

THE FRAUNHOFER MODEL

TECHNOLOGY TRANSFER FROM UNIVERSITIES TO INDUSTRY



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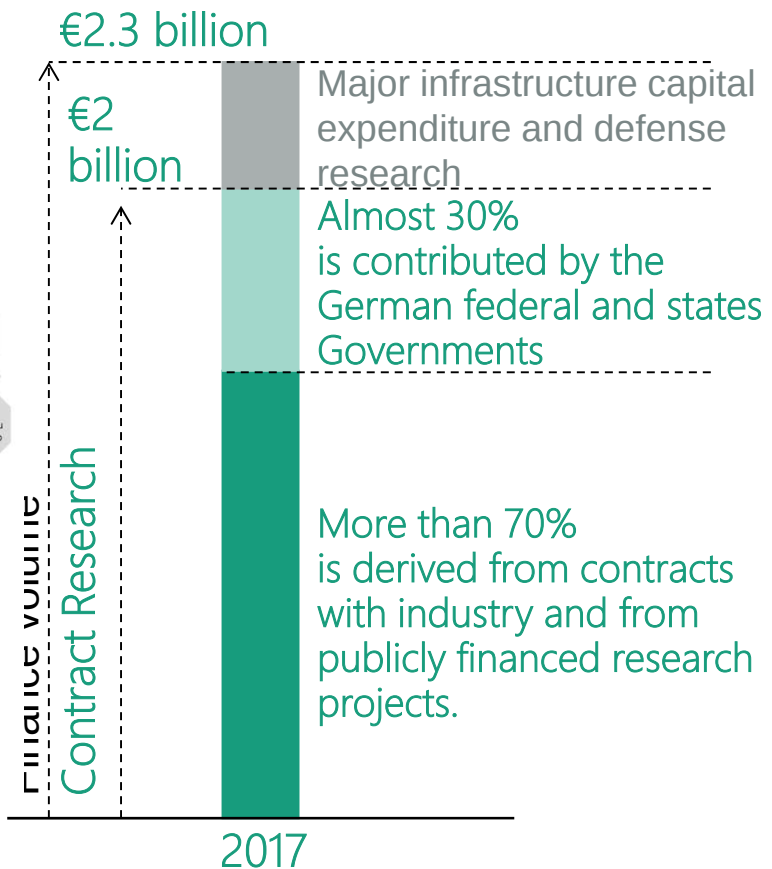
Fraunhofer at a Glance

The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.


25,327 staff


72 institutes and research units

Main locations ●
Other locations ○



What is Fraunhofer's Role and Position in the German Innovation System?

The German Research Landscape

Mission



Applied research and development

Application-orientated research



Research and education



Topic-orientated science and large-scale research facilities



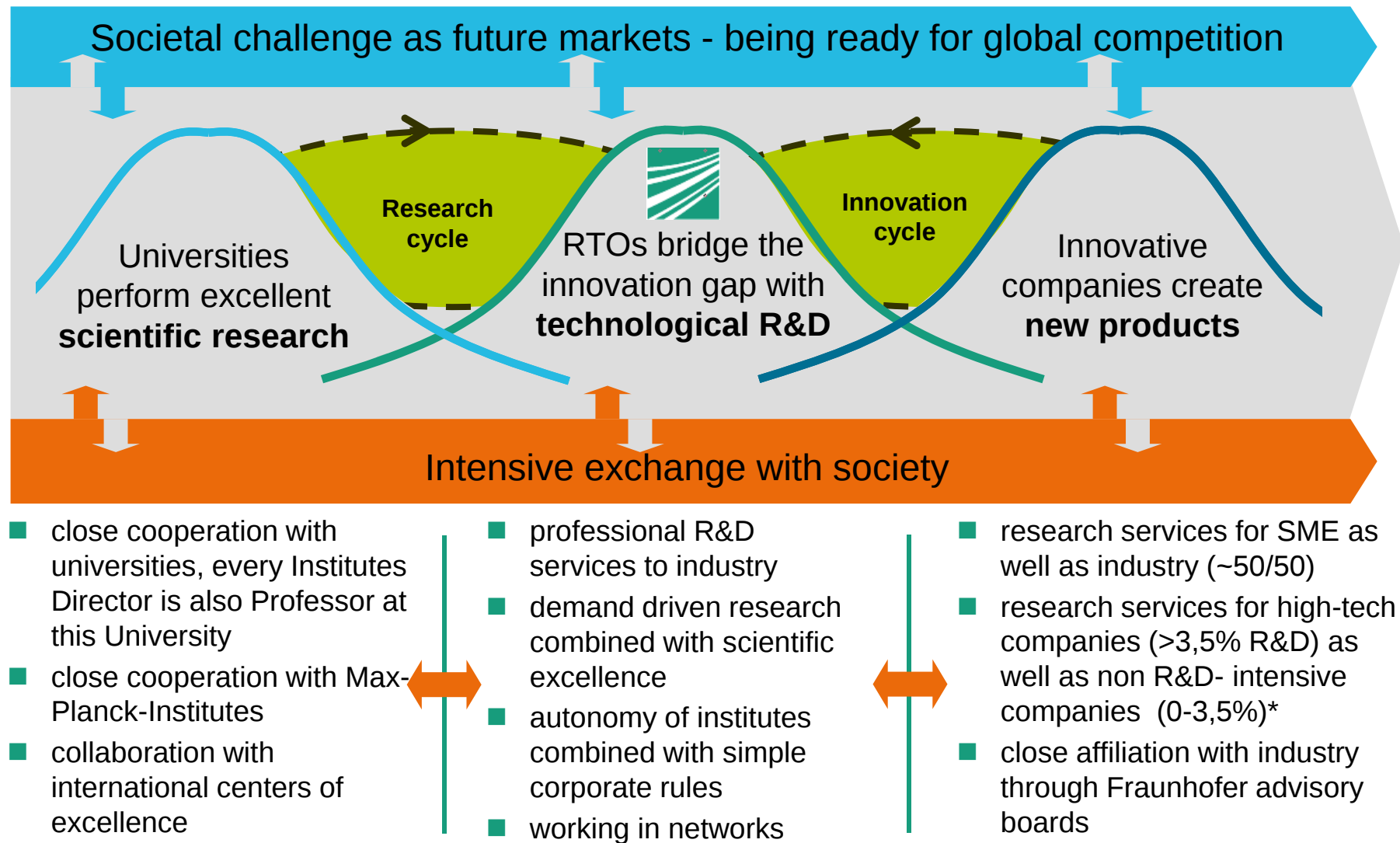
Knowledge- and application-orientated science



