New Space Economy - Market Study Germany

February 2019

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Belgium

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Germany

www.spacetecpartners.eu

- Context and approach
- Supply Analysis: Finnish NewSpace Domains
- Recommendations

The NewSpace Economy taps into markets beyond traditional space

Project Context

- The NewSpace economy fuels the industrial transformation of industries using space data and technologies
- Finland has embarked on a New Space Economy programme to help start-ups to renew the space sector and manufacturing companies to seek growth, as well as businesses that utilise data.
- Business Finland wants to optimally deploy its network and resources to the benefit of the domestic NewSpace players
- Germany with its strong and export oriented industrial base has been **chosen as a pilot** for a structured approach in five sectors/industry domain
  - Connectivity and IoT
  - Urban development
  - Bioeconomy
  - Security
  - Space technology
- Business Finland wants to understand the **needs** of the German market, the **business opportunity** for Finnish companies and what **actions** can be taken in the German market

Business Finland has entrusted STP to perform the specified analyses

Supply Analysis

- **Spa** Space Technology
- **Bio** Bioe…
- **Urb** Urba…
- **IoT** Conn… & IoT
- **Sec** Security

Understanding the Finnish NewSpace domains

Demand Analysis

Relevance for Germany

Opportunities

German Industry Landscape

Collect and analyse relevant information from Finnish companies
Identify potential uses of Finnish solutions in the German market

Business Finland Offerings

BUSINESS FINLAND

Business Finland Support

Matching & Recommendations

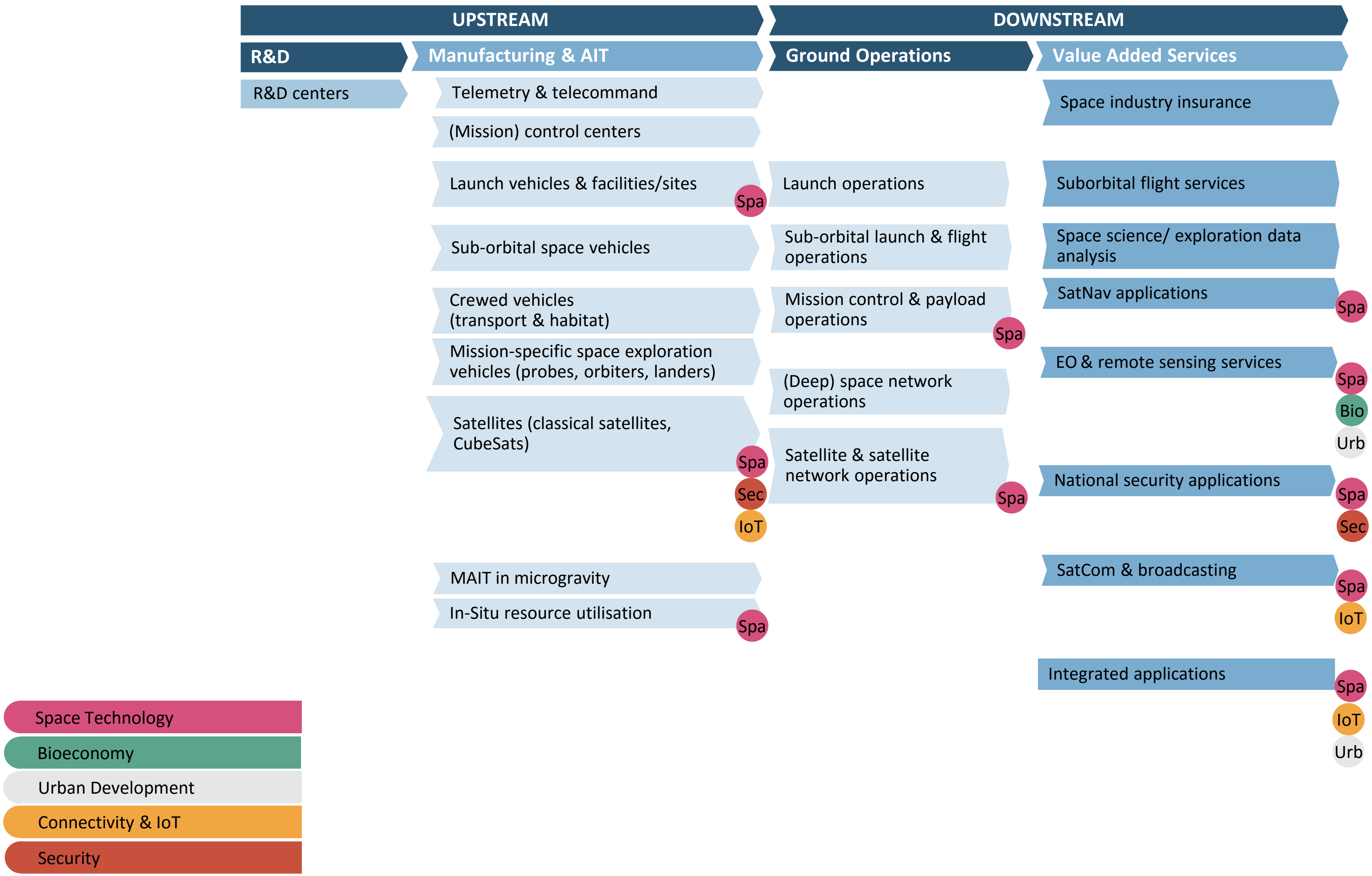
Define actions to create new business leads and help Finnish companies with matchmaking

