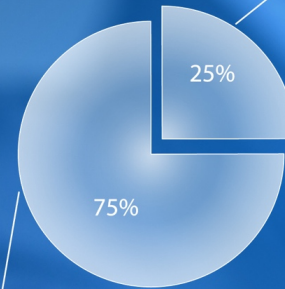


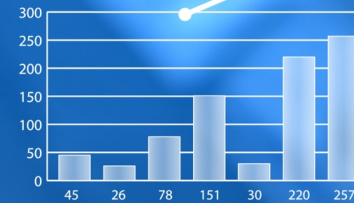
Distribution of market share among the major industry players: IT & C and BN & T was 74% and 26% percent respectively. A further change in the economic situation in the market will be characterized by a more equal distribution of market share major players

Share of market activity



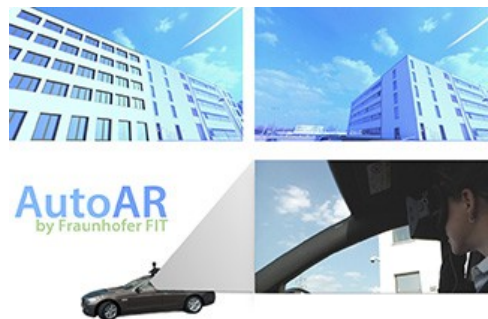
Changes in the activity of the active and passive market is uncertain. Established positive trends in various market segments.

Projected sales of main products in 2013



Passive market share

Fraunhofer Company Building Lookbook of Spin-off Opportunities



Project Auto AR (Fraunhofer FIT)

Panoramic AR from Building Information Modeling (BIM) Data

The Opportunity

Problem: reading blue-prints is only for specialists. First impressions from buildings or structures for decisions makers or funders are thus often gained from purpose-built miniature-models or renderings. This does omit the existing environment of the plot, is expensive, inflexible in case of changes, and outdates quickly. Auto AR uses the existing 3D geometry from BIM-data to virtually augment an existing plot with planned structures through a panoramic camera system. View orientation is done with natural head movements and camera positioning is done by driving the car. The AR-view can be seen instantaneously, and recorded for later use (e.g. video for board of directors). Together, this provides a first natural impression of the new structure on-site before it is build; and allows for better decisions or revised plans early on. First paying customers exist.

The High-Tech

High-precision hardware setup with commercial technology. Brought together by our custom software. Links in with standard software. Based on 15+ years of AR experience. Pre-funded through a Fraunhofer strategic invest project (300k+).

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Technology transfer and licencing
- Training and consulting
- Future tech development (optional)
- Equipment rental (system and parts)



The offer for High-Tech Pioneers

Up to 100% of shares are available

- CEO needed
- CTO needed (optional)
- Software developer
- Marketing



Hard Facts

- IP: not patented (might be done)
- Time to market: 0-12 months
- TRL: 7-8
- Misc: BIM will become a legislative requirement for German infrastructure projects from 2020 onwards.



MIOTY (Fraunhofer IIS)

A Game Changing Connectivity Solution for Global Internet of Things (IoT) Deployment

Further Resources: <http://mioty.de/> & [Deep Diving into MIOTY](#)

The Opportunity

The Internet Of Things, IoT, requires a cost-saving, battery-supportive and long-range connectivity solution. MIOTY is a key enabling Low Power Wide Area Network (LPWAN) Technology, that overcomes limitations of its competitors and enables deployment in various industries from Commercial, Industrial, Agricultural, even into the Consumer IoT market. The ability to collect massive amounts of data is the start of the IoT data chain from the sensor to the gateway into the most powerful cloud and analytics platforms. Now business intelligence can be created on the basis of huge amounts of realtime data and new sensors can be connected that were unreachable before. First licencees of the technology are available to cooperate as system integrators and hardware providers. Since 2018 we have a first licensee »Behr technologies«, targeting Industrial IoT-applications (non exclusive IPR-rights). Another potential licensee is focusing on Utilities/Smart City applications. These companies could be partners for HTP to build up a strong eco-system. We are envisioning a team that wants to focus on IoT application development, e.g. in the consumer or smart buildings market.

