

XoQo



## Overview

This presentation is to be used as XoQo Tech's foundation of coordinating projects and increasing success for our clients in IT, software development and engineering fields. With an increase in demand for Autonomous Vehicle, Advanced networking, and integrated applications, XoQo Tech can deliver project based services

## Goals

1. Set groundwork for opportunities in XoQo Tech to apply our expertise in the IT and engineering fields.
2. Research and acknowledge any challenges, whether present or future, in major regions around the world. Currently focused in Michigan's market.
3. Understand client needs and base relationships on project based work, with less focus on time.

Specifications Distribution of work per region according to supply and demand of services. Presentation assumes we're able to follow all local laws accordingly and have bilingual employees or representatives to communicate locally or remotely.



## **Future Need for Engineer Services**

### **1. Michigan**

- 1.1 Statistics and Projections for 2010 - 2020
- 1.2 Outlook for 2015
- 1.3 Outsourced Engineer Services

### **2. USA**

- 2.1 Statistics and Projections for 2012 - 2022
- 2.2 Demand for Engineers
- 2.3 Outsourced Engineer Services

### **3. Germany**

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- 3.2 Outlook on the German job market for engineering
- 3.3 Pros of outsourcing IT services

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- 4.2 Automotive Market Statistics
- 4.3 Software Outsourcing
- 4.4 Conclusion

# 1. Michigan

## 1.1 Statistics and projections for 2010 - 2020

The following is a chart of the occupations for engineering in the area of Michigan, which is to be found on their official website ( not including May 2014, % of projection reached in May '14 and the Increase from 2010 to 2014 in ~%).

Occupation Title	Employment 2010	Employment 2014	Projections	% of Projection Reached (May 14)	Yearly Increased Employment from '10-'14 in %
All Occupations		4,073,730			
Enviromental Engineers	1,430	1,600	1,640	97.56	2.848
Health and Safety Engineers	530	620	570	108.77	4
Industrial Engineers	19,830	22,390	21,870	102.38	3.08
Mechanical Engineers	30,910	38,700	33,930	114.06	5.78
Electiral Engineers	4,520	8,580	3,800		
System Software Developers	6,550	12,010	8,960		

(1)- Bureau of Labor Statistics May 2014 State Occupational Employment and Wage Estimates for Michigan  
 (2)- Michigan.gov Labor Market Information

## 1.2 Outlook for 2015

The engineering workforce is said to be a slowly growing one in the US Nonetheless it is growing more rapidly than the Michigan 2010 outlook on 2020 would have planned. The yearly increase in employment of engineers is around 3-7% but its growth is exponential which means that more engi- ners are hired every year than losing their jobs.

The industrial and mechanical fields are the ones with the most hired engineers in Michigan, 61,090 in total for may '14. Taking both into calculations for May 2016 will let us have an outlook for 2015 as well. The bailout for the automotive industry lead to hiring more electrical engineers and system software developers than planned by the Michigan government in 2010. The employment is not expected to keep growing in such extends.

Industrial Engineers:  $22,390 * 1.0308\%^2 = 23,790$  Mechanical Engineer:  $38,700 * 1.0578\%^2 = 43,303$   
 From May '14 to May '16 around 6000 new engineers were and will be hired on those two fields combined.

### 1.3 Outsourced Engineer Services

Engineering in the early years was all about improving your product and service. Specializing in a field, e.g. telecommunication technologies, and gaining know-how in it was the main target of it. With the higher rate of globalization and customers aware of the possibilities, products and services now need to have a higher range and therefore more know-how on different subjects. In modern western economy, outsourcing engineers are a good way to gain geographically based know-how from other countries and therefore to extend its own range of products.

The technology is improving from year to year drastically and having an intern R&D team for every new demanded technology is not only expensive, it's also not competitive with the global market. Why? Imagine your company is located in a region with no mentionable earthquakes and have to design a safe modern house for people living in regions with many earthquakes per year. Your company did not prepare for this demand yet and therefore you have to decide between giving your in-house engineers the order to design an earthquake- safe fundament or to hire extern engineers who already dealt with earthquake- safe fundamentals and know what is efficient. You do not only **save time and money on outsourcing**, you also have a **bigger** range of choices you can make and your engineers can continue improving in their field, e.g. environmental friendly rooftops or walls.

