



„ Small Aircraft Transportation in the Future - Roadmap Conference ILA”

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INDUSTRIAL CONSEQUENCES AND COOPERATION ON SAT MODE

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„INDUSTRIAL CONSEQUENCES AND COOPERATION ON SAT MODE”



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- ❖ Design/production qualifies,
- ❖ Total production volume possible in Europe,
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Meeting Societal and Market Needs

- European citizens are able to make **informed mobility choices**
- **90% of travellers within Europe are able to complete their journey, door-to-door within 4 hours.**
- Flights arrive **within 1 minute** of the planned arrival time
- Air traffic management system is capable of handling **25 million flights** a year in Europe
- A coherent **ground infrastructure** is developed



Inventory of industrial capabilities

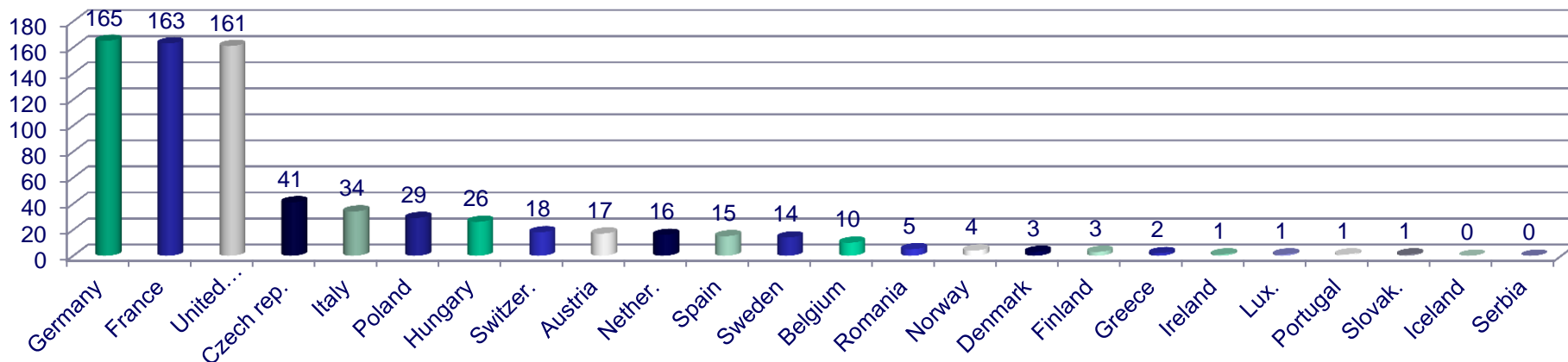
- ❖ Four groups were created
 - **Manufacturers (with or without POA)**
 - **Design organizations (with or without DOA or ADOA)**
 - **R&T / universities**
 - **Consulting service and Others**
- ❖ Information sources
 - ✓ EASA
 - ✓ International projects from the 7th framework program
 - ✓ Individual companies
- ❖ These four groups include companies and institutions oriented on aviation industries
 - Airframe, Engine, Avionics and IT technology, Components, ATM systems, Airport systems, System manufactures, Maintenance (with or without Part 145), Training (with or without Part 147, Part 66), Safety and Security, Research and Development
 - International projects (matrix System/Technology)
 - System – Airframe(wing), Engine(propeller), Avionics, ATM/Airport, others(focused on aviation)
 - Technology – Design and Development, Manufacturing, Certification and Operation, Maintenance, Safety and Security, Environment

