A REVIEW ON COMMUNICATION ENGINEERING USED IN MANUFACTURING MOTORCARS

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Abstract: The Urban traffic monitoring control continuously increases number of transmission methods regarding computational units. The technical protocols are been followed to address core issues. This paper insists the system, consisting traffic control policies and methods for emergency warning broadcasting. In real time transmitting signals and frequencies the modern artificial intelligence is used here. It helps in rapid growth of our human civilization and need a great demand and sustainability in upcoming years, these smart system communications give us multiple rapid growths without any fraternity and hence proves us with better results.

Keywords: Modern AI, Broadcasting, Sustainability, Transmissions

INTRODUCTION:

Regarding to this smart vehicle system industries all over the world . A new vehicle features that make possible to exchange information with the internet via specific interface will definitely lead to accidents , as infrastructure implies the system mainly consists of an intelligent and powerful computational and communicational unit which would be installed at each section to communicate with all approaching vehicles. As you think this is not very practical because of high cost and installing .The main objective of the proposed work is Design Vehicle communication to address core issues of safety and to analyse the performance.

Evidences of multiple methods in past decades:

Smieja. M, Jan 2010[3] presented , "The evolution of motorcars understood as complex mechatronics systems with ever emerging constrains on components of systems objects. The answers to these requirements is to optimize the operation of Flex-ray protocol in to increase the data rates for conventional CAN(controller area network) these are specially designed to ensure high data rates, fault tolerance, operating on time cycle, split into static and dynamic segments for event-triggered and time triggered communication. The way of communication increasing demands on transmission speed and level of security. This is one of method of transmission in controller systems in automotive applications"

Dong Yeol Han, Ji Hoon Lee, 24 Feb – 2020[11]:   In idea of improving the working efficiency and the quality of life many smart glasses technologies are being developed. These are used to improve the work quality and its productivity. It also reduces the data losses. But in real life these are just used as entertaining device with virtual reality. They are also used as an assistive manipulator for physically challenged. We present a method of touch-less activation by detecting a facial signal using transducer. This is possible by a facial signal amplifier using a lever mechanism. It classifies the facial signal and it obtains the accuracy by calculating the confusion matrix using a support vector machine. The classified facial signal can be activated in a radio controlled car by an eyewear-type signal transducer. Thus, for activating the actuator or for transmitting our messages through facial activities by our operating system.

Klaus Rudinger, Albert Ismer, 1973[26]:   Titanium parts are almost used in automobile industries for more than ten years .It has attractive properties and a good performance in auto field for recent years. It has high fatigue strength and low density. It has optimum utilization of their inherent properties.

Van Riza Belgrade, Viriena Puspita, 2021[37]suggested that   " Strategies build to develop brand and customer loyalty acts as an influence on a company's financial position. Toyota Astra Motor Indonesia, one of Japanese automotive companies in Indonesia, by applying communication strategies maintains its brand sustainability. This is implemented by displaying advertisements to attract the Indonesian people and to full fill their needs"

Riccardo Coppola and Maurizio Morisio, 2016[6]:   The connected car -a vehicle capable of accessing to the Internet, of communicating with smart devices as well as other cars and road infrastructures, and of collecting real-time data from multiple sources- is likely to play a fundamental role in the foreseeable Internet Of Things. In a context ruled by very strong competitive forces, a significant amount of car manufacturers and software and hardware developers have already ebraced the challenge of providing innovative solutions for new generation vehicles. Today's cars are asked to relieve

drivers from the most stressful operations needed for driving, providing them with interesting and updated entertainment functions. In the meantime, they have to comply to the increasingly stringent standards about safety and reliability. The aim of this paper is to provide an overview of the possibilities offered by connected functionalities on cars and the associated technological issues and problems, as well as to enumerate the currently available hardware and software solutions and their main features.

Wolfgang Schwiger, 28 May-2008[30] said "Right from the beginning of the scientific debate, the inconsistent usage of the term 'interactivity' is complicated. First, the article sheds light on the terminological origins and distinguishes the term from expressions. Finally, it delivers a systematic overview of specific criteria of interactive communication.