- Context and approach
- Supply Analysis: Finnish NewSpace Domains
- Recommendations

NewSpace in Finland can be categorised into five industry domains

Spa	Space Technology	The development of space equipment and related systems – such as sensors, software, sub-systems, structures and components … etc.
Bio	Bioeconomy	Renewable biological resources from land and sea – such as natural resources & climate change monitoring, natural forest management, waste as a source of bioenergy, … etc.
Urb	Urban Development	Improvement and adaptation of infrastructure – relating to infrastructure development, urban planning & maintenance, population and refugee migration patterns,… etc.
IoT	Connectivity & IoT	Communication solutions, enablers and infrastructure – such as autonomous mobility, asset management, tracking & logistics, … etc.
IoT	Security	Protection of national resources and interests – such as safety and surveillance, monitoring of high value assets, maritime safety, coastline monitoring, … etc.

Finnish NewSpace Domains can be mapped against the space value chain



While the traditional space business is well developed in Germany, the NewSpace economy is still emerging

Traditional space in Germany

- One of the largest contributors to the European Space Agency's budget with 22.7% of the total budget (ISS, Launchers, etc.)
- Strong manufacturing base, enabling the industry supply chain transformation process
- Leading players in all business segments, from equipment manufacturers, material and component suppliers to system integrators and service providers
- Airbus & OHB are the backbone of large-scale European space projects in traditional space

Emerging NewSpace Scene

- Public funding programmes limited with very strict regulations on intellectual property rights
- Several European innovation schemes have been initiated and are run from Germany (e.g. Master's Competition)
- Home to some of the most successful ESA BICs (ESA BIC Bavaria has supported 96 start-ups)
- Many SMEs and VSMEs with export ambitions
- German space agency, DLR, focuses on network of facilitators, e.g. DLR INNOSpace & Komponenteninitiative (Export possibilities)
- Recent NewSpace momentum driven by the Federal Aerospace coordinator and industry associations (BDI)

Starting points for entry into Germany

Challenges/Competition

- DLR Space Agency predominantly supporting domestic industry
- SmallSat & leading component players (Berlin Space Technologies, German Orbital Systems, Astro- & Feinwerktechnik, TESAT etc.)

Opportunities for Finnish NewSpace players

- Home of two large scale integrators (LSIs): Airbus & OHB
- Explore SSA, GovSatCom cooperation
- Explore cooperation with pre-existing control centre capability in Germany: ESOC, GSOC, Galileo, Planet, IABG (Military), Space Situation Centre
- Tap 5G Berlin innovation cluster (Fraunhofer Fokus)
- ESA contests, EU Horizon Prize for Launchers

Opportunities for Business Finland to support

- Engage through Nokia in DLR 5G activities
- SSA (Solar storms competence)
- Seek dialogue with German Centre for SSA on ICAO cooperation in SSA
- Leverage DLR initiatives for non-space outreach (e.g. INNOspace & Komponenteninitiative)
- Network in German clusters (e.g. bavAIRia e.V)
- Consider Finland Partner Stand at SpaceTech Expo Europe in Bremen
- Show presence at InnoSpace events

OHB SE Profile

Space Technology

Management

Marco Fuchs
CEO & Board Member

Business Development

Dr. Lutz Bertling
Board Member
Location: Berlin

Dr. Cornelius Schalinski
Deputy Head of Business Development
Location: Bremen

Timo Stuffler
Business Development
Location: Oberpfaffenhofen

Andreas Lindenthal
COO & Board Member
Location: Oberpfaffenhofen

Lionel Poncelet
VP EU-Affairs
Location: Brussels

Guy Perez
CTO/Board Member
Location: Bremen

Jochen Harms
Blue Horizon (LUX)
OHB Venture Capital (DE)
CEO

Key facts

- Founded in 1958 as a marine systems outfitter, shifted to space technology in 1981, still largely family-owned
- Headquartered in Bremen, Germany, with 10 subsidiaries across the EU (5 in Germany)
- Provides technology services in the areas of space and aeronautic technology, telematics and satellite services
- Prime for Galileo, SAR-Lupe, Sarah and MTG

