amazon logistics

Amazon Logistics - Strategies using emerging technologies

Executive Summary

Problem Statement:

Late deliveries have increased as Amazon's in-house logistics network has delivered more of its own packages. In 2017, from January to late June, an average of 4.6% of items were delivered late, compared with an average of 16.6% in 2019, according to Rakuten Intelligence data cited by Business Insider. If Amazon is unable to reverse this trend, it risks significant damages to its brand reputation

Strategic Solution:

The company could use self-driving forklifts, trucks, and other vehicles to expand on its early automation efforts. It's logical for Amazon to strengthen its in-house logistics capabilities to reduce shipping costs.

Meanwhile, autonomous trucks might help Amazon reduce fuel and labor costs for delivering packages, allowing the online retailer to expand on its efforts to disrupt the trucking industry. Autonomous forklifts could bring down labor costs in the company's warehouses.

Introduction

Company Background

- **Amazon.com**, is an American multinational technology company based in Seattle, Washington, that focuses on e-commerce, cloud computing, digital streaming, and artificial intelligence.
- Amazon was founded by Jeff Bezos on July 5, 1994, in Bellevue, Washington.
- The company initially started as an online marketplace for books but later expanded to sell electronics, software, video games, apparel, furniture, food, toys, and jewelry.
- In 2005, Amazon announced the creation of Amazon Prime, a membership service offering free two-day shipping within the contiguous United States on all eligible purchases for an annual fee of $79 (equivalent to $101 in 2018) and discounted one-day shipping rates.
- In 2012, the company started *Fulfillment by Amazon* which managed the inventory of individuals and small companies selling their belongings through the company internet site.
- In 2015, Amazon surpassed Walmart as the most valuable retailer in the United States by market capitalization.
- In 2018, Bezos announced that its two-day delivery service, Amazon Prime, had surpassed 100 million subscribers worldwide.

Industry

Amazon is known for its disruption of well-established industries through technological innovation and mass scale.

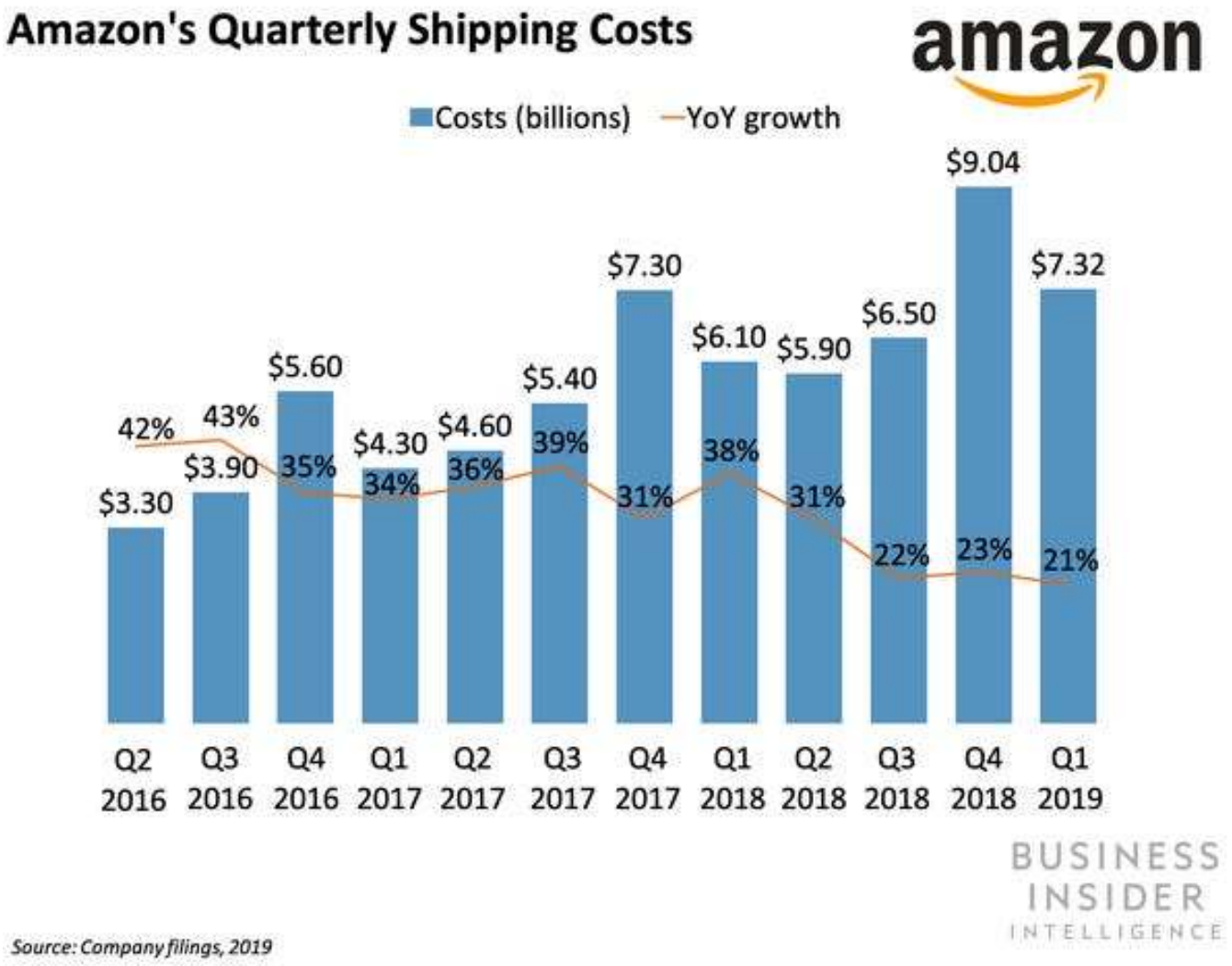
Where are the opportunities for growth in 2018?

- Using Voice to Foster Dominance
- Predicting Customer Needs
- Going After Grocery
- Outsourcing Inventory Management and Insourcing Logistics

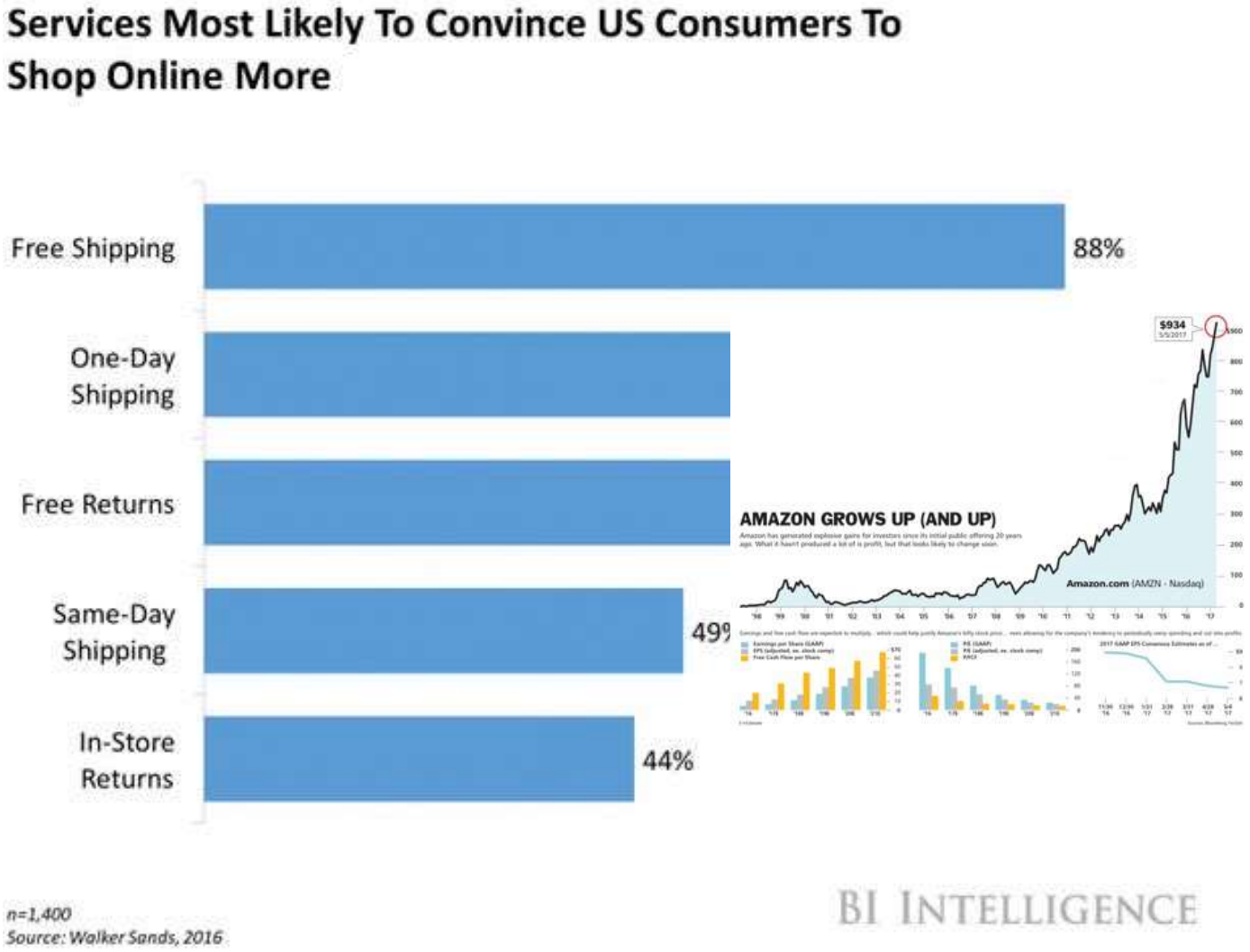
Which strategies are companies using to facilitate growth?

- Buy, Build or Partner
- Mergers, acquisitions, and divestitures
- Venture investing

Size, Growth, Outlook



Size, Growth, Outlook



Size, Growth, Outlook

Customers

- Amazon will also soon roll out delivery drones and is testing autonomous delivery robots.
- By controlling more of its shipping process and infrastructure, the company is not only able to reduce costs but is also opening up opportunity to offer shipping capabilities as a service for other retailers, somewhat akin to the Amazon Web Services business model.
- Amazon will be able undercut UPS and FedEx rates by 33 percent, according to a Rakuten Intelligence logistics expert who spoke to Axios. “It's trucks and planes are out delivering Amazon packages anyway so it can offer shipping at cost, instead of collecting a margin,” Axios reported.
- Given that Amazon already has around 50 percent of the U.S. e-commerce market, its move into logistics could impact the package delivery market in a big way


Amazon Logistics weekly share of Amazon.com shipments
Rakuten Intelligence
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
1/29/2017
4/23/2017
7/16/2017
10/8/2017
12/31/2017
3/25/2018
6/17/2018
9/9/2018
12/2/2018
2/24/2019
5/19/2019
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Customers

Corporate Strategy

Mission and Vision

Amazon's mission statement is "***We strive to offer our customers the lowest possible prices, the best available selection, and the utmost convenience.***" This corporate mission promises attractive e-commerce services to satisfy target customers' needs.

Objectives

Relentlessly focus on customer experience by offering our customers low prices, convenience, and a wide selection of merchandise.

Consider how these core marketing messages summarising the Amazon online value proposition are communicated both on-site and through offline communications.

Earn repeat purchases by providing easy-to-use functionality, fast and reliable fulfilment, timely customer service, feature-rich content, and a trusted transaction environment.

The lowest prices are for the most popular products, with less popular products commanding higher prices and a greater margin for Amazon.

Free shipping offers are used to encourage increase in basket size since customers have to spend over a certain amount to receive free shipping.