Fundamental science

Fundamental research

Fraunhofer's position in the German Innovation System



Why is the bridging Fraunhofer Model successful?

Cooperation with Universities

Institutional integration by dual appointment:
Fraunhofer Institute director = University professor (chair)

Fraunhofer Institute

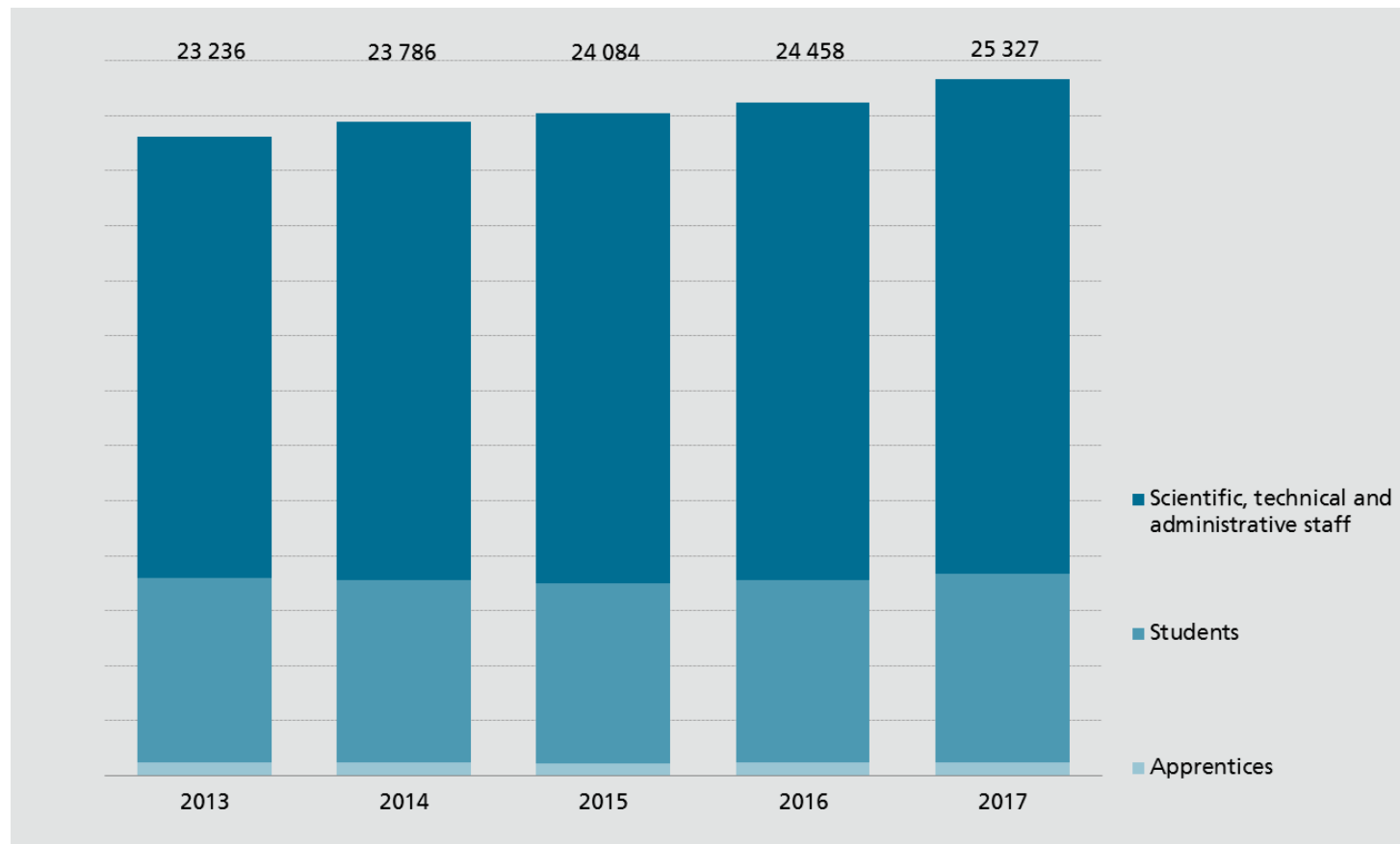
- access to basic research
- recruitment of junior scientists
- recruitment of students (interns, undergraduates)
- opportunities for employees to gain scientific qualification (doctorate, professorship, contributing to the university's curriculum)

University Chair

- cooperation in industry-oriented projects; opportunities for interns, undergraduates and graduates to gain practical experience
- integration of practical applications into the curriculum
- access to cost-intensive equipment

