PoC : Smart Routing

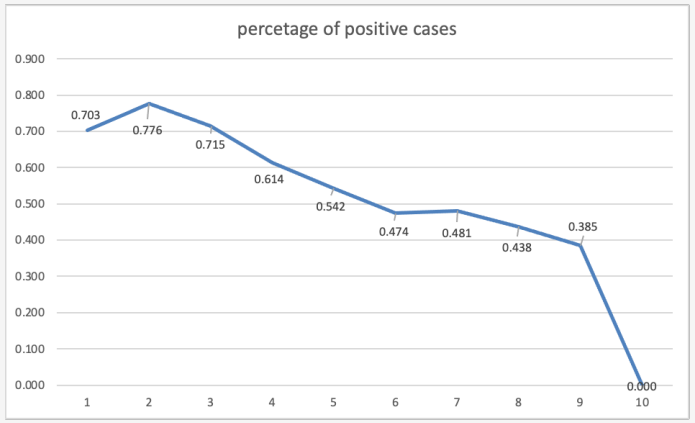
XE + CES Collaboration

Agenda

- Context
- PoC Use Case
- Routing Flow – High Level Technical Design
- Agent Skill ML Model
- Demo
- Summary & Next Steps

Context

Customer don't like to be bounced around



Over a period, Agent tends to pick up a niche

Emp Name	Activation	Billing	End User Account Management	Team Account Management	Troubleshooting
Genki Ito	77.97%	88.58%	85.93%	89.62%	82.22%
Rovin Yeshashwik		93.36%	88.67%	0.00%	
Daisuke Itou	87.63%	90.18%	82.73%	33.33%	82.93%
Kayo Tada	85.59%	91.74%	86.84%	87.00%	89.66%
Shuuhei Kaneko	89.76%	89.97%	89.19%		100.00%
Keiko Yoshijima	88.74%	89.34%	82.78%		80.00%
Ikumi Ohkawa	80.85%		73.02%	100.00%	75.09%
Himanshu Sharma	90.96%	84.38%	70.42%		82.42%
Nikhath Fathima N	75.00%	86.21%	97.70%		100.00%
Erika Watanabe	82.02%		58.33%	100.00%	84.75%
Yuuya Sasaki	88.43%	89.13%	88.49%		100.00%
Hiromi Sato	93.59%	90.31%	87.68%	90.77%	89.02%
Yuka Uesugi	82.41%	87.03%	83.85%	85.76%	86.79%
Koutarou Hashino	92.86%	88.19%	86.65%	100.00%	81.48%
Sumit Sharma	50.27%	83.94%	86.00%		86.51%
Dereck Thomas	100.00%	92.28%	84.21%		100.00%
Abba Diana Princy Samuel	94.70%				91.14%
Takaaki Inokuchi	89.33%	85.17%	82.01%	85.81%	75.86%
Sonali Sharma	75.00%	95.82%	96.61%	97.00%	66.67%
Momoko Takahashi	77.89%		73.81%	71.43%	81.88%
Kanako Hujiwara	86.54%	88.56%	81.48%	100.00%	0.00%
Nitiysh Kalra	92.59%	88.33%	90.29%		0.00%
Yukina Yano	93.02%	94.18%	87.13%	100.00%	96.55%
Hitomi Nakamura	78.13%		100.00%		83.80%
Aman Jain	95.10%		66.67%		87.45%
Harshal Sahu	93.35%	83.33%	78.43%		90.00%
Mayuko Izumi	91.91%	91.77%	85.09%	86.00%	75.00%

Hypothesis: For the customer to have the most valuable & satisfying experience with Adobe they need to interact with the agent who is best suited to solve their issue

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PoC Use Case

Ability to introduce any foreign element into the contact routing flow and use it to influence the outcome

Steps taken to functionally prove out smart routing end to end

- ✓ *Built ML model to map agent best in solving L2 issues*
- ✓ *Integrate ML model with AWS connect platform**
- ✓ *Built "Smart Routing Handler" to get ranked list of agents based on conversation context*
- ✓ *Check for Availability and Capacity of Agents in AWS Contact Flow*
- ✓ *Route to highest ranked agent who is available*