With today's high product variety in automobile manufacturing, every new car design must be adapted to existing production facilities. In order to check this, collaboration between engineering design and production engineering sharing the information is the of collaborative engineering.The main objectives of the proposed approach are supporting the requirement specifications for products and processes, improved and simplified information for process planners, forward and backward traceability from changes in manufacturing units to product systems, and the elimination of multiple versions of requirement specifications by simplifying the updating the information"

Fredrik Elgh, Staffan sunnersjo, 2007[44]:   With today's high product variety in automobile manufacturing, every new car design must be adapted to existing production facilities. In order to check this, collaboration between engineering design and production engineering sharing the information is the of collaborative engineering. The main objectives of the proposed approach are supporting the requirement specifications for products and processes, improved and simplified information for process planners, forward and backward traceability from changes in manufacturing units to product systems, and the elimination of multiple versions of requirement specifications by simplifying the updating the information.

Prajakta , Bhagyashree Shinde, Pratiksha Patils,05 May-19 [9]: The specific applications of wireless communication. Automotive wireless comm. is also called as vehicle to vehicle communication. It also explains the technology used for automotive wireless comm. Along with the various automotive applications relying on wireless communication. Our project proposes a vehicle to vehicle communication system for cooperative collision warning. One vital technical challenge viewed in this project is to achieve low latency in delivering immediate alerts in various road situations. Advanced wireless technology for vehicle to vehicle communication playing important role to reduce the number of accidents by providing early alerts. Based on a analysis application requirements, we design vehicle to vehicle communication system. This system consisting traffic control policies and methods for emergency warning broadcasting. Simulation outcomes displays that the proposed system gives less delay in delievering emergency alerts and bandwidth used efficiently in stressful road situation. The wireless data communication between two vehicles is provided by introducing Wi-Fi technology. It is implemented for low power consumption to allow battery last forever. The distance measurement is provided by ultrasonic sensors. These sensors are transmitting and receiving ultrasonic signals.

**Internal Influences in existing new communicational technologies :**

Marek Horynski, 2007[4] Provoked that   "The road traffic detector and role is to BCATS (Bay city area transportation systems) The application of modern IT networks for urban traffic monitoring control method continuously increases number of motor vehicles. The detectors are installed almost around the world to improve the motor transportation in industrial centres. These are colonized to transmit the parameters at proper time with indication"

(TETRA) Terrestrial European trunked radio for open standard digital mobile combing the radiotelephony and mobile telephony functioning the environment with many hardware systems enabling immediate contact with 10 or 100 more members.

 Da-kao YAN, Meng LI, Dong ZOU, 2013[15]:   An intelligent vehicle control system was designed. This uses MC9S12XS128 single-chip microcomputer as control core. The hardware circuit was made by the power module, motor-driven module, image acquisition module, steering gear-driven module. To get the road information the HQ7620 camera was used. The classic PID Algorithm was used to control the motor speed and servo steering. The PID control algorithm was made by MATLAB which increased the real time and stability. This made the experiment to confirm that the car behaves stable at the speed of 1.5m/s. As a result it makes us to understand the need of automatic control.

IS Bayram and Papapanagiotou, 16 December – 2014[21]approached   "The Vehicle to grid concept plays are required by advanced control and demand side management (DSM). A specific system architecture for the DSM of EV's are moving to low power urban area Low power wide area network. The results shows that LPWAN technology is capable of storing