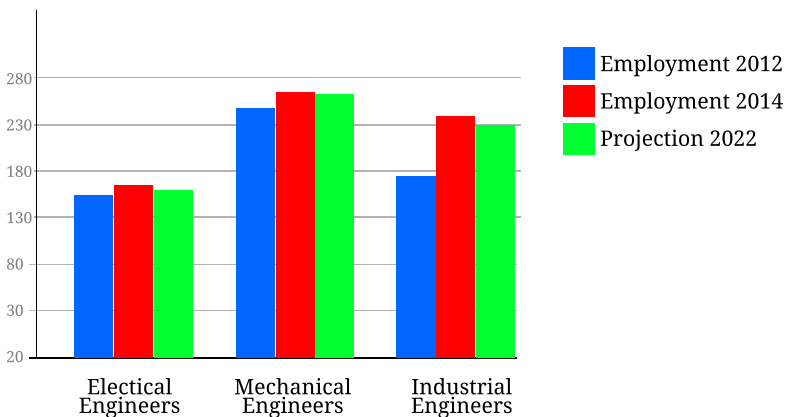
Outsourcing is something that takes place on the global market and gains more and more enthusiasts over the years.

## 2. USA 2.1 Statistics and Projections for 2012 - 2022

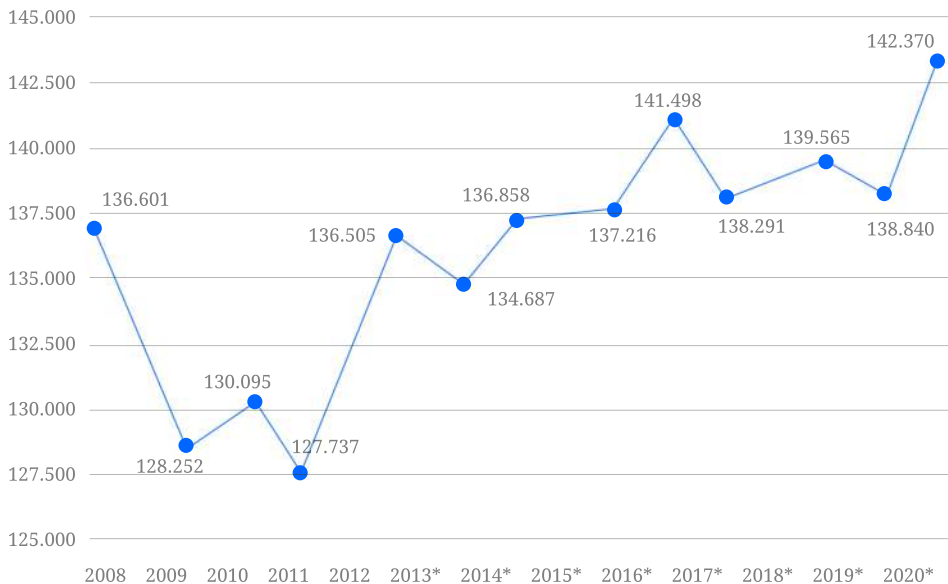
The engineering labor market according to the Bureau of Labor Statistics for USA will increase by 9% from 2012 to 2022. For comparison, the labor market for all professions is expected to have an average growth of 11%. The following specific engineering professions, excluding system software developers, are expected to have a growth in labor by only around 5%, 4% less than the average for engineers and 6% less than all professions combined.

Occupation Title	Employment 2012	Employment May 2014	Projection 2022
Electrical Engineers	166,100	174,550	174,000
Mechanical Engineers	258,100	270,700	269,700
Industrial Engineers	223,300	236,990	233,400
Software Developers, System software	405,000	382,400	487,800

As you can read from the table, the outlook is similar to the one from Michigan. The government estimated a small increase but the projection for engineers for 2022 already have been exceeded. Here a diagram for illustrating the engineering jobs.