Strategy

The company focuses on the variables of price, selection, and convenience. In this regard, the following characteristics are identifiable in Amazon's corporate mission statement:

- Lowest prices
- Best selection
- Utmost convenience

Business Unit Strategy

Mission / Vision

Amazon's vision is to be earth's most customer-centric company; to build a place where people can come to find and discover anything they might want to buy online.

Objective and Strategy

OBJECTIVE:

Gaining the biggest market share by improving and diversifying logistics to provide the best of services to the customers.

STRATEGY:

Offering the lowest price while offering the best customer service using automation and therein reducing the supply chain costs.

IT Strategy

Arun Krishnashnasamy

Mission

- Reducing the operating costs of various process in each stage of shipment logistics using emerging technologies implementing Robotics and Automation.

Vision

- Change the cost structure and utilization of warehouse and trucking operations and with that ultimately reduce operating costs and generate profit and cheapen the cost of consumer goods delivery

Objectives

Reducing logistics operating costs and provide profit to organization using automation

Reduce the long–haul shipping costs by implementing automation

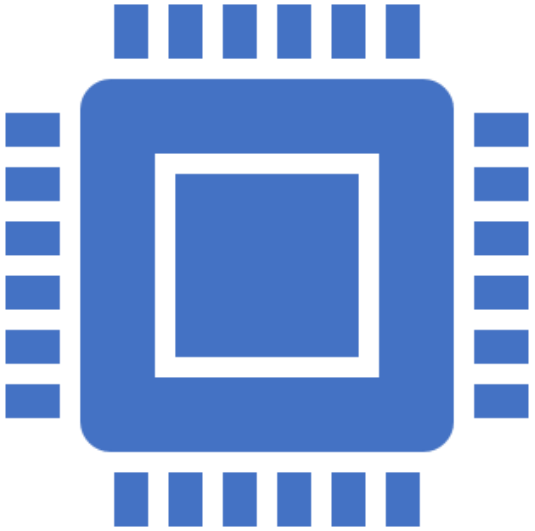
Implement innovative solutions to final-leg product delivery using robots and drones

Value statement

Deliver goods to customer at affordable price without compromising the quality of shipping and by enhancing the quality of shipping

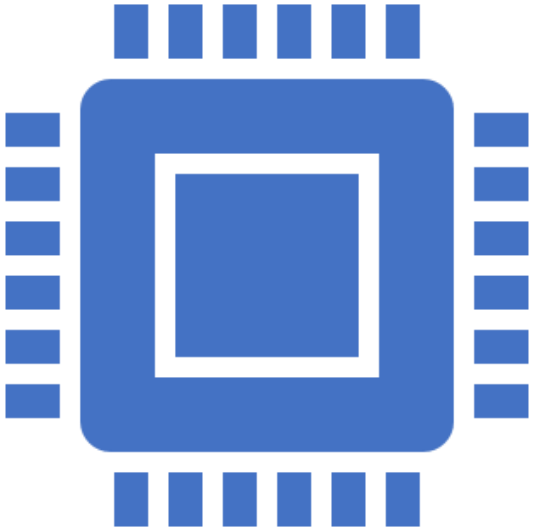
Provide employees with ease solutions to collaborate and perform duties by incorporating various robotics and automation solutions in every step of supply chain

IT Strategy – Robotics & Automation



- Digitization and emerging technologies are advancing and revolutionizing every industry, principally in retail industry. With this revolution in technology the **traditional logistics companies** have started to feel the necessity to implement emerging technology in their sector
- With **net sales of 232 Billion** (Amazon - 2018) with more 65% of goods are transported to customers using trucks the existing logistics process can be enhanced using automation and robotics methodology.
- Analyze the existing IT infrastructure for shipping and logistics and device a strategy in an incremental phase to meet the future needs of logistics with the help of existing technology and future requirement.

IT Strategy – Robotics & Automation



- Establish long term IT strategy and invest in R&D for develop solutions for delivery automation at each leg of shipping
- **SAE International Framework:**
- Level 4 Autonomy – (7 – 10 years) – autonomous vehicles usage in highway and at the end of the drive, drivers meet the vehicle at interstate and drive to its destination – 20% savings
- Level 5 Autonomy – (after 10 years) – fully autonomous vehicle – 40% savings

5P’s of IT Strategy

Plan:

- Form a specialized Business and Technical team to analyze, device a road map, and implement solution for automation delivery system
- Hire new talents or acquire company or invest in domain startups to give ahead start to devised strategy

Pattern:

- Acquire companies which has solid track record and already has a head start in specific technology or invest more money in the solution
- Learn the pro’s and cons from the companies which have implemented similar technologies such as Tesla – Autonomous cars, Boston robotics, US Defense – Drone technology

5P’s of IT Strategy

Perspective:

- Showcase technologies in small scale implementations rollouts such as delivering goods using drone in suburbs, isolated vehicle testing and planned robotics delivery systems to assure investors and consumers on safety and concern.

Ploy:

- Amazon has vast financial stability to rollout a successful project in a large scale within short interval of time which no other company has
- Amazon can play slow and long game to outperform any other company in the industry with its resource

Position:

- Through implementing various automation solution in shipping domain it can position itself as forerunner and innovator to its competitions like UPS and FedEx who are using traditional shipping methods and

Alignment with Corporate and Business/Service Unit

- IT Alignment with Business is crucial to the success of business, with flexible business plans and IT architectures acting as key components of alignment effort
- The new devised strategy should be incorporated within the existing business model and without compromising the existing model
- Effective usage of existing corporate and business resources to devise solutions for the new strategy such as using existing technologies and tools inside the firm to develop automation solutions and using existing physical products like trucks, delivery vans and implement automation on the same
- Re-train the resource/employees to adapt to the new technology also provide incentives to the employees to effectively utilize the system

How IT Delivers value to Business

How:

- Provide cheaper means of solution to deliver goods to the customer effectively saving up to 60% of operating costs
- Improve brand value and establish trust with consumers
- Provide faster delivery solution and environment friendly
- **When:**
- Automation will help the Business unit when the following solutions are effectively implemented
  1. Long – Haul automated trucks solutions
  2. Converting traditional trucks and vehicles to electric
  3. Last-leg delivery solutions using drones and rover robots

How IT Delivers value to Business

Who:

- Existing and new Customers in website as well as 3rd party customers who wish to use the delivery solutions
- Employees / developers / Scientists

Where:

- When reducing costs providing automation
- To gain better image and overcome other competitors.

What:

- Latest innovative solutions
- Automated technologies to ease the burden of maintaining employees and reduce costs

Five Principles for delivering values

Portfolio Management:

Automation technologies requires investment in various domain of other technology and technology company such as self driving solutions, Navigation solution, Automotive solution, etc which together provide a better outcome for implementing end product.

Deliver Chunks of value:

Delivering a complete automated logistic solution involves various small automation at various levels of process such as long-haul delivery solutions, automated warehouse robots, automated delivery solutions.

Holistic orientation:

Build a platform to provide an end-to-end solution for shipping tracking and delivering goods from sellers/warehouse to customers and also determine how the solution can be widely implemented to generate revenue from other business domains

Join Ownership:

Automation and implementation new business solution involves involvement from various modules of business operation right from truck drivers to warehouse mangers to software platform developer hence a common join ownership has to be established among all modules

Experiment:

Various small - scale pilot phases of the implementation is must needed to learn, adapt and upgrade before complete rollout, which will potentially avoid lawsuits and other financial losses.

Digital Strategy & Cloud Strategy

Digital Strategy:

- Develop a platform for autonomous truck and autonomous delivery vehicle and provide last-leg delivery solutions using robotics and drones
- Attain Level 5 Automation through Leverage Data Storage, drive-by-wire, positioning, power, processing, Software and sensors – cameras, LiDAR, Radar, Ultra sonics.

Cloud Strategy:

- Leverage and develop cloud solutions and infrastructure to store data and information's and transfer data and control autonomous vehicle / delivery bot and drones in real time and also this can be made possible using incorporating 5G technology in the strategy

  a single connected car will lob some 25 gigabytes of data to the cloud every hour while the average wireless customer consumes just 1.8 GB in a month.

How our strategy will drive business improvement and a competitive advantage

In current shipping domain where customers expects relatively shorter delivery time, due to low pay, difficulty schedules and conditions of job, there is a lack of driver availability, which will be addressed using this strategy where autonomy will create safer roadway and a better work environment for the drivers

Becoming first company to provide autonomous delivery solutions may provide competitive advantage over other shipping companies like FedEx, UPS which might help to claim a larger share of industry as a result

Might tap the latent capacity through near 24 – hour utilization of vehicles to provide delivery solution

Implementing innovative solutions will in-turn attract more customers which in-turn delivers more revenue to the firm

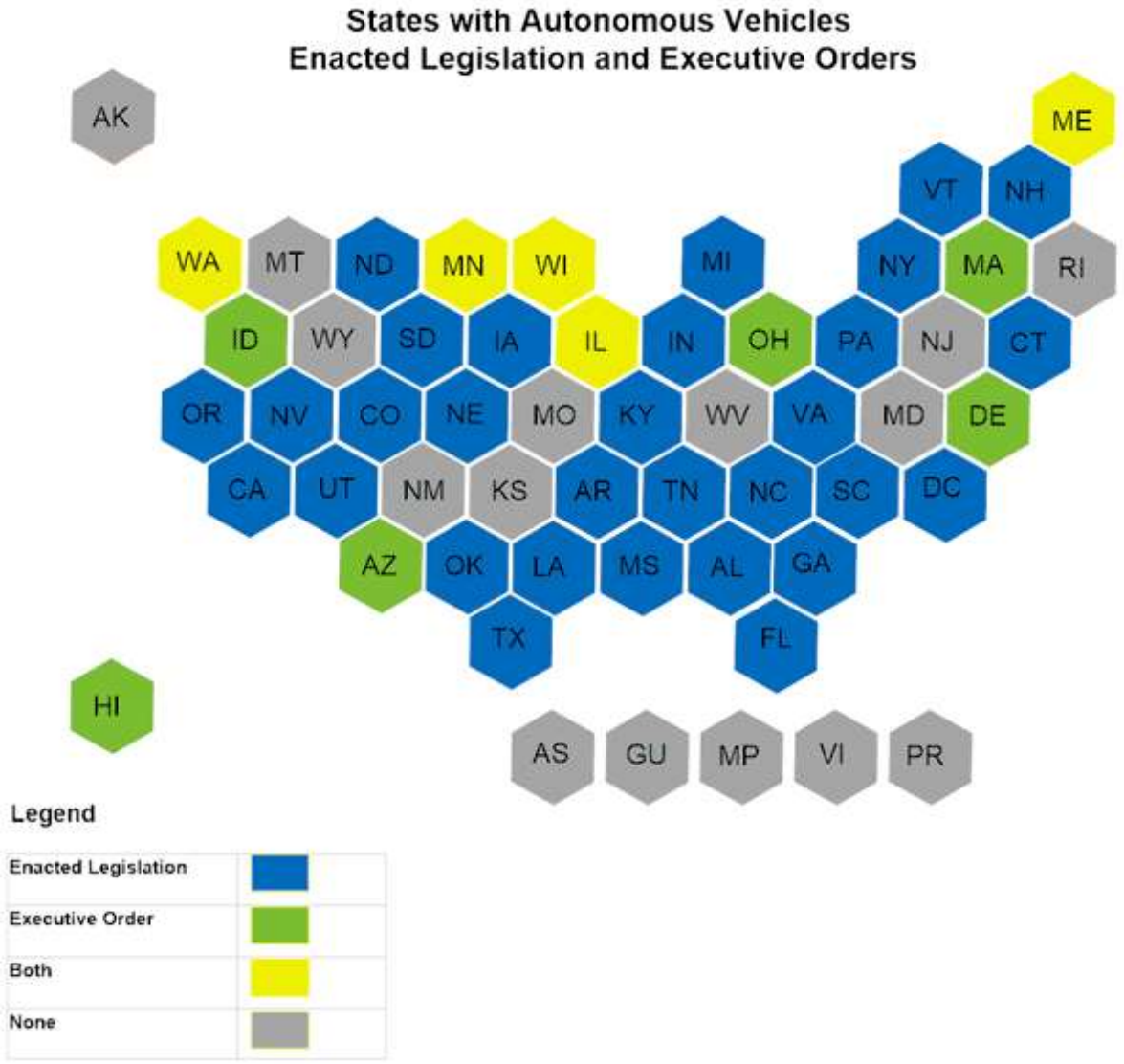
Reducing operating costs at each stage which in-turn provide opportunity for charging the sellers less in-turn attracts more sellers to the platform