Areas of expertise

- Space Systems
  - Developing and executing space projects
  - Earth observation
  - Exploration/Science
  - Communication & Navigation
- Aerospace + Industrial Products
  - Developing and manufacturing small satellites
  - Propulsion systems
  - Optical & Security systems

Opportunities may lie in German agricultural & renewable energy industries

Bioeconomy

Agriculture

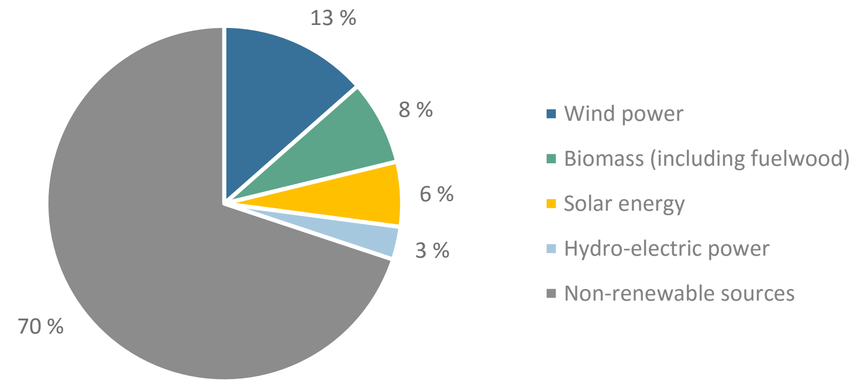
- 3rd largest importer and exporter of agricultural goods in the EU
- 4th largest agricultural producer in the EU
- Half of German land are farmed, of which
  - 90% managed by the owners themselves
  - 10% formed in partnerships, limited liability companies, cooperatives & private limited companies and cultivate over a third of Germany's farmland

Meet the community & key actors at the Internationale Grüne Woche in Berlin

Renewables

- Germany generates 30% of its energy need from renewables
- 18% of agricultural land is used for growing biofuels
- Germany saves around 7.3 million tonnes of emissions through the use of biofuels

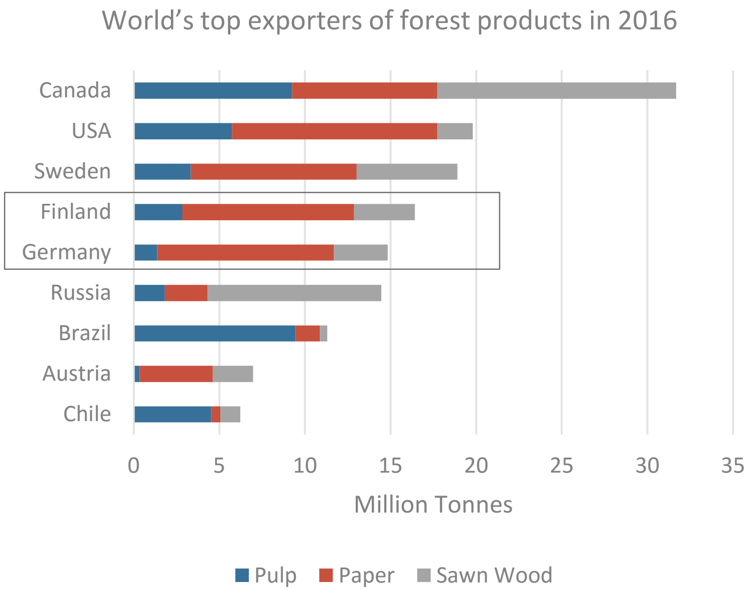
Percentage of Total Energy made up by Renewable Energy Sources in Germany



Source: Federal Ministry of Food and Agriculture, Agrarheute.com

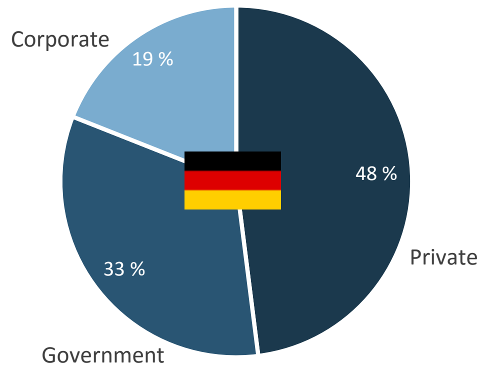
Finnish forestry service providers would have to adjust to the forestry business environment in Germany

While Germany and Finland have a similar export-orientation and product-mix….