adequate amount of information for the considered application the local base station is able to serve up-to 438 EV's per cell 1408 EV charging points"
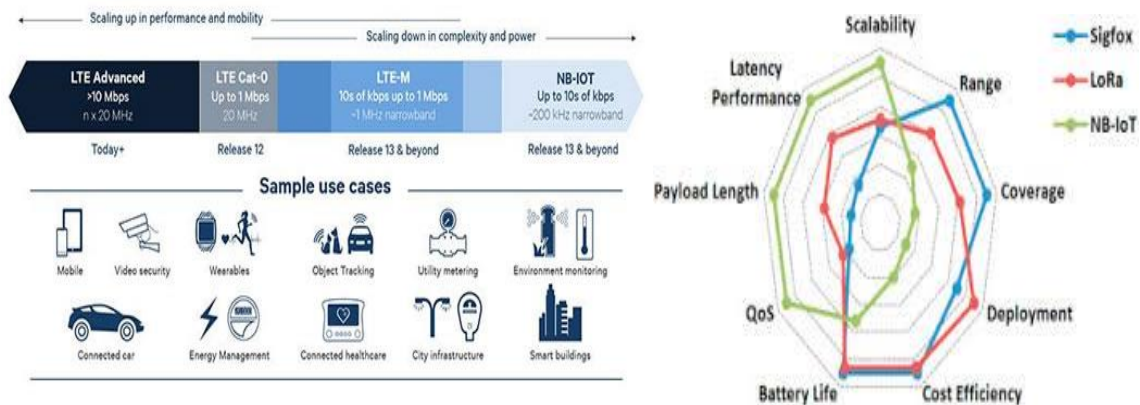
Standards of LPWA Networks in scale of Mobility....(21)

Siva RK Narla, July-2013[18]: In future the Driver's manual could begin with cars will have conversations with other cars, to traffic lights, and to other roadside devices. We know that every year cars come with more and more innovative in a way smarter. The success of these technologies is only when people stick to it. These are known as V2X technology in US and Car2X in Europe.

Z.Huda, December 02 – 2012[45]: This industrially-oriented reports a reengineered manufacturing process design so as to assure appropriate hardness in the axle-hubs of modern motor-cars. The experimental work involved using forging press, heat-treatment furnace, a sealed quench furnace (SQF), and a high-precision micro-hardness testing machine. The material-processing system was ensured to make corrective recommendations for reengineering in which they were then implemented to develop a new edited manufacturing design to meet quality requirements for the front-axle hub of the car.

Sathish Tanaji Bhosale, February – 2019[33]insisted "Complexity with high end is required for monitoring equipment. Increases the risk of sustainability on technology. Automation and control are features of IoT, because of that physical objects getting connected and controlled, digitally and centrally with wireless infrastructure. IoT protocols such as MQTT allows interaction with different kinds of automotive equipment such as- sensors, control units"

Shui-Hua Wang, Yu Dong Zhang, 06 October -2017[27]: 50 ford motorcars and 50 non ford motorcars, these data's augmentation to enlarge its size 3900 image . The we developed eight layer CNN which was trained by stochastic method gradient descent with momentum method. This proposed CNN method performs better than three state-of-the-art approaches.

Snehal Pacharne, Vinayak Kulkarni, 2021[39]: Visible light communication, also known as Light Fidelity Technology is the form of wireless communication. This uses the visible light to transfer information like digital data, Audio and video. To get the suitable speed and light is being modulated. V2V communication is the technology where one vehicle transmits and receives data to and from the second vehicle so that they can transfer data between each other and will be able to assist each other.

According to Gerard Bloch-Morhange, Emilio Fontela, 1 April 2003[47]: The study shows that the area of high value-added services with minimum pricing is yet to be developed in the industry. These dimensions allow for the positioning of all communication services into a morphological shape.The analysis of characteristic dimensions of the communications system has been based in the interaction between technological performance, cost for the user and value-added.

Kevin C. Desouza, Christoph H. Wecht, Jeffrey Kim, 22 Dec - 2015 [43]:   (ICTs) are no longer just for internal usage. Rather, in the era of open and distributed innovation, they must be leveraged by businesses and organizations to reach , record and review ideas from internal and external sources ranging from customers to employees. ICTs enable the entire innovation process, from idea generation and development to experimenting and testing, and, finally, to commercialization of ideas.