Human Resources

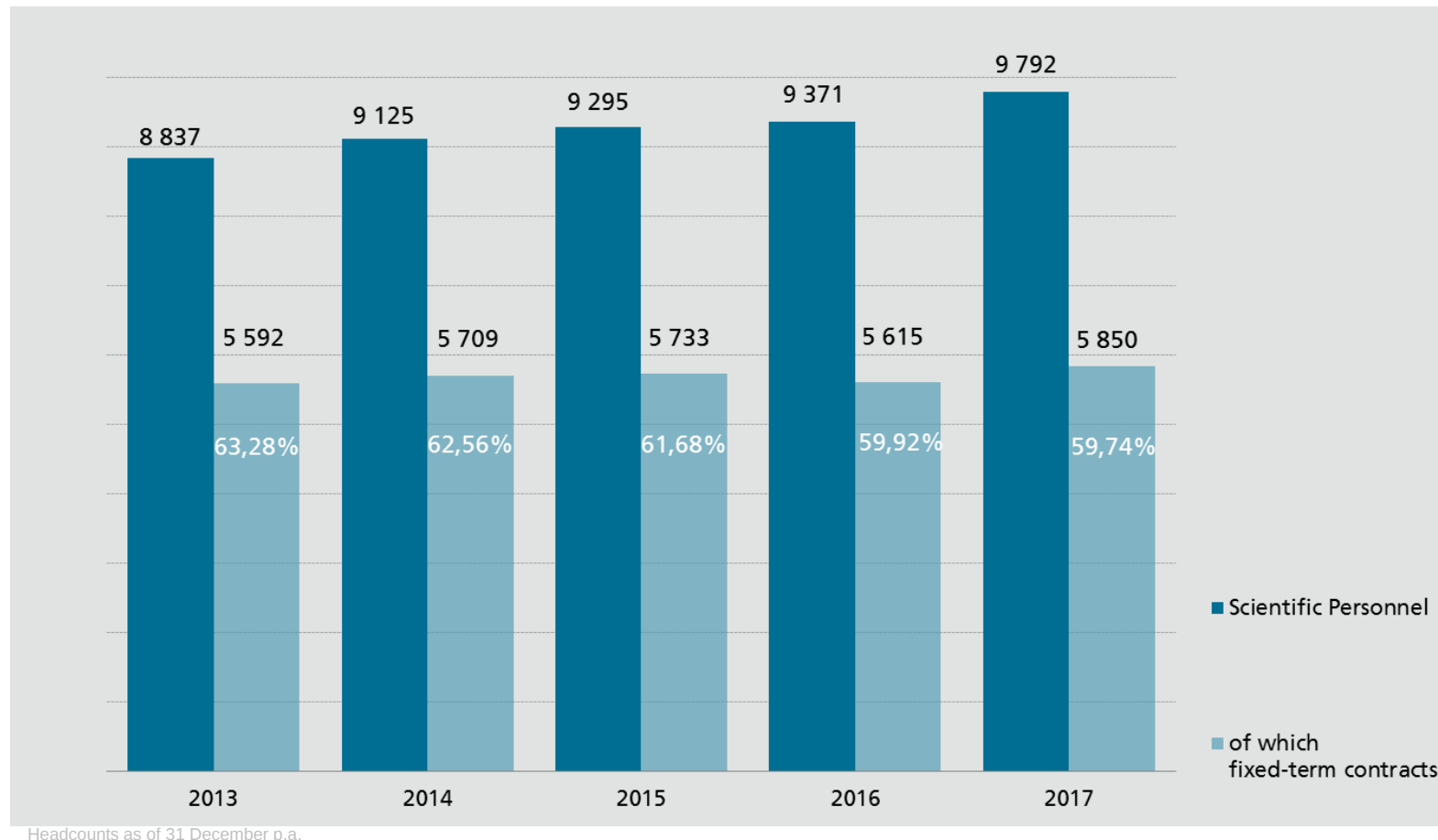
Development of Staff 2013 - 2017



Headcounts as of 31 December p.a.