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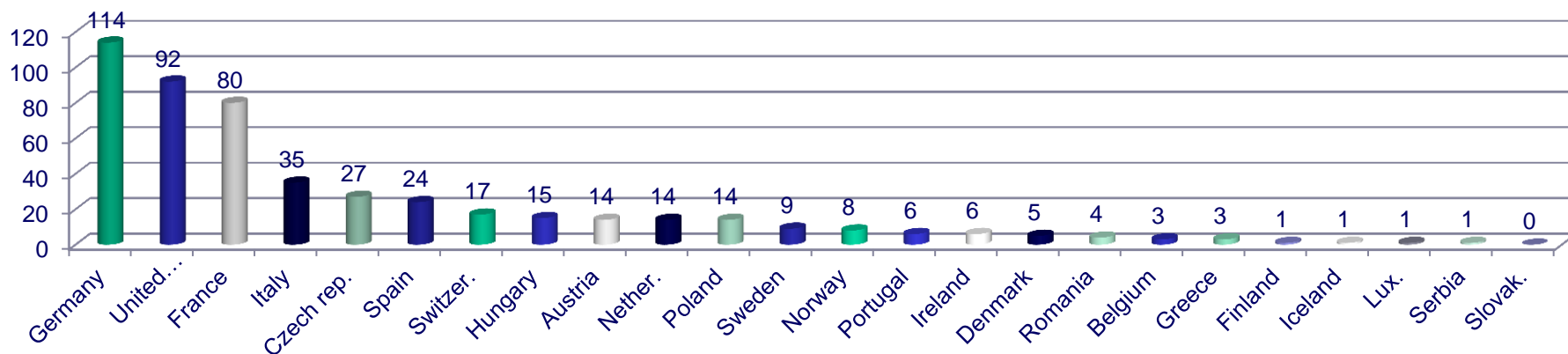


Inventory of industrial capabilities

Number of manufactures with or without POA



Number of Design organizations with or without DOA (Part 21) or Alternative Design Organisation ADOA



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Design/production qualifies

❖ In the SAT project the capabilities for small aircraft production, airframes (wings) and small engines, exploitable within the scope of door-to-door transport, are assessed.

The analysis shows:

- **17** manufacturers of small aircraft according to CS-23, CS-27 and CS-29 (including **5** manufactures of helicopters),
- **16** manufacturers ultra-light aircraft (including 1 manufacture of UL helicopter),
- **17** manufacturers of piston engines (including 1 manufacture of Wankel engine),
- **5** manufacturers of turboprop engines,
- **6** manufacturers of jet engines,
- **33** manufacturers of avionic and IT technology
- **11** manufacturers focused on production of airframe parts for GA aircraft,
- **2** manufacturers focused on production of engine parts for GA aircraft

In total gives number of: **107** manufacturers.

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Design/production qualifies

❖ SAT consortium (14 Partners) include following industrial Partners:



With possibility close cooperation in area SAT-in –CS2



GE Aviation



imagination at work

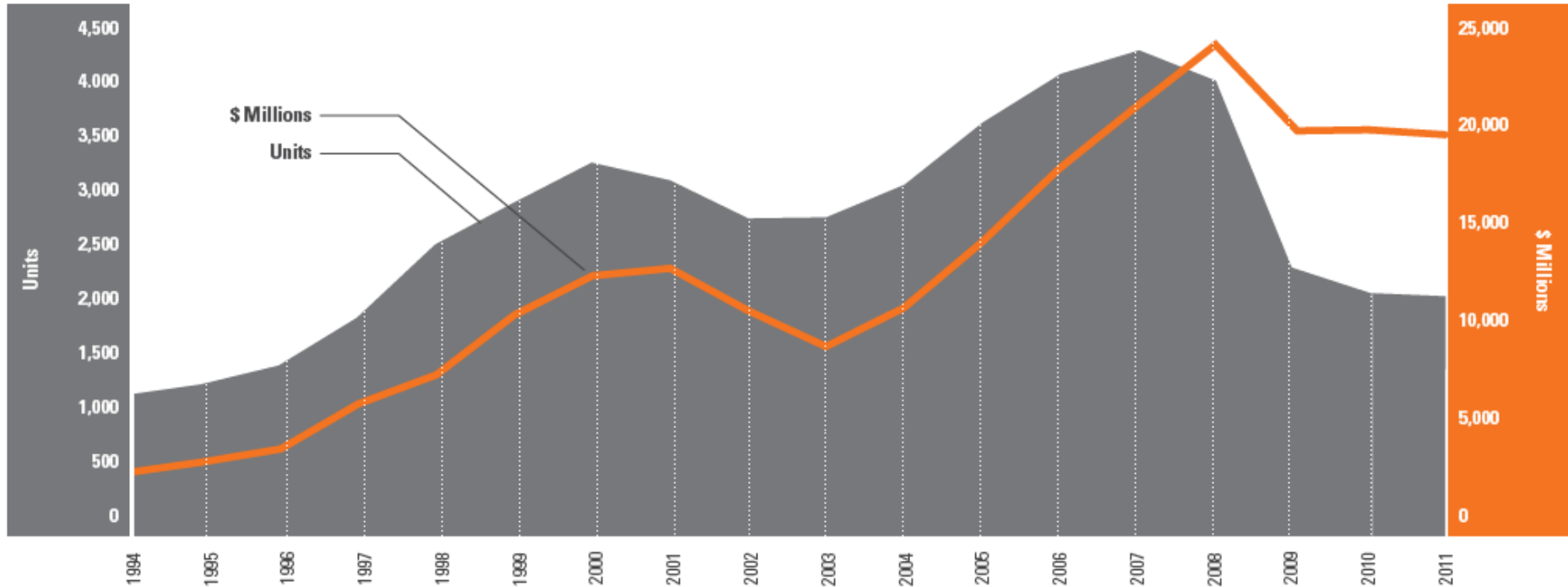


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Total production volume possible in Europe

General Aviation Airplane Shipments and Billings Worldwide (1994-2011)



Source: GAMA

Over **320,000** general aviation aircraft worldwide, ranging from two-seat training aircraft to intercontinental business jets, are flying today; over **223,000** of those aircraft are based in the United States.

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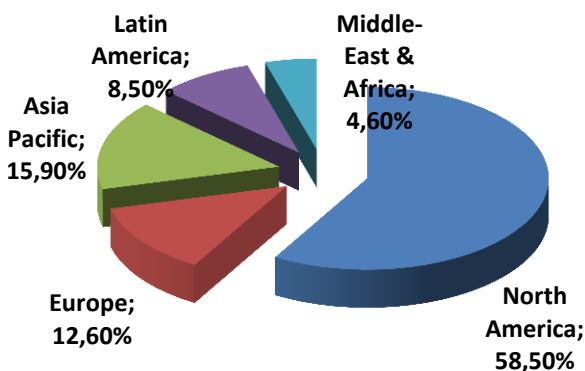
Total production volume possible in Europe

Delivery by Region (in Percent of Total) for General Aviation Airplane Shipments by Type of Airplane Manufactured Worldwide (2007-2011)

Source: GAMA

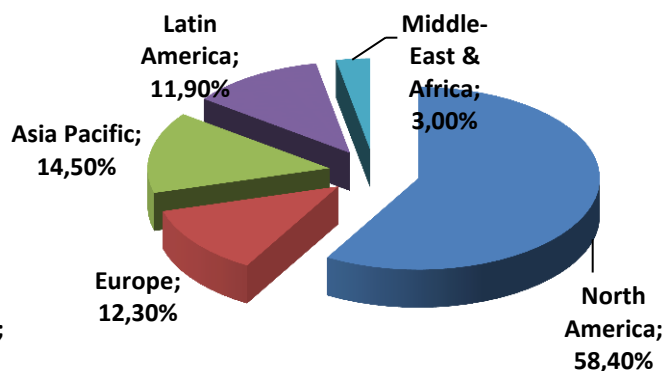
Year	Piston					Turboprop					Business Jet				
	North America	Europe	Asia Pacific	Latin America	Middle-East & Africa	North America	Europe	Asia Pacific	Latin America	Middle-East & Africa	North America	Europe	Asia Pacific	Latin America	Middle-East & Africa
2007	66.5	16.3	9.2	5.4	2.7	57.2	16.3	8.6	14.4	3.4	58.3	24.9	4.2	7.5	5.2
2008	68.1	15.2	7.5	7.3	2.0	57.3	21.9	6.0	7.4	7.4	53.8	25.9	4.7	9.4	6.3
2009	59.4	21.2	9.5	6.8	2.8	57.8	17.5	8.7	8.1	7.8	49.4	26.3	8.6	9.2	6.4
2010	53.4	18.6	13.7	8.8	5.5	43.2	15.2	16.8	14.7	10.1	42.1	22.8	11.8	14.3	9.0
2011	58.5	12.6	15.9	8.5	4.6	58.4	12.3	14.5	11.9	3.0	50.3	19.5	13.5	9.7	7.1