Developments in Sustainability:

Sara K Al-Ruzaiqi, 25 August-2020[20]:   The advantage of having automated cars is its ability to detect the real time obstacles and to exit them. The connection with an android device made the device is a good device. The device's brain is made of arduino Uno. Now, the user has the control movement of the car or switch to automatic mode in which the car can drive on its own. As the car has a character of detecting and avoiding obstacles in real time.

Yeka Joseph Abueh, Hong Liu, 2016[36]suggest to a come up with   'Driverless cars and autonomous transportation is becoming common in these days. Tesla, Audi and Google are like the leaders of this new era of autonomous industry. This brings lot of safety features and improves the quality of life. Instant safety messages like pre-collision alert, blind-spot detection, pedestrian and object detection improves the safety of the driver and the passengers. Thus vehicles can travel closely with safety"

From Jason Vrendenburg , Aug 22-2013[1]: The transportation and communication in the development of automobile emphasized the integration between these two. This decade helps to organize and regulate in ways would advance state and corporate interests, where telegraph separates automobile and communication in past century this development reintegrates these functions through two-way communication through community wireless networks. These members to communicate from automobile to society made happen now, for state and corporations to broadcast to the automobile but government specifications largely restricting the two way radio to police departments and emergency services made impossible to reply, the frustration of this violation of through close readings of Hunter S. Thompson (journalist) .This last integration concludes many of the possibilities early motor people viewed in automobile industry strengthening in conservative state by direct and indirect control of individual mobility to intensify relation between mobility and consumption.

 Michael Aeberhard, Dirk Wollherr, 27August -2015[8]:   During autonomous driving, in particular conditional or highly automated driving, a critical part of the system is the driver take over request. Little focus has been given to this important aspect in an automated driving journey. A driver take over request, or TOR, can happen for various reasons and under varying circumstances. Once a TOR occurs, as defined in conditional or highly automated driving, the driver has a finite amount of time in order to take over manual control of the vehicle before the automated driving system deactivates. This paper presents a detailed analysis of why a TOR can occur, how the automated driving system should react during the TOR phase. Various driving strategies during a TOR are presented and evaluated for a single-lane highway scenario.

Emilliano Sisinni, Federico Bonafini, Paola Ferrari, 10 May- 2018[24]: A wireless feedback for implementing the balancing method is proposed. The smart battery pack is based on wireless feedback from individual battery cells and is capable to be applied to electric vehicles applications .They are in charge of ensuring the battery operation into the safe operating into safe areas . The benefit is used to increase the useful capacity of battery pack. All the previous works are based on wire communication to get different measurements from all battery cells.

Goggin , Gerard, 2019[13]:   This content will show about the experimentation and manufacture of connected cars and autonomous vehicles: disability. This is a new kind of technology for users with disabilities which is like Google's pilot driverless vehicle for blind people. By these we can analyse how disability is connected to cars by communication and technologies. This kind of framing of connected-cars-as-good-for-disability brings the question of emerging social technology, equality, diversity and design.

Network Concealment:

Tamás Tettamanti, István Varga, Zsolt Szalay, 10 Oct - 2016 [16]insisted to   "The news about automatic vehicles brings a big boom in the field. By the discovery of autonomous vehicles it brings great advantage for the consumers in reducing the driving tension and gives a calm and effortless travel. But in other side it also has a big possibility of to hack the vehicle in future. Therefore the review's aim is to be in trend by bringing a driverless vehicles and automation in transportation field "

NN Kumbhar, PV Mane-Deshmukh, 2017[38]:   In today's world inventions and technologies are developing enormously. In consideration of these innovations, development of smart and highly secure lock/unlock system based on wireless communication technology brings a new era. For developing this, the system is connected to smart microcontroller PIC 16F-877A and Zig-Bee.

E. Dado and R. Beheshti, May 28-2004[49]:   Several testing have been conducted in the past couple of years to determine the use of (ICT). Although, these surveys showed that there is a clear evidence of a widespread (and increasing) use of ICT in the BC industry, the uptake of ICT in the BC industry can be characterized as slow in comparison with other industries. . Benefits can be gained by analyzing the possibility of importing, adopting, adapting or translating successful developments. Also these developments will be compared with the current situation in the BC industry. This is an advantage if we look at what is happening in other industry sectors. Conclusions drawn are relevant for future developments in the BC industry.

