

# Cognizant

# MACHINE LEARNING

in  
Claims Servicing Calls  
in era of

**CORONAVIRUS  
COVID-19**



**CCi – Digital Domain Team:**  
O S, Saravanan, Akshat Kant  
Souvik Chanda, Angela  
Vikas Pilania, Prem



## Agenda

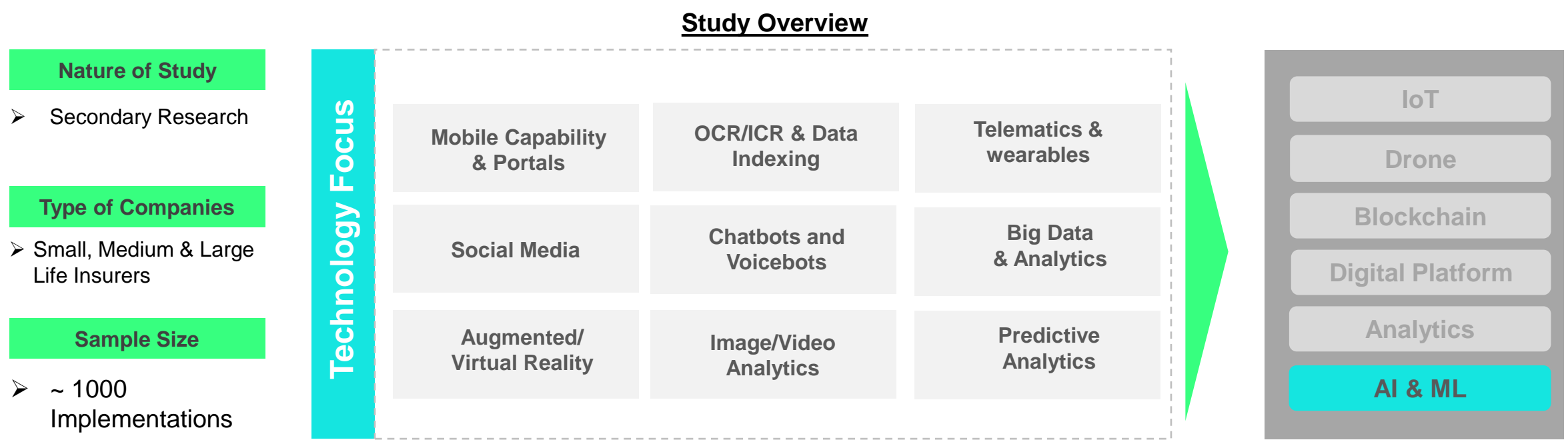
- Insurance: Claims Customer Servicing in the Digital Race
- Customer Pain Points in the Claims Process
- Digital disruption is set to continue in Life Insurance claims & customer servicing
- Use Cases for Machine Learning in Claims Servicing
- Machine Learning – how to approach claims servicing
- What future holds



# Insurance: Claims Customer Servicing is GAINING UP in DIGITAL RACE

The inherent inefficiencies and lack of customer centricity of ‘customer care centers handling claims calls’ are coming under the spotlight as customers’ expectations around real-time service, digital access, and improved experience are not being adequately met.

In our “**Machine Learning based customer servicing for Claims calls**” study we did a comprehensive secondary research to understand the primary customer grievances including COVID claims, insurers technological challenges, preferred technologies to cater to underlying issues and identified opportunities to transform ‘Claims Customer Service’ centres using Machine Learning.



Claims based calls, traditionally characterized by fragmented, considered disconnected and often delegated to third parties, is waking up to the modern, digitized age – as need of the hour to improve customer satisfaction.

# Customer Pain Points in the Claims Process

Lack of speed, transparency and inefficiency from the CSRs are the characteristics of a poor quality claims experience.

## No defined course of action

- Customers rarely get clarity on what is the next step on their claims or if there is an action item from their end.
- Lack of visibility about claims statuses and when losses will be recouped without chasing insurer for updates

## Lack of empathy

- Many carriers overlook the employees' courtesy, empathy, knowledge and professionalism and fail to address
- Inability to deal with different experiences for different generations – Baby Boomers need face to face interaction, Gen X need an multi touchpoints, and vulnerable customers need higher levels of caution

## Redundant Information & Multiple POCs

- Frustrations are likely to arise if claimants must juggle multiple points of contact and repeatedly answer the same questions.
- Customer's own effort to make appointments for damage assessments before they can have their car or home repaired can create a negative experience

## Pain Points due to the Pandemic

- Lack of enough claims reps to address the claims issues
- Long wait times
- Large volumes of claims (maturity claims have seen a spike)
- **Lack of knowledge of claim covering COVID -19 especially for outsourced call center reps**
- More frustration due to the pandemic
- Longer wait times for documents (treatment records, certificates) to process