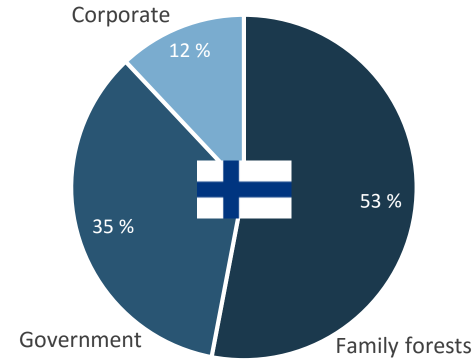
…. the ownership structure in Germany is very heterogeneous

The forests in Germany (approx. 11M ha) are distributed among approx. **2 million owners**



5,5 ha/owner

The forests in Finland (approx. 26M ha) are distributed among approx. **630,000 owners**



42 ha/owner

Source: EARSC, Bundeswaldinventur, Natural Resources Institute Finland

One path could be to explore cooperation with large private forest owners and/or export-oriented equipment producers

Bioeconomy

German Forestry Value Chain

Owners*

- Wappen Thurn und Taxis
- Christian Erbprinz zu Fürstenberg
- Hatzfeldt-Wildenburg
- Fürst von Hohenzollern
- Riedesel Freiherren zu Eisenbach
- Sayn Wittgenstein-Berleburg
- Wittelsbacher Ausgleichsfonds
- Haus Oettingen-Wallerstein
- Waldburg zu Zeil und Trauchburg
- Arenberg-Meppen GmbH
- …

*Top 10 in Germany

Harvesting Equipment

- John Deere
- Stihl
- Dolmar
- **Valtra (FI)**
- **Ponsse (FI)**
- **Logset (FI)**
- **…**

Wood Products

- Ilim Timber
- Ziegler Holzindustrie
- Ante-Holz
- Rettenmeier Holzindustrie
- …

Distributors

- Helms Tekampe
- HolzKogler
- Valentin Angermüller
- …

Forestry Trade Fairs to target

- IPM Germany, January 22-25, 2019 in Essen
- FORSTlive, March 29-31, 2019 in Offenburg
- Agra, April 25-28, 2019 in Leipzig
- Ligna, May 27-31, 2019 in Hannover
- Niederbayern Schau, October 2-6, 2019 in Landshut
- MeLa, September 2019 in Gülzow-Prüzen

Source: Wald-Prinz.de, Timber-Online.de

Starting points for entry into Germany

Bioeconomy

Challenges/Competition

- German forestry market differs significantly from Finland (ownership, type of forestry business etc.)

Opportunities for Finnish NewSpace players

- Liaise with insurance companies (e.g. MunichRe, Allianz, HannoverRe etc.)
- Partner with SAP as multiplier into global B2B markets
- Seek cooperation with Finnish wood-harvesting producers active in Germany (Ponsse, Valtra, etc.)
- Provide forestry solutions to infrastructure providers like Deutsche Bahn
- Target export markets with German actors, e.g. GAF AG, (sustainability markets, rainforest etc.)

Opportunities for Business Finland to support

- Leverage 'Partner Country' status at Grüne Woche to engage the community
- Consider Finnish presence with a stand at Agritechnika 2019

SwissRE Profile – Agriculture Team

Bioeconomy

Swiss Re

Hans Feyen
Director
Head Products Centre Agriculture & ReInsurance Europe, Middle East

Marc Andriesse
Senior Underwriter Agriculture Development

Dr. Sabine Holl
Key Account Manager
Director Europe, Middle East & Africa

Paul Hammer
Underwriter & Senior Product Manager
Risk Modeller Agriculture

Key facts

- World's second-largest reinsurer founded in 1863
- HQ in Zurich, also office in Munich, Germany
- Global presence with operations across all continents
- Agri-team based in Zurich
- Successful cooperation with EO start-ups (e.g. VanderSat) in Agriculture

Areas of expertise

- Reinsurance
  - Property & Casualty
  - Life & Health
- Corporate Solutions
  - Insurance to mid-sized and multinational corporations
- Life Capital
  - Risk and capital management solutions

Urban development faces different challenges in Germany

Drivers and targets

- Sustainable urban development
  - Economic land management
  - Sustainable urban mobility management
  - Socially responsible housing provision
  - Integrated urban development
- Demographic changes, urbanisation
- Energy-oriented modernisation
- Strengthened urban-rural cooperation
- Adapting regional planning to climate change
- Selected ‘Smart Cities’ developments – often around electric drive infrastructure

