# Connected cars driving the future of mobility

Innovation of:

Things Go Social

INTRODUCTION

A new revolution is brewing in the bosom of IoT that would connect things from all over together.

And with this motto of reformation and transformation, IoT is connecting all the cars and making them smarter for a smart and intelligent future.

A smart cityscape for a bright future needs smart mobility and therefore we developed an innovative solution to drive the future in the present ecosystem of transportation. To bring the revolution we aim to bring the solution on a large scale to change the face of mobility completely by bringing a change at the source, at the automobile manufacturing industry. We believe that by introducing our smart solution at the manufacturing level it can widen the horizon and effect of the intelligence.
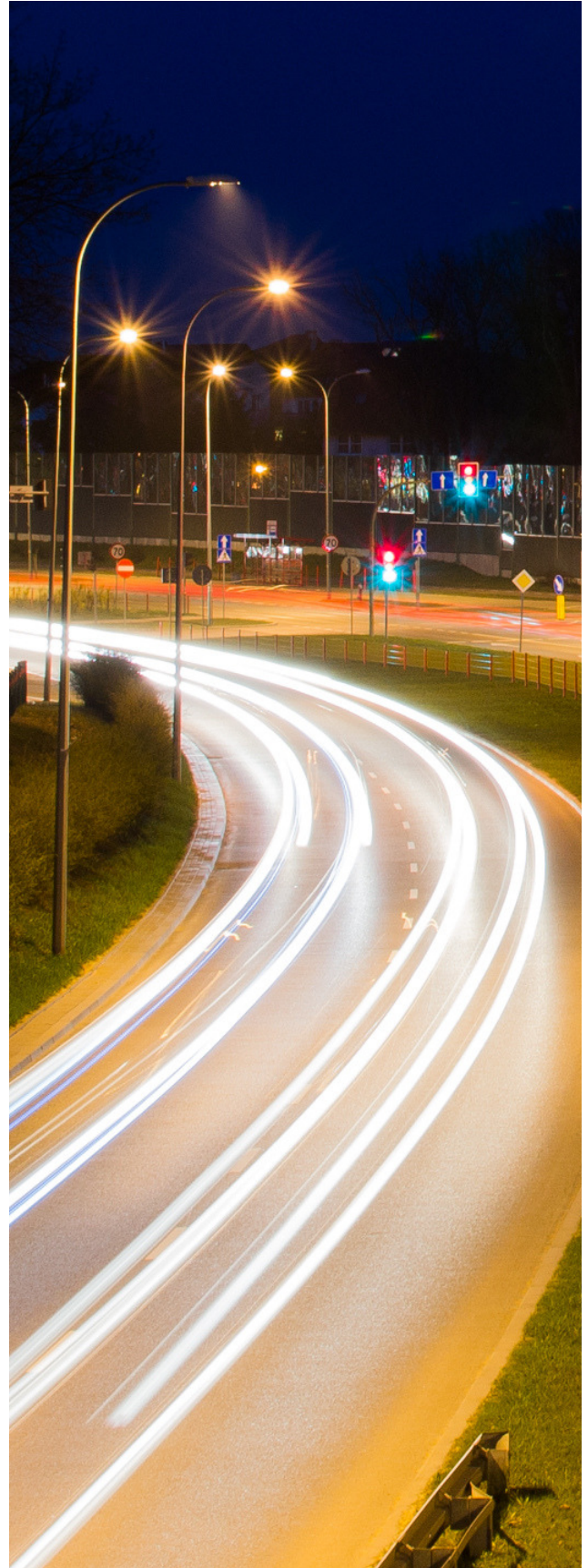
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Decoding the buzz of IoT

The ubiquitous Internet of Things(IoT) has seized all markets and after the revolution of the Internet, IoT is its successor in the wake of becoming a full-fledged revolution in itself. From space and infrastructure to the objects of daily use and appliances IoT has touched everything and made it smart. The touch of the Midas of IoT can turn everything smarter with its touch! One revolution came with Internet connecting people from all over together and another revolution is brewing in the bosom of IoT that would connect things from all over together!

The two shining stars IoT and AI are riding the dream of a smarter future. To summarize, **IoT (Internet of Things)** is connecting everything in a network with the Internet and **AI (Artificial Intelligence)** is giving cognitive powers to the machines, making it "Artificially" intelligent like humans.

With the smartly connected network of sensors bringing in the Big Data which can be successfully incorporated into infinite possibilities to improve the quality of life in all its walks! The number of devices connected and the number of sensors is mushrooming exponentially such that by 2020, more than 20 Billion devices will be connected using IoT, which extract data from the objects and collect it all which would be like the holy grail of information for the public and private sectors.