** used AWS Hackathon environment for the PoC*

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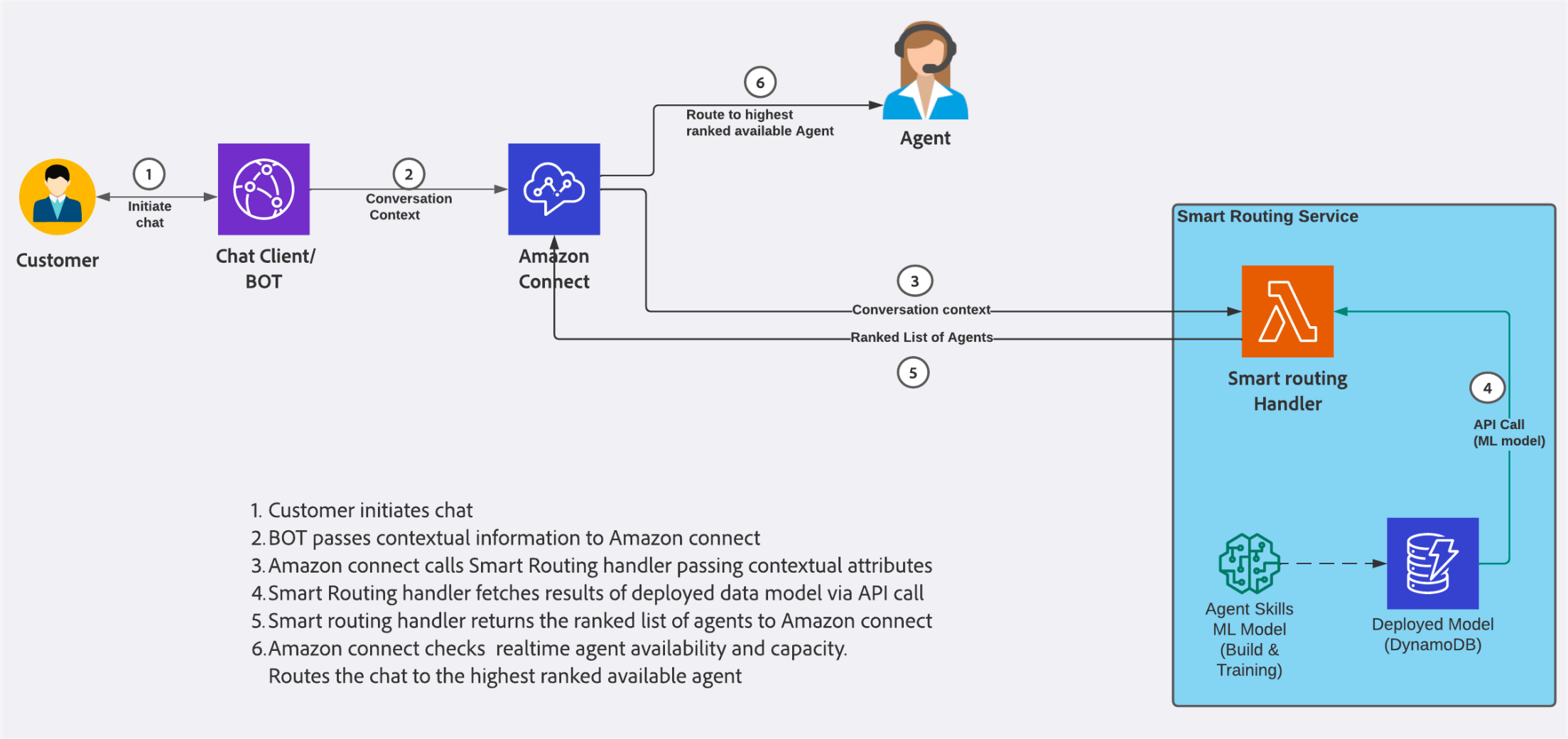
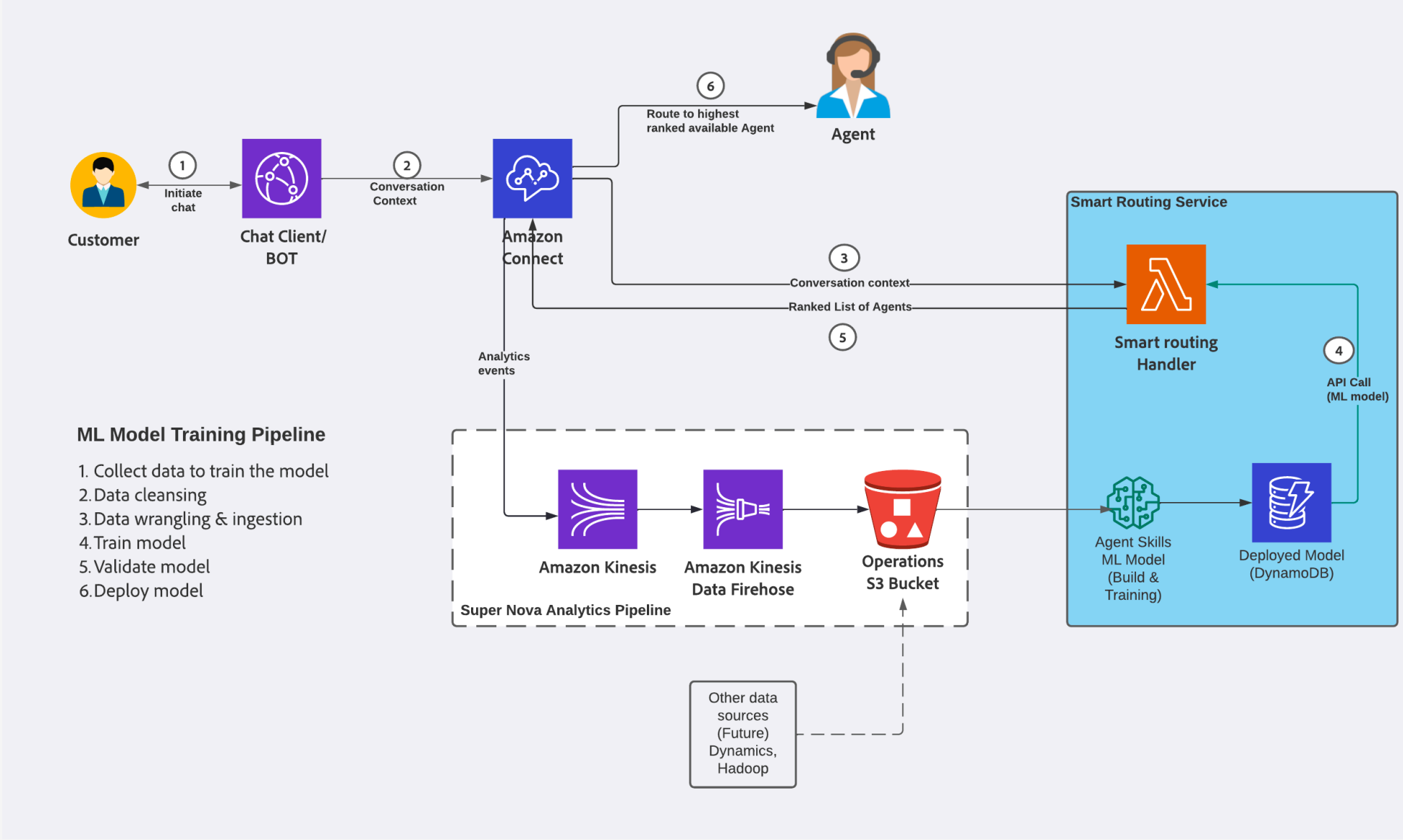
Technical Design – Smart Routing