Scientific Personnel

Fixed-term contracts



Fraunhofer as an preferred employer



Universum Study Young Professionals 2017

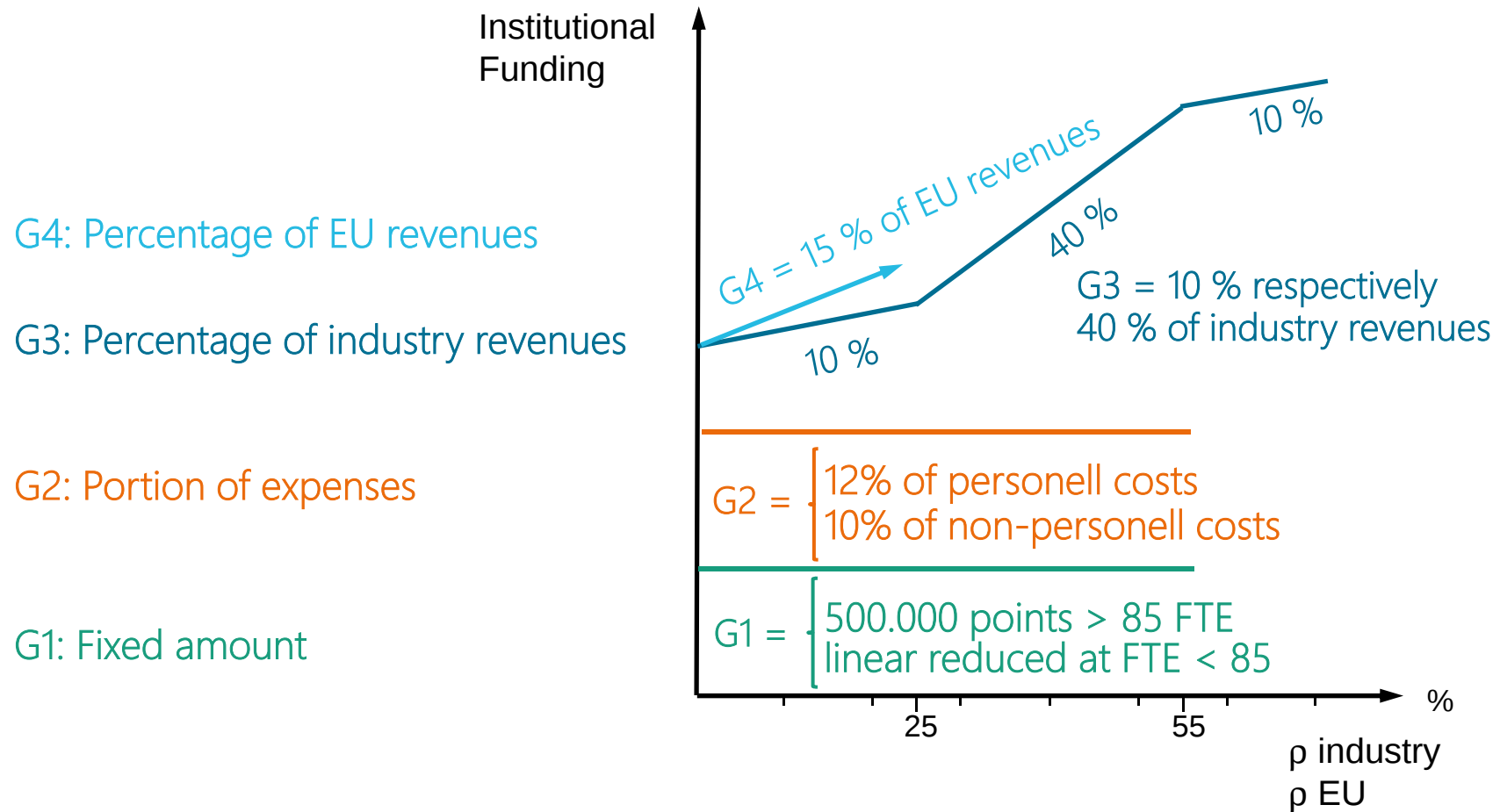
Naturwissenschaften	(2016)	Ingenieurwissenschaften	(2016)	IT/Informatik	(2016)
1. Max-Planck-Gesellschaft	(1)	1. Porsche	(2)	1. Google	(1)
2. Fraunhofer-Gesellschaft	(3)	2. Audi	(3)	2. Microsoft	(2)
3. Bayer	(4)	3. BMW Group	(1)	3. Audi	(4)
4. Roche	(2)	4. Daimler/Mercedes-Benz	(4)	4. Porsche	(6)
5. Novartis Pharma	(6)	5. Bosch	(5)	5. BMW Group	(3)
6. BASF	(5)	6. Siemens	(6)	6. Amazon	(7)
7. Merck	(7)	7. Volkswagen	(7)	7. Bosch	(8)
8. Boehringer Ingelheim	(8)	8. Airbus Group	(8)	8. SAP	(5)
9. Sanofi	(9)	9. Hochtief	0	9. Daimler/Mercedes-Benz	(9)
10. DLR	(12)	10. Google	(9)	10. Siemens	(13)
11. Siemens	0	11. Lufthansa Technik	(10)	11. IBM Deutschland	(11)
12. BMW Group	(13)	12. BASF	(12)	12. Volkswagen	(10)
13. Bosch	(11)	...		13. Intel	0
14. Audi	(10)	17. Fraunhofer-Gesellschaft	(11)	14. Fraunhofer-Gesellschaft	(14)