The High-Tech

Fraunhofer's patented Telegram Splitting Multiple Access technology at the core of MIOTY provides highest network scalability (1,5 million messages/day per base station) and exceptionally robust connectivity with high interference immunity. Other performance indicators are: ultra low power consumption (up to 20 years battery life time) and Mobility (up to 120 km/h).

The foundation of this technology is a new physical layer designed from the ground up to withstand interference and maximize the quality of service of the wireless link. As a software solution, MIOTY is designed to be smoothly integrated in any existing IoT architectures, providing users with great ease of implementation and has the potential to become "the new WiFi for IoT".

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Licensor of technology
- Future tech development
- Market Intelligence Support
- Pilot projects



The offer for High-Tech Pioneers

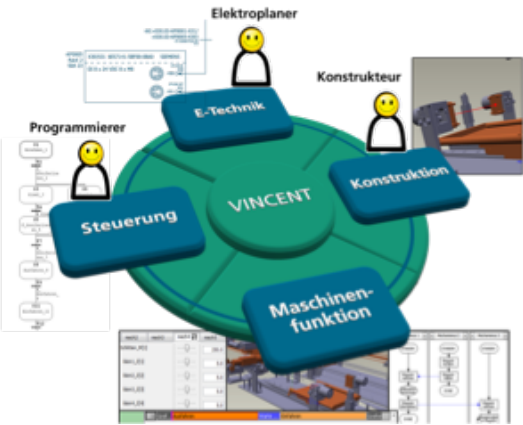
Up to 100% of shares are available

- CEO & CTO needed
- Marketing & Sales team needed
- FAEngineering team needed



Hard Facts

- IP: worldwide protection
- Time to market: ~ 6 months
- TRL: 7 (demonstration system)
- Evaluation-Kits available (> 30 already shipped to EU and US)
- Several PoC & Pilot projects conducted: Automotive, Oil & Gas, Mining, Steel, Utilities etc.



VINCENT (Fraunhofer IFF)

Collaborative Development of Production Systems

The Opportunity

The pain in engineering of typical production plants: utilizing many domain-specific software & lacking interoperability.

VINCENT as a Digital Engineering solution is tailored to the needs of typical German Mittelstand engineering companies. It enables the visualization and simulation of machines. These are the core values it provides:

- Complete digital development, full functional testing in advance
- Interdisciplinary planning of production lines (mechanical, electrical, control system, ...)
- Increased efficiency of systems engineering (reduction of time and costs: 50% for programming, 70% for setup)
- Better teamwork with less mistakes and misunderstandings

The High-Tech

- More than 10 years of development and application experience transferred into a complex user oriented, hardware independent software solution
- Lean system optimized for usability
- Customer specific solutions on the basis of a modular software framework
- Know-How transfer into digital models

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Future tech development
- Licensor of technology



The offer for High-Tech Pioneers

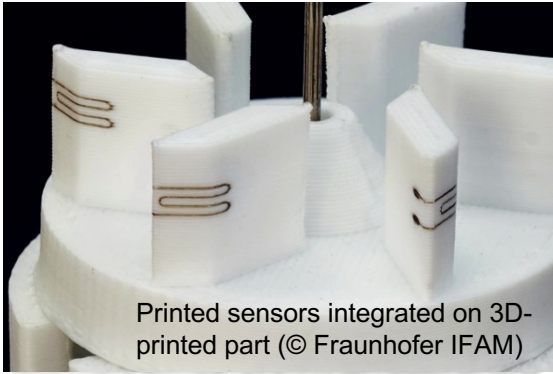
Up to 49% of shares are available

- CEO needed



Hard Facts

- IP: closed source software
- 10 years of engineering experience
- 9 user companies
- 4 commercial license contracts
- established partner-network



3D-Printed Electronics (IFAM)

Functional integration on 3D printed parts

The Opportunity

3D-Printed Electronics combines the structural advantages of 3D-Printing and the functional opportunities of Printed Electronics. It enables highest freedom in designing new products with integrated new functions. New design concepts, highly integrates antenna for automotive and logistic applications as well as strain sensors, temperature sensors and pressure sensors can be customized applied on 3D-printed parts. The resulting products can e.g. measure and store life-cycle data, offering predictive maintenance and input for simulations (Digital Twins).

