

## Collaboration in Aircraft Design

2. CPACS/RCE Symposium  
4. – 6. December 2012  
Integrated Design Lab  
Hamburg, Germany

## 2. CPACS/RCE Symposium Program

### Preliminary Program Outline

4. 12. 2012	<b>Workshop:</b> CPACS/RCE Release Kit The basics of the Release Kit See next page for details
5. 12. 2012	<b>1. Day Symposium</b> Review 1. Symposium Introduction new participants Experiences CPACS/RCE
6. 12. 2012	<b>2. Day Symposium</b> Design Challenge Outline Validation Industry Outlook

During the first symposium in March 2012 participants presented and discussed several aircraft design tools and technologies. The second symposium continues on these items and will focus on three main topics:

- Design challenge NSA
- Experiences with CPACS/RCE
- Validation of design tools

A one day workshop concerning the CPACS/RCE-Release Kit will be held on the first day of the symposium. The workshop aims at new users of the system and the basics of the Release Kit are outlined.

The auditorium is open to participants from industry, research and academia. Participants will be asked for contributions prior to the symposium.

## New Single-Aisle Aircraft Design Requirements

Due to the estimated growth of air traffic and rising economic and ecologic needs, the challenge for a new single-aisle aircraft for entry into service in 2025 is increasing. The below mentioned requirements target for a successor single-aisle aircraft delivering as much as 35% savings in cash operation cost compared to today's concepts.

The challenge is open for new concepts, technologies and breaking the rules (for good reasons even the requirements) to fulfill the economic and ecologic requirements.

### Design Requirements

PAX	190 all economy @ 30" pitch 135 kg/pax payload capacity for high density layout @ 28" pitch
Range	2000 NM (90% of flights within Europe and USA < 500 NM range). Technical means to enable up to 2900 NM range
TOFL	2000 m, SL, MTOW, ISA +15°C
LDGFL	1500 m, SL, MLW, ISA +15°C
Mach	0,79
Initial Climb/ Max. Altitude	FL 350 / FL 410
Span	Max. 36m or technical means to achieve ICAO class C
Noise	-5 dB cum. vs. Chapter 4
Fuelburn	-25% versus A320 (CFM) 2009
Emissions	Near zero emissions at gate and during taxi
CoC	-35% versus A320 (CFM) 2009

The symposium will take place at the Integrated Design Lab in Hamburg, Germany. An additional social program will take place on the evening of the 5<sup>th</sup> December.



This flyer is distributed early in time to give sufficient planning time for international travel. Further information, a detailed schedule and accommodation information will be available at [www.dlr.de/ly](http://www.dlr.de/ly) in time.

The symposium is open to anyone, free of charge, who is interested in Collaboration in Aircraft Design. We kindly ask you to sign up for the symposium via email to:

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# CPACS/RCE Workshop

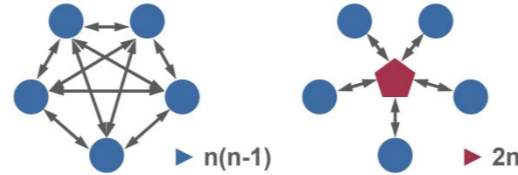
On the 4.12.2012 a workshop on CPACS and RCE for CPACS takes place in the Integrated Design Lab in Hamburg. The workshop aims for users that are new to the CPACS/RCE environment. In the morning talks are given on the basics of each component in the system. During the afternoon attendees can participate in a „hands-on“ demonstration of the release kit and start working on their own designs.

## Start 10:00am, Integrated Design Lab

10:00 – 11:00	Integration in RCE for CPACS Markus Kunde, DLR e.V.
11:00 – 12:00	CPACS / VAMPzero Daniel Böhnke, DLR e.V.
12:00 – 13:00	Lunch
13:00 – 15:00	„Hands-on“ Demonstration All

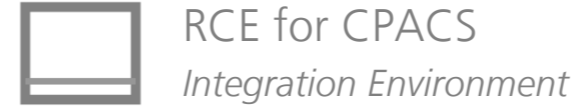
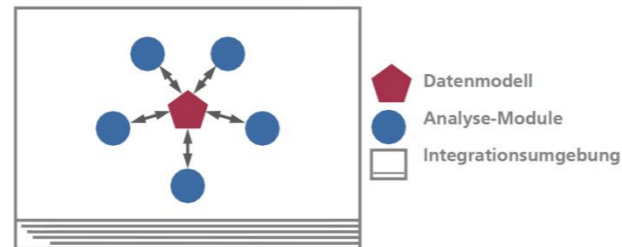


Since 2005 DLR develops the Common Parametric Aircraft Configuration Schema, short CPACS. It contains a parametric description of aircraft configurations as well as the complete transport system, e.g. fleet and airport descriptions.



The number of interfaces in multi-disciplinary aircraft design is crucial for a flexible and efficient flow of information. Along with CPACS the number of interfaces between analysis modules is not only reduced but also do these become replaceable, as all adapt to one common definition.

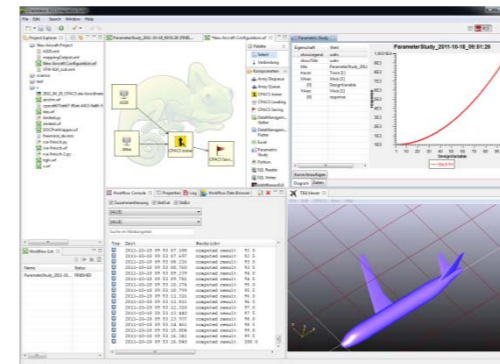
The CPACS format allows the automatic generation, validation and documentation of data-sets. As a part of the Release Kit, CPACS format, documentation and sample configurations are made available.



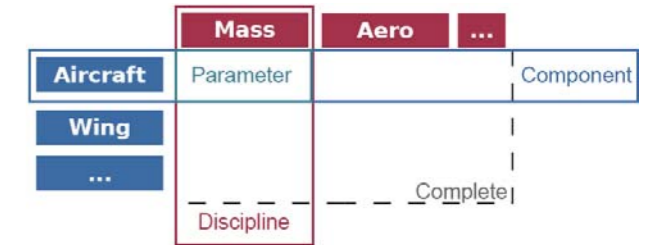
Integrating multi-disciplinary competences in aircraft design poses a challenge. This accounts not only for the disciplinary part but also for the technical-infrastructure part of the integration. To enable engineers to concentrate on their disciplinary challenges DLR developed the distributed integration environment Chameleon. It supports engineers in the design of new aircraft configurations or in the optimization and assessment of missions to be flown. For this reason, design and analysis modules are integrated in Chameleon.

The base of RCE for CPACS is formed by the software framework RCE (Remote Component Environment), which is also being developed by DLR.

RCE for CPACS is a part of the distributed Release Kit. With its help the engineer is able to integrated distributed multi-disciplinary competences in aircraft design without handling technical-infrastructure aspects. RCE for CPACS is available under open source licenses.



As a first possibility to analyze and generate CPACS files, DLR developed the conceptual design module VAMPzero. It is a part of the Release Kit and available under open source license.



VAMPzero is based on well-known handbook equations and has been specifically developed to work in combination with the CPACS format. It is able to interpret more detailed information as well as generating new CPACS data-sets.

Furthermore, DLR wants to provide further open analysis modules with CPACS interface via RCE for CPACS. One of the analysis modules to be named is Tornado.