Data Strategy – Information Management

Data Strategy – Master data Management

IT – Enabled Innovation Customer Experience

- Provide better customer experience through innovating last leg delivery methods using drones and robot’s
- Use the existing vast available data sets to analyze specific customer needs and cater to their demand using emerging technology
- Provide innovative delivery solutions to third world countries where traditional delivery methods are not viable
- Provide better solutions for sellers / customers to accurately track their shipment in real time



Compliance

Nevada was the first state to authorize the operation of autonomous vehicles in 2011. Since then, 21 other states have passed legislation related to autonomous vehicle

manufacturers need to be able to develop their own plans in order to ensure the safety and performance of automated technologies

When testing automated vehicles, there are several options for testing environments that OEMs should consider

Compliance – Testing Automated vehicles

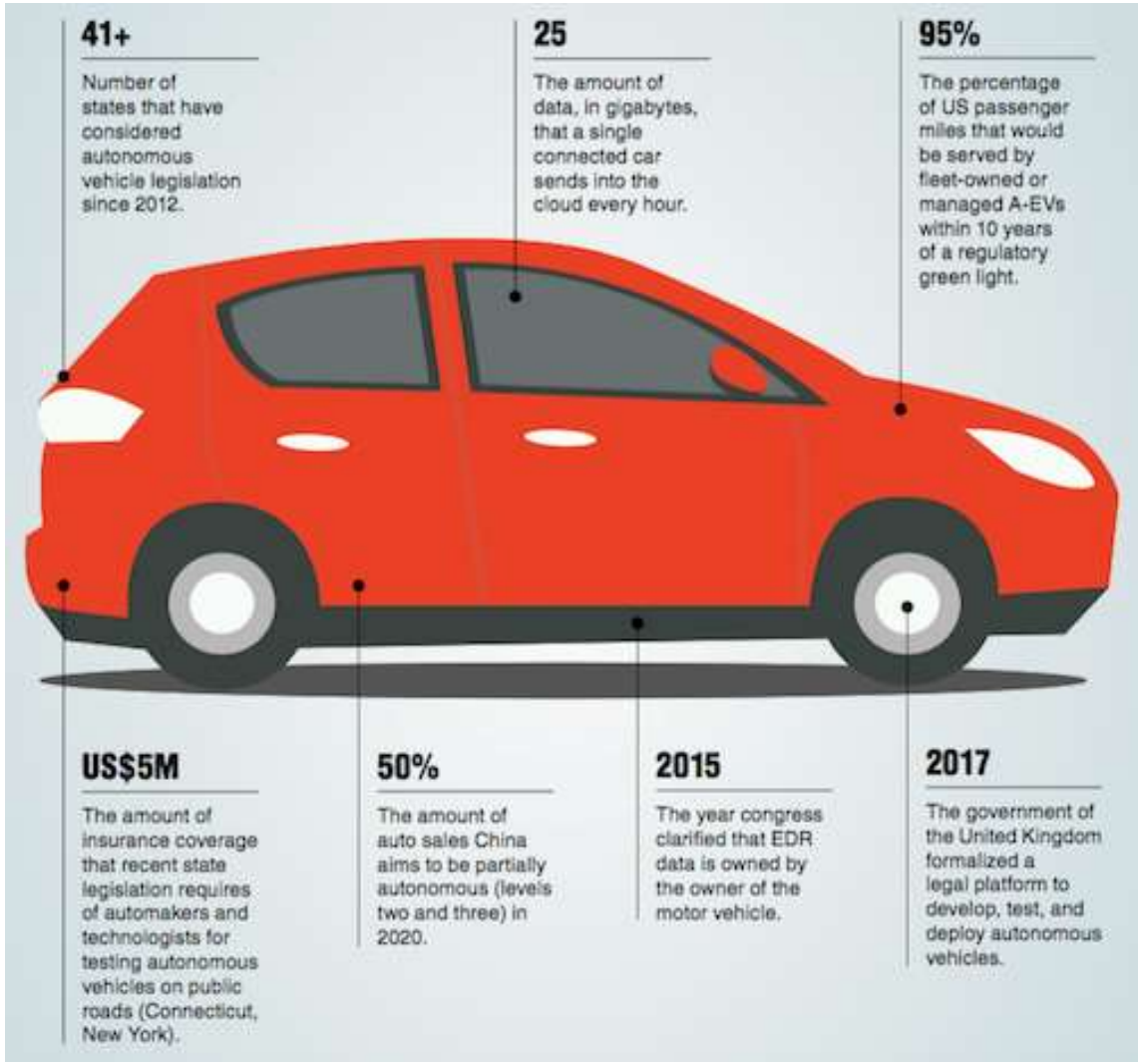
Evaluate various sensing technologies Two of the most common of which are radar and lidar

Lighting condition Most automated vehicles employ cameras as they can offer a robust solution for object detection

GPS - It is important to test additional sensors and algorithms and to use data acquisition hardware and real-time kinematic (RTK) systems to track true vehicle position versus assumed position in these situations.

All connected devices must be evaluated for cybersecurity concerns, and connected vehicles are no exception.

For vehicles in motion, communication will be a constant concern. Not only do automobiles need to interact with each other, they will increasingly need to interact with infrastructure and other smart devices


41+
Number of states that have considered autonomous vehicle legislation since 2012.
25
The amount of data, in gigabytes, that a single connected car sends into the cloud every hour.
95%
The percentage of US passenger miles that would be served by fleet-owned or managed A-EVs within 10 years of a regulatory green light.
US$5M
The amount of insurance coverage that recent state legislation requires of automakers and technologists for testing autonomous vehicles on public roads (Connecticut, New York).
50%
The amount of auto sales China aims to be partially autonomous (levels two and three) in 2020.
2015
The year congress clarified that EDR data is owned by the owner of the motor vehicle.
2017
The government of the United Kingdom formalized a legal platform to develop, test, and deploy autonomous vehicles.

Compliance

Uber Eats

RIVIAN

EMBARK

Suppliers and Alliance

- Amazon have ordered 100,000 electric delivery vans from electric vehicle manufacturer Rivian
- Amazon is testing self-driving **trucks** developed by Embark to haul some cargo on the I-10 interstate highway
- On effective implementation the company may look out for other major alliance with other domains like food delivery companies, shipment delivery companies etc.

IT Governance

Arun Krishnashnasamy

IT Governance

Strategic Alignment:	• The new IT solutions should always align with existing business domain to effectively collaborate and continue delivering business solutions
Value Delivery:	• Delivering value to end customers is a determining factor on whether the company can retain the same customer in future business
Risk Management:	• It is highly necessary to forecast and evaluate any technical or financial risks involved and provide solution to avoid and minimize the impact
Resource Management:	• Effective guidelines must be provided to pre-plan, schedule and allocate resources to maximize efficiency
Performance Management:	• It is necessary to ensure that set of activities performed and outputs obtained meets the organizations goal

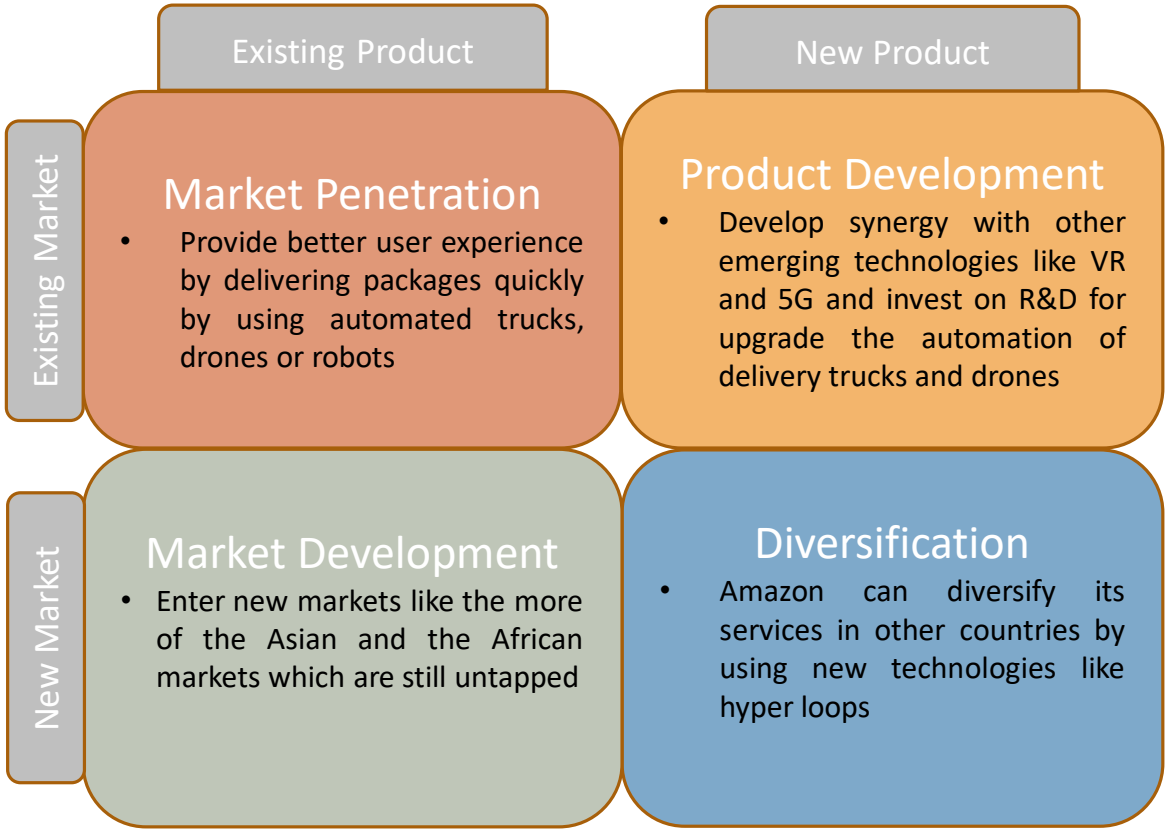
Communication Plan

Professional Assessment

Internal Analysis – Super SWOT

Super SWOT Analysis	**Strengths:** • Operational cost reduction • Flexible work hours • Increased throughput and efficiency • Safe delivery • Faster Delivery	**Weaknesses:** • Infrastructural requirement • Reliance on numerous technologies • Inability to deploy in all geographical regions • Huge capital cost
Opportunities: • Improve customer relationships • New partnerships • Scale up the business • Forerunner in logistic automation	**SO Strategies:** • Customer relationship can be improved by taking advantage of faster and safe delivery • Due to improved efficiency and throughput, business can be scaled up	**WO Strategies:** • Could work in an ecosystem with business partners to tackle technology and infrastructural issues • Initial capital could be compensated as the business scale up
Threats: • Security Risks • Unsuitable operating conditions due to bad weather • Failure of the technology • Road accidents	**ST Strategies:** • Can invest more time on testing failures in technology and security risks as the operational costs reduce	**WT Strategies:** • Using VR or AR technologies to navigate automated devices in regions prone to bad weather • Prevent accidents and technology failure by providing advanced IT and geographical infrastructure