After the data has been collected by the sensors from the connected devices the actual process begins, which is, analyzing the data! The ultimate use of the massive data collected could only be possible with analysis, or to put it simply, the collected data can be beneficially put to use after a comprehensive analysis powered by AI.

IoT is the data source in that sense and AI can make use of this data to make rational decisions which can transform the way we live!

Gartner predicts there will be nearly 20 billion devices connected to the IoT by 2020, and IoT product and service suppliers generating more than $300 billion in revenue.

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And with the motto of reformation and transformation, IoT knocked the doors of transportation, connecting all the cars and making them smarter for a smart and intelligent future of mobility!

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The rise of automobiles and the rising concerns

The increasing number of cars is one reason we need a smart management system for the cars and vehicles in general.

Number of cars sold worldwide from 1990 to 2017 (in million units)
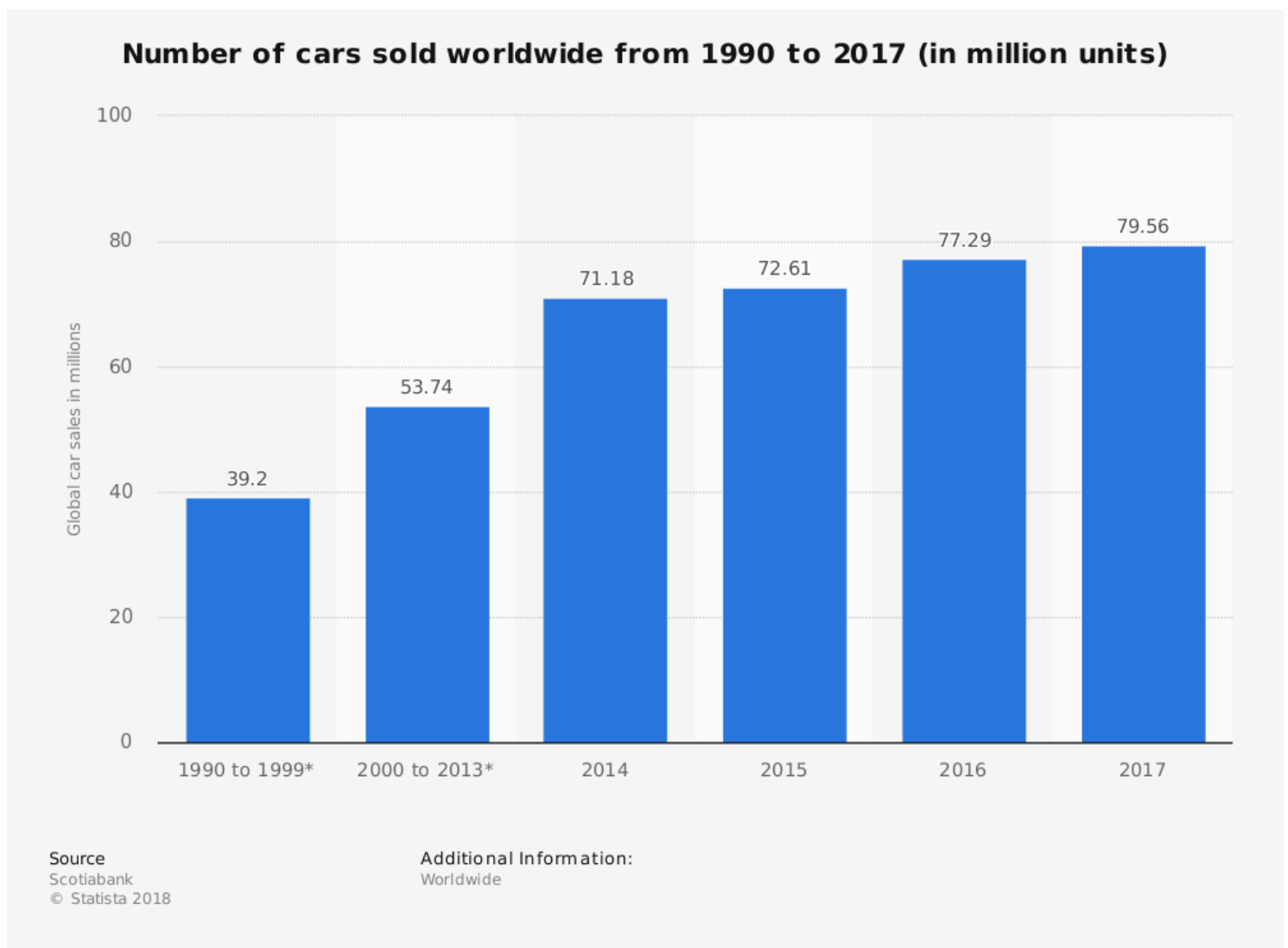
The graph shows the Global car sales(in millions) through the years showing the increasing rate of cars sold; source: Statista

Albeit the importance of automobile industry and its rising slope of the graph, it is causing a number of other problems and issues highlighting the missing efficiency and a need for a smart solution solving the problems.