Status quo in Germany

- Germany’s federal structure reflects in a decentralised infrastructure management model urban structure with federal, state, metropolitan regions, cities, municipalities medium-sized and small towns, each with their own jurisdiction
- Federal Ministry of Transport and Digital Infrastructure (BMVI) is responsible for planning federal infrastructure (motorways, railways, shipping)
- 2030 Federal Transport Infrastructure Plan: 270 B€ dedicated for transport infrastructure by the Federal Ministry of Transport
- Actual planning / geoinformation /mapping responsibility largely reside on state level with differing governance models
- Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) oversees the development of cities and communities

Starting points for entry into Germany

Challenges/Competition

- Several GIS providers serving the domestic market (membership list Runder Tisch GIS e.V)
- German market very regional
- German value-added service providers very active internationally (GAF, EOMAP, EFTAS)

Opportunities for Finnish NewSpace players

- Explore demand from insurance companies (e.g. MunichRe, Allianz, HannoverRe, etc.)
- Target infrastructure monitoring applications with large companies (e.g. E.ON, Innogy, Vattenfall, Deutsche Bahn, TenneT, etc.) to provide infrastructure security solutions
  - Deutsche Bahn (railway track security)
  - Deutsche Telekom (base stations)
  - Nord Stream 2 oil pipeline

Opportunities for Business Finland to support

- Showcasing Finnish Geospatial industry at **Intergeo Fair**
- Consider side event for matchmaking
- Showcase drone monitoring solutions made in Finland
- Link to German EO/Copernicus cluster activities driven by DLR/BMVI

STUTTGART 2019 17 – 19 SEPTEMBER INTERGEO GLOBAL HUB OF THE GEOSPATIAL COMMUNITY

GAF AG Profile

Management

Dr. Sebastian Carl
CEO & Board Member

Dr. Stefan Saradeth
COO
Incl. Africa Activities

Dr. Thomas Häusler
Board Member
Forestry & Climate Change

Dr. Matthias Baron
Program Manager
Integrated Services

Markus Probeck
Program Manager
Land Monitoring

Key facts

- Formed in 1985 and have conducted projects in over 100 countries for public and private customers
- Headquartered in Munich, with a branch in Neustrelitz (North of Berlin), subsidiary of Telespazio (IT)
- Internationally active company with leading competence and expertise in applied remote sensing and spatial information systems

Areas of expertise

- GIS and database applications
- Defence and Security
- Environment and Water Management
- Forestry and Climate Change
- Infrastructure and Mobility
- Insurance and Asset Management

Domain: Connectivity and IoT

Finnish perspective

- Potential launch pad: 5G-relevant capability in Nokia Networks supply chain
- Reference customers in several sectors such as communication (e.g. Digia Salpa, Getac), energy (e.g. EFACEC), maritime (e.g. Salen, Fleetrange, Torvald Klaveness), military (e.g. Finnish & Estonian Defence forces), as well as multinational companies (e.g. Thales, Airbus), of which there are many more in Germany

Objective

Leverage home telecoms market and strong telecommunication infrastructure and networks

Source: biotalous.fi, investinfinland.fi

German strengths in logistics, mobility and communication technologies provide opportunities for Finnish companies

Autonomous mobility leaders	▪ Strong automotive industry with leading car manufacturers (e.g. Daimler, BMW, VW Group) and automotive suppliers (e.g. Bosch, Continental) ▪ Intelligent Transport Systems ▪ Federal Ministry of Transport and Digital Infrastructure's 'Strategy for Automated and Connected Driving'
IoT hub	▪ Siemens, Software AG, SAP and others investing heavily in IoT ▪ Demand driven by Smart Automotive and Transport solutions
Industry 4.0	▪ Strategic federal initiative to push forward digital transformation in advanced manufacturing ▪ Technological leadership in industrial production R&D
Intelligent Logistics Systems	▪ Logistics is the third largest sector of the German economy transporting over 4.3 billion tonnes of goods ▪ Freight Transport and Logistics Action Plan puts forward goals and measures to support the freight transport and logistics industry in fulfilling its comprehensive tasks. ▪ Logistics Alliance Germany consists of around 70 large, medium-sized and small companies
Satellite communication	▪ Germany pursuing 5G SatCom ambitions, targeting a demo in an emerging 5G Industrial Makerspace ▪ Satcom laser component champions (e.g. Mynaric, TESAT) ▪ Cluster for Satellite Communication (DeSK) consists of 38 SMEs and research institutions, focused in Baden-Wurttemberg ▪ Potential role of SatCom in 5G licensing (whitespots)

Starting points for entry into Germany

Connectivity & IoT

Challenges/Competition

- Many corporates will have started discussions with some providers already
- German-origin players
  - IOT constellation for broadband: KLEO Connect
  - LCD – phased Array Antennas: Alcan, VITES
- Terrestrial M2M players: Device Insight GmbH (Munich)