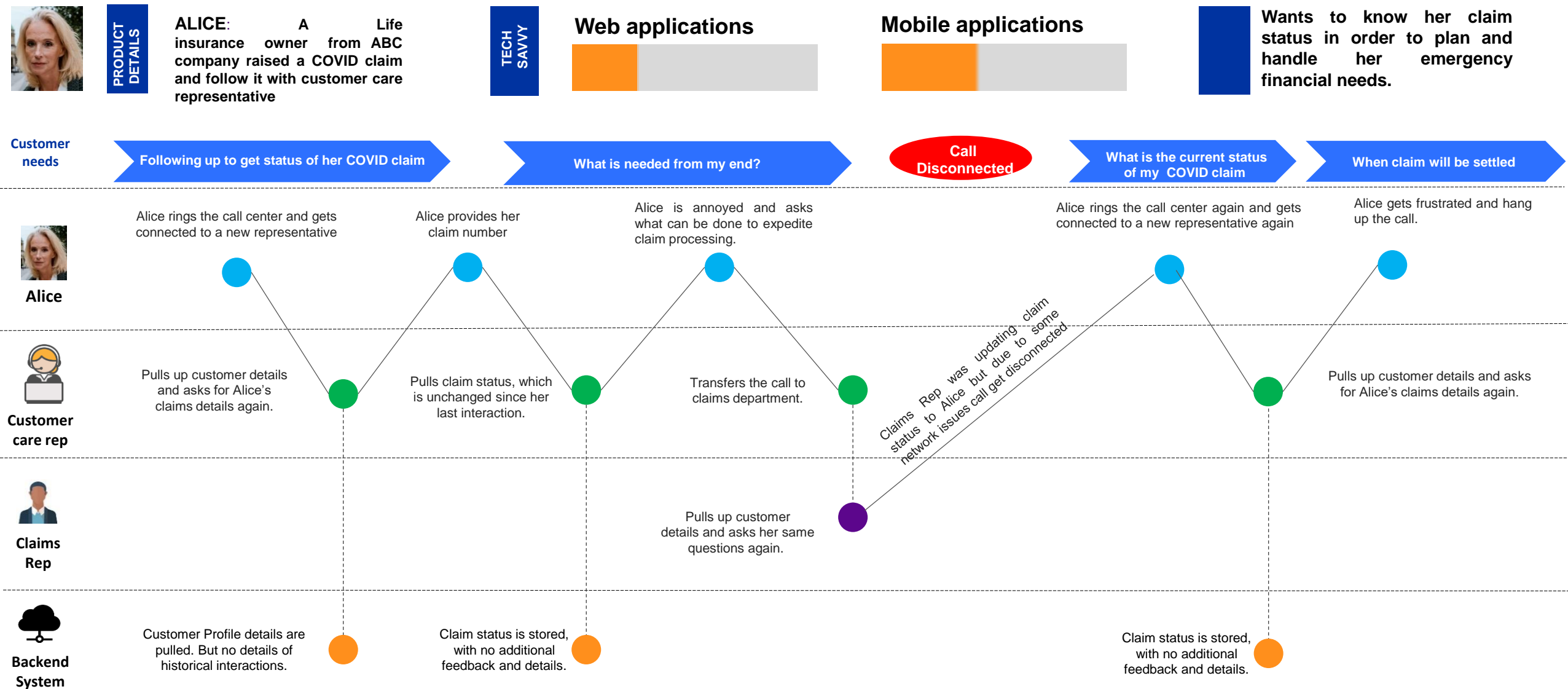
## Inexperienced Customer Care executives

- Difficulty to obtain support from agents on claims process
- Manual Reporting with various complex questions

### Predictors of Customer's Satisfaction in Claims:

• Insurance Company acted in my Best Interest	11.4%
• Initial Filing of claim	8.0%
• My Issues were Resolved the First Time	7.4%
• Obtaining Approval of a Claim	7.0%
• Overall Effort Required to File a Claim	6.7%

