



Next generation of global communication:
Satellite based 'ad-hoc networks'

Dr. Andreas Hausotter
Prague, 21.04.2016

Agenda:

- esc Aerospace - an overview
- business units
- Satellite based ,ad-hoc networks‘

esc Holding - structure



esc Holding GmbH

employees: approx. 95
 turnover 2015: € 9,6 m



esc Aerospace - companies



**esc Holding GmbH
(Munich)**

**esc Aerospace GmbH
Munich**

**esc Aerospace s.r.o.
Prag**

**sites
(currently being set up)**

**esc Aerospace SRL
Bukarest**

**esc Aerospace Sp. z. o. o.
Warschau**



Dr. Andreas Hausotter



Lars Weimer



Mathias Krüger



Richard Sysala

employees:

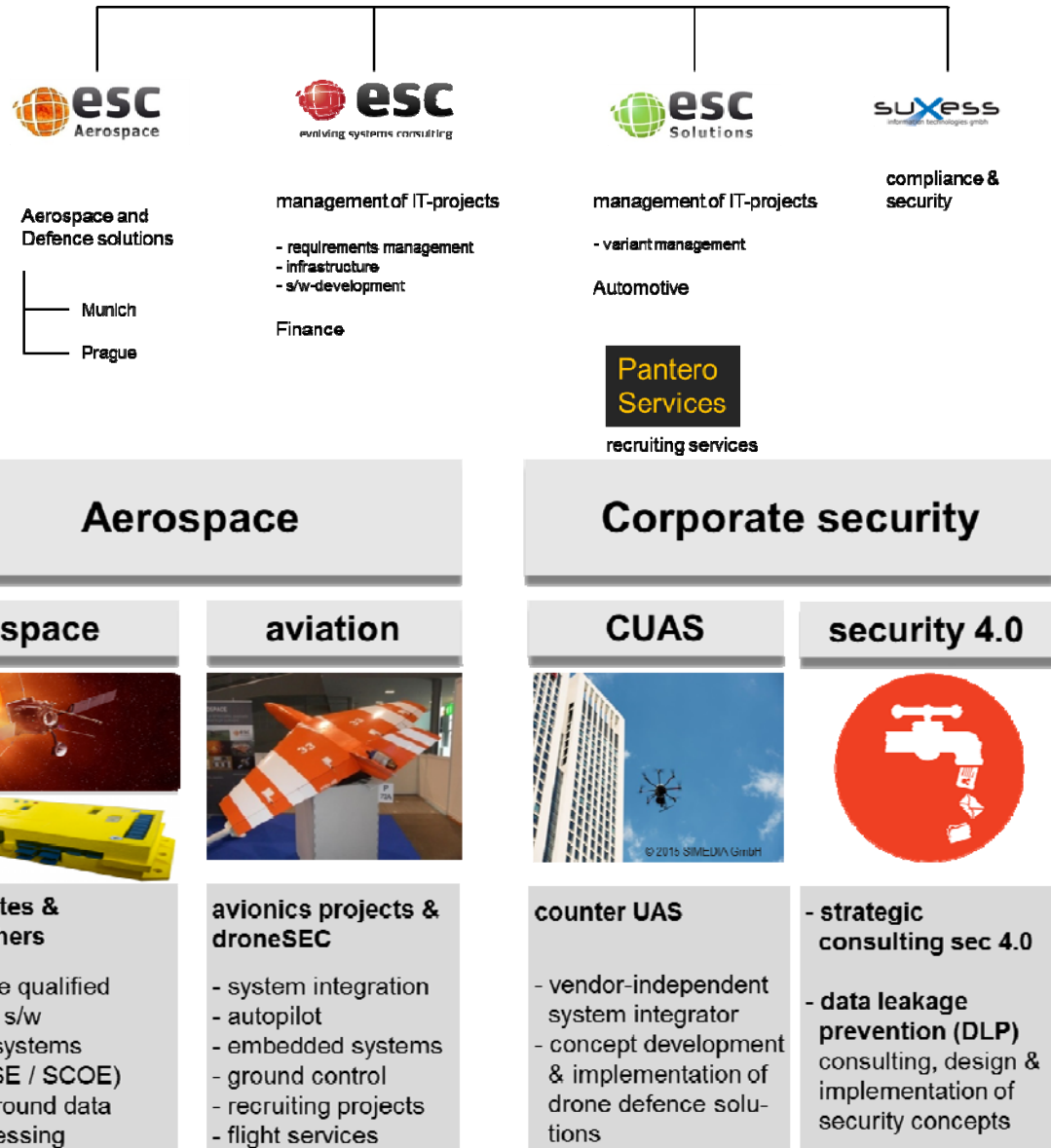
10

40

structure & BUs

esc Holding GmbH

employees: approx. 95
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business units