Piston (2011)



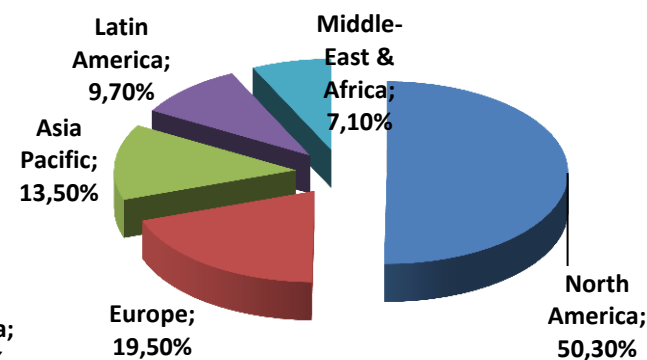
Europe: 108 units

Turboprop (2011)



Europe: 40 units

Bussines Jet (2011)



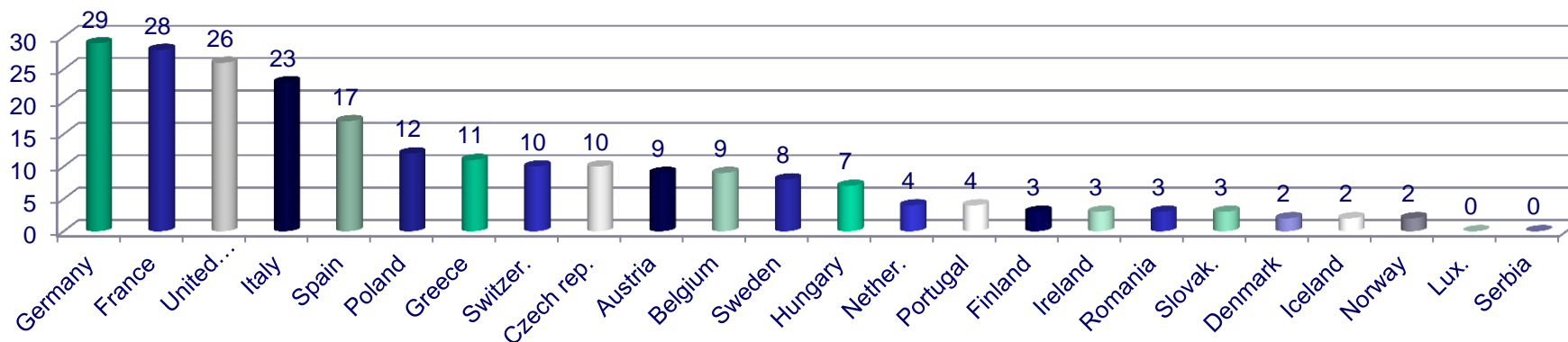
Europe: 133 units

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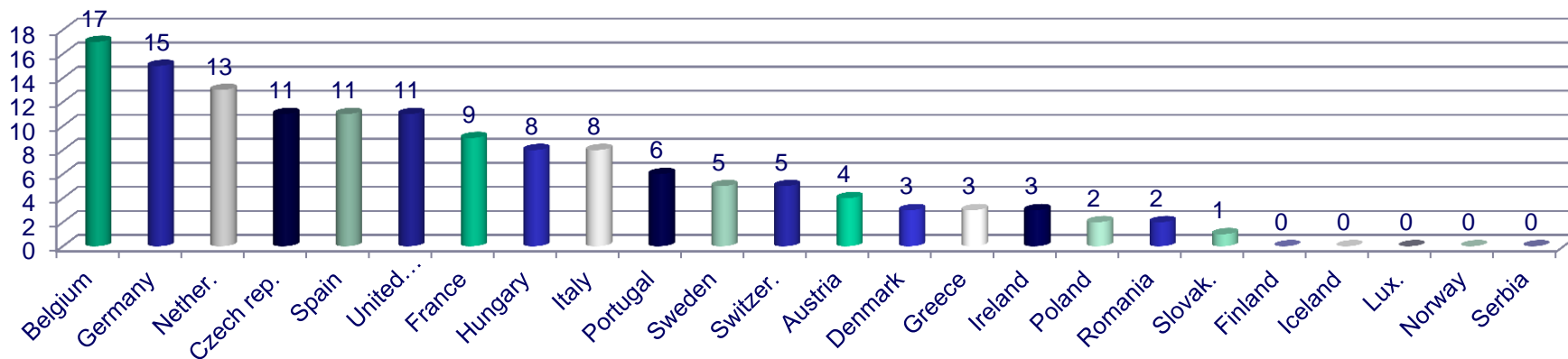


