

Opportunities for Indian IT companies to participate in Germany's Industry 4.0 Revolution

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Abstract

Germany is **the birth place** of the term "Industry 4.0". In this article, we discuss how **India's expertise** in information technology and engineering services, and **German mastery** in manufacturing can converge to create great solutions for the world at affordable costs. We also discuss what Indian firms need to do to capture this rich, long-term opportunity – both technologically, and on soft factors.

Germany - the birthplace of Industry 4.0

The term Industry 4.0 was first used in 2011 to describe high-tech strategy of German Government. Scientists, businessmen, academicians, and politicians joined hands to form workgroups. Industry 4.0 workgroup members and partners are recognized as the **founding fathers** of and **driving force** behind Industry 4.0.

Industry 4.0 revolution began in Germany for a simple reason - Manufacturing makes up one-fourth of German GDP! (**Chart 1**)

Germany is the only industrialized country where almost 25% of its GDP comes from manufacturing. The rest of the "industrialized" countries lie between 10 and 15% - with declining tendency.

Thus, Industry 4.0 was invented in Germany to maintain its technological edge, to continue to create manufacturing jobs within the country, and to protect the wellbeing of the future generations!

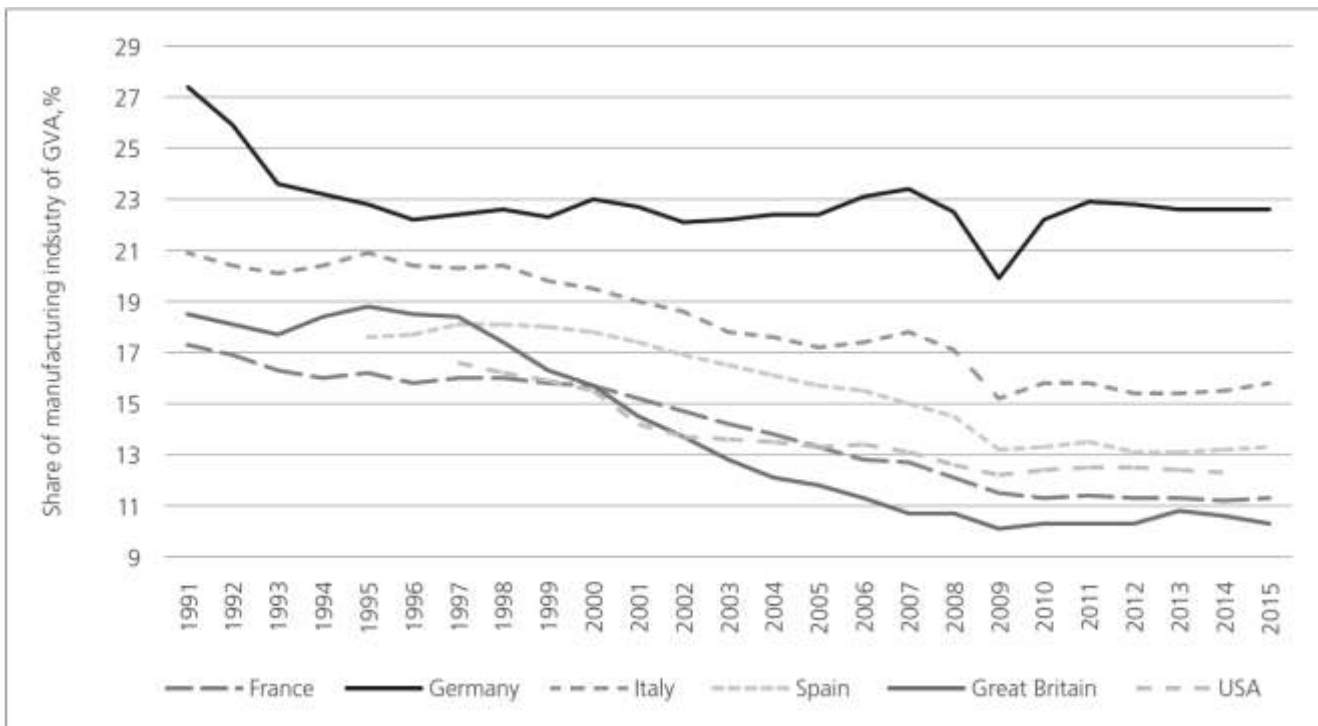
Some of the major players in German Industry 4.0 ecosystem include overseeing body- Plattform Industrie 4.0, It's OWL (Intelligent Technical Systems OstWestfalenLippe), Acatech

– National Academy of Science and Engineering, German Research Center for Artificial Intelligence – DFKI, Fraunhofer-Society, German Mittelstand (SMEs), Large Industry, and Clusters, Hubs and Regional Networks.