Aerospace

Corporate security

space

aviation

CUAS

security 4.0



satellites & launchers

- space qualified flight s/w
- test systems (EGSE / SCOE)
- on-ground data processing

avionics projects & droneSEC

- system integration
- autopilot
- embedded systems
- ground control
- recruiting projects
- flight services

counter UAS

- vendor-independent system integrator
- concept development & implementation of drone defence solutions

- strategic consulting SEC4.0

- data leakage prevention (DLP) consulting, design & implementation of security concepts

satcom ad-hoc communication network: Communication is the essence of all economical systems and social societies

Cars are bound to be



Each car will have an integrated
phased array satcom antenna,

and there are 1.000 million cars
around the world.

Accelerated progress in technology will lead to ...

intelligent and self-organizing ad-hoc communication
networks ...

... and by this the rules will change!

Each human will have at least 3
communication devices,

and there are billions of devices
through the internet of things.

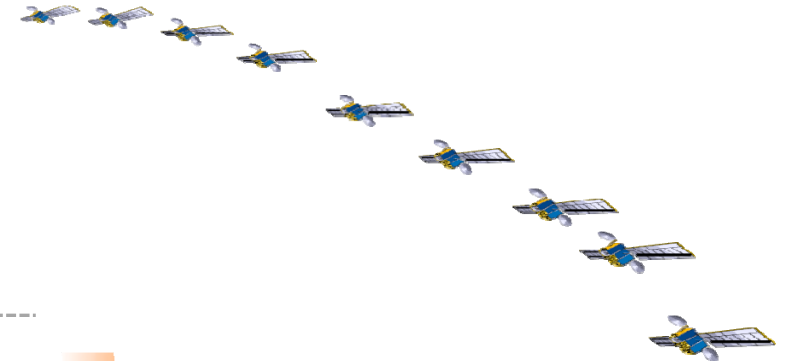
Each nation will invest into the
space technology,

and there will be millions of
satellites, ballons and low /
high flying drones.

Satellites are bound to be



satcom ad-hoc communication network: Next generation satcom



space

micro-, nano-, pico-satellites (autonomous)

(high) atmosphere

autonomous, solar-powered aircrafts, balloons and drones

upper airspace: 'commercial aviation'

standardized air traffic control, in future: autonomous air traffic

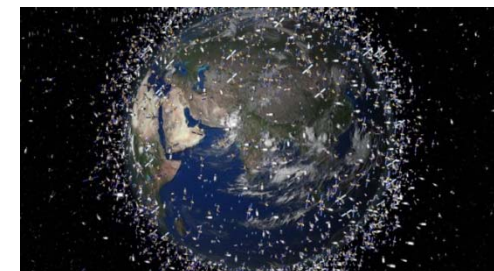
lower airspace

autonomous flight of regulated, commercial drones

road, rail & water traffic

autonomous, energy-efficient mobility

intelligent, self-organized satellite-based communication
-> clamp-and-joint basis for many technologies and applications (e.g. industry 4.0)



Global AdHoc Network Based on Satellite Communication

Goal

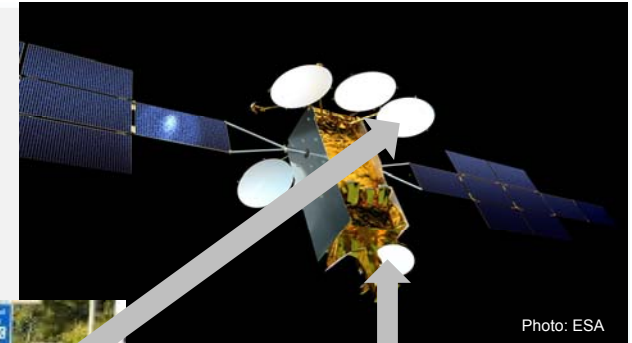
- High bandwidth, stable, scalable, reliable, always and world wide available network at moderate costs
- New generation of applications and services for the digital society