R&TD capabilities

Number of R&T / universities



Number of Consulting service and Others



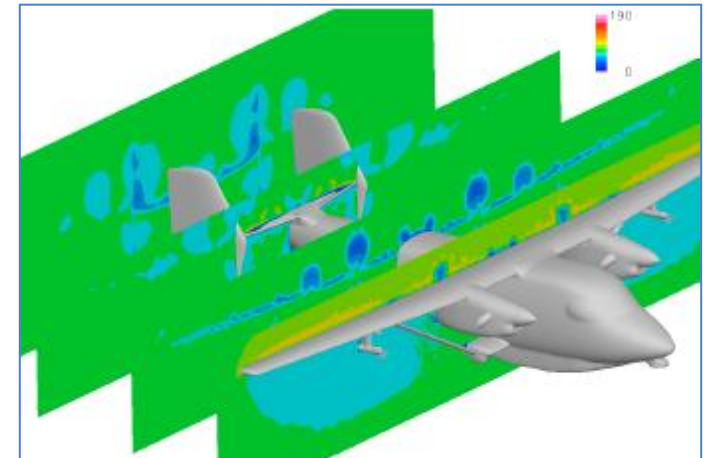
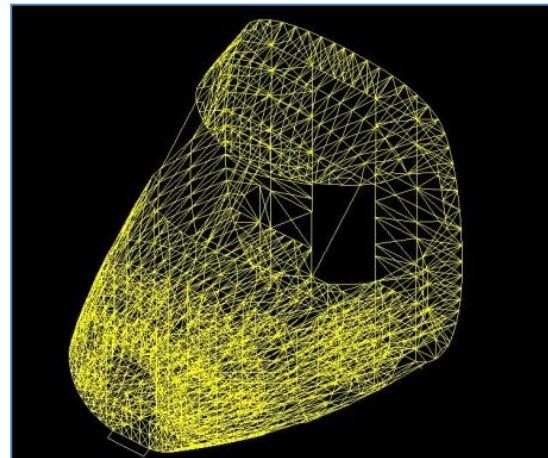
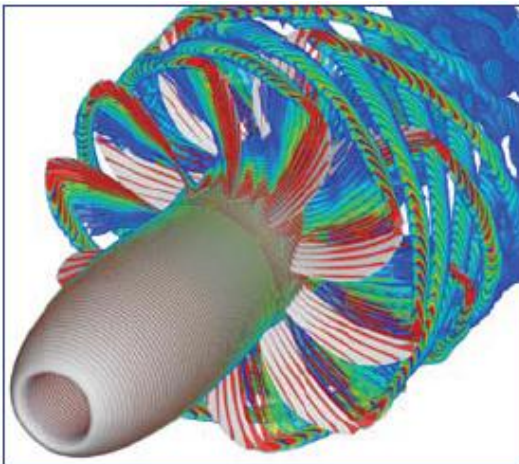
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R&TD capabilities

R&TD activities and relevant infrastructures have to be ensured to grant:

- development of specific simulation tool for multidisciplinary simulation and optimization,
- step changes in small aircraft technology,
- development of new small engine technology,
- development of an ATM concept suitable for SAT system.