External Analysis – Ansoff Matrix



External Analysis – Porter's Five Forces

NEW Entrants

Low

- High Capital investment
- Less market influence
- High Technology barrier

RIVALS

High

- The number of players in the recent years has grown
- E.g. eBay, Alibaba, Flipkart

SUBSTITUTES

High

- Many substitutes like brand outlets, online stores of brands that amazon also sells

BUYERS

Medium

- Bargaining power of buyers is more as amazon focuses mainly on customer satisfaction

SUPPLIERS

Low

- Being an established player, amazon has the upper hand over the suppliers

AS-IS/TO-BE Analysis

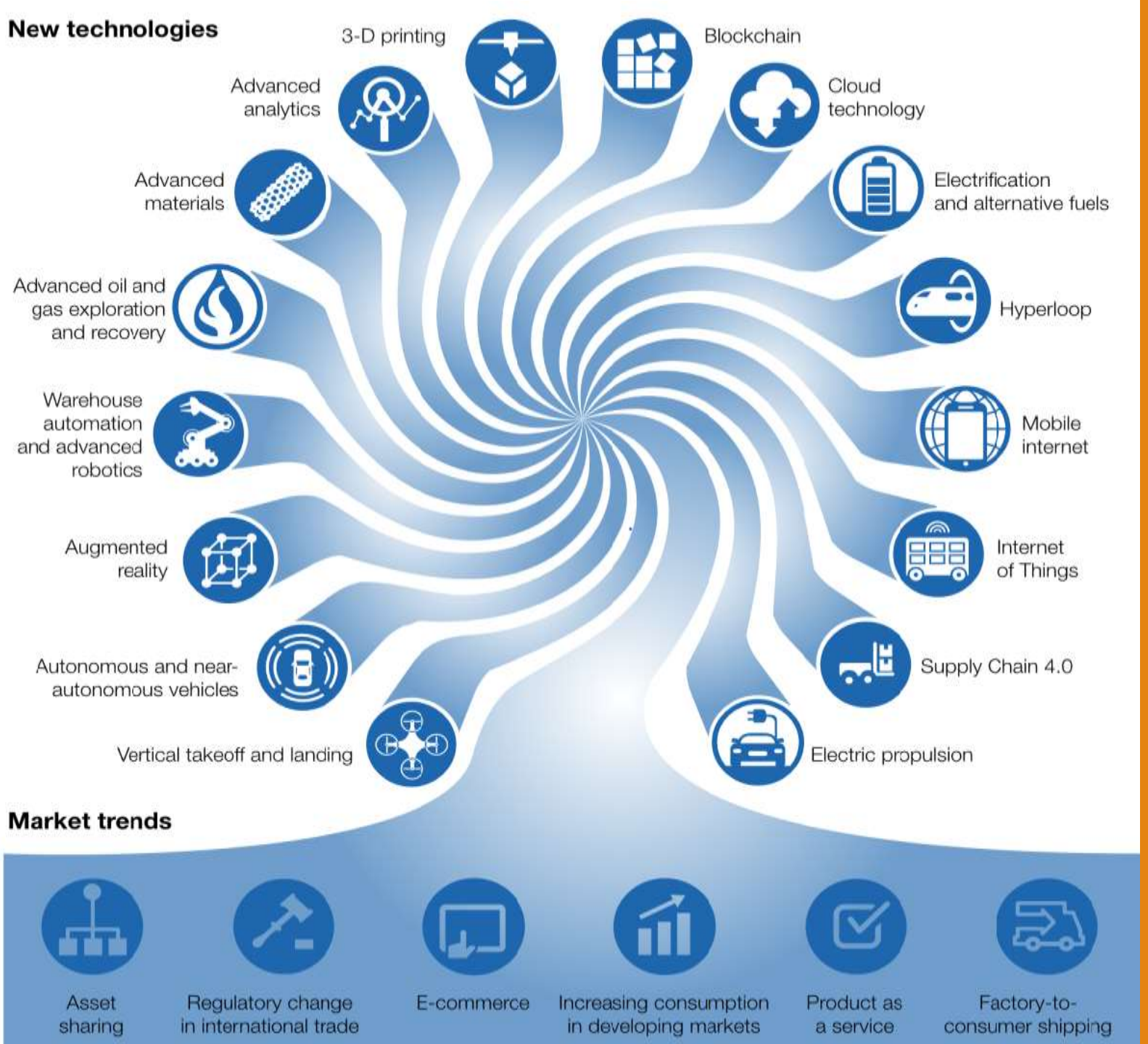
	Factors	AS-IS	TO-BE
Logistics	Customer/Clients	• General Population	• General Population • Businesses
	Software deveopment	• Development and deployment of wave 1 (driver in each truck) semi- autonomous trucks	• Wave 2 (driver in the leading truck) • Wave 3 (Driver for pick-up and drop-off) • Wave 4 (driverless)
	Technology	• Warehouse automation and advanced robotics	• Warehouse automation and advanced robotics • Autonomous trucks • Drones

AS-IS/TO-BE Analysis (Cont.)

	Factors	AS-IS	TO-BE
Logistics	Competitors	• Starship technologies	• Fedex • Pepsi Co • Walmart
	Warehouse/Inventory	• Operates only during particular work hours • Mostly manual operations • Per-unit costs of inventory depends on the days the product is stored in the inventory	• Facilates 24/7 Operation • Autonomous trucks and robotics facilitate efficient operations • Per-unit cost of inventory will get reduced
	Challenge	• Number of drivers available to drive the trucks are lesser than the required	• Automated vehicles can operate without drivers or in the supervision of a driver

AS-IS/TO-BE Analysis (Cont.)

	Factors	AS-IS	TO-BE
Logistics	Employees	• Full-time skilled drivers	• Less or no drivers required for long hauls • Part-time or temporary driver requirements for a hub to customer delivery
	Port Operators	• Yards are active only for few hours a day	• Yards operate 24/7 • Port's activities can be extended deep into the country
	Time for Delivery	• Time for long hauls take 2-5 days	• Time for long hauls take 1-2 days

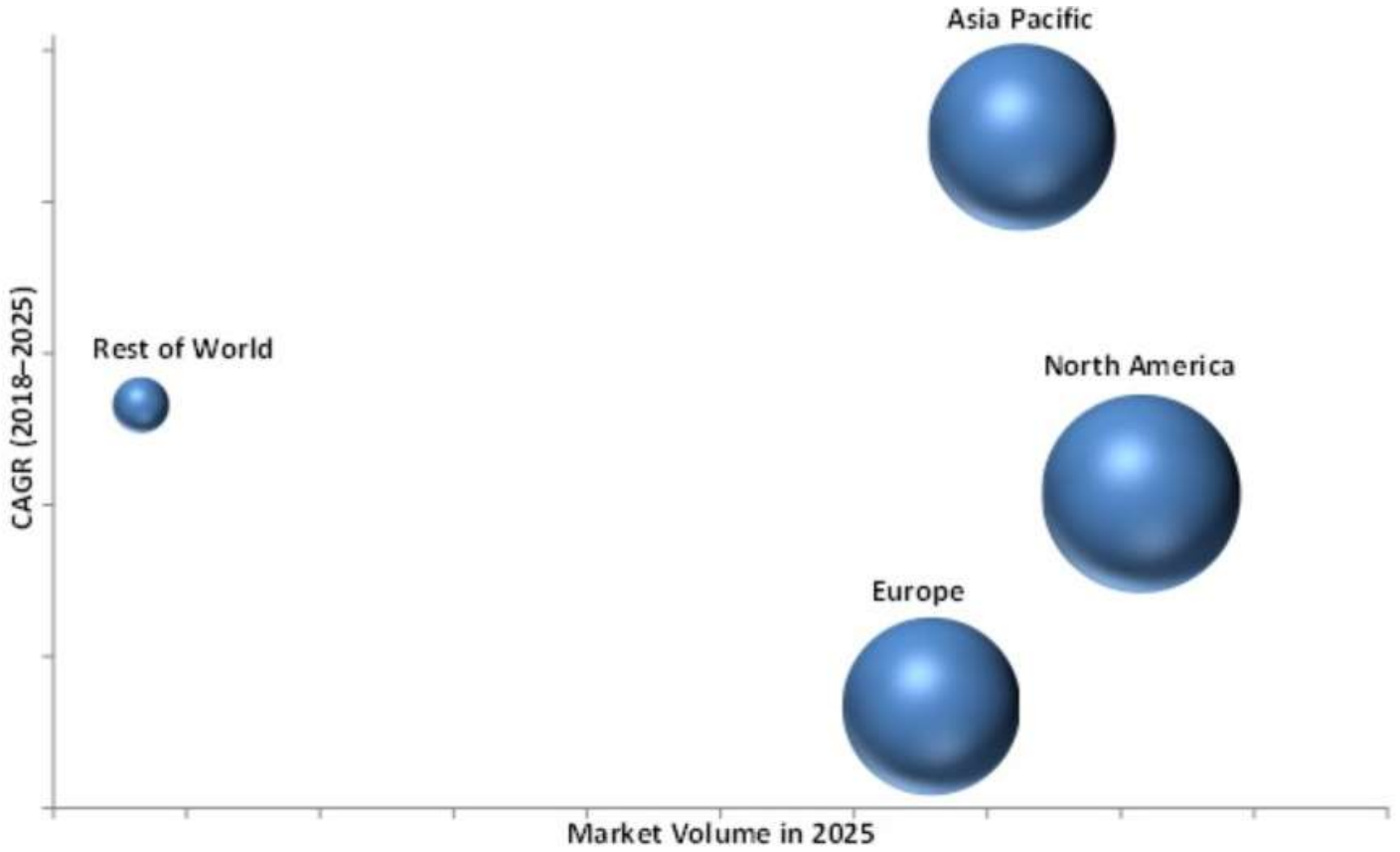


Market Trends

Haritha Krishnankutty Nair

Market Analysis and Demands

- Sixty-five percent of amazon's goods are trucked to market
- With full autonomy, operating costs would decline by about 45 percent, saving the US for-hire trucking industry between $85 billion and $125 billion
- The global self-driving market size is expected to be valued at $1,004 million in 2020 and is projected to reach the market size of $1,669 million by 2025, registering a CAGR of 10.4% from 2020 to 2025



Target Market

- North America
  - USA, Canada, Mexico
- Europe
  - UK, Germany, Russia, France, Rest of Europe
- Asia-Pacific
  - China, Japan, Australia, Singapore, Rest of Asia-Pacific
- LAMEA
  - Latin America, Middle East, Africa

Brand Portfolio Analysis - BCG Matrix

Stars

Amazon.com
Amazon Fresh
Amazon Kindle

Cash Cows

Alexa
E-books
IMDB

Question Marks

Amazon Web Services
Zappos.com
Video on demand

Dogs

Amazon MP3
Amazon Cloud

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IT Service Design

Stages of the Service Design

Concept Generation:

- Use of ATs to make delivery, to enable low cost services to customers, thus increasing the market base.

Analysis and Research:

- Research upon the government policies, legal issues, and other factors effecting use of ATs in the target company.

Design Strategies and Implementation Plan:

- Prepare the logistics team for the changes.

- Ensure to have a team of well qualified team of Data Scientists and Researchers, also have a legal team ready.

- Have enough training data for the ATs

Cost Estimation

- Prepare the cost estimation plan for the overall project.

- Prepare a plan on how to divide the lower cost of logistics upon successful deployment.

Final Design and Improve:

- Once the ATs are ready, test them with live traffic.

- Use a similar plan for other demographic locations.

