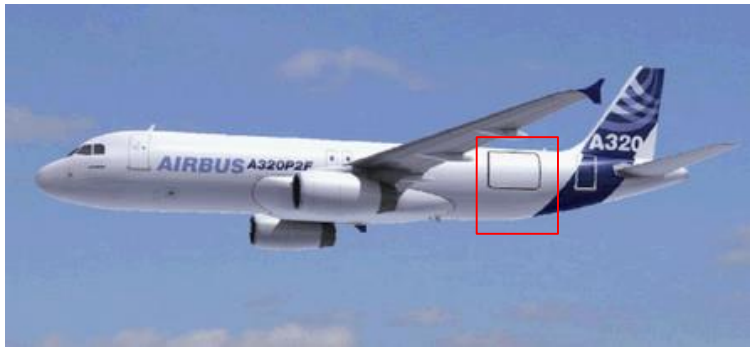
IRKUT Corporation

Tools

- CATIA V5
- TREND
- Nastran
- Patran
- VPM
- TAKSY

Environment

- AIRBUS Freighter Conversion (AFC)
- Parts belong to ATA52 Cargo Door and Cargo Door Installation and ATA53 Main Deck Floor
- A320-200
- Assembly of Rear Main Deck Cargo Door
- Assemblies of the Main Deck Cargo Door Mechanisms
- Main Deck Cargo Door Structure
- Main Deck Floor Reinforcements



Project Description / Scope

- New interface Main Deck Cargo Door with Rear Left Side Shell Fuselage
- New Main Deck Cargo Door Structure design, frames, beams, skins, piano hinges, complete structure assembly
- New Main Deck Cargo Door Mechanisms, Latch and Lock , Open / Close Systems
- GFEM new model creation
- DFEM and hand calculations
- New Cargo Door Mechanisms kinematic
- New Main Deck Floor Assembly design

Structural Experience

A320 P2F CONVERSION Fatigue

Customer

IRKUT Corporation

Tools

- CATIA V5
- Nastran
- Patran
- Microsoft Excel

Environment

- AIRBUS Freighter Conversion (AFC)
- Parts belong to ATA52 Cargo Door and Cargo Door Installation and ATA53 Main Deck Floor
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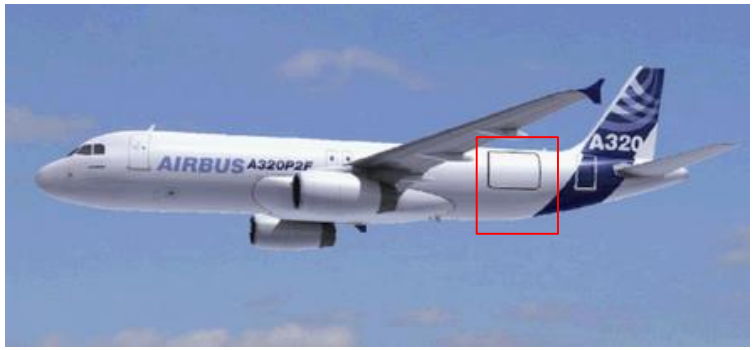

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- New Main Deck Cargo Door Mechanisms, Latch and Lock , Open / Close Systems,
- GFEM new model creation
- DFEM and hand calculations
- New Cargo Door Mechanisms kinematic
- New Main Deck Floor Assembly design
- Fatigue justification

Structural Experience

Project Description

ATA 53 – A320/321 P2F - AFT *FUSELAGE - S15, S17, S18*

Environment

A320/321
Primary Structure

Tools

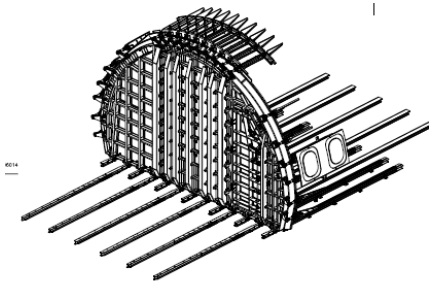
CATIA V5,VPM,TAKSY CCD, Zamiz, ASACOS, NASTRAN,PATRAN, MS-Office