Anurag M Lulhe, Tanuja N, 19 Dec-2015[17]:   The use of vehicles that consumes in petrol and diesel brings two major problems. It pollutes the environment enormously as the number of conventional vehicles are in large numbers. Secondly, the price of the fuel is increasing day by day that says low cost fuels is coming to an end. This results in bringing the electric and hybrid vehicles. Electric vehicles run by an electric motor, either AC or DC fed by battery through electric converter. The AC drives consists three phase permanent magnet. Similarly, other widely used drives are three phase Induction motor (IM), Switched reluctance motor (SRM), Brushless DC motor (BLDC).

Demetris Trihinas , George Pallis, Feb 23 – 2018[5]:   This content will show how to provide a low cost pollution monitoring systems for highly toxic gases like(CH_4 & CO_2) and dust measurements, consists of dust device, sound sensor, that are combined into single platform. This presents a new system for calibration of sensors along with improving optimization and vitality which results in precision of information. This can be achieved by connecting your smart devices with data or Wi-Fi to upgrade the standard of living. The microcontrollers are available in abundant. By believing this works in terms of quick detection and real time response.

Alessandra Fanni, and Augusto Montisci, 9 May-2019[31] mentioned "Many charging units share one of transmission lines this includes the carriers into a single station. A set of network technologies support the smart grid communication ranging from optimal to wired communication. Because of all charging units connected to one single feeder, any lines can reach all nodes. In smart grid new batteries are posed to power systems operator by electric vehicles"

Network Topology Types
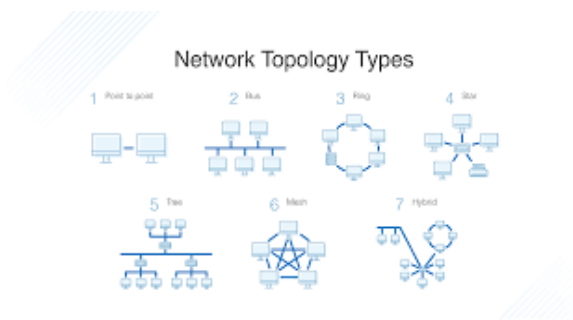
Jhunhua Zhao, Fushuan Wen, Abdus Salam, Liang Li, 3 May- 2017[23]:   The capability of power systems to accommodate renewable energy forms such as wind power. The conflict between the increasing energy demand and environment concerns is becoming more and more severe along with the social and economic development of society , the system to accommodate intermittent renewable energy which has been successfully applied to Maryland electricity (USA).

Mariam Zouari, Adel M. Alimi, Joseba M. Rodriguez, 17 Jan -2017[28]:   The number of Electronic Control Units (ECUs) and networking technologies in the automotive field and a specialized traffic analysing system is well needed to scrutinize all exchanged data and the analysis results as input data in a type 2 fuzzy Rule base system for road choice. This paper presents the challenges of a high performance in-car network traffic analysing.

Yuan Fang, Wei Li and Zhisen Wang, 12 April -2010[10]:   The performance and capacity of mobile communication system are directly influenced by the speed and precision of channel estimation.by this feature analysis of mobile wireless fading channel. This method has the virtue of high speed, low complexity and strong real time character to environment.

Roberto Brignolo, Stefano Cosenza, December 2009[7]: The technical protocols of Motorola's iridium system are gathered. This system is a worldwide, satellite-based, cellular, system primarily intended to provide commercial, low-density, portable service v, mobile or transportable user units, employing low-profile antennas, to millions of users around the globe. Calls can be made and received anywhere in the globe with a personal, pocket-size, portable unit. A small (700 kg), smart satellites are interconnected to form the network's backbone. Small, battery-powered, cellular-telephone-like user units communicate directly to the satellites.