Opportunities for Finnish NewSpace players

- Collaborate with automotive OEMs and their supplier base (e.g. VW, BMW)
- Tap German machine building industry – servicing globally
- Export-oriented equipment industry looking for backbone with global service models
- Connect with German multinationals with 5G ambitions (e.g. Vodafone, Daimler, Siemens)
- Embrace SatCom laser component champions (Mynaric, TESAT)

Opportunities for Business Finland to support

- Connect with German ambitions in 5G SatCom (Exhibit at DLR's National SatCom Exhibition in May 2019 – Possible theme: "Industrial Transformation with Finnish Technology")
- Tap German export champions at Hannover Messe

SAP SE Profile – key contacts for industry

Connectivity & IoT

Massimiliano Claps
Global team lead for Future Cities, Citizen Experience, Postal and the SAP Institute for Digital Government

Chris Peters
Product Manager
IoT Moving Assets

Patrick Rupp
Head of HANA Platform
Lifecycle Management

Simone Maienfisch
SAP Industries - Global Public Sector
Director Future Cities

Andre Przemek Gajda
VP Business Development
IoT and Digital Assets at SAP

Hinnerk Gildhoff
Development Manager
Head of SAP HANA Spatial & Graph

Luisa Silva
Vice President, ISV Go to Market,
Global Platform Channels at SAP
(Startup Support)

Cedrik Kern
Solution Management
Agribusiness and Commodity Management

Key facts

- Founded in 1972 by former IBM employees, serving over 350 customers across the globe
- Headquartered in Walldorf, Germany with regional offices in 130 countries
- World's largest provider of enterprise application software, with 110m cloud subscribers across the world
- Existing cooperation with ESA "Space World Alliance" covering EO and Navigation

Areas of expertise

- Consumer Industries
- Aerospace and Defence
- Energy and Natural Resources
  - Chemicals
  - Oil and Gas
- Financial Services
- Service Industries
  - Engineering
  - Telecommunications
- Public Services
  - Defence and Security

More specifically …

- Internal security
- Critical infrastructure protection:
  - Telecommunications networks
  - Railway lines and nodes
  - Airports
  - Power stations, Energy grid, pipelines (Nord Stream 2)
  - Wind farms
  - Key bridges, infrastructure computing centres and operations centres
- Smart borders - Migration mitigation infrastructure technology / cooperation on outer EU borders / FRONTEX
- ICT and Cybersecurity
  - Secure and private data communication
  - Electronic identity safety

Starting points for entry into Germany

Security

Challenges/Competition

- Existing but publicly not debated threats of cybersecurity and infrastructure threats
- Any current dependence on non-EU players?

Opportunities for Finnish NewSpace players

- Demand for cybersecurity, Germany making significant investments
- Critical asset monitoring solutions of growing importance
- Joint approach with EU defence contractors in EU Space & Defence ambitions (IABG)
- Connect with large infrastructure and energy players (e.g. BayWa, Aral, DEA, Wintershall)

Opportunities for Business Finland to support

- Leverage institutional DE-FI Galileo PRS connection with German Competent PRS Authority (BMVI)
- German shipping industry e.g. Meyer-Werft GmbH & Co KG (market leader cruise & LPG transport ships)
- Leverage Nokia trusted brand in this context for smaller players

Industrieanlagen-Betriebsgesellschaft (IABG)

Security

Management

Prof. Rudolf F. Schwarz
CEO & Board Member

Stefan Kupczyk
Department Manager
Space

Thomas Sichert
Director
Navigation & Satellite Communication

Oliver Kosing
Department Manager
Aeronautics

Jörg Schäfer
Department Manager
Geodata/Geoinformation

Dr. Stefan Baumann
Project Manager
Radio- and Satellite Systems / PRS

Key facts

- Established in 1961, seven different business segments
- Headquartered in Ottobrunn, Germany (near Munich)
- Enterprise customers from various industries such as machinery, IT and telecommunications, aeronautics
- Public institution customers at local, state, federal and supranational levels

Areas of expertise

- Aeronautics
- Automotive
- Defence & Security
- Energy
- Environment
- Infocom
- Mobility
- Space

09:30 am	**Registration and Accreditation**
10:00 am	**Opening Reception by the Presidents of the BDL and BDLI** Prof. Klaus-Dieter Scheurle, German Aviation Association Dr. Klaus Richter, German Aerospace Industries Association
10:20 am	**Political Statement** Dorothee Bär, Minister of State to the Federal Chancellor Government Commissioner for Digital Affairs
10:30 am	**Keynote**
10:50 am	**Impulse Lecture "Opportunities"** Panel 1: "Mobility" *Coffee Break* Panel 2: "Digital"
12:50 pm	***Lunch Break***
01:50 pm	**Application Examples**
02:20 pm	**Impulse Lecture "Challenges"** Panel 3: "Defense of unauthorised Drones" *Coffee Break* Panel 4: "Integration of Drones in the Airspace"
04:20 pm	**Networking**

DRONE INSIGHTS – The Unmanned Aviation Summit 2019

We are pleased to invite you to the upcoming event **"Drone Insights – The Unmanned Aviation Summit" on 12 February 2019**, which takes place for the first time in the heart of Berlin.