Another interesting aspect for engineering offices in the USA is the sales revenue. Taking a look at the following chart shows us the trend. The years 2008 - 2012 suffered from the big depression and did not leave the market for engineering services untouched. 2013 - 2020 are estimated sales.

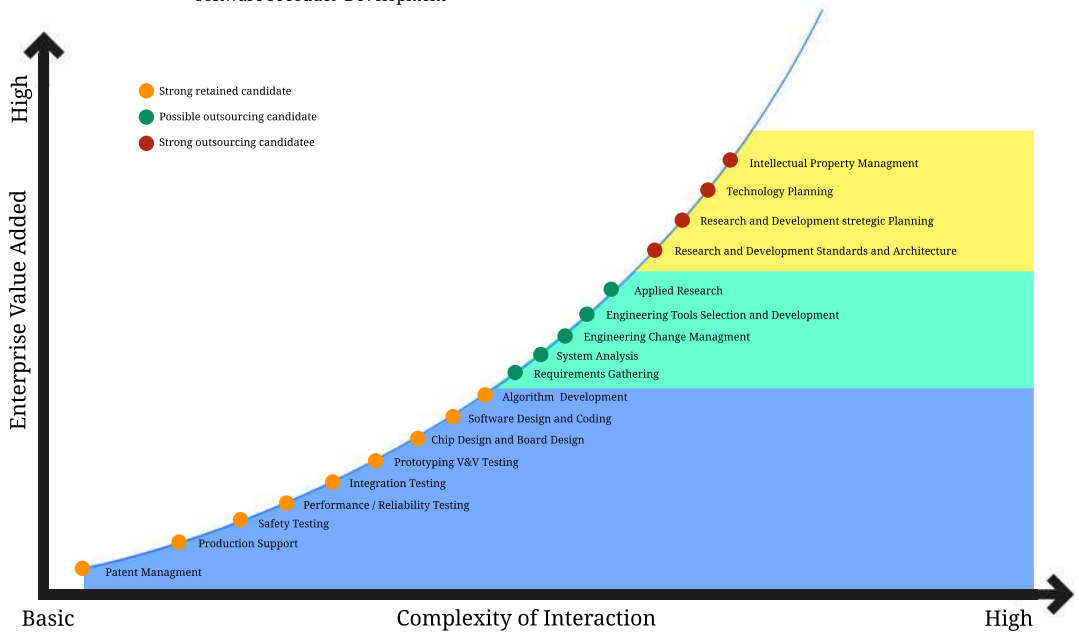


## 2.2 Demand for Engineers

According to the Bureau of Labor Statistic, the best engineering specialties with the brightest outlook for the future are biomedical, civil, environmental and petroleum engineering. Nonetheless there is still a high demand of mechanical and electrical engineers due to future technology inventions and integrations such as 3D- Printing, robotic technologies, information storing etc. The society of automotive engineers made a study for engineer employment for mobility industries 2011-2016 which shows that within this time, the average of the automotives original equipment manufacturer (oem) plan to hire between 500-1000 engineers.

In 2015, the north American automotive market, with 19.4 millions sold units, was the second biggest in the world, 80% of it made in the USA. With its big market, the future needs for adas in automobiles and bigger demands for EV and HEV, electrical, mechanical and software engineers have a bright perspective for future employments.

R&D/Engineering Services for Electronics, Software, and Embedded  
Software Preproduct Development



**Projected Numbers of US Jobs to be Moved Offshore\***

Profession	By 2010	By 2015
Architecture	83,000	184,000
Business Operations	162,000	348,000
Computer Science	277,000	473,000
Law	35,000	75,000
Life Sciences	14,000	37,000
Management	118,000	288,000

**To low Wage countries such as China, India, Mexico and the Philippines**

**Source - Forrester Research Inc**



### 3. Germany

#### 3.1 Statistics on German Engineering

Germany is well known for its engineering and its mechanical products. But nowadays, Germany is struggling with the demographical changes under the engineers. The institution of German Economy in Cologne found out that Germany is leading the list with the most engineers above the age of 55, 21% of all engineers, in Europe. And with only 18% of engineers under the age of 35 it is expected to lose more engineers with every year (IW Cologne 08.04.2014).