# Customer Journey Map – With existing solution ecosystem









# System Limitations + Customer Care Centers Limitations

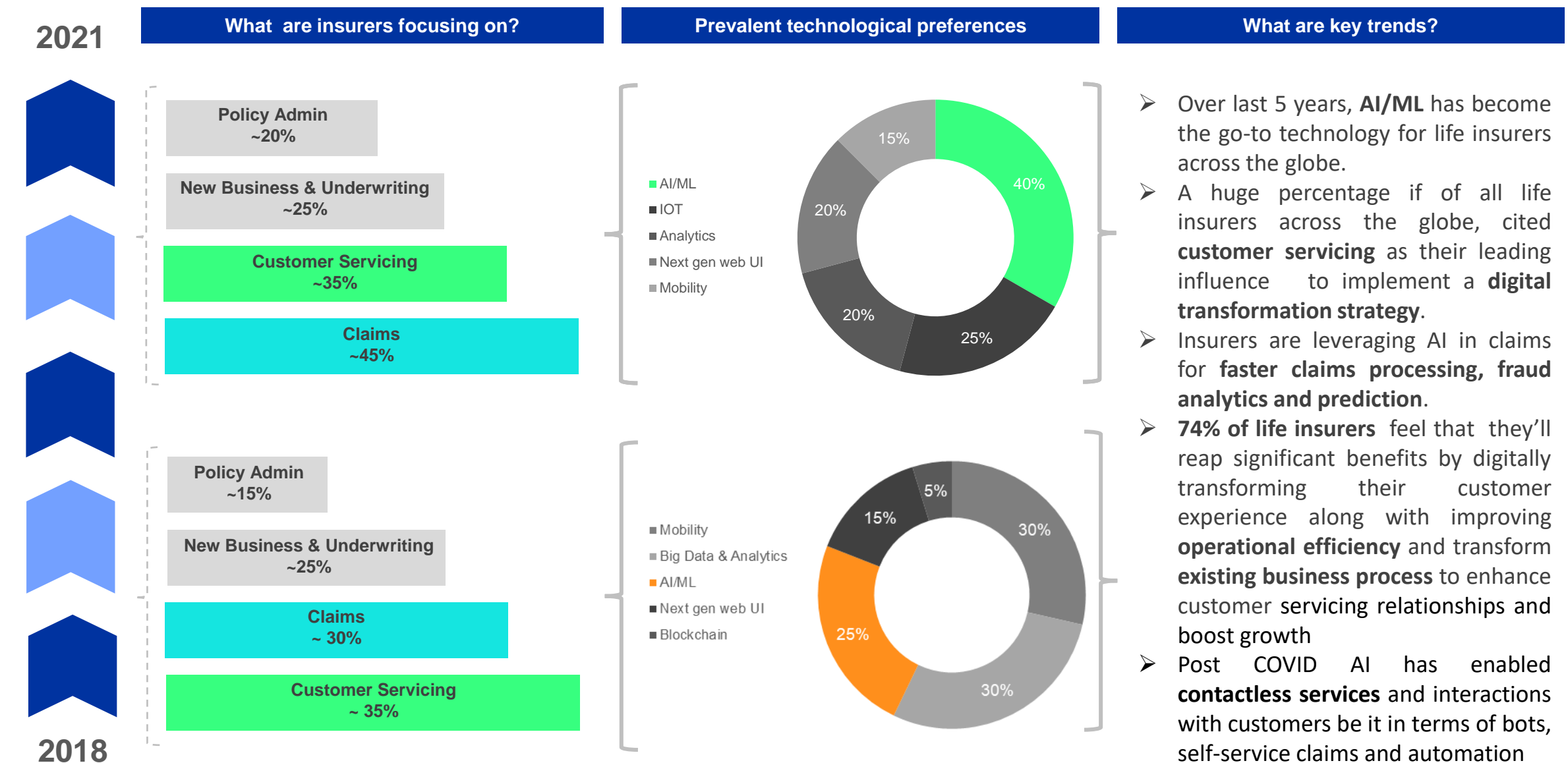
## Customer Care Center limitation

	Insurance customers prefer to connect with a customer care executive compared to any other mode of communication which results in <b>huge call volume</b> .
	Delayed claim status reports or closure notification to the claimants
	Customer service representative's low productivity to register a claim as details are fetched from different systems.
	Frustrations are likely to arise if claimants must juggle multiple points of contact and repeatedly answer the same questions.
	Reduced efficiency due to manual errors and disparate claim information across multiple systems results in delayed query resolution
	Lack of knowledge of COVID claims, riders and applicability.