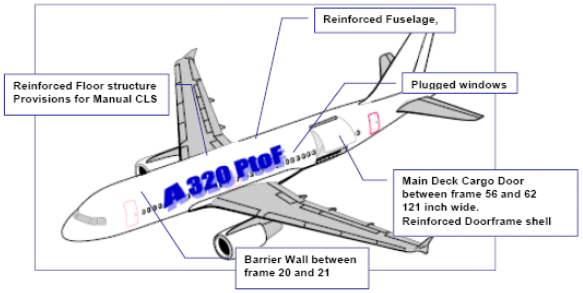
Check Criteria Design:

- Check of Weight Breakdown
- Check of BOM (Standard Parts valid in ESDB, consistency with Design, ...)
- Check Interfaces (work around between CATIA and CCD TBD)
- Check Design if it is in line with RSDP's (Edge margin, rivet pitch, stepping, ...)
- Clash Detection
- Consistency check of Deliverables and manage data transfer via DEX server from IRKUT to TBESR

Check Criteria Stress:

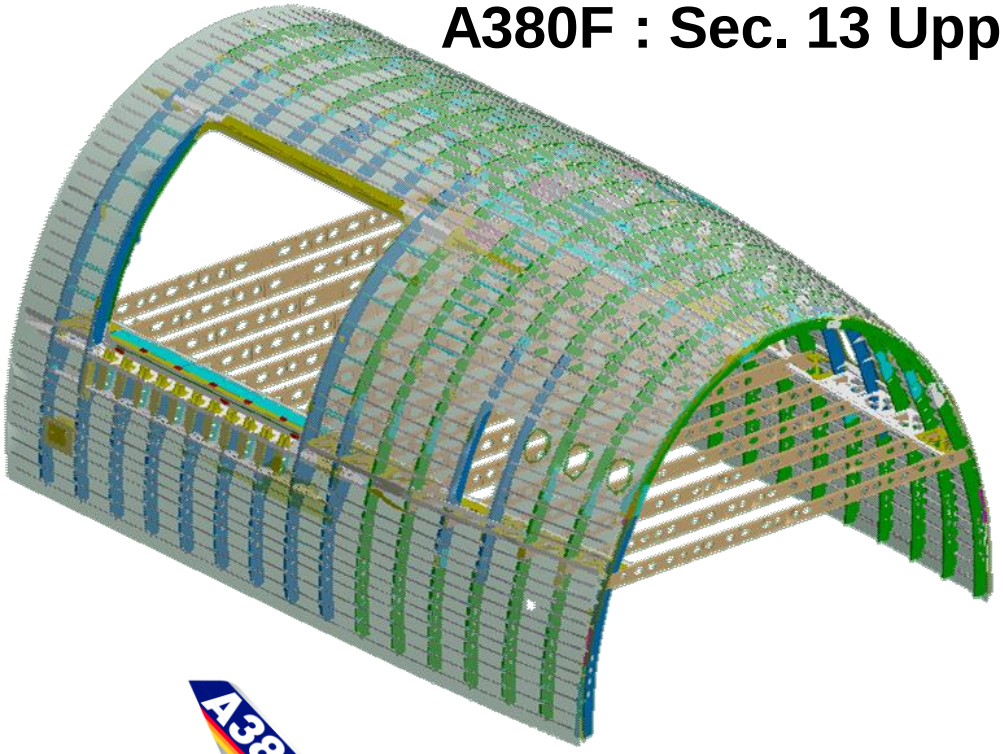
- the used methods are provided by Airbus (e.g. HSB)
- additional justifications are necessary
- the content of the stress dossiers is in line with the criteria from the CLDB
- the input consistency of delivered 2D drawings, global FEM model and justification input data
- the results are acceptable (RF>1)

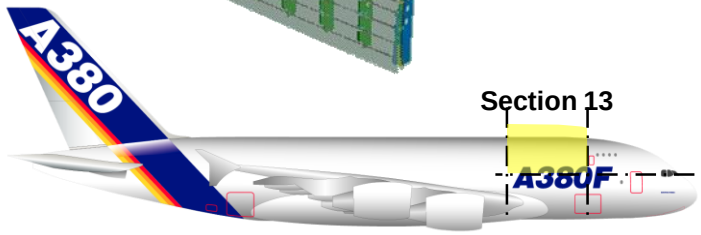




Structural Experience

A380F : Sec. 13 Upper Shell – Stress and Design





FPP (Fixed Price Project)

Context :
Design and analysis of S13 Upper Shell of the A380F (Technology: GLARE)

Volume :
120.000 hours (40FTE - 2 years)

Domain :
Primary structure (frames, panels, stiffeners...)