The U.S. Environmental Protection Agency (EPA) declared cars "mobile sources" of pollution

The improved mobility and economic growth with rising automobiles come with a cost. With it, the smoke is also increasing along with the rising traffic. Vehicular pollution is one of the most pressing concerns of the economy today. The pollutants from the cars are major contributors to air pollution and the deteriorating air quality index.

Moreover, the carbon emissions from the cars increase the amount of carbon dioxide severing the issue of global warming becoming one of the major sources of GHG(GreenHouse Gas) emissions.

Also, the increase in vehicles has substantially increased the number of accidents. The increasing traffic is causing a huge wastage of natural resource, oil with the wastage of petrol and diesel. The ascending vehicular traffic can be pinned as a cause of global warming. And with the increased traffic and pollution, the efficiency of the cars or vehicles is decreasing causing a major wear and tear expense and maintenance cost. The increasing traffic is directly proportionate to fuel wastage and pollution.

All the issues and problems are interrelated weaving a web of perpetual agony for not only individuals but the complete nation.

The major sufferings in the current scenario

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In the current scenario without any connectivity or transparency within the transportation system and cars has become a cause of sufferings of collectively faced by the government and the consumers or individuals.

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THE PROBLEMS FACED BY THE GOVERNMENT

In the current system of transportation, there is **an absence of a comprehensive management system to manage and monitor the cars at one place causing the lack of transparency and visibility needed by the government.**

There is a need of **a centralized management solution** to monitor and manage the cars and vehicles in one place anytime.

The Indian govt. Came up with a solution to manage and reduce the vehicular pollution by banning the cars above 15 years of use from their manufacturing year. This is a positive step in a drive to solve the problem of pollution but it can be inefficient. There might be cars which due to reasons like fuel inefficiency, depreciating engine etc can be a cause of pollution even before it completes 15 years.

Moreover, the pollution check made to ensure the reduction in pollution is available at petrol pumps or gas stations which becomes a hindrance in getting the car pollution checked. The government has no way to know the pollution emission by cars in real-time so as to take appropriate measures at the right time. The pollution check is done only when the car is driven to the petrol pumps and is valid for a time duration, which shows there is no real-time measure of the pollution emission to nip it in the bud.

The **lack of transparency** with the overspeeding is also a major obstruction in making any nation accident-free, or safer. There is no measure with the govt. to manage the speed and traffic in real-time or to know the location in real-time for relief actions on time.

There is arbitrariness of the legislation of rules and laws to curb pollution as they unable to manage and monitor cars and other vehicles in real time.

THE PROBLEMS FACED BY INDIVIDUAL CONSUMERS

The problem of lack of transparency bothers the consumer as much as it bothers the govt. The owners of logistics, parents, and consumer as a whole have qualms of safety because of lack of visibility with the speed, vehicle health, etc**.**

Consumers are facing issues with the car health and increasing expenses with the maintenance cost of their cars. To keep a track of their location is another important aspect of safety.

Our integrated smart solution

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A smart cityscape for a bright future needs smart mobility and therefore we developed an innovative solution to drive the future in the present ecosystem of transportation.

The new game changer for a new era of commuting with connected cars. The new business model of connected cars has the capability of cars and transportation as a whole while proving itself to be a profitable venture.

Statistics have shown that the revenue from connected cars is expected to show an annual growth rate (CAGR 2018-2021) of 18.0 % resulting in a market volume of US$18,143m in 2021.

We developed an IoT platform for collaboration and innovation. **ThingsGoSocial(TGS)** is our web-based IoT platform with a mobile application. It is powered by the disruptive technologies of **IoT** and **AI** to provide the benefits of **data analysis** and **predictive maintenance.** We worked on advanced AI algorithms and data analytics tools to analyze and improvise with TGS.

TGS is empowered with our data acquisition device **Thing Green** which collects the data and **wirelessly transmits** the data on the cloud for **remote accessibility**. Our solution was developed for **bidirectional communication wirelessly**. It is made with a **modular design** concept to be **future-ready** and provide **scalable intelligence** in all industries.

With ThingsGoSocial we aim to build **a global cloud** for connecting cars to bring innovation for smart cities with revolutionary human-machine interaction using cutting-edge embedded solutions and disruptive technologies of IoT and AI to increase the quality of life and protecting the environment for sustainable growth and development with automation.