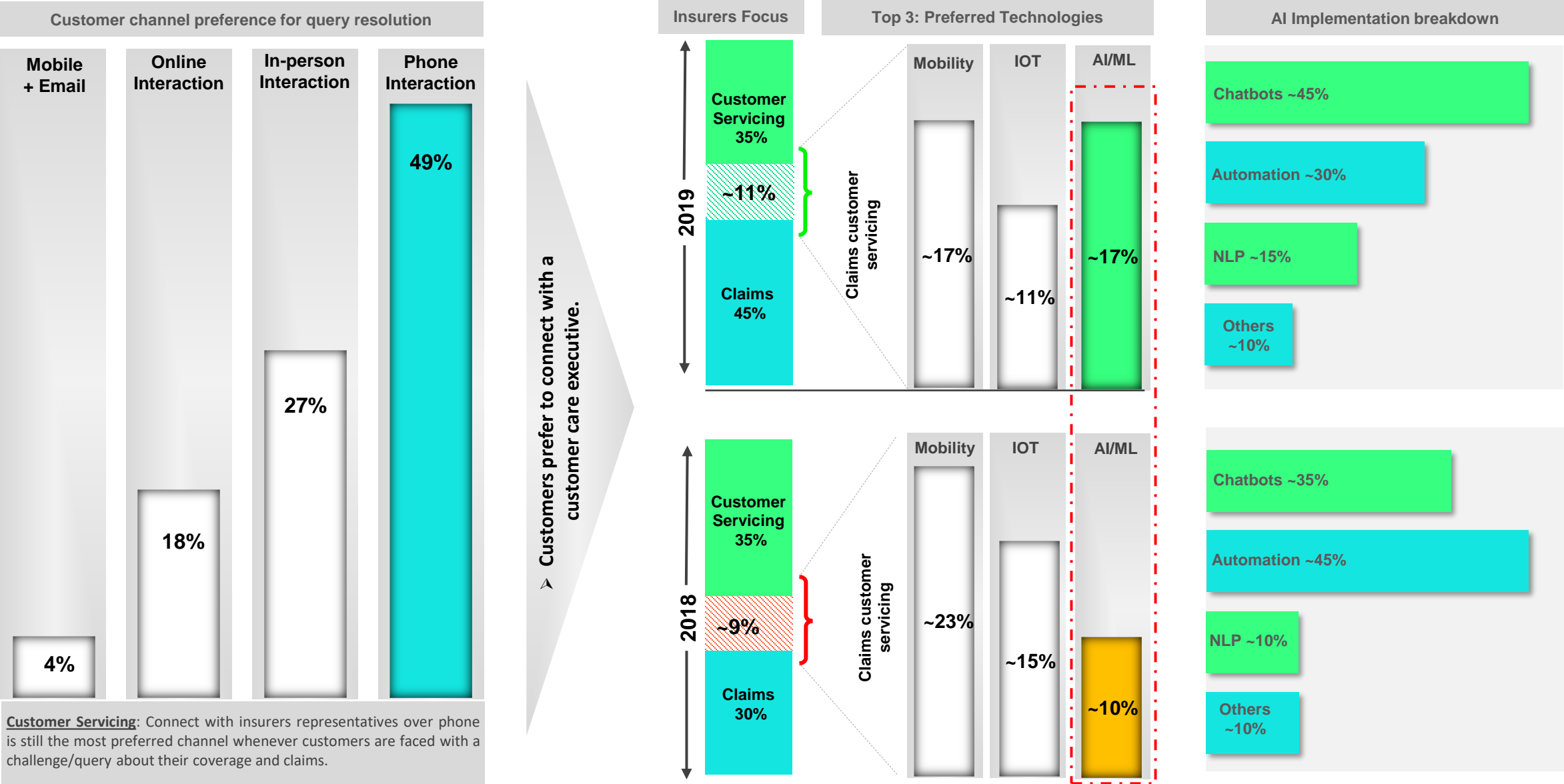
## System Limitation

	Legacy systems with limited information exchange between systems, which causes information loss and claimant needs to answer same questions multiple times during an interaction.
	Incoherent claims processing, lack of analysis of customer's earlier interactions and poor task management leads to a delays.
	Missing/incomplete information on claimant/claims raised, with minimal follow ups on filling the gap and lack of relevant proactive communication from insurer's end.
	Systems' inability to triage calls and connect customers with most suited executives, based on customer profile, claim details etc.
	No built in recommender engines, which could parse through historical interactions and pull out most solutions provided for similar queries in past.
	No built in workflows for COVID related claims High IVR volumes

# Digital disruption is set to continue in Life Insurance claims & customer servicing



# AI/ML becoming the go-to technology for claims customer servicing





# Use Cases for Machine Learning in Claims Servicing



# Claims Assignment based on historical interactions - AI Driven Ecosystem

**Customer Persona:** Alice is a HNI working as a professor in a college. She is a Life insurance owner from ABC company raised a COVID claim and follow it with customer care representative



## Business Problem

- How would you assign claims to the right claims handler?
- How do you assess if the claim is simple/complex?
- How would you know if it is an claims initiation or a follow-up claim?



## Business Opportunity

- Skills-Based Routing
- Auto-assignment
- Customer + Claims details
- Claim handler details



Alice

- Does Alice have to remember her claims details?
- Will she have to have the documents and emails handy to answer questions about the claim?