Fraunhofer Financial Model

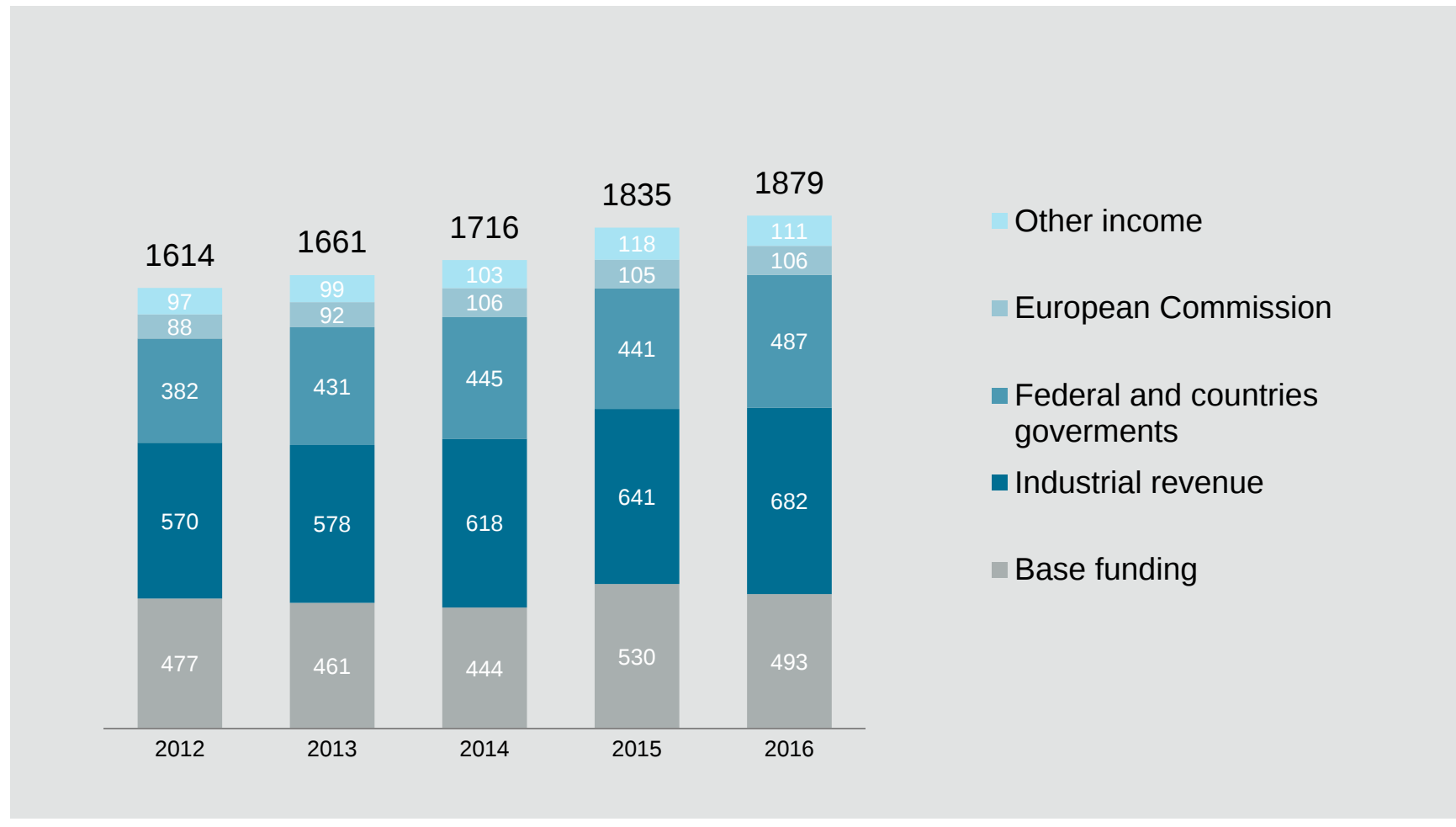


- Base Funding: continuity of scientific excellence
- Public Projects: precompetitive research (networks)
- Industrial Contracts: direct innovation push