Nature of the activity :
50% Design – 50% Stress

Specifics :
Use of composite technologies for the realisation of the fuselage skin in GLARE

Design Tools :
Catia V4 - VPM
Stress Tools:
NASTRAN/PATRAN
ISAMI

Structural Experience

A350-1000 Cargo Door Surrounds

Customer

Premium AEROTEC

AIRBUS America

Tools

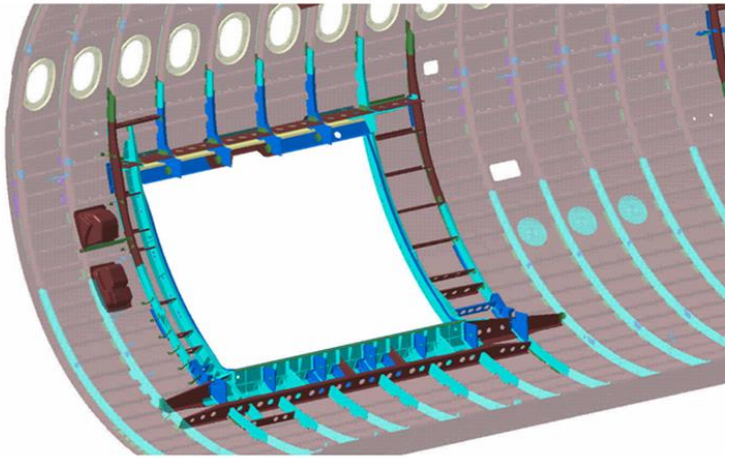
- CATIA V5
- PDMLink SSCI
- A350 VPM
- ISAMI
- Patran / Nastran
- VBA Macros

Contract

75.000 hours
2 years
10 design engineers
13 stress engineers

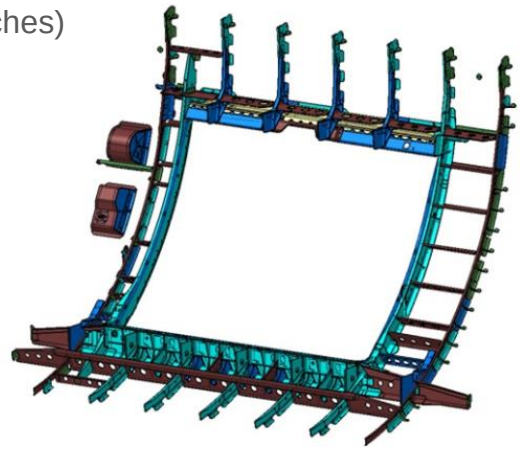
Environment

- A350-1000 Cargo Door Surrounds S13-14 and S16-18
- Primary and Secondary Structure
- Stress / Design
- Development MAT B + C, incl. CRs, Design Principle, DQN, Concessions



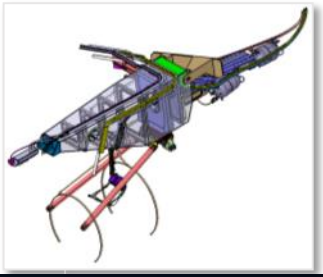
Project Description / Scope

- Design and Stress Analysis of Fwd and Aft Cargo Door Surround
- Method Development for CDS analysis
- Door Frames in new technology (CFRP and Polar Patches)
- Support from Mat A all the way to Aircraft Certification
- Preparation of Certification Reports and Studies

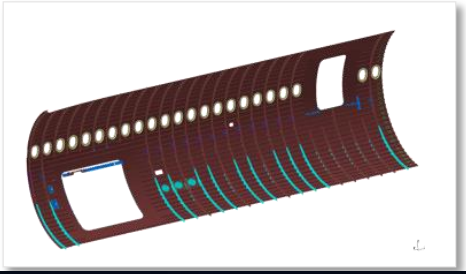


Lifecycle Presence in Structural Domain

A30x Pylon

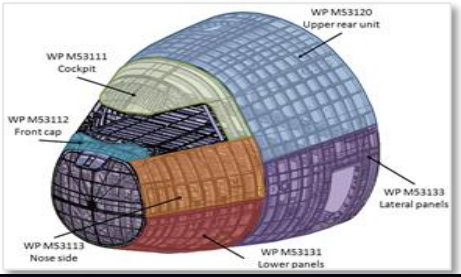


A350-1000 S13/14



A350 FTB Pylon

A400M NF SRM



Thank you for your attention

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