- Assign the claim to the most efficient claim handler
- Auto Route to previous claim handler for information on Life Insurance Policy
- Ready reference of claim and customer details with the claims representative



- Auto claims Assignment based on historical interactions



Contact center using IBM Watson explorer text analysis

## Guidewire Predictive Analytics

This software assesses claim severity, routes and assigns claims, and identifies claims that may require litigation or subrogation.

# Intelligent Case Management- AI + Workflow Management

**Customer Persona:** Alice is a HNI working as a professor in a college. She is a Life insurance owner from ABC company raised a COVID claim and follow it with customer care representative



## Business Problem

- What is the process to be followed for life claims vs retirement claims?
- Manual claims verification will be time consuming and will result in long wait times.
- How to manage documents?



## Business Opportunity

- Workflow Management
- Intelligent Routing
- Claims verification
- Categorizing Claims
- Document Management



Alice

- This is Alice's second call to enquire about claims
- Her claim is complex
- She wonders if the claims settlement document will take long

- Claim is classified as complex based on amount, number of parties involved
- Based on Workflow management, claim status is with the litigation
- Once the litigation clears, the documents are automatically generated



- Intelligent Case Management for claims



Amelia leads call center employees through step-by-step procedures to help answer a variety of customer questions

# Next Step Recommendation- AI + Call Categorization

**Customer Persona:** Alice is a HNI working as a professor in a college. She is a Life insurance owner from ABC company raised a COVID claim and follow it with customer care representative



## Business Problem

- How to categorize customers based on the way they talk?
- How to capture claims details when the customer talks?
- How to assess the claim based on customer inputs and recommend next steps?



## Business Opportunity

- Sentiment Analysis
- Assessment and Repair (only P&C)
- Interpret claim data including unstructured text, audio, images and video



Alice

- Alice seems worried and has an angry tone
- She asks for immediate resolution of claim
- She has a COVID related claim

- Based on sentiment analysis, the customer responds with empathy
- Ways to approach the customer are also shown to the customer rep
- Based on the inputs, next step eg. department to transfer is recommended



- Next Step Recommendation



Uses Verint's speech analytics to measure customer experience



Able (allstate business insurance expert), who appears as an avatar, reportedly provides agents with step-by-step guidance for "quoting and issuing ABI products" using natural language



IBM, NVIDIA, Hyundai, Geico Bring Deep Learning AI to Call Centers



# Customer Communication - AI + Multi channel Integration

**Customer Persona:** Alice is a HNI working as a professor in a college. She is a Life insurance owner from ABC company raised a COVID claim and follow it with customer care representative



## Business Problem

- How to communicate with empathy?
- How to leave a positive impact with the customer after the claims call?



## Business Opportunity

- Omni-channel CCM
- Claims NLP to support interactions in an empathetic way
- Customer Engagement for risk mitigation



Alice

- Alice has received her claim status as SMS
- She also receives the same claim status on whatsapp

- Insurer sends customer communication on email, sms and whatsapp
- Insurer sends proactive risk mitigation measures related to wellness etc.



- Customer Communication

Aegon

Aegon Hungary has introduced VoiceAnalytics to detect the emotions of its call centre agents and customers.

# Machine Learning – how to approach claims servicing

Insurers need a tool which can analyze incoming claims calls in real time, so as to recommend best possible actions to claims handler.








## Solution Elements

- System can categorize calls based on priority and improve resolution time for calls with high loss severity etc.
- Improving First Call Resolution for claims related call, by directing calls to agents with relevant experience.
- COVID specific claims to be routed accordingly
- Almost real time text analytics engine to convert customer conversation into analyzable data.
- Maintaining conversations history, customer questions/grievances, solutions and other relevant indicators.
- Using customer historical conversations, interactions to map customer's persona.
- Auto detecting customer's intent/sentiment and guide customer care executive with relevant inputs.
- Surf through existing dataset to identify similar customer problems and resolutions provided.
- Prioritize recommendations based on their effectiveness.
- COVID specific workflows to be defined
- Flagging parameters which can be identified as potential litigation indicators.
- Detecting delays in litigation/documents due to COVID and responding empathetically