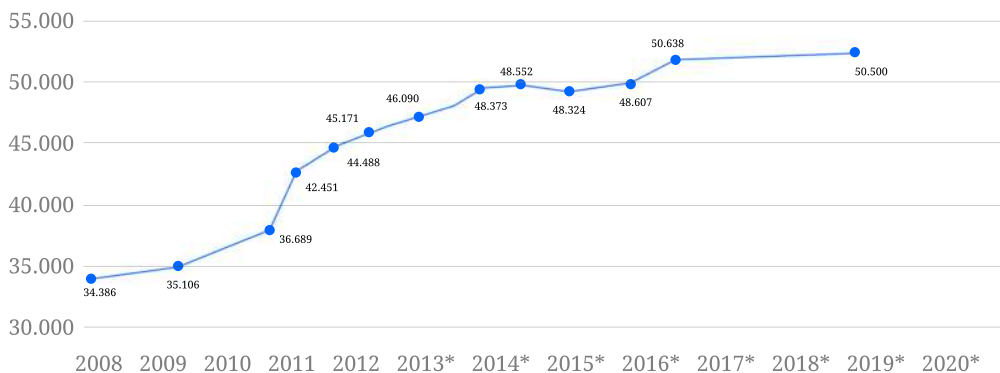
Therefore the annual demand for engineers (chart below) is increasing as well.



2012, Germany counted 1,6 million engineers. 0,4 million of them were freelancer. 2013 - 2017, around 39,800 engineers are needed to maintain the number of the engineers

In 2012, the automotive industry counted an employment of 1,296,000 employees, 163,000 of them were engineers. Spending on innovation totaled to €33.68 bn. (~ \$43.78 bn.)

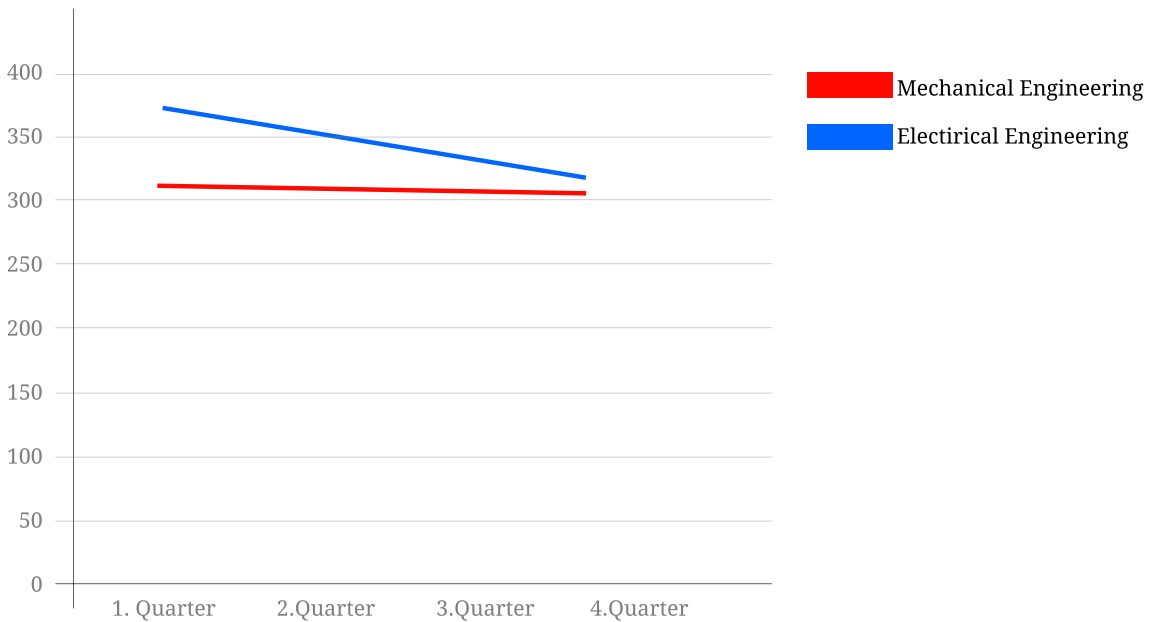
The sales revenues outlook for engineering offices also is bright for Germany.