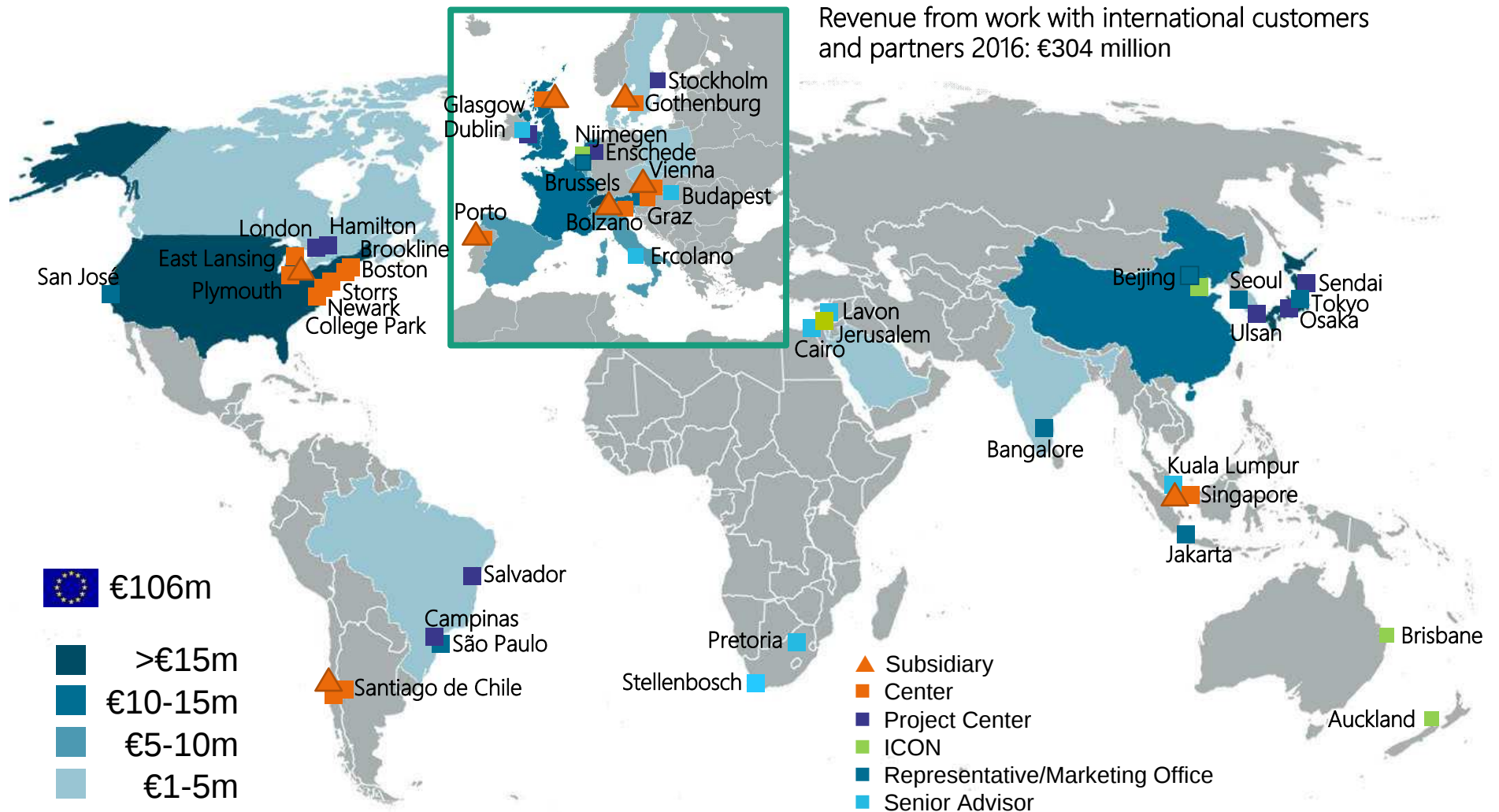
Allocation of Base Funding



Revenues in Contract Research 2012 - 2016 in Mio €

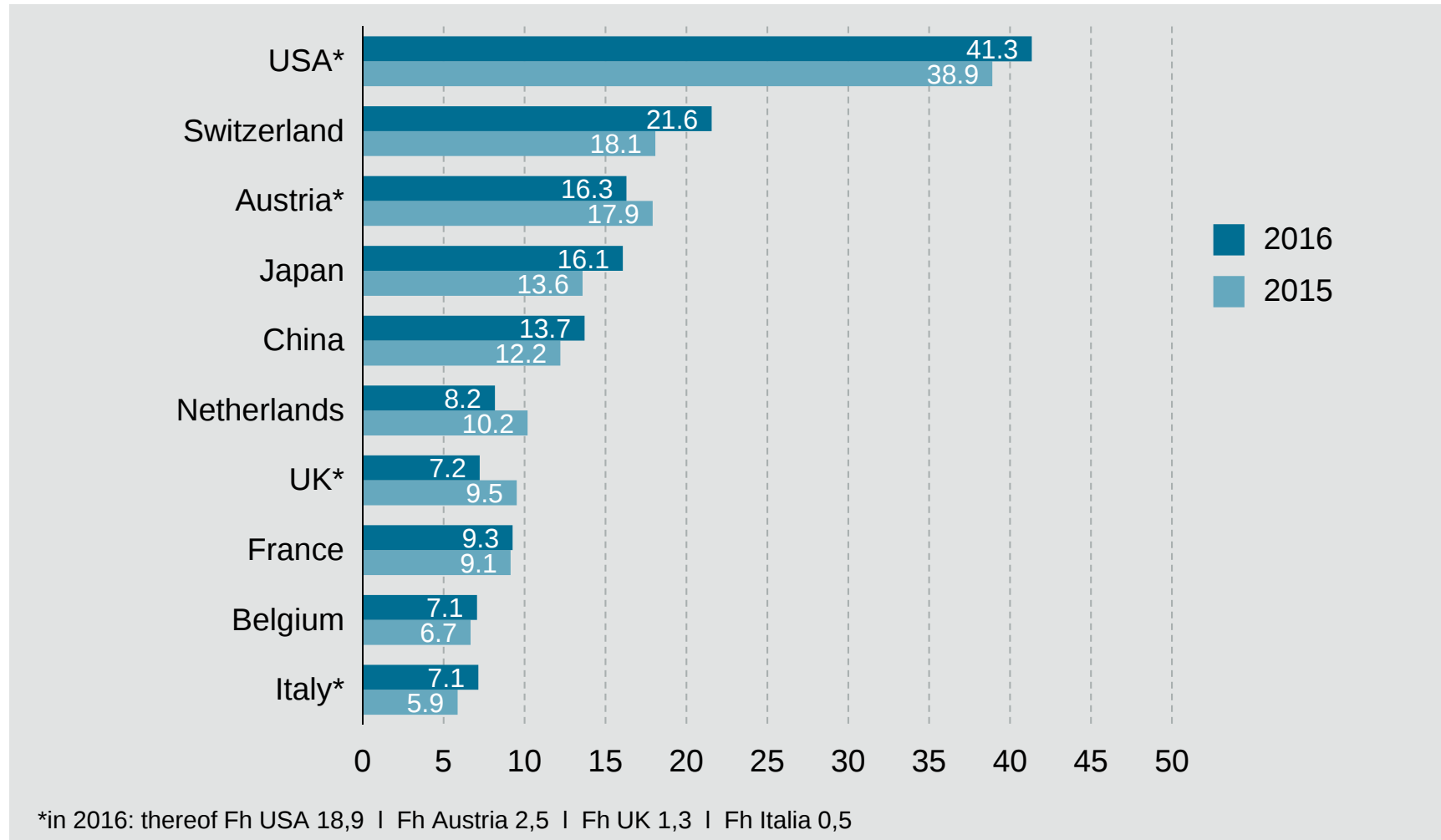


International Activities and Revenues worldwide (2016, without subsidiaries and licenses)