The High-Tech

By combining 3D-Printing and Printed Electronics in an integrated technology platform customized end user products can be easily produced in a low cost technology. Integrated functions like sensors, actuators, antenna and data storages can be applied and integrated in 3D-printed parts. In special, metal structures can be applied on low-temperature polymers. Thus, the potential of 3D-printing is again extended to customized functional products. As a result, flexible solutions for the Internet of Things (IoT) can easily be produced by use of additive manufacturing. The Basis is a deep understanding of the interaction of manufacturing processes, materials and product design.

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Future tech dev (material science & process development)
- Know-how transfer
- Returns via: ROI based on market success, profit sharing, licence fee



The offer for High-Tech Pioneers

Up to 100% of shares are available

- CEO needed
- CTO probably needed
- further roles needed



Hard Facts

- Patents: 1 German patent on printed thermoelectric devices
- TRL 4-5
- Time to market: ~ 1year
- Several projects running with partners in automotive sector



msquare (DLR)

heating technology

The Opportunity

Firmen im Bereich Reparatur von Leichtbaustrukturen (Flugzeug, Windkraftanlagen, Boote, etc.) haben das Problem, dass entweder eine gleichmäßige Erwärmung des Reparaturbereiches oder eine lokal begrenzte Erwärmung mit dem Stand der Technik nur schwer möglich ist. Zudem gibt es speziell bei der Reparatur von Windkraftanlagen keine Dokumentation der Reparaturparameter. Zudem besteht das Reparatursystem aus sehr vielen Einzelteilen. Für diese Probleme hat msquare Lösungen entwickelt.

The High-Tech

Die patentierte Technologie der flexiblen induktiven Erwärmung FlexIn Heat® ist das Kern-Knowhow von msquare. Eine luftgekühlte Induktionsspule wird auf ein flexibles Trägergewebe gestickt und passt sich somit auch an gekrümmte Strukturen sehr leicht an. Durch ein automatisiertes Herstellungsverfahren können beliebige Größen und Formen hergestellt werden. Für eine Reparatur wird direkt auf dem Reparaturbereich eine Metallfolie/ Blech oder Gitter beliebiger Form platziert. Diese wird durch die Induktionsspule flächig homogen erwärmt. Es gibt auf dem Markt keine andere Technologie für diese Anwendung, mit der eine lokal begrenzte Erwärmung mit dieser Präzision möglich ist.

co-founder(s)
needed

full founding team
needed



DLR/ Helmholtz role

- Lizenzgeber
- Forschungspartner für weitere Anwendungsgebiete
- Unterstützung bei der Suche einer Frühphasenfinanzierung



The offer for High-Tech Pioneers

Up to 5-15% of shares are available

- Mitgründer mit Erfahrungen in der Geschäfts- und Finanzplanung oder Vertrieb
- COO



Hard Facts

- IP: DE 10 2011 076 463 B4 (2x PCT Anmeldungen)
- Time to market: 2 Monate
- TRL: 8-9
- Misc: bereits potentieller Zulieferer für Luftfahrtbetriebe



SensorModule (Fraunhofer CSP)

Large area sensor systems for photovoltaic

The Opportunity

Photovoltaic energy yield metrology relies precise data input PV system monitoring. Currently, more than 1 Mio. PV systems in Germany are operating without quick, exact and cheap power loss alarm in case of degradation or damage. A world wide market of >10Mio. PV systems is waiting for SensorModules (pat. pend.) to acquire this data for each individual PV system. SensorModules is the data basis to make PV system performance and maintenance more efficient and cheaper for owners and operators (private, commercial) as well as service providers (e.g. cleaning, replacement).

The High-Tech

SensorModule is a high-tech system comprising a sensorized PV module fully integrated in existing PV systems and a digital data acquisition and processing system. The unique functionality results from the smart°radation-free sensor design (pat. pending). SensorModule monitors the health of the PV system based on various key performance parameters that are measured in real-time, on-site and under operation conditions. SensorModule is configured and calibrated to match the specific technology and setup of the PV system to be monitored. The data output may be converted and integrated into PV performance evaluation algorithms. The technology concept is based on the Homogeneity Tester Solar Cells/Modules (pat. pending), which is already in the prototype state waiting for commercialization.