The rapid development of unmanned aviation systems (UAS) represents a technological quantum leap that will profoundly change the commercial use of our airspace. The commercial applications of UAS are manifold and lead to the development of new business fields across all industries. They provide a macroeconomic impetus for th creation of new jobs in the high-tech sector and in the service sector. It is an undisputed fact that drones will have a tremendous impact on entire industries and will deeply change people's lives over the next twenty years by improving medical care, logistics and urban mobility. But what are the opportunities and the challenges of this promising technology? Which legal and structural frameworks must be created in order to leverage the technology's potential value?

"Drone Insights – The Unmanned Aviation Summit" is designed as a platform for high-ranking international guests from politics, the aviation and aerospace industry, institutions in standardization and regulation, science and media, debating the opportunities and the challenges for the commercialization of unmanned aviation. The conference is hosted by the German Unmanned Aviation Association (VUL), a joint initiative of the

German Aviation Association (BDL) and the German Aerospace Industries Association (BDLI).

- Context and approach
- Supply Analysis: Finnish NewSpace Domains
- Recommendations

Recommended areas of action

1. **Linking Finland NewSpace with the German space ecosystem**
2. **Aiming for cooperation in German NewSpace building blocks**
3. **Linking Finland NewSpace with German non-space corporates/multipliers**
4. **Tapping Germany-specific demand**
5. **Deploying Business Finland Instruments towards market readiness**

1 Linking Finland NewSpace with the German space ecosystem

- Network with German space players at industry events
  - 6. Nationale Satellitenkommunikationskonferenz, May 2019
  - Space Tech Expo Europe, 19 - 21 November, Bremen
  - Cluster events
- Explore investment and partnership opportunities
  - ESA investment forum, Jan 30, Darmstadt
  - Discuss possibilities of bilateral company matchmaking with DLR Komponenteninitiative (as done with CZ, PL, etc.)
- Form R&D partnerships
  - Fraunhofer-Allianz Space: explore the institutes capabilities for complementarity
  - Technical Universities: e.g. strong push in Bavaria to expand TU Munich's role
  - Alfred Wegener Institute for Polar and Marine Research (Iceye)
- Showcase Finnish solutions
  - Consider outreach exhibitions (e.g. Space Tech Expo, ILA Berlin 2020)
  - Proactively approach NewSpace players who are planning constellations (e.g. KLEO Connect)

1 Potential German partners with integrator capabilities

AIRBUS

- Manned and exploratory space systems
- Galileo IOV
- Key components for launchers and satellites
- Solar panels

OHB

- Galileo constellation
- Meteorology satellites
- Military and security satellites
- Structural parts and tanks for launchers (Ariane)

BST Berlin Space Technologies

- Mini- and smallsats
- Standard components

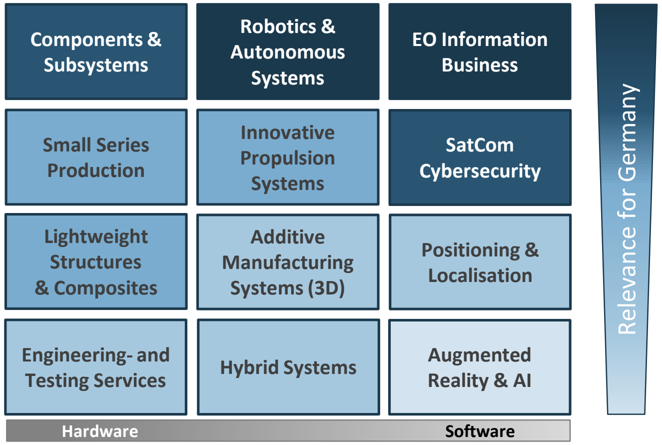
Astro- und Feinwerktechnik Adlershof GmbH

- Mini- and smallsats
- Standard components

GERMAN ORBITAL SYSTEMS

- Nanosats and components

2 Aiming for cooperation in German NewSpace building blocks



Source: NewSpace Study for German Ministry of Economy

IoT Connectivity & IoT

Urb Urban Development

Bio Bioeconomy

Sec Security

Spa Space Technology

EO Information Business
- Unique digital terrain models (SAR technology)
- Specialist user know-how, solution and process competence, image recognition and change recognition
- Geo Cloud Platforms from Germany