- wireless mobile ad hoc networks
- nodes create and join networks "on the fly" – anywhere, anytime
- self-configuring & dynamic
- nodes are free to move
- SatCom links on demand, established through flat antennas, steered electronically, tracking a moving satellite

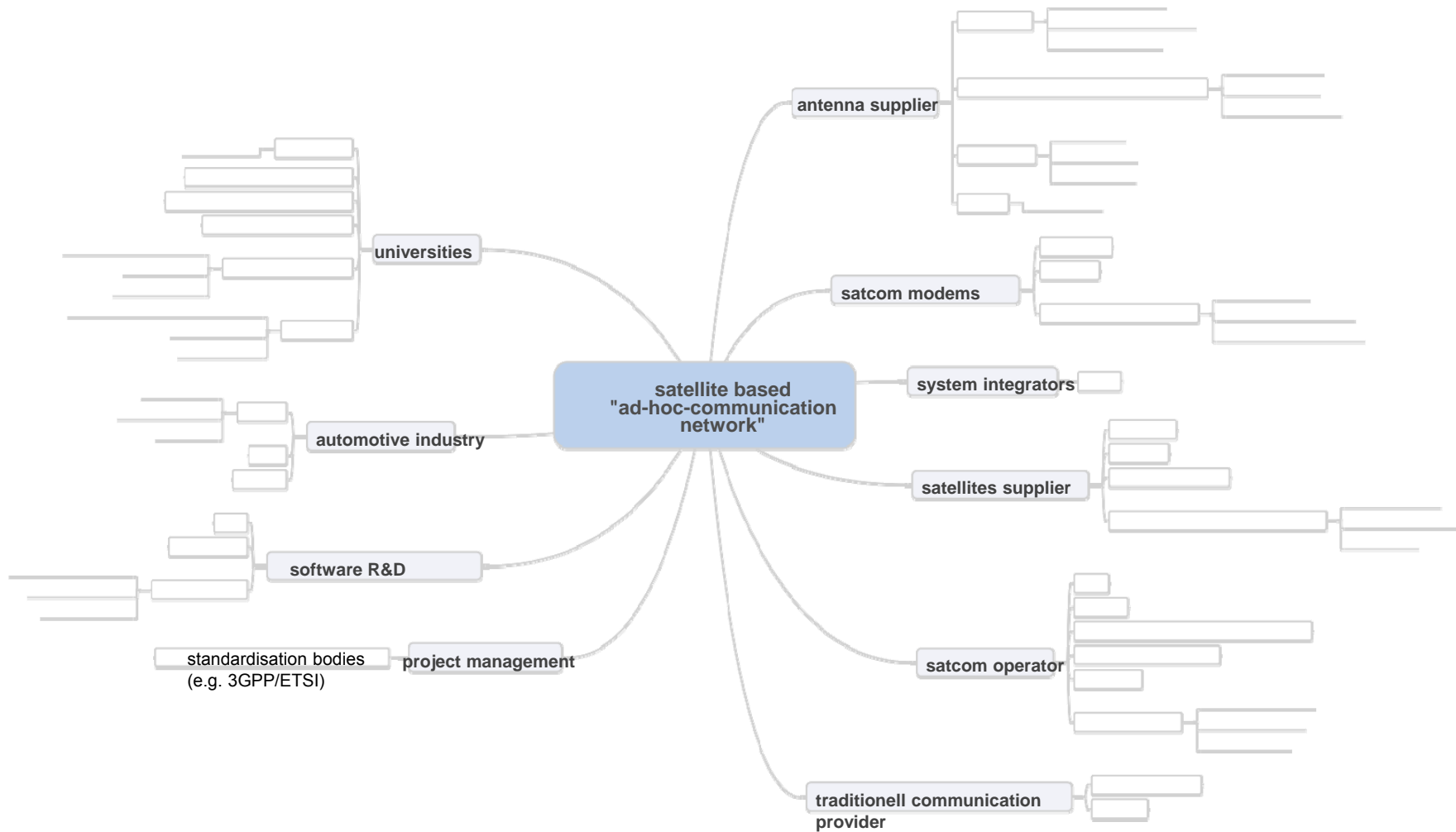
Only 10% of the Earth is covered with 4G/LTE networks!



This network provides true worldwide coverage through all kinds of mobile entities (nodes) with networking capabilities, e.g. billions of cars, satellites, airplanes, UAVs, balloons, personal mobile devices, devices through the Internet of Things



satcom ad-hoc communication network: project mind map



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