Following chart visualize the trend. (2013 - 2020 are estimated sales numbers)

### 3.2 Outlook on the German job market for engineering

In 2014, around 206 engineering jobs were offered per 100 jobless engineers. The most open jobs for engineers are in the mechanical engineering and automotive technology engineering. In the first quarter of 2014 it offered 362 jobs per 100 engineers with the qualification. Followed by electrical engineering with 307 jobs per 100 qualified engineers. In the end of 2014, mechanical engineering still had a 309 jobs to offer per 100 engineers. Although it is a downward trend, mechanical engineering still has many jobs to offer. Unlike mechanical engineering, electrical engineering shows no actual downward trend. It started at 309 jobs per 100 engineers and ended the year with 300 engineering jobs per 100 engineers.



### 3.3 Pros of outsourcing IT services

Taking both, the sales revenues outlook for engineering offices and all the unoccupied mechanical and electrical engineering jobs, into consideration, the future trend will be a higher rate of outsourced engineering services, reflected by a growth of 9.5% since 2014.

The sales revenue for engineering offices in Germany is estimated to grow by almost 5% from 2014 to 2015. Therefore, companies will rely more on other service providers to maintain or even expand their growth.

One major aspect of outsourcing IT services is that it's cost efficient for German companies to maintain a competitive edge while not sacrificing quality. The company investing in direct employment would have to invest more money on insurance, benefits, training, if they intend to maintain their growth, while outsourcing IT related services would minimize costs since these factors are readily available or unnecessary.

There are 2 "generations" of outsourcing IT- related services. The first generation describes the outsourcing of the work as a whole. A company saves more money with this than with the second generation of outsourcing which describes automation of a process only.

Nonetheless, both concepts increase profit and companies can focus on their main field of business rather than on how to implement its own system into the business. Risks will decrease and by focusing on the main business, customer's satisfaction will increase as well.

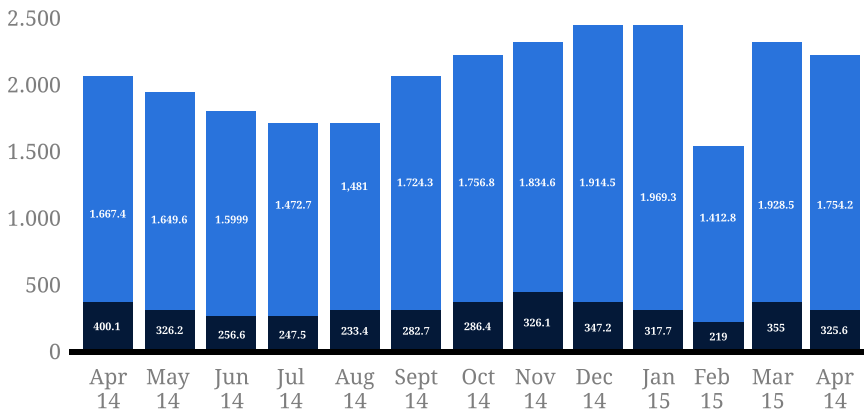
## 4. China

### 4.1 Automotive Market Statistics

China is the future market for automobiles of all kind. Not only it has low production cost due to low payments but also its big population brings new possibilities and difficulties for every car company. China and especially its bigger cities are known for heavy air pollution. Automotive companies are forced to find new ways of making cars more energy efficient.

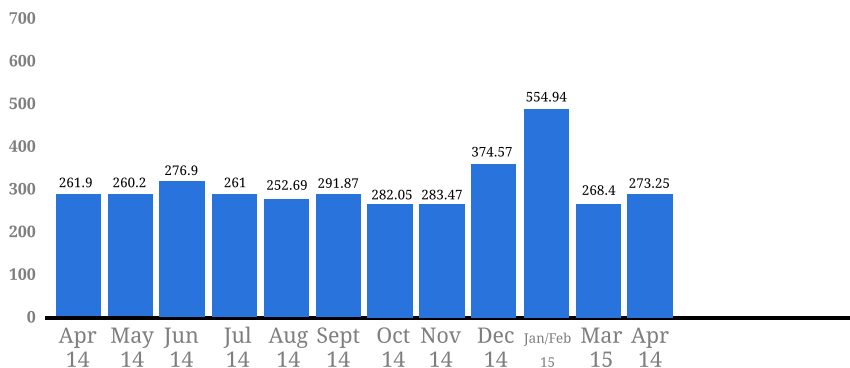
So first, let's focus on the automotive market and looking at the trends on trade revenue and their automobile production in the last months. Highest production rate was recorded on January 2015 with 1.969 million automobiles produced, followed by the lowest rate on February with 1.412 million.