Bio Urb Sec IoT

Robotic & Autonomous Systems
- Synergies with autonomous mobility
- Development of commercially operated “space habitats”
- Concepts for in-orbit maintenance

Sec IoT Spa

SatCom Cybersecurity
- Easier protection than terrestrial systems (KLEO Connect)
- Encryption expertise
- Laser communication (Tesat, Mynaric)

Sec IoT

Components & Subsystems
- Star trackers, inertial sensors, optics, radar etc. (BST, Jenoptronic)
- Actuators and control moment gyroscopes (Teldex, Astro- & Feinwerktechnik)
- Pressure control system (AST)

IoT Spa

Innovative Propulsion Systems
- Research on electric motor controllers
- ‘Green’ Propellant (BayernChemie)
- Reputation for chemical products and gases (Messer, Linde)
- Synergies with the hydrogen economy (car/transport/air)

Small Series Production
- Better price-performance ratio
- Process spin-in from precision mechanics, tool making, prototype production, etc.

Spa

Lightweight Structures & Composites
- Synergies with aviation and automobiles
- Know-how related to plastics and material bonds

Spa

Additive Manufacturing Systems (3D)
- Competence in new production methods
- DMG Mori AG: used by Virgin Galactic
- EOS: In series production at SpaceX Super Draco
- LPKF: Rapid prototyping of printed circuit boards

Spa

Positioning & Localisation
- Excellent research: FhG, DLR
- World leader HERE: HD cards key to autonomous mobility
- Ambitions of suppliers: Bosch, Continental etc.
- Mobility oriented start-ups
- Domestic financial technology providers for authentication

Sec IoT

Engineering
- Unique technical facilities and know-how
- Interface to research
- Diagnostic capabilities, standardisation/certification know-how
- Existing capacities (testing, simulation) of service providers
- Export of manufacturing and test procedures for constellations

Spa

Hybrid Systems
- Laser communication technology
- High density of drone manufacturers (AscTech/Intel etc.)
- Advanced regulation for civilian drones
- Balloon and High-Altitude companies
- HQ for the aviation safety authority EASA in Germany

Bio Sec Spa

Augmented Reality & AI
- Excellent research facilities
- Automation potential
- Successful companies with exits (Metaio/Apple)

Spa

3 Linking Finland NewSpace with German non-space corporates/multipliers

Cooperate with Germany's strong export-oriented industries

Software

- SAP interested in HANA cloud use-cases and address SAP customer problems
- Software AG providing platforms for IoT and Software-as-a-service solutions

Automotive

- Daimler interested in connectivity solutions, sensors etc.
- BMW and VW exploring OEM technology solutions

Machine-building

- Trumpf interest in robotics & sensor technology applications
- Thyssenkrupp exploring advanced manufacturing and Industry 4.0 solutions

4 Tapping Germany-specific demand

- Space Technology
  - Match Finnish differentiation with German offerings
  - Complement German NewSpace hardware integrators with downstream capabilities
  - Fill gaps in DLR programmes and Armed Forces sourcing
- Connectivity & IoT
  - Solutions and business models for 5G infrastructure and applications (white spots)
  - Industry 4.0, IoT and digitalisation solutions are in high demand
- Urban Development
  - Limited potential
- Bioeconomy
  - Possible potential in subdomains
  - Work with German players in technology revolution around Common Agriculture Policy (CAP) for EO/Galileo
  - Pragmatic showcasing: Finland as ‘Partner Country’ status at Grüne Woche
- Security
  - Germany second behind only the USA in terms of cybercrime related costs
  - Potential in use of ICT in critical infrastructure security

2019 Events

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC

Industry Events

IPM ESSEN GERMANY
22-25 January
Essen

GRÜNE WOCHE
18-27 January
Berlin

FORST live
29-31 Mar
Offenberg

HANNOVER MESSE
1-5 April
Hannover

agra
25-28 April
Leipzig

LIGNA
25-27 May
Hannover

MeLa
12-15 September
Gülzow-Prüzen

IAA
12-22 September
Frankfurt

Niederbayern Schau
2-6 October
Landshut

AGRITECHNICA
10-16 November
Hannover

Space Events

ESA Investment Forum
30 January
Darmstadt

DRONE INSIGHTS THE UNMANNED AVIATION SUMMIT
12 Feb
Berlin

6. Nationale Konferenz Satellitenkommunikation
14-15 May
Bonn

2019 EBAN Annual Congress
3-4 June
Helsinki

INTERGEO GLOBAL HUB OF THE GEOSPATIAL COMMUNITY
17-19 September
Stuttgart

SPACE TECH EXPO EUROPE
19-21 November
Bremen