1. Customer initiates chat
2. BOT passes contextual information to Amazon connect
3. Amazon connect calls Smart Routing handler passing contextual attributes
4. Smart Routing handler fetches results of deployed data model via API call
5. Smart routing handler returns the ranked list of agents to Amazon connect
6. Amazon connect checks realtime agent availability and capacity.
   Routes the chat to the highest ranked available agent

Technical Design – ML Training Pipeline



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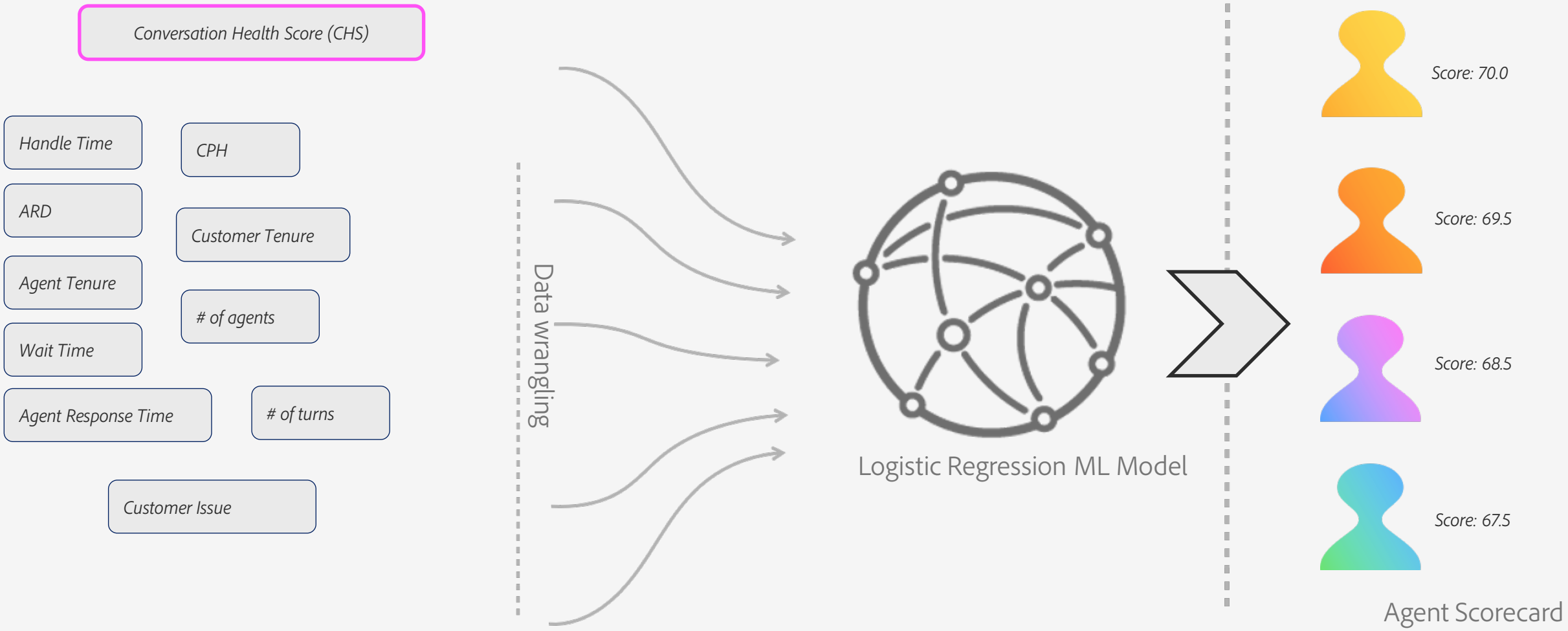
Agent Skill – ML Model