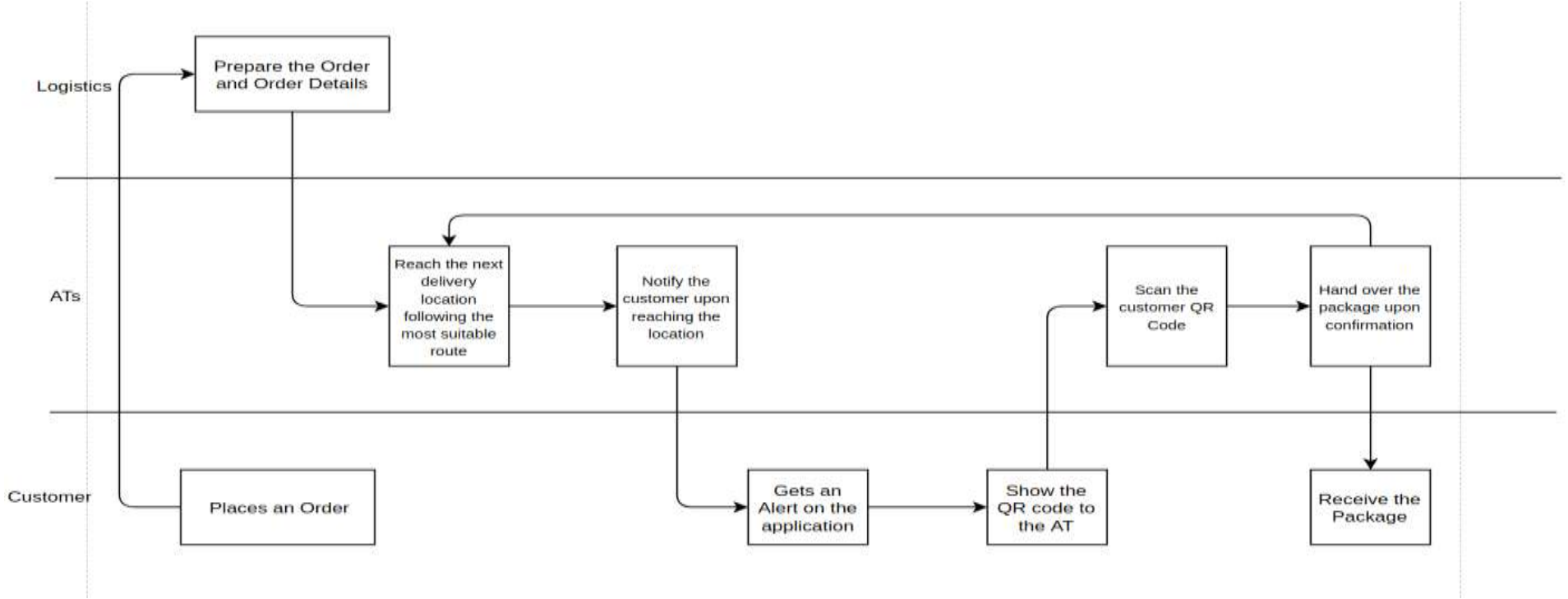
- Get government approvals.

- Gain customer trust and support.

Service Processes

1. Coordination in Logistics and Supply Chain : Gather requirements of the Logistics and Supply Chain department and act accordingly.
2. Design Team: Team of Designers to develop an achievable prototype.
3. Technical Support and Research: Team of Data Scientists and researchers working on the Implementation of the design.
4. Legal Support: Can help in understanding the government rules and regulations in the target country.
5. Security Management: Avoid hackers to access and manipulate the software running the ATs.

Service Virtualization through Blueprinting



Technology Roadmap

Technology Roadmap - Phase 1

Understand the Present

- Gather information about the current steps followed in the logistics department.
- Explain the changes to the current team.
- Understand the challenges faced by implementing the change.
- Ensure smooth communication between IT team and the logistics department.

Technology Roadmap - Phase 2

Working for the Future

- Form dedicated teams consisting of Data Scientists and Machine Learning Engineers working on the Autonomous Truck.
- Form a team of designers to build a prototype of the trucks and coordinate with the Technical Team
- Form alliance with companies such as Google and Uber to use their Google Maps API and Data.
- Iteratively improve upon enhancing the efficiency of the car until at least it outperforms the skills of a human driver.
- Get legal authorization from the Government.

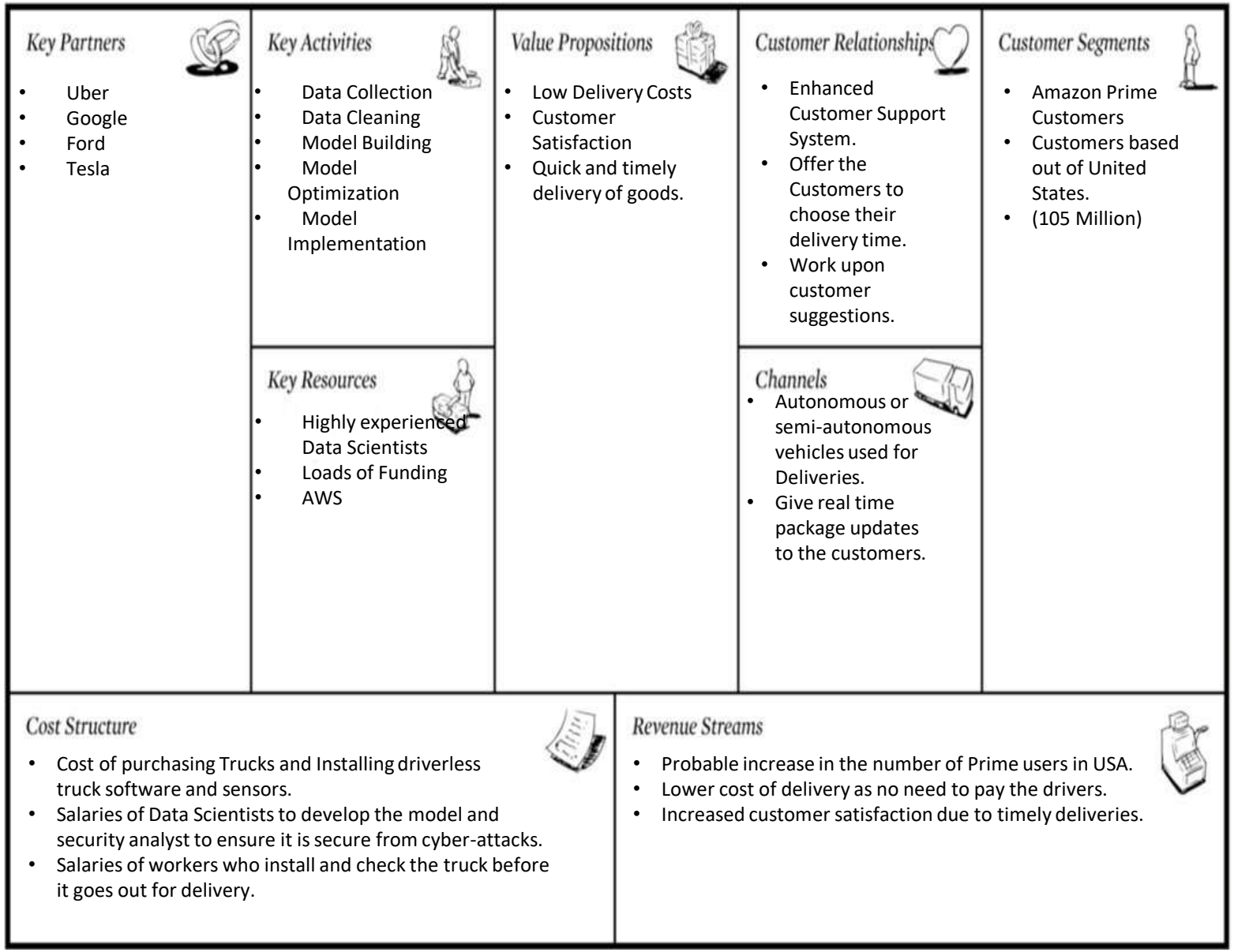
Technology Roadmap - Phase 3

Benchmarking and Monitoring

- Decide upon the KPIs to determine the success or failure of the implementation of the project.
- Get customer feedback.
- Enable software to learn from the mistakes automatically.
- Enable a driver assist mode in the ATs for the first few iterations.

Business Model

IT Business Model



Ayush Kalla

Alignment with Corporate Business Model

- ATs will enable to increase the customer satisfaction, customer subscription and a decrease in delivery time.

- Upon perfecting the art of making Autonomous Vehicles, Amazon can manufacture autonomous vehicles for other car manufacturing companies or for taxi companies like Lyft and Uber.

- Fully Autonomous Vehicles used for delivery can reduce the cost of operation by 45 %, which can correspond to increased profits for Amazon as well as reduced price of goods.

Functional Strategies

PRODUCT	PRICE	PLACE	PROMOTION	PEOPLE	PROCESS	PHYSICALEVIDENCE	PRODUCTIVITY
Enhanced Product Delivery System using Autonomous Trucks	No extra price paid by customers, apart from the regular price to prime subscription.	All orders executed from the official website of amazon.com (USA).	Advertising (Making customers aware of the new delivery services offered by Amazon)	Internal Data Scientists, Machine Learning Engineers, Workers, Customers	Enhanced Customer Service. Reduced delivery time Lower cost of goods.	Amazon Database of Customer Account. QR Code to verify the customer upon delivery.	Faster delivery Lower Cost of goods for Prime Subscribers 45% reduction in the overall cost of the delivery operation.

8 p's of Service Marketing

Ayush Kalla

Marketing Strategy

VALUE PROPOSITION (EXTERNAL)

We are re-inventing the Delivery process by incorporating the latest trends (Autonomous Vehicles) in our delivery logistics.

This would enable us to cater better to the customer needs and enable us to give better service to our customers at a better rate.

This will also ensure that the order reaches only the hands of its rightful owners.

MARKET SEGMENTATION

Current Prime Subscribers in the United States (105 Million)

Use a smartphone (To scan a QR code to confirm the delivery)

CUSTOMER SATISFACTION and BUILD CUSTOMER LOYALTY

A delivery service that offers to use the advancements in the use of AI and Autonomous Vehicles to carry out Amazon deliveries using Autonomous Trucks.

Offer a better rate to customers accepting to the service.

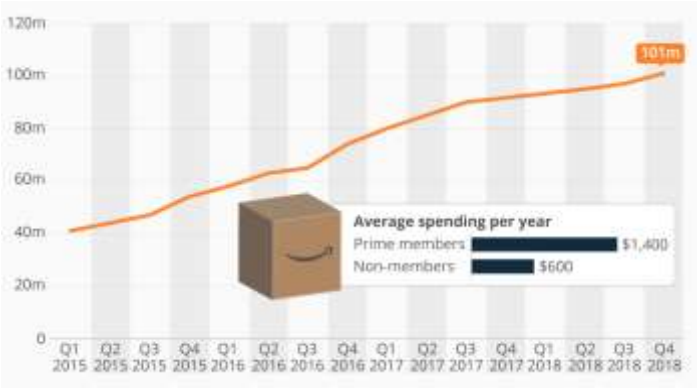
Bring down the product delivery cost significantly

Build upon customer feedback

Perform numerous trial runs before rolling out the service to the market.

Expenditure (Prediction)

- Increase in the Gross Shipping Cost over the past few years due to increase in the customer base and the number of Prime Subscribers for Amazon.



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Expenditure (PREDICTION)

- ATs can reduce the shipping cost by anywhere between 40 – 45 %

CAPEX	
Data Collection	$ 10M
Trucks, Sensors	$ 1B
Advertising	$ 20M
In-house AI Development Lab	$ 20M
Total	$ 1.5B
OPEX	
Shipping Cost	(60% of current Gross Shipping Cost) 21 B
Salaries	10M / Year
AI Tools	10M / Year
3 Year Total OPEX	65B

Ayush Kalla

Revenue (PREDICTION)

- This will be a direct increase in revenue as there is an expected 10 % increase in the number of prime subscribers in the USA over the coming years.