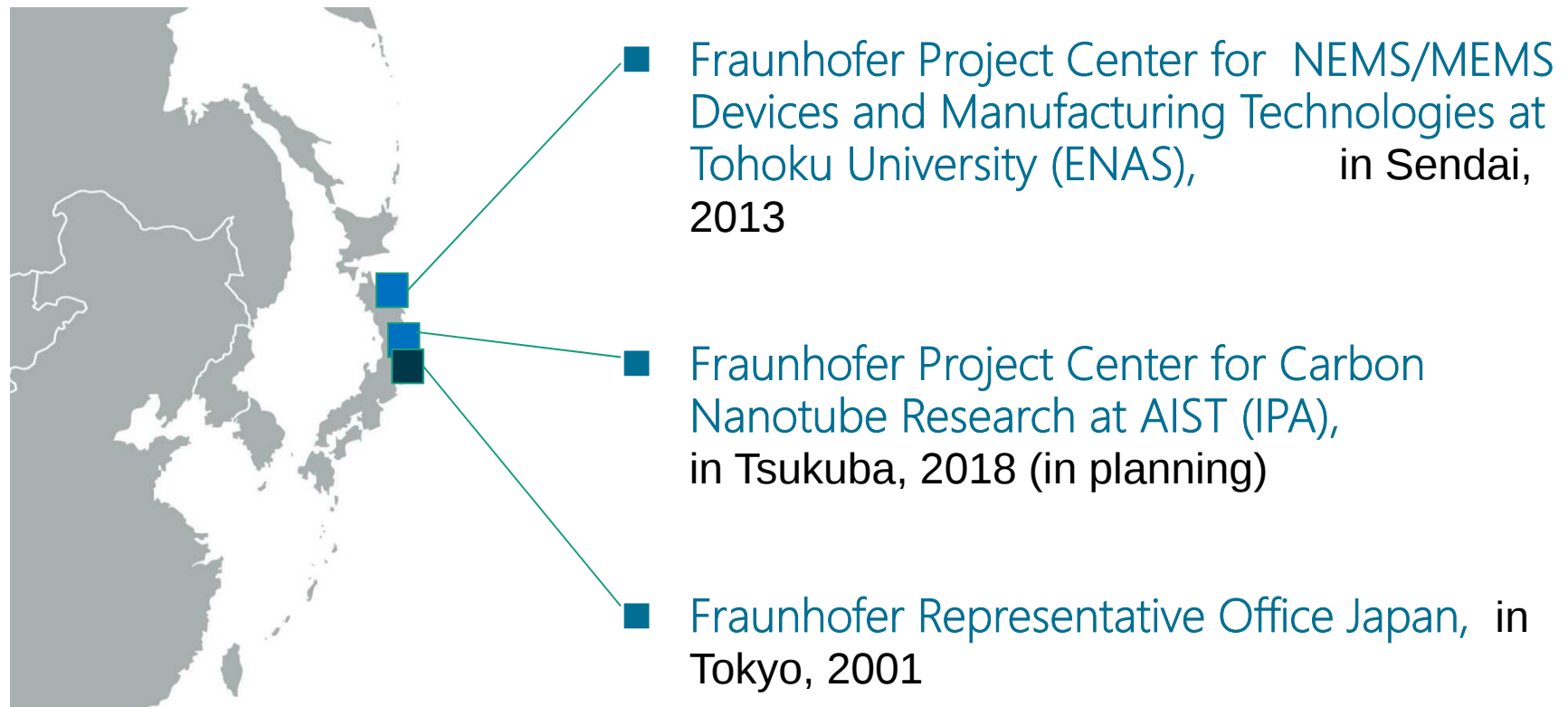
International revenues of the Fraunhofer-Gesellschaft

Top 10 worldwide (without EU-Commission), in million €



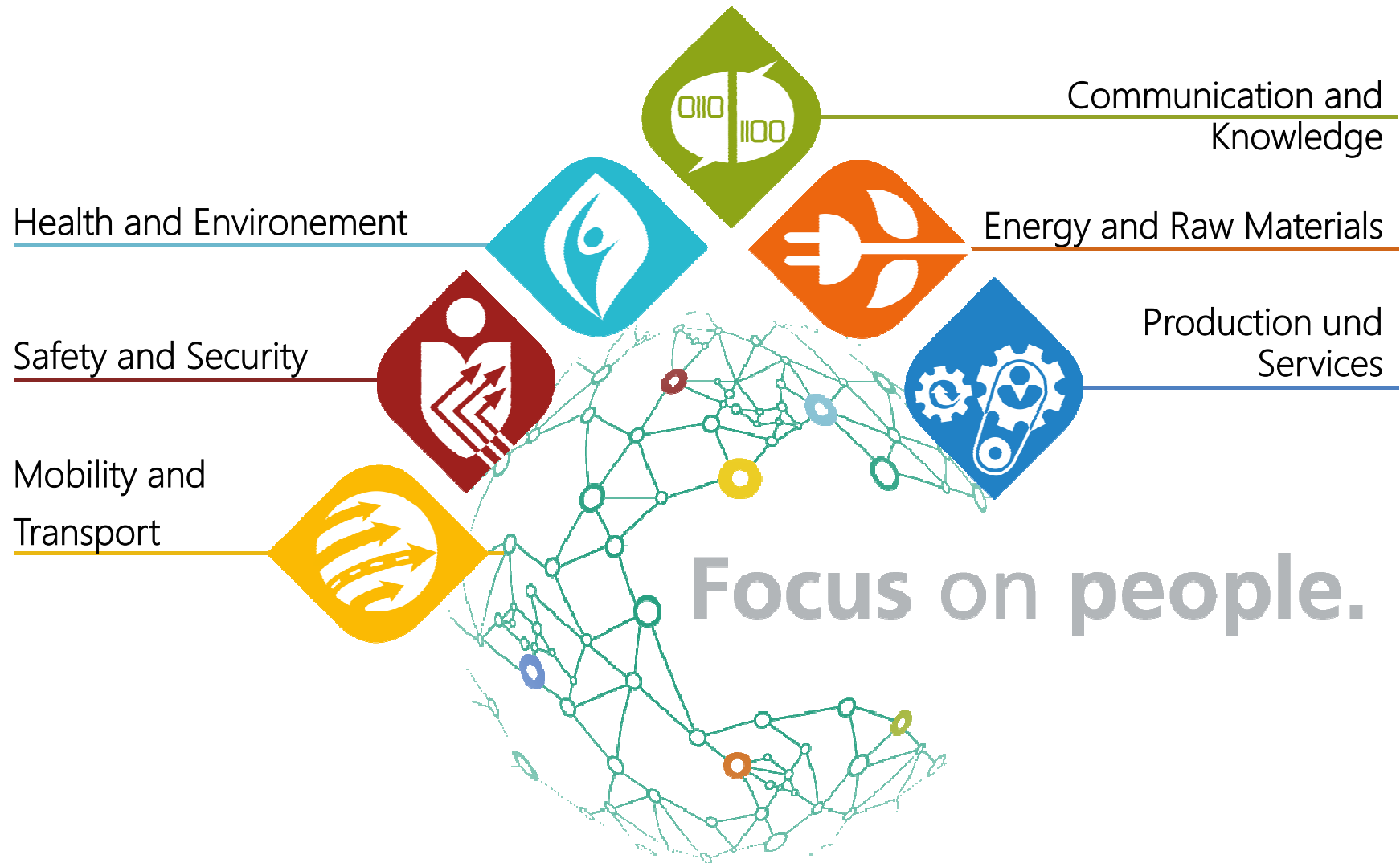
Fraunhofer in Japan

- 80% of Fraunhofer Institutes are collaborating with Japanese companies in app. 180 projects per year (volume: €16 mio. in 2017); app. 220 Japanese companies are customers of Fraunhofer
- Fraunhofer in Japan at mainly three locations.