General:

Hwang, Jong - Gyu ,Jo, Hyun - Jeong, 12 Jan – 2010[34]:   Workers maintaining at the roads may collide with the vehicles since they cannot recognize the other vehicles approaching because of the sensor block median occurrs due to their long hours of continued maintenance work. To reduce these casualty of maintenance workers at the trackside of road, developed the wireless communication-based safety equipment for preventing from accidents. The motor-cars for maintaining trackside facility have unique operational patterns suitable for urban independence. The several mechanism are to be developed.

James Hay Stevens, 08 Dec – 1982[35] worked on " It is when discussing alternatives to the internal combustion engine that the enormity of the problem is revealed in all its bleakness: the weight, bulk and restricted performance of the best of them, electricity; the many problems of the steam engine the early evolutionary state of the fuel cell. a true exhaust cleaner at 100 per cent efficiency but the policy for thousands of millions of older vehicles present terrific problems"

Accelerate Digital Transformation:

Fauzan Zahudi , Bassam Sheyaa, Waleed Asender, 12 May-2010[14]:   In a past decade the number of car are increasing rapidly and so is the number of car theft attempts. Even though most of the cars have various security systems, the number of theft cases doesn't reduce. Thus, to overcome this problem we use the project "Monitoring and Tracking System" which both are required for having a powerful security system. This sends SMS and MMS to the owner in case of theft. So the local security and the owner can easily track and identify the theft place by using the GPS system that can be linked to Google earth. The testing of the system showed us in a result of sending the MMS to the owner within few seconds of the theft and receiving information to the database within 4 minutes. This helps in finding the intruder.

MosfequrRahman[c] and DylanNelms, April 2019[25]:   The coil setup consisted of primary coil with capacitor and a secondary coil with the capacitor. Now there is essential need for expanding the utilization of wireless charging methods for electric vehicles charging are confirmed in brief with some scientific examples and approaches. Inductive wireless power transfer prototype is experimentally implemented with 3D design is presented as well.

Anna Blombäck, Christina Scandelius, 2 August – 2013[41]:   (CSR) communication is positively related to responsible brand image with consumers. It is notable that the results indicate that corporate heritage identity on its own does not influence positive consumer perception on responsibility, unless it is linked to CSR communication.

R.Karthika1 , S.Balakrishnan2, 3 March – 2015[42] prepared   "The designed prototype of LIFI system to transfer information as well as data. The idea is to transfer data and file as serial data's using UART serial communication from one PC to another PC using VLC. For binary conversion of received stream of data into a suitable file to be recognized by the PC software. Photo diode transistor is used to recover the data from visible light and inverting amplifier is used to get the data and processed by pic controller connected to PC serial communication port as well as Android Phone using OTG cable these can be used wherever LED light source is available"

G Arun Francis, M Arulselvan, J Vijaya Kumar, April – 2019[19]:

Radar is a device that is uses to monitor a distinct area continuously. It uses the radio wavelengths to detect the signal frequencies, angles. The main intention of this is to help the Fishermen who are being caught by the neighbouring country army. By this radar system they can deploy from them by giving an alert message.

Gabriele grande and Remus Teodoerscu, 12 October 2019[22]:   The dependence of one energy source exposes economics to unstable global oil markets and increase in environmental concerns. Therefore the data electric vehicles are expected to achieve a shape market position in upcoming years, the realization of such frame work requires appropriate communication that will enable interaction between control power and varying network conditions. These serve communication requirements, standards, IoEVs, challenges and smart grid applications

Rolf Isernhagen, Wolfhard .E. Lawrence, 01 Feb -1990[29] said " One main controller of nets in comparison with other local area networks is that they have real time requirements. Messages crossing the communication lines how to have to that in certain time to full fill certain requirements in communicating techniques"

V.V.Šeštokas, 1980[40]:

On considering the interrelation between a town and its transport system the following factors should be taken into account: -the frequency and time of the communication with the centre and other points of gravitation and the transportation of people; - the characteristics and parameters of street-motorway network, its loading; -types of transport and their interaction, modes of transportation.