Revenue	2020	2021	2022
Prime Subscription Cost	$ 11 B	$ 13 B	$ 15.3 B
Money saved on deliveries	$ 12 B	$ 16 B	$ 18.5 B
Total (per annum)	$ 23 B	$ 29 B	$ 33.8 B
Total (After 3 Years)			$ 85.8 B

Ayush Kalla

Delivery/Operations

Customer service strategy

● A driverless vehicle can deliver the order faster and without technician's presence, boosting productivity and profit.

● The integration of route optimization ensures the fastest and safest route by analyzing real-time travel conditions and avoiding traffic. Thus, reducing delivery time, fuel costs etc.

Distribution of services

● Promote the usefulness and efficiency of autonomous vehicles to push the order of business

● Creating awareness about environmental benefits could very well present a competitive brand advantage over the model with a human behind the wheel.

● Work with Government to broaden the reach and applications on larger landscapes

Kumar Kovid

Delivery/Operations

Delivery Options

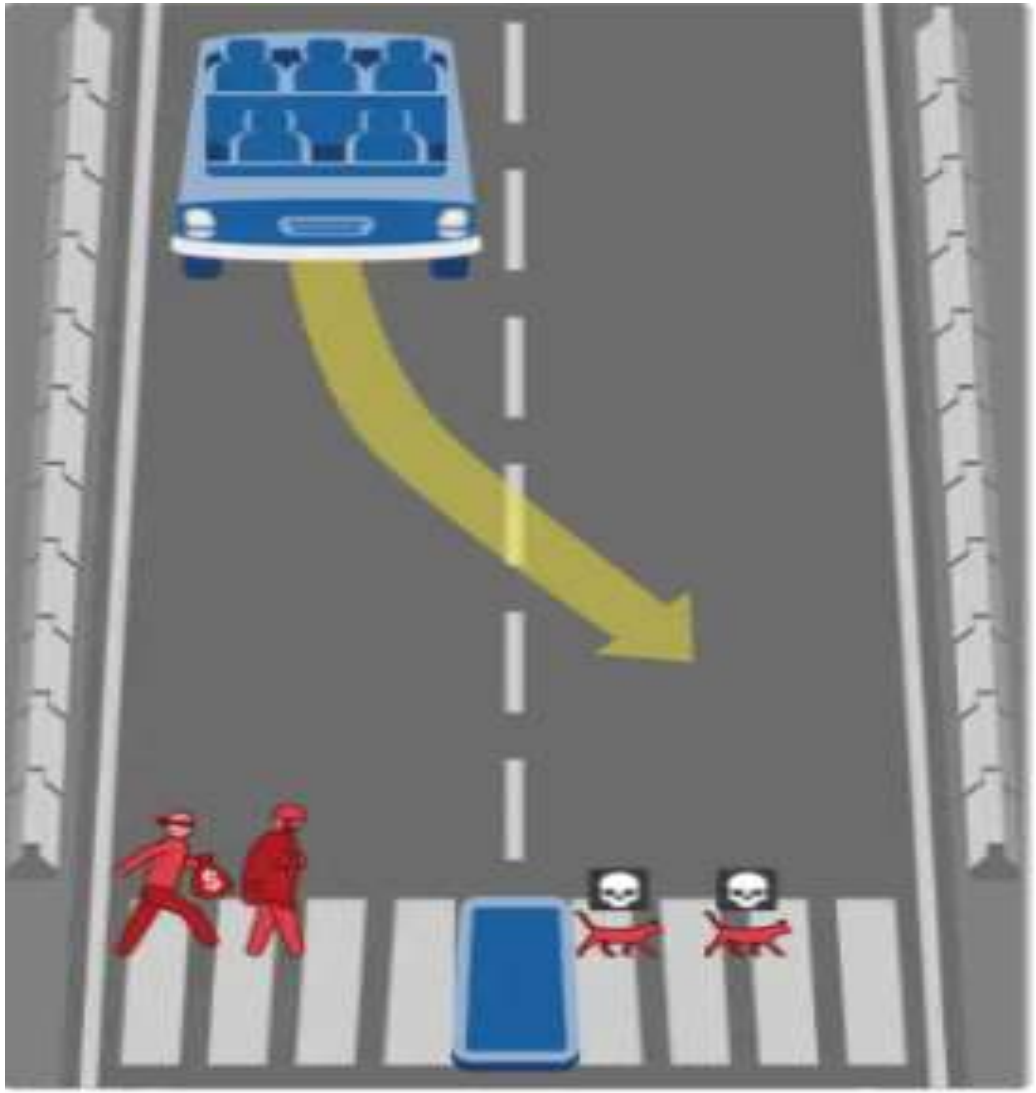
- All vehicles should be able to communicate and update the route depending on location of delivery

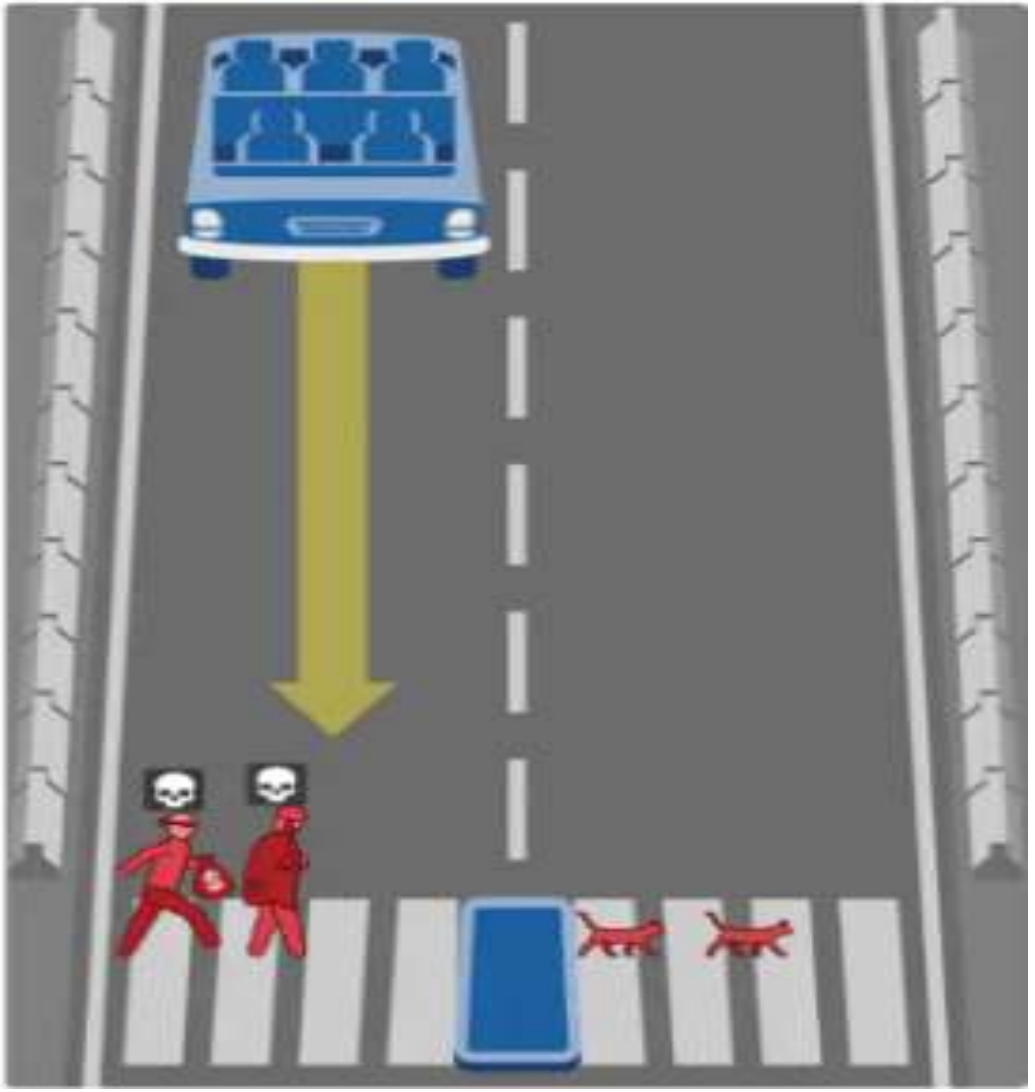
- Parking can be done at a cheaper cost, with no preference to be near a facility

- Number of trucks owned should be enough to support the large sales, to reduce the delivery time from the current delivery time.

Technology

- Real-life behavior programming
- Advanced 3-D mapping
- Real-time Road report
- Complex decision making





Technology

- LIDAR camera – Distance of objects
- Object detector and Identification
- Bumper radar to maintain distance
- Global Positional System

Sales

- Integrate Autonomous vehicle system with the traditional Vehicles to reduce cost.
- Generate and understand the different use cases to create a promotion program
- Integrate Business Intelligence in sales and use data to develop sales strategies according to the customer needs

Kumar Kovid

Human Resources

Hire top level Data Scientists, Machine learners to ensure the learned models are good enough to take the roads and to fill the knowledge gap based on new requirements

Retain top talent by identifying top performers and multipliers from each teams who are critical for this strategy and review/upgrade their job profile, salaries and incentives.

Human Resources

Acquire startups doing fabulous work on autonomous vehicles like Zoox, Embark, Pony.ai etc to offer valuable insights on market trends and new technologies.

Identify and outsource low-yielding activities to free up resources' time for them to focus on high-yielding activities.

Outsourcing

Strategy and steps to select a vendor

Consider the technical capabilities of the vendor in similar domain and evaluate the past deliveries of the vendor

Define jobs/functions to be outsourced

Marketing and IT operation tasks will be outsourced

Identify success metrics

Delivery time and cost comparison of autonomous vehicles vs raditional vehicles


WHY NOT HAVE DRIVERLESS CARS?
I MEAN, WE ALREADY HAVE BRAINLESS PEOPLE BEHIND THE WHEEL
imgflip.com

Kumar Kovid

Implementation Strategy

Phase 1

-Hiring Talent and Training

-Partnerships & Acquisitions

- Upgrade analytic software, hardware & communications

Phase 2

- Plan with supporting chapters on the transportation, transit, land use etc.