Existing Implementations



# ML System– Under the Hood

Noise Removal from historical data	Sentiment Extraction of incoming calls	Named Entity Recognition	Subjectivity Classification	Calls Classification: Based on Litigation indicators
 <ul style="list-style-type: none"><li>➤ Cleaning the data from irrelevant calls, conversations etc.</li><li>- Lower Case Conversion</li><li>- Punctuation Removal</li><li>- Bag of words/ Dictionary of Words</li><li>- Stemming/ Lemmatization</li><li>- Stop Words Removal</li><li>- N-grams creation</li></ul>	 <p>Multiple algorithms can be used for identifying an associated Sentiment with a conversation. There is no such thing as best algorithm.</p> <ul style="list-style-type: none"><li>➤ Naive bayes - BernoulliNB, GaussianNB, MultinomialNB</li><li>➤ Support Vector Classifiers - LinearSVC, PolynomialSVC, RbfSVC, NuSVC</li><li>➤ Maximum Entropy Model - GIS, IIS, MEGAM, TADM</li></ul>	 <ul style="list-style-type: none"><li>➤ An important part of sentiment analysis as the objective of sentiment analysis is</li></ul> <p>“Discover all the opinion quintuples - entity, aspect, sentiment on aspect of the entity, opinion holder and the time/context of opinion”.</p>	 <ul style="list-style-type: none"><li>➤ The task of classifying a sentence as opinionated or non opinionated is termed as Subjectivity Classification.</li><li>➤ Classifying an opinionated statement as expressing a positive or negative opinion.</li><li>➤ Classifying a sentence or a clause of the sentence as subjective or objective, and for a subjective sentence or clause classifying it as expressing a positive, negative or neutral opinion</li></ul>	 <ul style="list-style-type: none"><li>➤ Classify calls data to different categories – e.g. High Loss Severity, Low Severity, Litigation etc..</li><li>➤ It is as necessary because different set of features are defined for different domains and thus, each domain should have different classifier.</li><li>➤ Certain words such as lawyer, sue etc. can be used as parameters for litigation classification.</li></ul>

Machine learning methods have limitations and, actually, can't work at a character level like humans. Need to keep in mind that any type of modifications that are made to the data, leads to information loss.

# Key Takeaways – Call for action for insurers

## 01 Conversation Starter

- Leverage to start conversations about the future of insurance and digital around ML and data capabilities.
- With correct Use cases we need to help Insurers to use ML without overstepping the legal and regulatory requirements as a start, we can talk about:
  - **Sales improvement**
  - **Risk modelling**
  - **Customer acquisition**
  - **Claim prediction**
  - **Fraud detection**
  - **Churn prediction**
  - **Price optimization**

## 02 Build Partnerships

- We can align insurers vision and goals to team up with startups through in-house incubators, accelerators and innovation labs.
- Also, help look for suitable technology partnerships with insurtechs to bridge capability gaps

## 03 Grow Capabilities

- Continue to focus on building capabilities around digital by help build Insurers set up data science center of excellence (CoEs) to define and implement use cases in their business
- To elaborate, the new reporting standard (IFRS 17) requires more data granularity, as result insurers are overhauling their IT systems and architecture to handle the increase in data volume and quality