An integrated ecosystem with connected cars and communication of cars and humans enhancing the process reliability making it intelligent and efficient with optimized asset management and optimized performance.

It is a **real-time monitoring-cum-management system**. We developed our smart solution for the increasing problems caused by increasing number of cars with connected cars. Cars already contain advanced technology, with hundreds of sensors and numerous onboard computers and processors. In the present scenario of cars, they are not connected and thus most of the information is generated or stored locally. We are **connecting the cars to intelligence** by connecting them to the cloud and using Big Data generated by them using sensors giving greater credibility to the cars and greater control to the users and owners.

With our solution, we aim to bring services including navigation, fleet management, remote diagnostics, automated notifications, real-time location tracking, enhanced safety, smart insurance, traffic management with our future aim of autonomous cars.

TGS and Automobile manufacturers

To bring a revolution we aim to bring the solution on a large scale to change the face of mobility completely by bringing a change at the source, at the automobile manufacturing industry. **We believe that by introducing our smart solution at the manufacturing level it can widen the horizon and effect of the intelligence.**

When the automobile manufactures embed their manufactured cars with TGS they are creating **end-to-end visibility** in their cars. **The outcome: smart connected cars to a singular platform simplifying management and increasing transparency.**

TGS via ThingGreen will collect all the data for all the important parameters from the ECU, the car computer which provides controls for a variety of systems within the engine. All the important data with respect to the fuel consumption, pollution, vehicle health, engine health will be provided remotely on the **interactive dashboards** of TGS in real-time.

Along with the monitoring, the manufacturers can manage their cars by setting **personalized alerts** in settings to set normal limits for the car, providing real-time notifications and alerts in case of deviations. Moreover, automobile manufacturers will be able to **update and control the software remotely**, allowing them to monitor and respond to **engine performance**. For example, if the vehicle needs maintenance or is showing detrimental fuel consumption than any of the other cars if the engine is deteriorating due to an unknown case, then that **unknown cause can be deciphered easily and remotely**.

Our solution will enable them to keep a track of the vehicle performance for **predictive maintenance** and timely actions. It will help them in improving their performance with **increased customer satisfaction** and **reduced R&D costs** powered by the **actionable insights** of TGS. This will result in not only **efficient product quality** but also an **optimized performance** with an **enhanced customer experience** and **goodwill boost**. It will be the foundation for **better and new designs** for the future.

With the advancement of connected cars technology, cars can now be made more reliable than ever.

Complete visibility for remote asset optimization

Our solution gives **complete control** with **end-to-end visibility**, it monitors the car's maintenance schedule, fuel, and oil levels, and tracks it in real-time for extreme cases of theft, accidents, etc. Along with historical data analysis and behavioral analysis, the manufacturers can even **predict component failure** beforehand.

We are accelerating innovation to help reduce traffic cutting down on congestion and improving safety. By connecting cars, they will transmit a whole gamut of data including their speed, traffic (via acceleration and deceleration), location, direction, etc sending alerts to each in case of emergencies and accidents.

With **remote diagnostics** keep a track of your car's health and its engine status. This will enhance the consumer satisfaction with **enhanced service experience** as it enables them with the insights of maintenance required to maintain their assets and vehicles in peak performance. This will not only **schedule maintenance** and repairs required by the car but will also **notify the nearest service center** about the approaching vehicle in emergency situations and the consumer about the nearest service station. This would help the **OEM keep the real-time track of the vehicular health** improving the maintenance thereby improving the performance along with **remote support** in emergencies or on-road breakdowns. This would be beneficial in the case of accidents as well, sending location alerts to the nearby service station and hospitals

We are on a drive to bring 100% transparency to find out hidden patterns and correlations thereby preventing the disasters or problems before they arise.

Using **real-time location tracking** there is an **assurance of safety** of the vehicle making way for the smart insurance contract. The cars will be protected with **theft alerts** to ensure complete safety of your assets even in the extreme cases of theft. This data can be used to compare the fuel consumption to bring to the light all the operations of the vehicle. Our connected cars solution will make **Smart cars that can be controlled with a smartphone giving complete control of the car with a real-time track of its fuel consumption, driver analysis, and cruise control.** All of this helps to keep vehicles in peak performance shape, increasing its efficiency and **reducing costs** while **saving the environment** with **reduced emissions** while **increasing transparency** and control for increased safety and security.

> *Our smart solution is a scalable, hassle-free, and a modular solution for increased and enhanced asset lifecycle with preventive maintenance predicting problems before they breakdown saving huge financial and environmental costs.*