-Research and Development

-Gather the data, monitor progress

Phase 3

- Market and Competitor analysis

- Topical plans – Vision Zero, transportation technology, and the new mobility roadmaps

Phase 4

-Delivering and continuous improvement

-Decreasing delivery time and accuracy of delivery info with Business Intelligence

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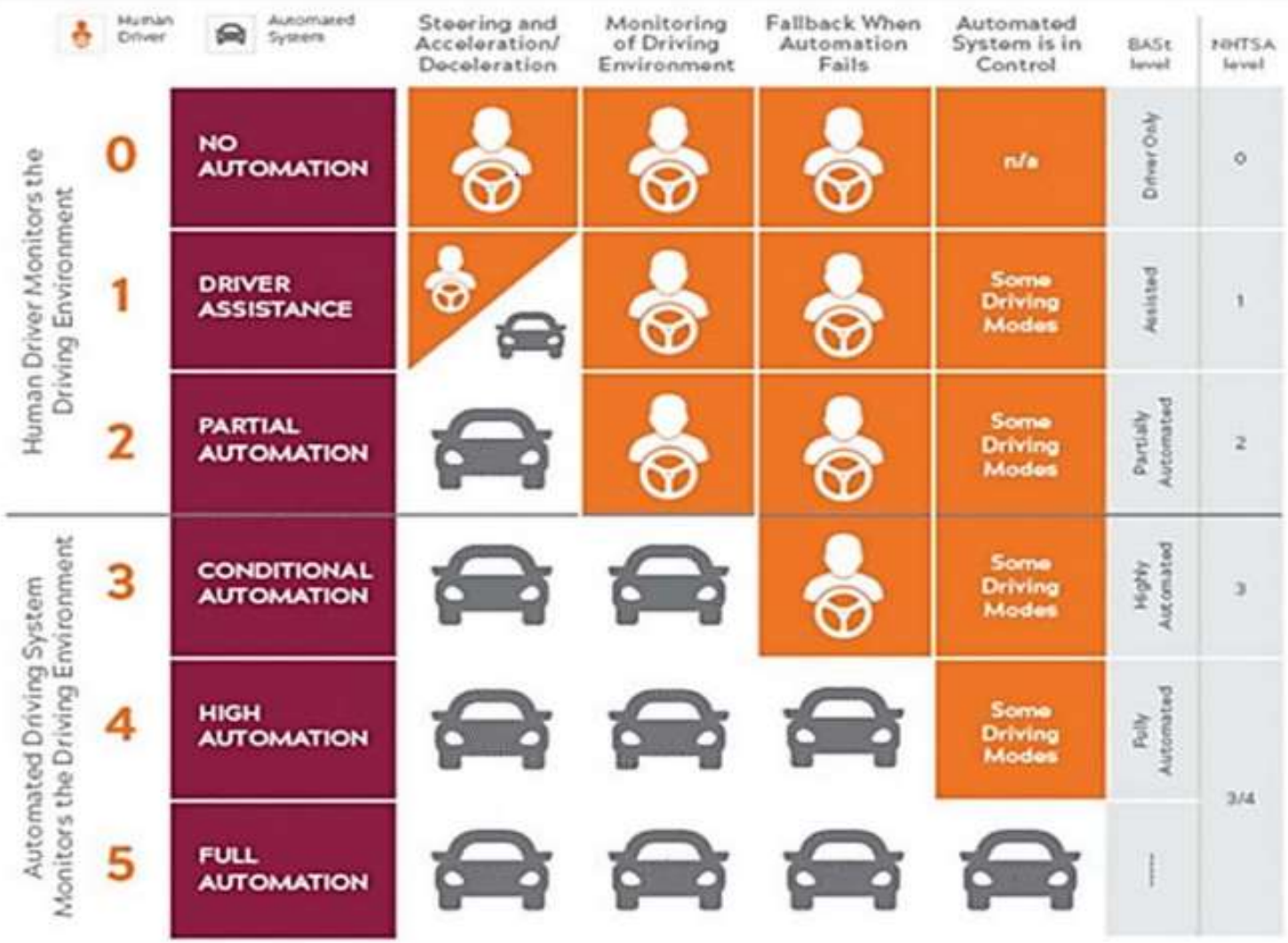
Levels of Autonomy



The SAE defines five vehicle automation levels. Most predicted benefits require levels 4 or 5.

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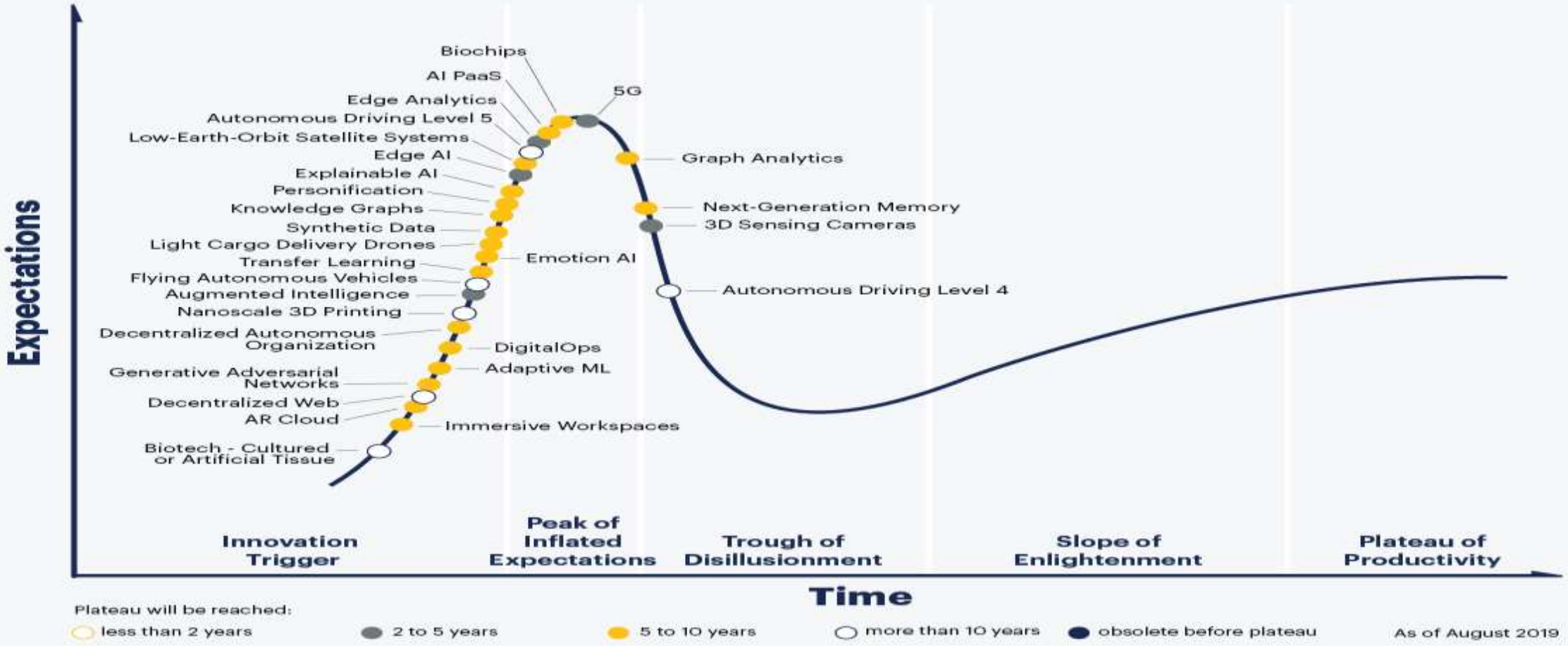
Gartner Hype Cycle for Emerging Technologies, 2019



gartner.com/SmarterWithGartner

Gartner

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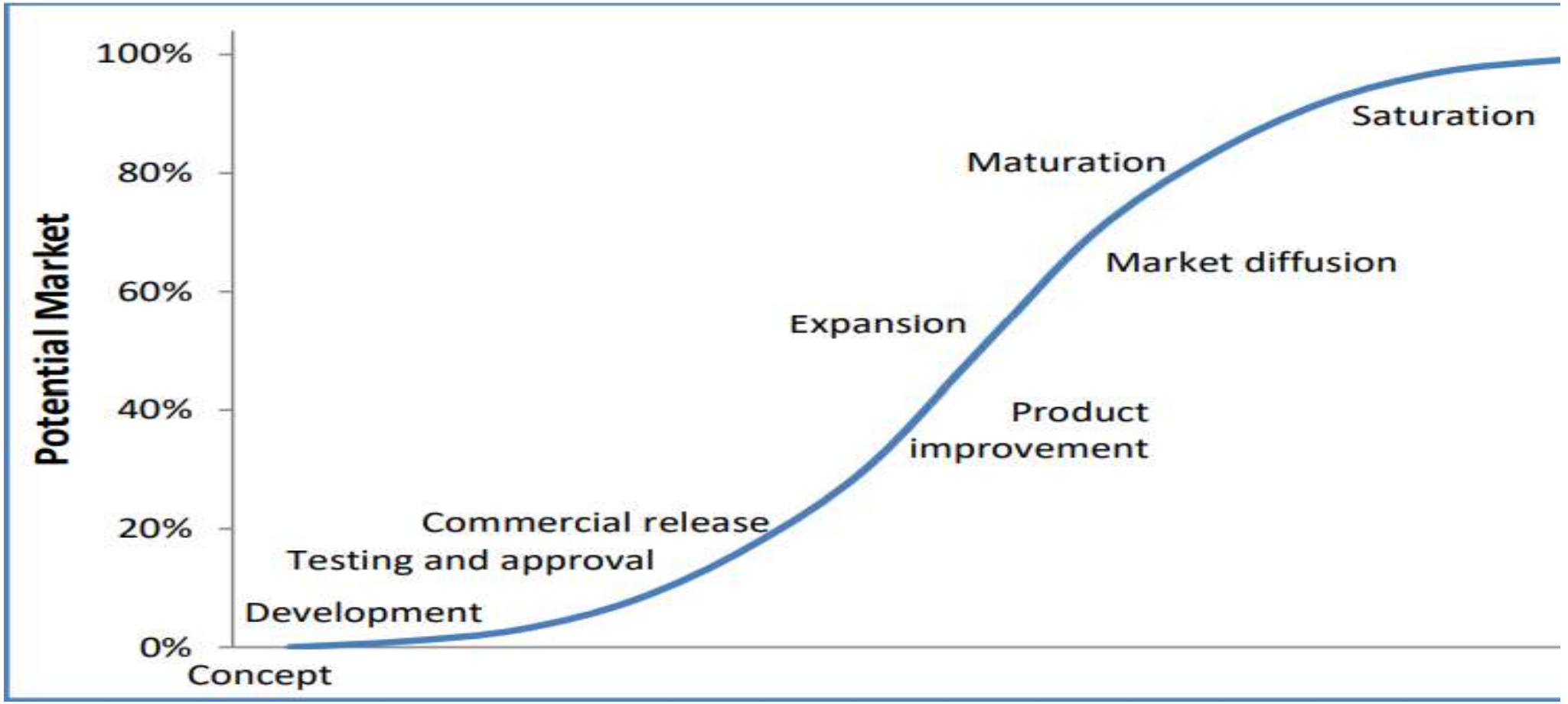
Rollout Curve



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Rollout Plan

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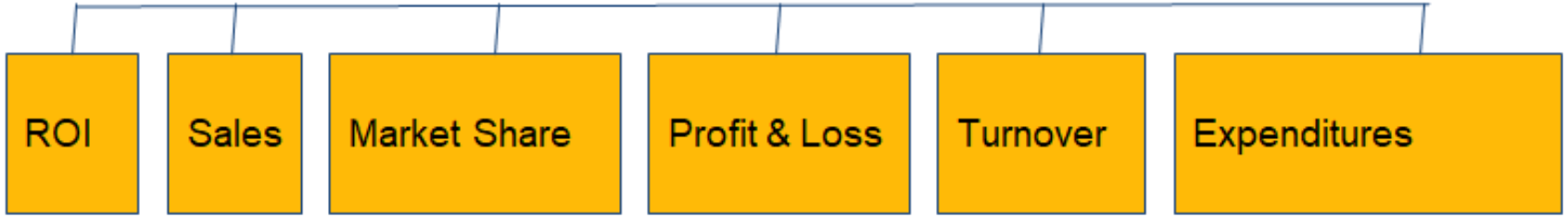
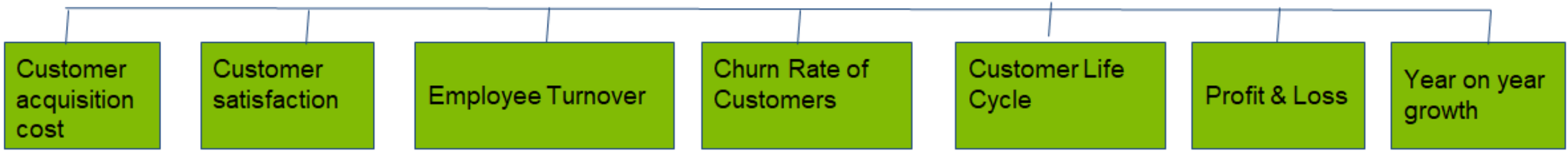
Measurement and Metrics