**Automobile Production in China from April 2014 - April 2015 ( 1000 Units)**



The monthly trade revenue on China's automotive market is around CNY 260 bn. to CNY 280 bn. ( \$41.94 bn. - \$45.16 bn.) with a peek on December 2014 with \$60,41 bn. According to the chart above, January has also shown excellent trade revenues but due to a weak February, the chart below, which referred to the national bureau of statistics of China, combined both months.

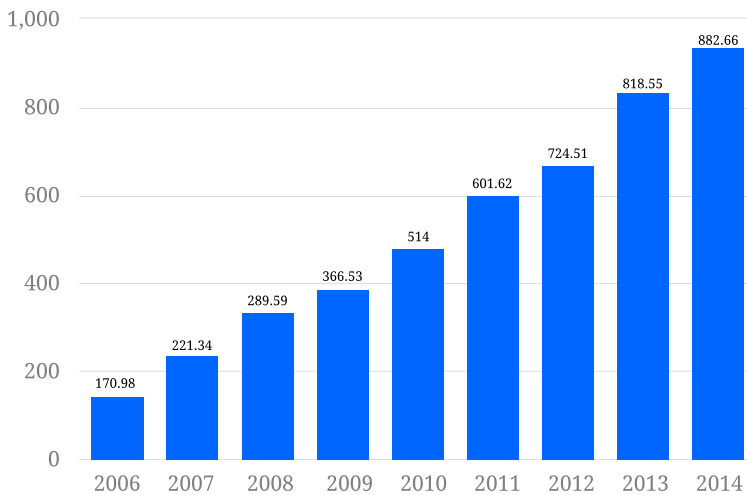
**Trade revenue of Cars in China from April 2014 to April 20 1 5 (in billion yuan)**



## 4.2 Electrical and Mechanical Engineering

Now coming next to the engineering services for China, starting with the mechanical engineering. As already mentioned before, China is a popular target for outsourcing engineering services and therefore it is not surprising that the sales revenue of mechanical engineering services in China also rises from year to year.

**Revenue of the mechanical engineering industry in China from 2006 to 2014 (in billion U.S dollars.)**



Due to some legislations like the limited number of new vehicle registration which excluded electrical vehicles and tax shortening on electrical vehicles, the market share for those is now increasing as well, boosting electrical engineering offices. January 2014, China sold 600 electrical vehicles while U.S. sold 6,000. Nevertheless, In Dezember of 2014, China sold 26,000 units, surpassing U.S. sales on electrical vehicles for the first time. If this growth continues, China might surpass the U.S. as the world's largest market for EV in this year. Leaving a bright outlook for the future need of electrical engineering services.

## 4.3 Software Outsourcing

Since China joined the WTO in December 2001, it's software outsourcing market has grown drastically. U.S.A. in particular was more interested in outsourcing software development to Chinese companies. China's largest software outsourcing companies which stood under contract for companies like IBM, Microsoft, NEC and Fujitsu increased their workforce from 200 employees in the beginning to over a million employees in only one decade.

In 2013, the country's software industry recorded a sales revenue of \$0.5 trillion, 24.6% higher than in 2012 recorded. In comparison, the global average growth was 5.7%. The 3 fields contributing to its success are software products ( 32.1%), system integration & support services ( 20.7%) and data processing & operating services (17.4%).

Due to the growing popularity of "Big Data", data processing & operating services is expected to contribute most to the industry's revenue in the future.

#### 4.4 Conclusion

The automotive market in China seems to already be booming but it is not even close to reach its full potential. A year ago, the car density per 1,000 people was only 10% of the car density in the U.S