Input parameters

Identifier

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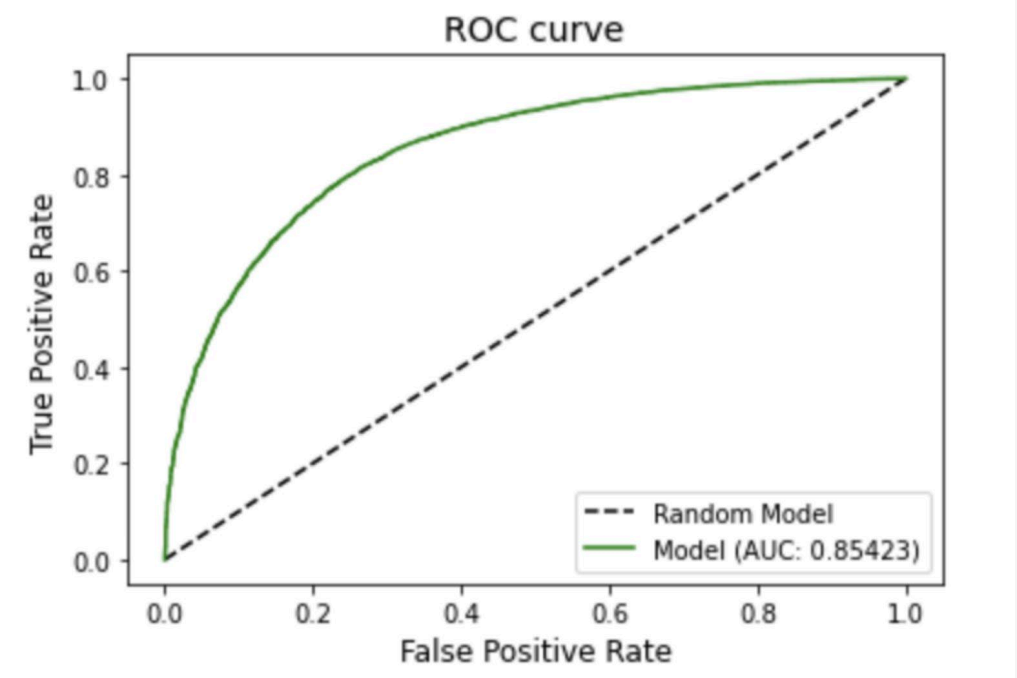
Model Output

L2 Issue: Billing Failure/ Error

employee_key	sub_line_of_business__c	incidentlevel2reason	score
CEAD8079-6D20-EB11-A813-000D3A31C911||DYNAMIC_CRM||2021-09-07	Consumer Customer Service	Billing Failure/Error	75.5750
85EF604C-C8AF-EA11-A812-000D3A31C4C1||DYNAMIC_CRM||2021-04-04	Consumer Customer Service	Billing Failure/Error	75.4710
38E48637-B14A-EB11-A813-000D3A31CB42||DYNAMIC_CRM||2021-02-13	Training/Nesting	Billing Failure/Error	68.4960
31691F46-A0A7-EB11-B1AC-000D3A5CD190||DYNAMIC_CRM||2021-06-11	Billing	Billing Failure/Error	68.4520
3D691F46-A0A7-EB11-B1AC-000D3A5CD190||DYNAMIC_CRM||2021-08-11	Consumer Customer Service	Billing Failure/Error	68.4490
3D691F46-A0A7-EB11-B1AC-000D3A5CD190||DYNAMIC_CRM||2021-06-11	Billing	Billing Failure/Error	68.3840
7451EB10-9997-E911-A862-000D3A3722D6||DYNAMIC_CRM||2021-11-04	Quality	Billing Failure/Error	67.7540
BB37AC8F-3C40-E911-A854-000D3A3722A0||DYNAMIC_CRM||2021-09-24	Billing	Billing Failure/Error	67.3630
85EF604C-C8AF-EA11-A812-000D3A31C4C1||DYNAMIC_CRM||2021-05-26	Consumer Customer Service	Billing Failure/Error	66.7960
85EF604C-C8AF-EA11-A812-000D3A31C4C1||DYNAMIC_CRM||2021-05-18	Consumer Customer Service	Billing Failure/Error	65.7820
157C02B9-B942-EC11-8C62-000D3A35AFA6||DYNAMIC_CRM||1900-01-01	Consumer Customer Service	Billing Failure/Error	65.5470
D0A1D6CF-DEC5-EA11-A812-000D3A31C3BF||DYNAMIC_CRM||2021-04-23	Consumer Customer Service	Billing Failure/Error	64.9480
E9918A4B-00AA-EA11-A812-000D3A58F938||DYNAMIC_CRM||2021-04-23	Consumer Customer Service	Billing Failure/Error	64.5720
9B03FC49-E375-EB11-A812-000D3A37DA51||DYNAMIC_CRM||2021-06-11	Consumer Customer Service	Billing Failure/Error	64.5050
BE86C28A-FB14-EA11-A813-000D3A31C841||DYNAMIC_CRM||2021-04-04	Consumer Customer Service	Billing Failure/Error	64.4330
469B1C02-C4BC-EB11-8236-000D3A33CB8C||DYNAMIC_CRM||2021-06-11	Consumer Account Management	Billing Failure/Error	63.2820