Traditional measures

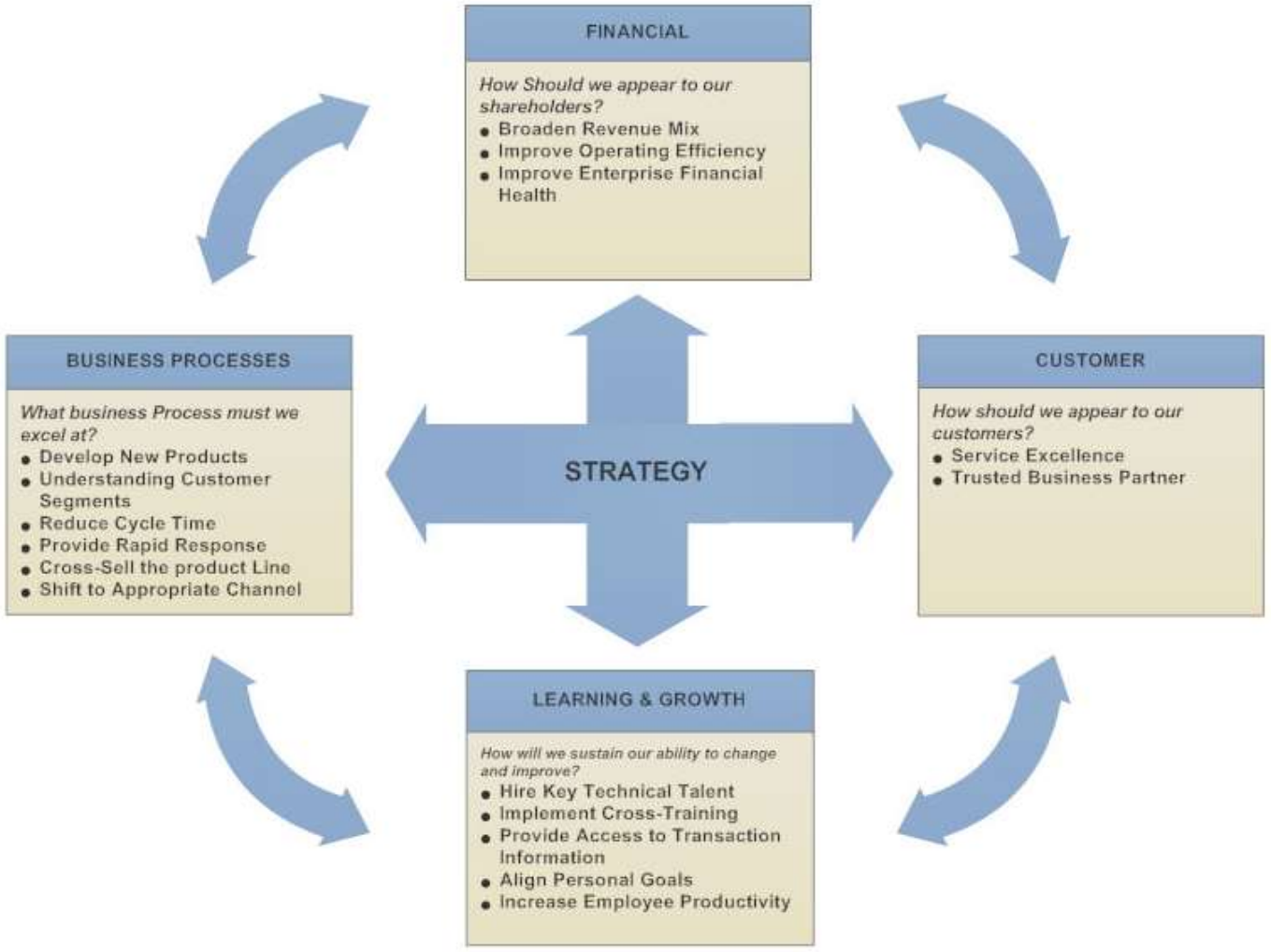


New measures



Balance scorecard

Financial:
Own healthy capital chain
Customer:
Keep connecting with client and trust them
Learning and Growth:
Improve efficency
Business processes:
New product, comprehensive consideration.



Value measurements & How IT is linked

-Sales Metrics
IT is linked with product delivery time and overall product review from market

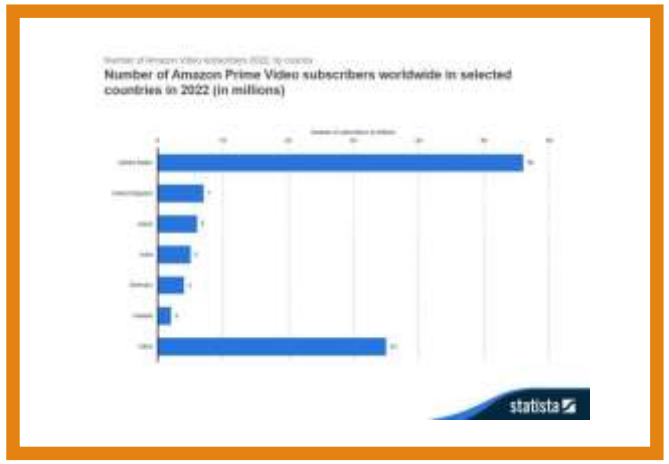
-Security Metrics
IT is linked with data security and overall data governance

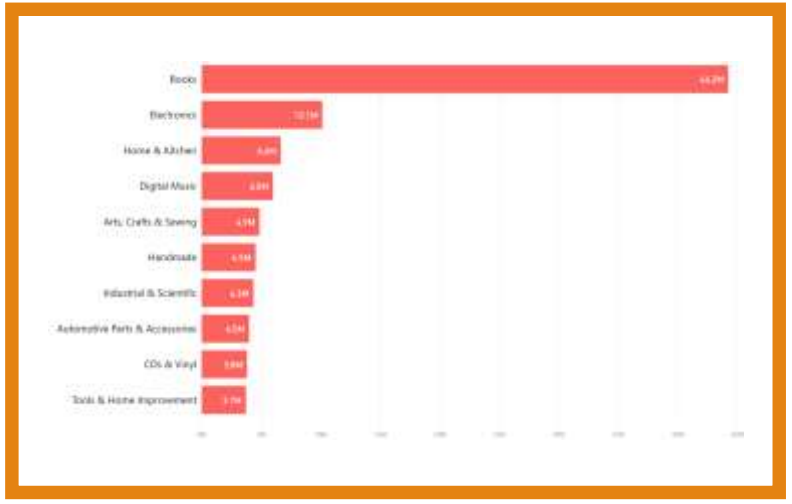
-Financial Metrics
-Ties IT with organisation's overall impact on Earnings Per Share revenue and profitability

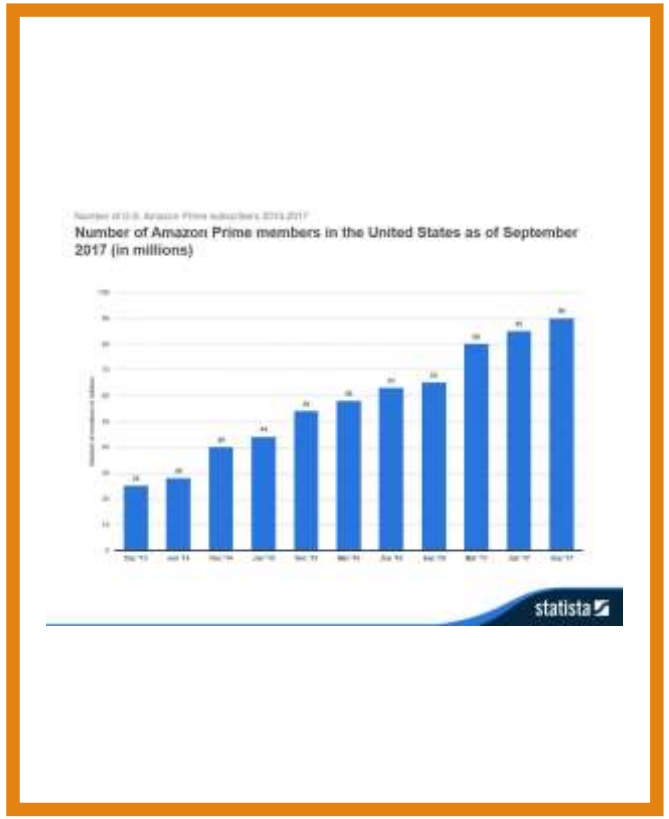
-Customer/Marketing Metrics
-Customer satisfaction score with new delivery ways
-Customer query/pain point solution.

-Operational Metrics
-IT is linked with delivery time, turn-around time, efficient resource management

Create a Dash Board



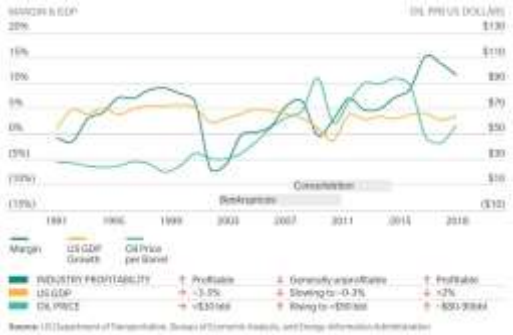




Issues

Government Regulations and Policies

1. The limitation of using drone in business process
2. Different shipping rules between different state(speed)
3. The privacy protection policy between people and government department
4. The core tech patent policy sharing with government



Technology environment

1.The automatic tech isn't mature enough
2.far from real-time control when facing something emergency
3.no signal in the desolate area

Macro-economic Environment

1.Change in the exchange rate (paying salaries to employees in other countries)
2.Economy recessions
3.Inflation rates (Increase in cost of IoT nodes will increase the cost of data collection)

Social Environment

1.People are becoming more aware of their data and how it being used

2.Organizations that don’t protect the data of people are now prone to being boycotted by their customers

3.People don't fully trust of automatic and AI technology.

Demographic Environment

Make sure to collect data from all the demographics and not the ones for which it is easily available as the final aim is to cater to all

Complementors

AI company may not provide the core patent for us delivery process

Others

1.Weather condition will influence the judgement of automatic car about around environment
2.someone will steal or destroy the drone
3.battery problem (run out of power when facing an accident)

Risk Management:

1.Make a long contract with your partner company especially about the patent.

2.Be familiar with every policy which is published by the government.

3.Hiring professional data security expert to protect the privacy data security.

4.consideration more comprehensive about the accident in the delivery road then make series operation in automatic car and drone.

5.keep investigation of the economy around the world to precaution and avoid economic risk.

Conclusions

Recommendations

Keep investment in the advanced technology

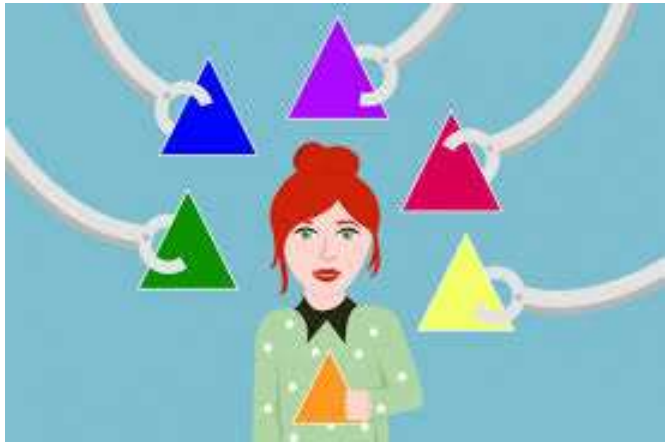
Focus on BI led the decision making

Invest more on hiring best data scientists to acquire better insights

Make sure that our system have good data security

There should be enough data to work with and the data should not be biased

Train the business professional to use BI to handle business more predictable



reference

https://policymanual.nih.gov/26101-42-F/

https://www.mckinsey.com/industries/travel-transport-and-logistics/our-insights/distraction-or-disruption-autonomous-trucks-gain-ground-in-us-logistics