WHY INDIA AND GERMANY MUST COLLABORATE ON DEVELOPING INDUSTRY 4.0 SOLUTIONS?

Two basic reasons – Germany is investing heavily in Industry 4.0, and due to demography, there is a severe shortage of relevant skills in Germany – which India has in abundance.

German companies have already invested an average of **5.9% of turnover** in networking machines, digital twins and cloud computing; in large businesses with over 500 employees, the figure was even as high as **7.5%** - according to **Ernst & Young**. And it is expected that they will continue



(Source: Friedrich Ebert Stiftung)

Chart 1

to invest in foreseeable future. In Germany alone, extra value-added potential of up to EUR 425 billion has been forecast for the period up to 2025 – mainly in the automotive, mechanical and plant engineering, and electronics and high-tech industry sectors.

In such a future, **data and software** will become more important than the manufactured devices they reside on. And this will, possibly shift power, profitability and responsibility elsewhere in the manufacturing chain. And as **Operations technology** and **Information Technology** progressively converge, Indian IT prowess will have a big role to play.

Real partnership – not a cliché

“India and Germany must collaborate to take Industrie 4.0 to a new level” – was the outcome of a study by the think tank **Bertelsmann Stiftung**. *“Industrial performance from Germany and software development from India complement each other to develop Industry 4.0,”* said **Martin Ney**, former German ambassador to India while launching the study.

Challenges of Digitization in Germany

Germany's famous **Mittlestand** (SMEs) employs 60% of its working population and over 80% of young apprentices. SMEs lack direction and get more confused by all the buzz-words of Industry 4.0, and go into wait-and-watch mode. Germany's vibrant manufacturing industry risks falling behind, if it's SMEs do not catchup rapidly in digitizing their manufacturing.

A recent **PwC** survey found that **High investment** (46%), **Skilled Workers** (30%), and Lack of standards (26%) as the top-3 challenges.

Advantage India

In these challenges, we see a great opportunity for Indian IT companies.

Pole position

Unlike in many other domains, our IT industry has an impeccable reputation the world over. Entry-barrier is much easier to break.

Costs matter!

Industry 4.0 projects are bound to take place on a piecemeal basis. From a POC (Proof-of-concept), to vertical integration within the organization to horizontal integration with other stakeholders. This allows **smaller but**

technically advanced and agile Indian IoT/IoS companies an opportunity to enter the market. Cost factor never takes a precedence over quality in Germany, but it does play an important role.

China factor

China is making big strides in AI/ML (artificial intelligence and machine learning), and Robotics. But it is unlikely that China will set global standards in these fields. And that is primarily due to the risks related to IPR (Intellectual Property Rights).

In a survey conducted by German newspaper the **WeLT**, a whopping 82% of German manufacturers surveyed said that their machines, components, spares, catalogues, designs etc. got copied in China. India was well-placed with only 11% saying the same about our country. Besides, India with her democracy, tolerance and diversity, scores much better over our arch rival amongst German population.

Brownfield projects

Again, most of the existing SMEs in Germany are going to make an incremental shift to Industry 4.0. This calls for brownfield projects, and a lot of

flexibility and patience on the part of the consultants. It opens doors for **smaller Indian IT companies**.

HOW TO APPROACH THE GERMAN MARKET?

Indian IT giants (TCS, Infosys, Wipro) which are already present in Germany since a couple of decades need to improve their visibility in Germany in Industry 4.0 domain. Industry 4.0 happens at granular level - even within large corporations. Luckily, our IT giants are getting adjusted to the new realities of POC-based Industry 4.0 projects. Interestingly, other prominent companies like KPIT, Tech-Mahindra, LTI are showing stronger presence in Europe in future technologies.

Local Operations

Setting up your own operations in Germany is the best solution – but not the most cost-effective to start with. Companies with long-term commitment, global footprint, and deep pockets should consider this option seriously. Trust and commitment play a vital role from German client's perspective. Industry 4.0 business is not going to be a **commoditized activity** like business process outsourcing, or call centres. Close relationship with clients, and understanding their core activities will play a central role. Proximity matters!