What is the outcome of that model?

Our research covers future challenges



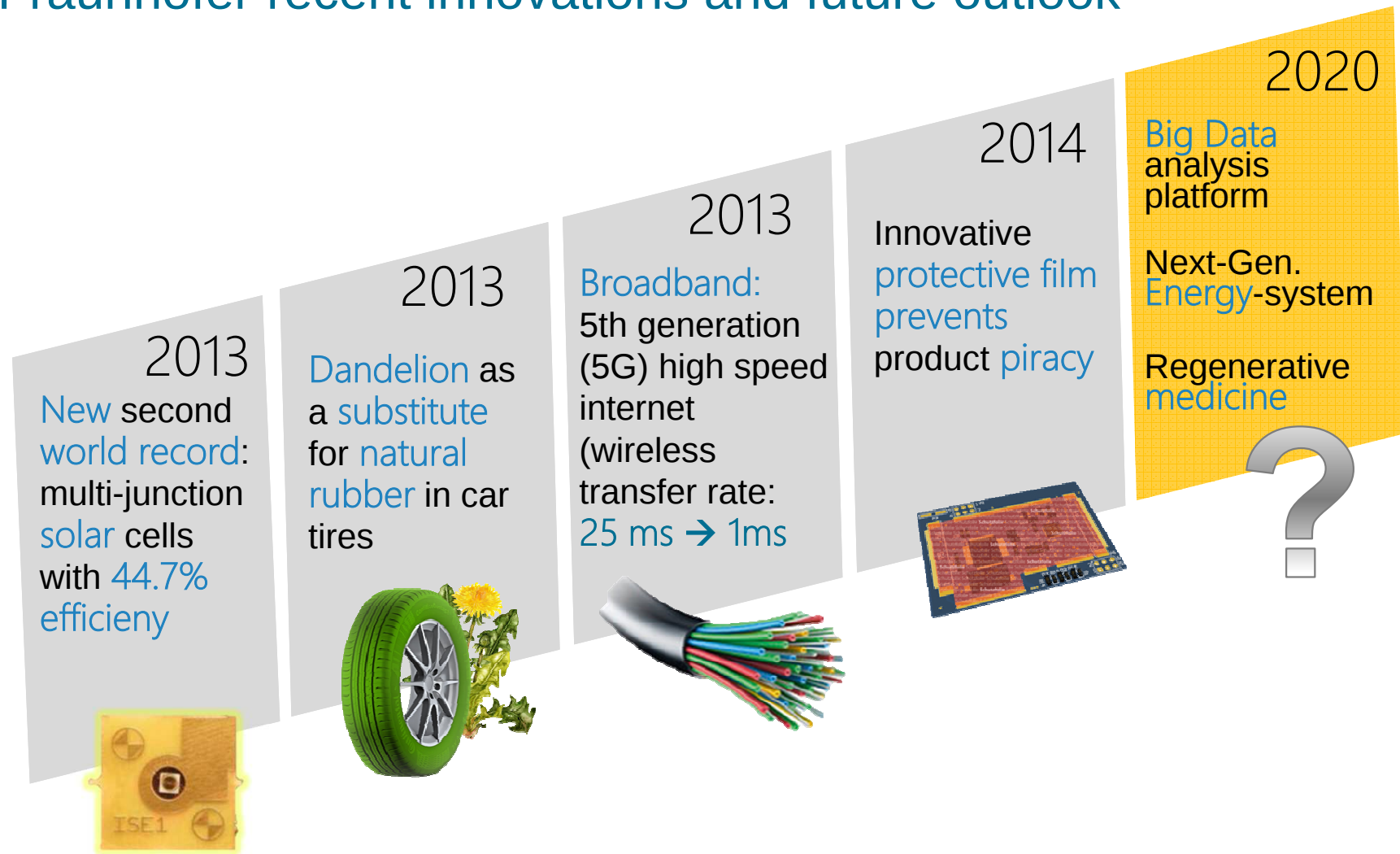
The economic benefit of Fraunhofer's work, an example: Economic benefit through mp3



- At least €1,67 billion volume of sales/turnover in Germany with mp3 devices, digital contents, equipment and audio devices with additional mp3 applications
- More than € 300 million fiscal revenue per year
- At least 9.000 jobs in Germany in direct correlation through mp3
- Not taken into account:
 - Indirect benefit in the supplier chain and in the services
 - Indirect fiscal revenues and jobs!

It does not happen without vision

Fraunhofer recent innovations and future outlook



Innovation Activities of Fraunhofer

	2013	2014	2015	2016	2017
Aktive Patentfamilien*	6407	6625	6573	6762	7036
Erfindungsmeldungen p.a.	733	736	670	798	756
Patentanmeldungen p.a.	603	563	506	608	600

* Bestand an technischen Schutzrechten sowie laufenden Patentanmeldungen zum Jahresende



2016: Fraunhofer on

- Rank 18 among acitiviest patent applier and
- Rank 16 among activiest brand applier



2017: Fraunhofer is among the activiest appliers at the European Patent Office (Rank 45)

2017: According to Clarivate Analytics Fraunhofer is among the »Top 100 Global Innovators«.

(with 3 other German companies: BASF, Bayer, Merck)

What brings the future?



Fraunhofer

Working for the future.