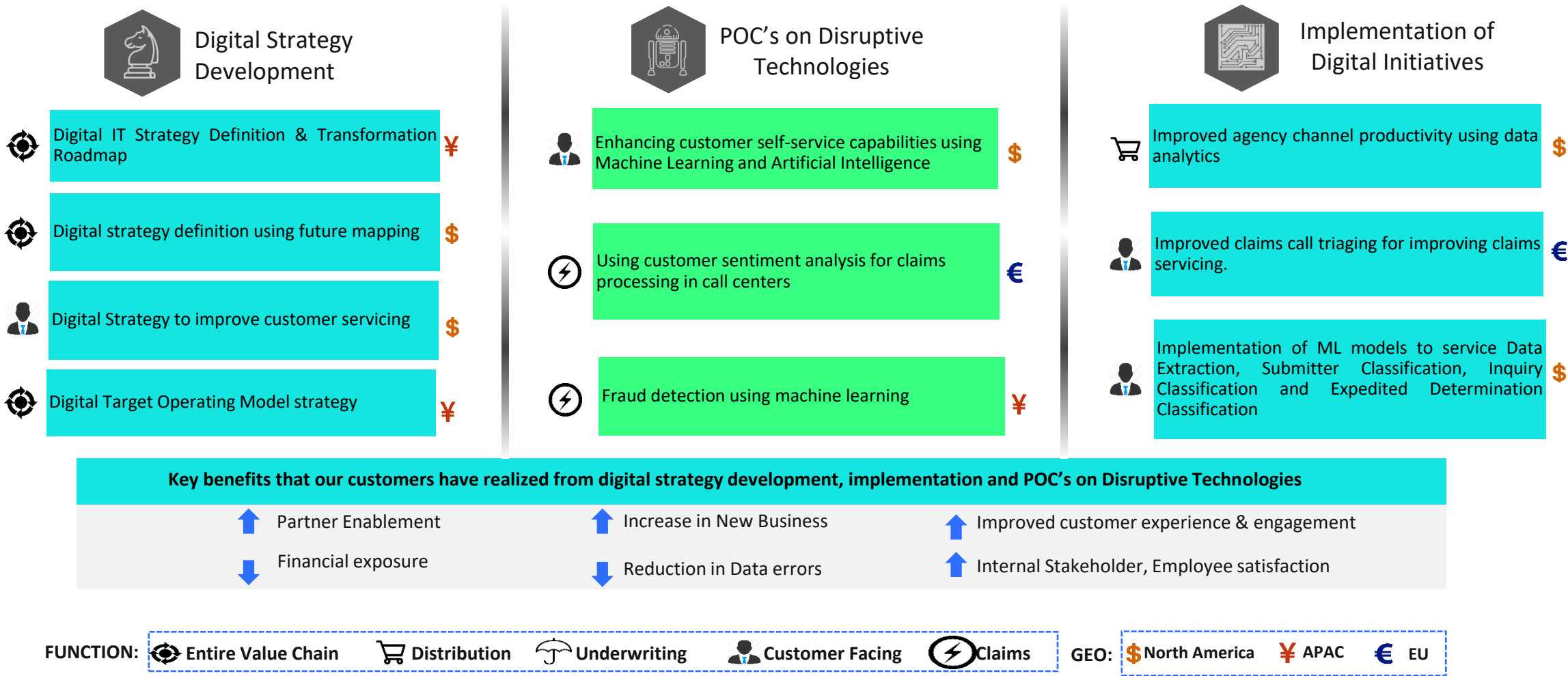
## 04 Broaden Horizons

- Broaden thought leadership horizon to look for solutions and adjacencies beyond traditional insurance
- The challenge for insurers is to construct a compliant and interpretable framework of advances models within the regulatory space – we need to help guide Insurers take that next step through aligned Thought Leadership



# Cognizant has been assisting insurers with their digital transformation

Cognizant has been delivering high quality sales and business transformation consulting services in multiple geographies. Our experience spans across **digital strategy development, implementation and POC's on Disruptive Technologies.**



# References

- [https://ddd.uab.cat/pub/tfg/2017/tfg\\_70824/machine-learning-techniques.pdf](https://ddd.uab.cat/pub/tfg/2017/tfg_70824/machine-learning-techniques.pdf)
- <https://pdfs.semanticscholar.org/fafc/0e995f038b1be50754ed56bbe9fc1a3a7a51.pdf>
- <https://pdfs.semanticscholar.org/34e7/03d61e29213f82e3a3e6776c17933219d63f.pdf>
- <https://docs.aws.amazon.com/machine-learning/latest/dg/data-transformations-reference.html>
- <https://machinelearningmastery.com/how-to-prepare-data-for-machine-learning/>
- <https://docs.microsoft.com/en-us/azure/machine-learning/studio-module-reference/data-transformation>
- <https://machinelearningmastery.com/transfer-learning-for-deep-learning/>
- <https://arxiv.org/ftp/arxiv/papers/1601/1601.06971.pdf>
- [https://ddd.uab.cat/pub/tfg/2017/tfg\\_70824/machine-learning-techniques.pdf](https://ddd.uab.cat/pub/tfg/2017/tfg_70824/machine-learning-techniques.pdf)
- [https://www.capgemini.com/wp-content/uploads/2017/07/Global Trends in Life Insurance Policy Administration.pdf](https://www.capgemini.com/wp-content/uploads/2017/07/Global_Trends_in_Life_Insurance_Policy_Administration.pdf)
- [https://www.capgemini.com/wp-content/uploads/2017/07/global trends in life insurance policy administration and underwriting.pdf](https://www.capgemini.com/wp-content/uploads/2017/07/global_trends_in_life_insurance_policy_administration_and_underwriting.pdf)
- <https://lct-master.org/files/MullenSentimentCourseSlides.pdf>
- <https://policy-administration.insuranceciooutlook.com/vendors/top-policy-administration-solution-providers-2017.html>
- [http://claimvantage.com/australia/wp-content/uploads/sites/2/2017/04/AUS\\_Claimfirst\\_Brochure-Final.pdf](http://claimvantage.com/australia/wp-content/uploads/sites/2/2017/04/AUS_Claimfirst_Brochure-Final.pdf)
- <https://www.gartner.com/reviews/market/life-ins-policy-admin-systems-north-america>
- <https://pdfs.semanticscholar.org/presentation/7d3e/2be84ec5d00c25cbfc68c04596bdd48ae562.pdf>
- <https://www.infosysbpm.com/mccamish/newsroom/analyst/Pages/leader-life-policy-administration-systems.aspx>
- <https://www.oracle.com/assets/gartner-magic-quadrant-lifesci-2410540.pdf>
- <https://www.sqmgroupp.com/resources/library/blog/customer-contact-channel-preference>