Refer this dashboard to see model in working

Model accuracy ~85%



Refer this wiki to learn more about this model

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Demo

Intent – Activation Issues

- Utterance(s) - Activation error

Agent	Model Score	Status
Debajit	65.1815	Offline
Narayan	61.0404	Online
Akshay	57.6942	Online
Katie	56.7429	Offline
Vikas	56.6881	Offline
Prasanna	56.6811	Offline

Intent – Billing Failure

- Utterance(s) - I have a billing question

Agent	Model Score	Status
Akshay	75.5750	Online
Santosh	75.4710	Offline
Vikas	68.4960	Offline
Prasanna	68.4520	Offline
Katie	68.4490	Offline
Narayan	68.3840	Online

Summary & Next Steps

- We believe this functionality will enable us to create **bespoke & fulfilling experience** for our customer agnostic of their channel preference.

- The **business KPI's** it will positively impact
  - Higher CSAT% & Customer Effort Score
  - Higher RFT
  - Lower Transfer Rate
  - Reduction in Repeat
  - Faster Resolution Time

- We have also done the preliminary **technical design review** with AWS team, and they are onboard.
- We have kept the **Agent Load** as a factor to watch out for. In the current scope of PoC we have kept it ASIS
- Future work –
  - A/B testing in Production
  - Feedback loop to continuously improve ML model
  - Align with AWS on their roadmap

Next Steps:

✓ PoC Feedback from the attendee

✓ Approval to add this to SuperNova's backlog?

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Thank You

1. Context & potential impact (Hypothesis) - Debajit
2. What is the ASIS (include the MVP for SuperNova) routing flow - Narayan
3. What is the new proposed flow that we are recommending - Debajit
    1. Demo
4. High level architecture of the data flow and continuous learning - Narayan
5. The data model (how it is working) – Katie & Prasanna
6. What is the RTP plan – Narayan & Vikas

POC Use case

- Functionally prove out smart routing end to end
  - ML model creation
  - Integrate ML model with AWS connect platform
  - Get Ranked list of Agents
  - Check for Availability and Capacity of Agents
  - Route to highest ranked agent who is available

DEMO TIME

Model Explanation

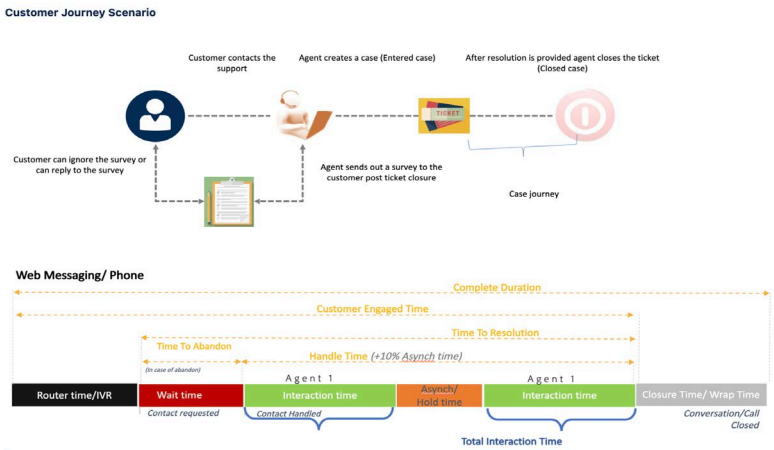
What are the attributes?
-- We have a correlation view to show columns i.e. attributes – wiki attach. Slide 5
What is the target variable?
-- Conversation health score (positive or negative - -1 or 1)
What is the type of model?
-- Data Engineering (WOE)/ Logistic Regression Model

How are we measuring model accuracy/ performance?
-- AUC – Area Under Curve – Wiki attach

Pre-Post testing.
1. hypothesis : average number of agents serving per case will go down.
2. hypothesis: probability of having better experience goes up as experts begin to handle different user interactions
3. hypothesis: CPH – Contact per hour will go up, hence experience will be happier, better NPS.