Rowan Wilken, Julian Thomas, 2019[32]: In knowing the precision maps data are so prized by autonomous vehicle developers, we concentrate on one firm, Uber provides a good example here because its struggles over mapping data. Maps data are vital to Uber's operations and are connected into their smartphone apps at all stages. The ability to book and ride and then track the position of approaching car on the map is one of the key features of the app interface, for this to work both the app users and in term of back end operations and analytics. It has to rely on the scenes of infrastructure maintanence, point of interests, up to date backing Information, and so on.

Environmental Check:

Fabio arena and Giovanni Pau, Jan 2019[2] views on "The aim is to review the carried out communication protocols and road infrastructure used by vehicles. The result of V2V technologies helps in ad-hoc mesh networks electronic stability program, forward collision warning, brake assist systems they are called as intelligent transport systems .Daimler ,General motors, Mitsubishi have been working on traffic communication for past years. In implanting this there are some obstacles no privacy, Cash for growth, dissemination of technology"

Fauzan Zahudi and Waleed Asender, 12 May-2010[14]:

In a past decade the number of car are increasing rapidly and so is the number of car theft attempts. Even though most of the cars have various security systems, the number of theft cases doesn't reduce. Thus, to overcome this problem we use the project "Monitoring and Tracking System" which both are required for having a powerful security system. This sends SMS and MMS to the owner in case of theft. So the local security and the owner can easily track and identify the theft place by using the GPS system that can be linked to Google earth. The testing of the system showed us in a result of sending the MMS to the owner within few seconds of the theft and receiving information to the database within 4 minutes. This helps in finding the intruder.

 I.E .Noble, October 1992[12] said "Upcoming motor cars and automobiles come with more electronic control systems in order to make our life more comfortable and also enhances the safety of life. More than these, this system do not radiate excessive electromagnetic noise. These electromagnetic noises could cause interference within-board or domestic radio reception that the vehicle will encounter in the road. Many articles says that the EMC has been tackled for nearly 40 years by the automobile industry. Thus, it concludes that the automotive industry can be complied with European Community EMC legislation"

Simon. J. Towner, April 1994[50]: In the race to get to market first, old product development models must be discarded. Sequential development and hand-over-the-wall practices are too slow. Time must be cut out of the process, and a blueprint for doing just that is put forward. It is based on the observation and reporting of many cases where aspects of a product development have been accelerated. It represents a synthesis of the best practices into a coherent approach for speeding up time to market. A holistic view to orchestrate all the business functions, strategic partners and channel intermediaries is required. An accelerated product development program must be established to streamline and undertake activities in parallel, to launch the product simultaneously in world markets, and to release enhanced supporting services and business processes after launch. The management disciplines and structure to achieve this are outlined.

Moshe Y. Vardi, 2016[48]:

As engineers also have a moral imperative to adverse consequences of the technology to engage with scientists and researchers to find ways to address these consequences. At the same time, the automation of driving would have a huge disruptive effect on the global economy. The automation of driving would be largely beneficial, saving lives and preventing

injuries on a massive scale. In the balance, lifesaving and injury prevention must take precedence, and we have a moral imperative to develop and deploy automated driving.

A R Abu Talib and R L Jacobs, November 08 -2016[46] prepared " The intent is to give an overview of the role of technologists and managers in professional services industries and to understand that there is a need within the industry to re-look into the perspective of a proper training to prepare them to take up management roles effectively. Aviation technologist is one of the key components in the aviation maintenance industry as they are the future managers charged with the responsibility to ensure continuation of the organization's objectives and culture"

Conclusion:

Besides Communication the number of successful organizations the challenges for businesses is to create effective and efficient transmission. The key feature has become the torrent this year. In the same way the implementation of new technology must not be criticized, automakers have taken a notice that many industrial leaders have to adjust fundamental disruption have recognized the need for entirely new approach towards both their employees and their organizational capabilities.

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