Apart from this, the local operation makes it easier to hire locally or immigrate employees from India, addressing the complex GDPR (General Data Protection Rules) issues and data security matters. Joining clusters/hubs and local networks becomes easier.

Through Trade Fairs

Germany conducts 2/3rd of the world's largest industrial fairs. You get to see latest technologies, and meet customers, suppliers and competitors at one place. Since digitization encompasses all industries – one can visit some specialized industry shows, apart from trade fairs specific to Industry 4.0. **HanoverMesse** is the most important show for Industry 4.0, however some of the other shows could also be interesting.

Most of the Indian visitors and

Dates	Trade Fair	Location
25.02-27.02.2020	embedded world 2020	Nuremberg
03.03-05.03.2020	IT-TRANS Intelligent Urban Transport Systems	Karlsruhe
10.03-12.03.2020	LogiMAT - Intralogistics Solutions and Process Mngt	Stuttgart
18.03-21.03.2020	GrindTec- Inter! Trade Fair for Grinding Technology	Augsburg
25.03-26.03.2020	LOPEC - International Trade Fair and Printed Electronic	Munich
20.04-24.04.2020	HANNOVER MESSE	Hanover
05.05-07.05.2020	Rapid Tech +Additive Manufacturing	Erfurt
07.05-13.05.2020	interpack - PROCESSING AND PACKAGING	Dusseldorf
16.06-19.06.2020	automatica - Smart Automation and Robotics	Munich
23.06-25.06.2020	SENSOR + TEST	Nuremberg
08.09-12.09.2020	Automechanika	Frankfurt
06.10-08.10.2020	it-sa - The IT Security Exhibition	Nuremberg
10.11-13.11.2020	electronica-Components, Systems, Applins and Solutions	Munich
24.11-26.11.2020	SPS-Smart Production Solutions-Industrial Automation	Nuremberg

participants can drastically improve their chances of capturing business through such fairs with a lot of planning and preparation. Preparing for trade shows "**Before-During-After**" the visit is extremely important. Such preparation should start about 3-6 months before the show for a visitor, and 9-12 months for a participant. This could include identifying potential customers, writing to them, making appointments at the trade show, preparing your pitch, practicing, digital marketing and so on. Support from a consultant could play an important role, and help make open doors for you.

Local Consultants in Germany

Hiring services of local consultants with connections in the industry could be another option. Unlike in India, however, consultant's insights, experience and connections are considered to be valuable. While searching potential clients for you, he/she invests time and money on research, engagement, and visits. These are required to be considered as investments by Indian service providers looking for opportunities abroad.

HOMEWORK WE NEED TO DO

Historically, Indian IT companies have been good in dealing with service sectors like finance, banking, insurance, retail, logistics, airlines. Lately, more and more companies are dealing with PLM (product lifecycle management), simulation, AutoSAR, data analytics, engineering services – closer to industrial applications. However, Industry 4.0 focuses much in-depth on manufacturing. Core engineering skills coupled with IT skills are in demand. A detailed understanding of the cus-

tomers' **operations chain** becomes essential.

Some typical challenges that get highlighted from the USA about collaborating with Indian partners are as follows. In Germany too these perceptions need to be dealt with:

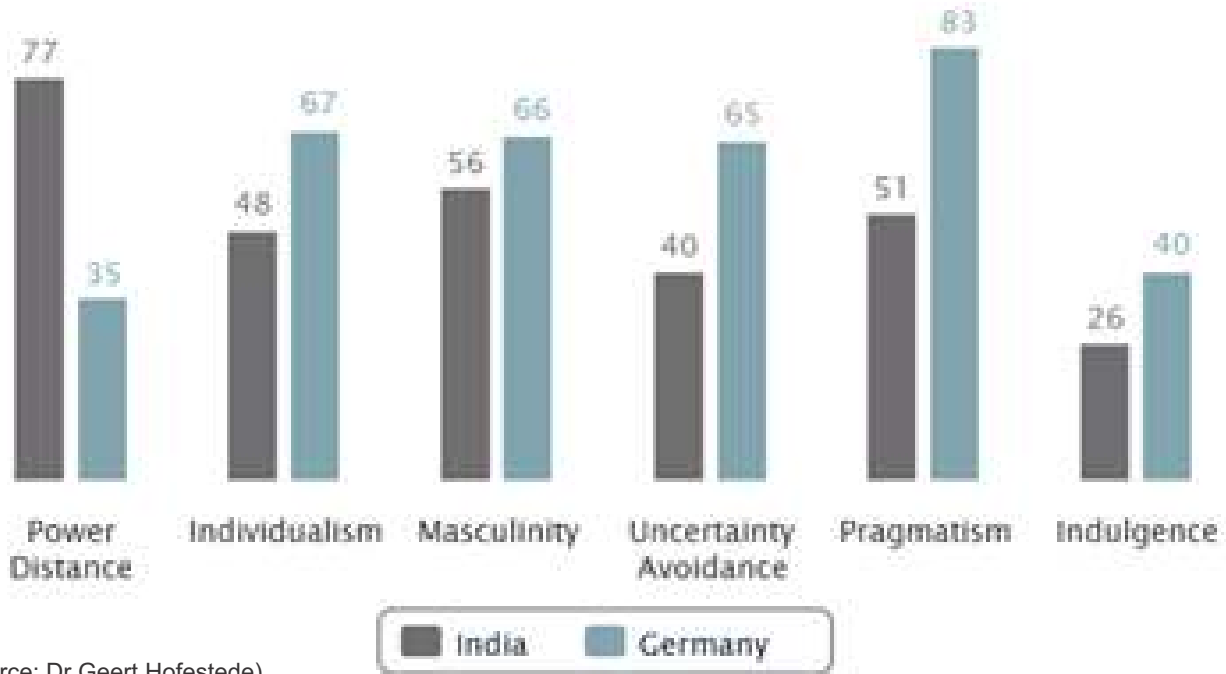
- Indians prefer **verbal communication** than the written one. This could lead to misinterpretation and constant revisits to the same topic – which is very ineffective.
- Poor **project management**
- Indian IT is, almost exclusively, service-oriented and not product-oriented. It often does **commodity business** based on client specifications. **Indians do not do the thinking**, they execute.
- High **employee turnover** of Indian IT employees
- Lack of knowledge of "**big picture**" eg. the project objectives. Hence, the staff often does not know "why" they are doing what they are doing.
- Indian project team members don't **say "No"** even when it's needed – leading to ambiguity and uncertainty

How Germany is different from the USA?

Since Indian IT companies are very familiar with the American customers, it would be useful to see how the Americans differ from the Germans. Germans are more engineering-driven, and long-term oriented. As against this, Americans are more transactional and cost-driven.

German IT-related collaboration processes are not matured enough. They would expect the consultant to go

Chart 2
India
in comparison with Germany



(Source: Dr Geert Hofstede)

much in depth, and possess more skills than purely IT-related.

While dealing with Germany, the challenges are going to be even more. We have the **language barrier** to overcome. IT services take place in airconditioned offices, but Industry 4.0 happens on the shop-floor. Germans are demanding, direct, and deadline-driven.

If this is so – why should we collaborate at all with Germans?

Germans are long-term oriented. The business deals are never transactional but relational. You become embedded in their organization once you are able to win the trust. You will never be replaced overnight with a cheaper service-provider. Margins in the business are quite attractive. They don't believe in squeezing out the last cent from the vendor. You get to learn a lot from these relationships. And last but not the least, Germans are going to stay put in Industry 4.0 for the decades to come, and invest heavily in it.

Intercultural understanding

Cross-cultural communication is central to the collaboration of multinational teams. Understanding each other's concepts of time, trust, commitment, and interdependencies becomes very important. Culture is reflected in negotiations, leading the teams, writing emails, conducting meetings, giving feedback and so on. The famous psychologist **Dr Geert Hofstede's** model assesses the impact of cultural values on the workplace behavior. Based on his model Indian and German behaviours and attitudes compare as follows.

(Chart 2)

A proper understanding of these cross-cultural behavioural aspects, and diversity management are extremely important for everyone, but especially for the project leaders. We strongly recommend **cross-cultural training** for the team-members who are going to work on Indo-German projects - whether off-shore or on-shore.

Conclusion:

India has set herself a target of enhancing the share of manufacturing in GDP from present 16% to 25% in a few years. We can reach this goal only by embracing Industry 4.0.

Germany can be an **excellent role model** for this as well as a **reliable and willing partner!**

(Source: DIN, BMBF, BMWi, BVMW, GTAI, Bertelsmann Stiftung, FES, GT, EY)

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