Issue of certification

New A/C requirements:

- ❖ Small aircraft should have safety levels comparable to large commercial A/C.
- ❖ New rules for pilot training, certifications and operations.
- ❖ Overcome small aircraft sensitivity to adverse weather
- ❖ Low cost certified operators for maintenance are needed.
- ❖ Improved weather awareness without on-board weather radar.
- ❖ Affordable solutions in the detection and processing of atmospheric phenomenon.
- ❖ Capability to operate with limited ATM services.
- ❖ Use of advanced technology (modern GPS, tablet, etc) for traffic and positioning awareness.
- ❖ Low cost Traffic and Collision Avoidance Systems (TCAS) providing guidance to the pilot to restore safe separation (ACAS)
- ❖ GPS-based approaches on secondary airports allowing IFR flights in and out without expensive ground-based systems.
- ❖ Use simulations as certification tools.

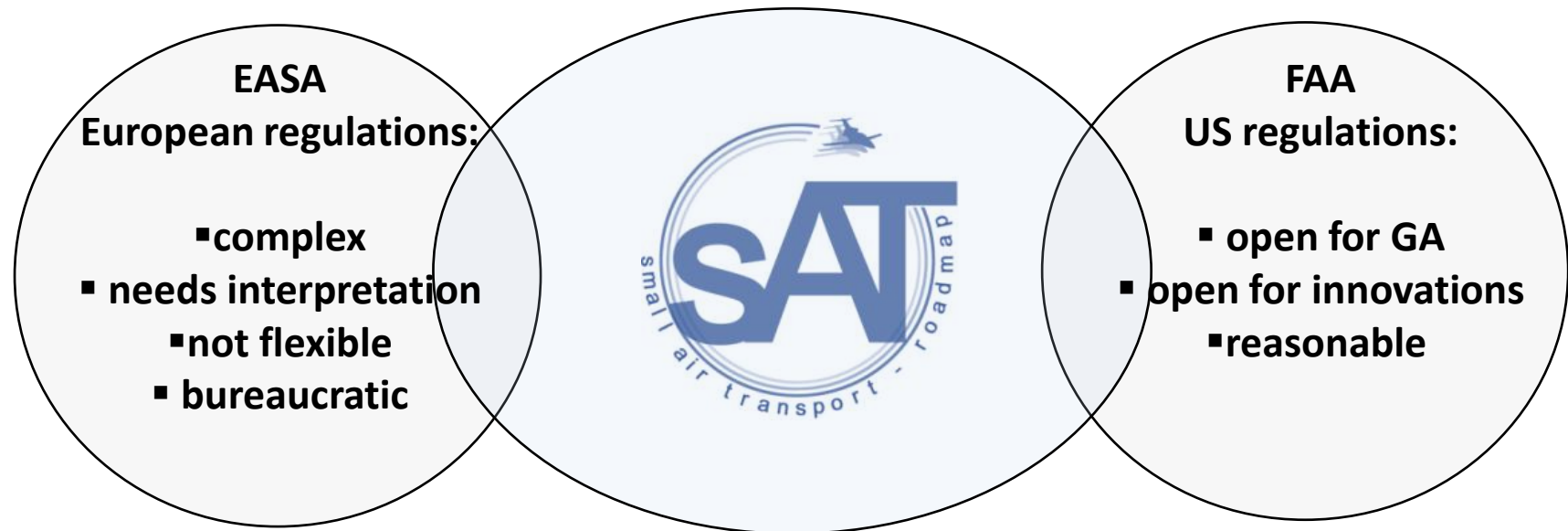
**The new A/C requirements will pose new challenges for certification.
Early engagement of the regulators is essential.**

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Issue of certification

Certification of aircraft, engine, aircraft unit, aviation personnel or organization is for most of companies quite a demanding activity from time, finances and administration point of view.



Reduction of these costs will enable a larger development of Small Aircraft Transport segment (SAT) in Europe and it will open the way to the development of new airplanes for small aircraft.

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“General aviation is an essential R&D laboratory for commercial air transport and industry in Europe; therefore, at a time where the European strategy for R&D is being defined for the next 7 years, its voice should be taken into account by EU”.

EGAMMA, Mr Nicolas Chabbert
Geneva, Switzerland, 16th May 2012