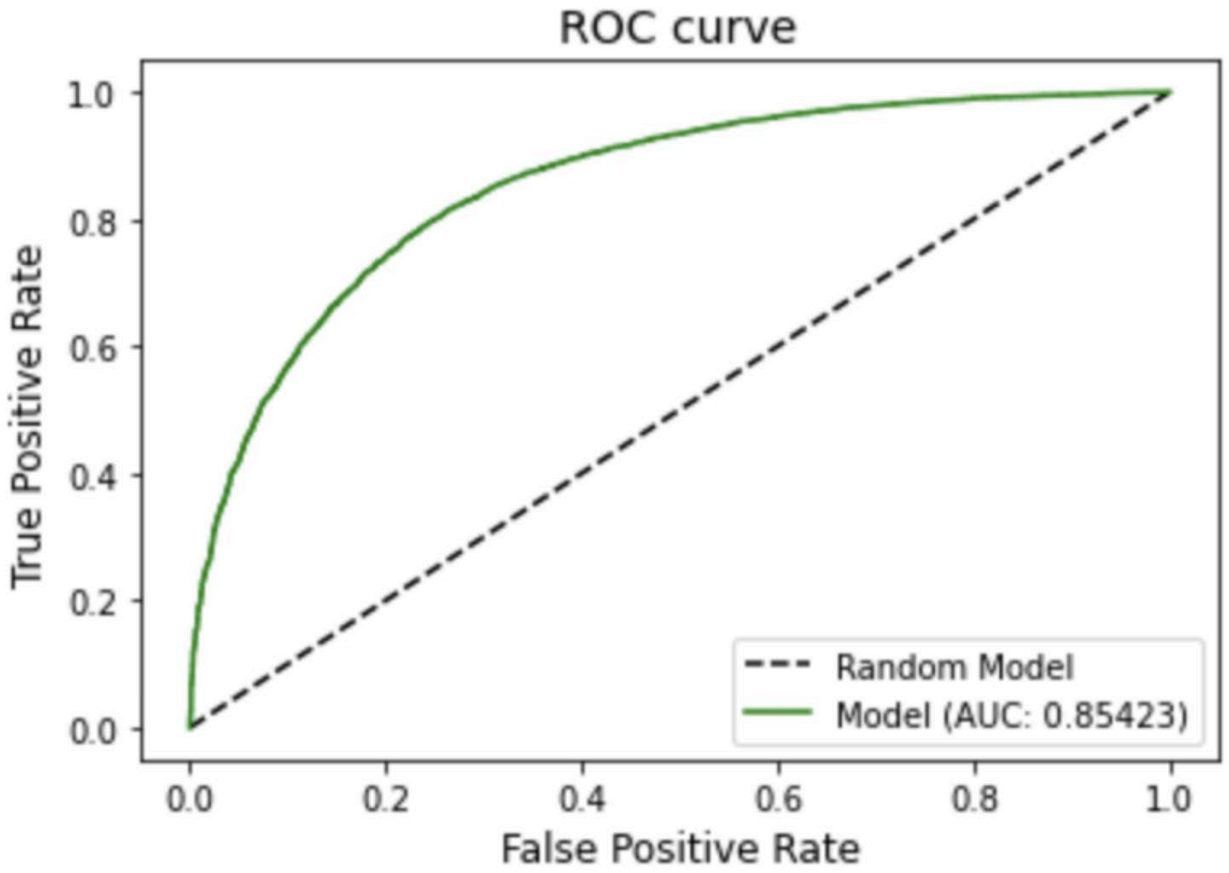
Insights
1. easy to solve issue type and hard to solve issue type clustering -
https://wiki.corp.adobe.com/display/DIA/Agent+Performance

What are the attributes?



case	agent	issue type	wait time	avg response time	agent handling time	number of turns per conversation	number of agents handling	agent tenure	resolution days	billable days	working hours	CPH	CHS
1	A	download	100	20	40	28	2	600	0	6	7	2.3	1
2	B	payment	300	30	30	29	2	500	0	7	7	2.5	1
3	C	download	200	100	60	20	4	400	0	8	7	1	-1
4	D	account	700	400	70	10	1	200	1	3	7	0.8	-1

model efficiency



Next steps

- Post MVP - Integrate in SuperNova project
- A/B Test (floodgate integration)