# Cognizant

## Keep Yourself Safe

## Thank You

---



**CCi – Digital Domain Team:**  
O S, Saravanan, Akshat Kant  
Souvik Chanda, Angela  
Vikas Pilania, Prem

# Cognitive Solution to Automate Triaging service and Loss Control Recommendations to Claimants

## Key Highlights



Collaborated with home office to define scope of development



Conducted market analysis to identify best solution



## Client Requirements

1. Carrier receives 1500 calls per day in each service centers, of which 200-300 of these are claim related
2. Carrier wants to analyze incoming calls from claimants in real time or near real time, to initiate the right actions to minimize the losses
3. Carrier wants Cognizant to develop a cognitive solution that mine claims call center voice files in order to make (near-) real time decisions that will help in
  - Reducing loss severity
  - Improving better triaging
  - Empathizing with customers with the help of sentiment /emotion analysis
  - Increasing claims NPS and satisfaction scores



## Solution Highlights

- Cognizant is developing the solution using IBM Watson APIs
- Watson Speech to text
- Alchemy Language API + Watson Knowledge Studio for call categorization and training engine with taxonomies
- Natural Language Classifier API for litigation VS non-litigation calls classifier (will be used for other anomalous calls\* too)
- Personality Traits API + Tone analyzer API for personality traits matching analysis
- HTML / CSS screens – for dashboard



## Business Outcome

- Sentiment analysis dashboard that provides insights into customer's sentiment at near real time to make informed decisions
- Call transcripts for future trainings and review



# Healthcare | Intake Process

## Background

### Client

Leading US Healthcare Insurance Provider

### Client's Role

Address appeals and grievances raised by members or providers

### Aim

Automate the Intake Process

## Challenge

- Client received around multiple appeals and grievances everyday that needed to be addressed within stipulated time frames.
- Manually intensive work which required analysts to extract information from PDF and Tiff documents, conduct multiple validations and persist the outcome in CCP.

## Solution

- WorkFusion was used to provide RPA and ML solution.
- Adopted agile methodology using TFS for requirements management, project management, testing, release management etc.
- OCR is used to convert PDF/Tiff documents to xml/html files.
- ML models are employed to service Data Extraction, Submitter Classification, Inquiry Classification and Expedited Determination Classification

## Benefits

**32** Fields subject to Data Enrichment

**3000+** Documents Processed Daily

# Existing implementations in same lines

- **ELAFRIS INC** has an AI-powered virtual insurance chatbot that makes it easy for a customer to view the history of submitted claims, including status for current claims and payment information. Customers may also submit a claim over the app after answering a few questions, including clicking on the damaged areas in the car drawings. Once the claim has been submitted, the chatbot indicates that a claims adjuster will follow up with the customer. It also shares a list of local repair shops for the customer to get an estimate. Within minutes, the FNOL is complete without involving a claims adjuster.
- **FUKOKU MUTUAL LIFE INSURANCE** made waves in December when it announced that 34 claims FTEs would be replaced with an AI system based on IBM's Watson Explorer that is designed to read medical records and other documents necessary to determine payment.
- **GUIDEWIRE** acquired Eye Analytics, a provider of predictive analytics products, it was able to use machine-learning algorithms and predictive analytics to score claims in real time. Now renamed Guidewire Predictive Analytics, this software assesses claim severity, routes and assigns claims, and identifies claims that may require litigation or subrogation.
- **ALLSTATE INSURANCE**: Earley Information Science (EIS) is an agency which reportedly helps businesses improve performance outcomes through data analysis. Allstate partnered with EIS to develop a virtual assistant called ABle (the Allstate Business Insurance Expert). ABle (pronounced "Abbie") was developed to assist Allstate agents seeking information on Allstate Business Insurance (ABI) commercial insurance products. ABle, who appears as an avatar, reportedly provides agents with step-by-step guidance for "quoting and issuing ABI products" using natural language. EIS claims that ABle processes 25,000 inquiries per month.
- **PROGRESSIVE INSURANCE** is reportedly leveraging machine learning algorithms for predictive analytics based on data collected from client drivers. Progressive claims that its telematics (integration of telecommunications and IT to operate remote devices over a network) mobile app, Snapshot, has collected 14 billion miles of driving data. Progressive incentivizes Snapshot for "most drivers" by offering an auto insurance discount averaging \$130 after six months of use.