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Future tech development
- Long-term consulting
- Licensor of technology



The offer for High-Tech Pioneers

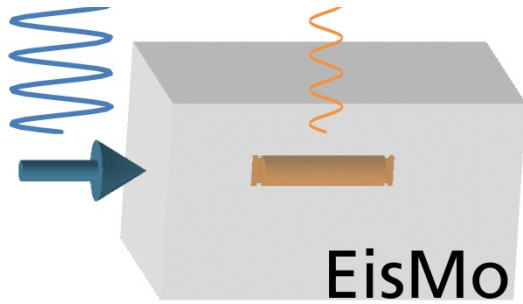
Up to 70-100% of shares are available

- CEO needed
- CCO needed



Hard Facts

- Patents pending for Europe:
Homogeneity Tester Solar Cells /
Homogeneity Tester Modules / Sensor
modules
- Time to market: 3 months / 12 months /
24 months
- TRL: 8 / 6 / 2



Embedded inside smart Monitoring (Fraunhofer IKTS & IWU)

Application case: smart implant & hull monitoring

The Opportunity

Incorrect and overload stress of metallic components can lead to structural damages. Currently, such loads can only be measured near or on the components' surface. Our solution is a fully inside the metallic material embedded wireless monitoring system, which works energy self-sufficient. Areas of application for this system are: medical technology (detection of implant loosening, TRL 6-7), shipbuilding (smart hull monitoring for ice-classed ships, TRL 3-4), offshore (platform columns, TRL 3-4), construction (bridges, TRL 3-4), automotive (frame and body, TRL 3-4). The value of this solution is on the one hand a direct operating short term cost reduction, and on the other hand indirectly for predictive maintenance (long term cost reduction).

The High-Tech

The monitoring is area and volume related because it is done directly from the inside of the component. The USP of EisMo is the development and production of energy self-sufficient monitoring modules depending on the possibility of embedding and application. The IP and know-how of the sensors & actuators as well as the embedding method with additive manufacturing processes and multi-layer thermal protection is secured (3 patent applications in international phase, more in progress). As OEM modules they are embeddable in nearly all metals, metal alloys and composites.

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Future tech development (e.g. in a joint venture)
- Licensor of technology (depending on the application)



The offer for High-Tech Pioneers

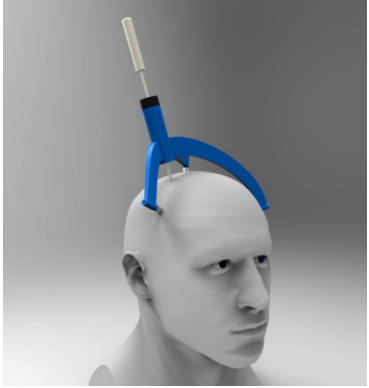
Up to 25 % of shares are available

- Senior business developer (CEO?) needed
- Financial and sales experts needed
- Marketing experts needed



Hard Facts

- IP: 3 patents are pending (WO) + 2-3 more to come
- Time to market: depending on application field 12-18 months (see application fields)
- TRL: 3-7 (see application fields)



Patientspecific stereotactic devices (Fraunhofer IWU)

Minimal invasiv brain biopsy device

The Opportunity

Stereotactic surgical interventions means to reach a preoperative planned target area inside the patient. Current stereotactic devices in neurosurgery have the following problems:

- Very complex handling, high investment costs (ca. 100,000 €), only applied in high specialized centers, long surgery time, MRI and CT required for planning, infection risk (BSE)
- Market: 90,000 stereotactic interventions per year only in Germany, ca. 800,000 in Western Europe and Russia per year

Application: Platform technology for brain biopsy, lesioning, deep brain stimulation, local tumor therapy

The High-Tech

- 3D-printed patient-specific stereotactic device
- Worldwide most accurate system
- Cost reduction:
 - 90% less investment costs
 - Only one 3D medical imaging required for surgical planning (CT or MRI)
 - Reduction of operating time
- Less infection risk due to disposable device
- Less mechanic stress for patient due to lightweight construction

co-founder(s)
needed

full founding team
needed



Fraunhofer role

- Future tech development
- Long-term consulting
- Licensor of technology



The offer for High-Tech Pioneers

Up to 25-40% of shares are available

- Venture capital
- Network medical industry



Hard Facts

- IP: patent submitted for stereotactic system as DE and PCT
- Time to market: 12 months
- TRL: 6
- Misc: contact to global medical player Abbott, no CE-mark required