

AI.Care

Australasian Institute of Digital Health

FUJITSU

Implementation of conversational and text-based
generative AI in a customer service system

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(with thanks to the Amelia team for content)

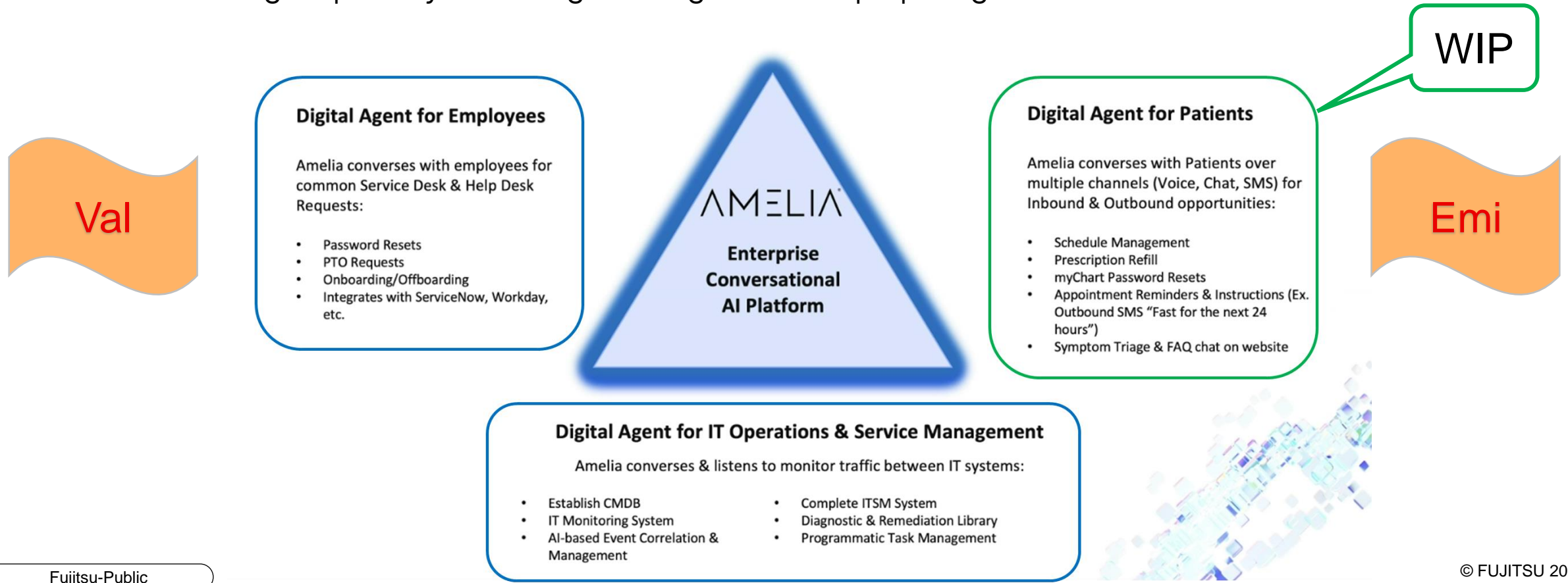
Agenda

- Universal Virtual Agent
- Technology Brief
- Implementation Processes
- Results
 - Conversation scripts
 - Anecdotal evidence
- Lessons Learned
- Conclusions about Val
- You know Val, now meet Emi
- Healthcare Case Studies
- Conclusion

Universal Virtual Agent Overview

Our managed service desk receives a high volume of calls from system users facing technical and business challenges.

The model of hiring experienced technicians to resolve issues was getting more expensive for customers and as business challenges became more complicated, the issues took longer to resolve as customer service staff needed to consult the knowledge repository or message colleagues before proposing solutions.



We needed an AI system that could learn from both voice and text then interact with users in both voice and text.

It needed to be able to ingest the knowledge repository so that it could learn from past and future use cases.

It needed to be fast and secure to install then to provide measurable improvements in performance above the baseline so that we could understand whether it was more or less effective than a human customer service agent.

It needed to be able to handle many simultaneous lines of enquiry and response.

It needed to provide an economic return on investment so that it was less costly than hiring more staff.

It needed high availability and resilience so that it could operate safely and consistently every day.

Implementation Processes

The system was technically simple to install in the Proof of Concept stage.

Initially we needed to allocate dedicated staff to supervise the responses to validate that they were correct.

This workforce was additional to the customer service agents dealing with enquiries and diminished as the response accuracy improved to the point that the POC was complete and we implemented in a live customer setting.

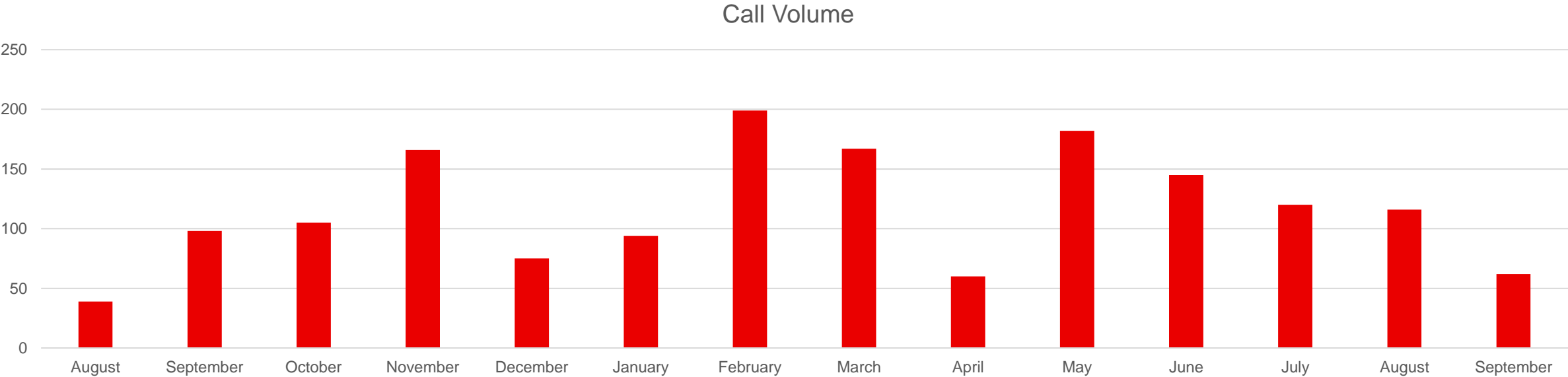
Results – Call Volumes

We called the Generative Virtual Assistant, “Val”, she had a feminine voice.

In 12 months from Sep 2022 to Aug 2023 Val responded to 1,628 customer service enquiries.

The call supervisors reviewed the call logs weekly, retrospectively and commented on Val’s responses.

627 (39%) calls were rated green. They were handled optimally by Val i.e. faster than a human and solving the query without human intervention.



Results – Human comparison

While those results were acceptable, we wanted to understand them better.

For example, a short call time does not necessarily achieve a positive outcome.

We segmented the calls and analysed them using more AI, Natural Language Processing.

# Customer service enquiries	% Customer service enquiries	Outcome
122	7%	added to the FAQ list
262	16%	added to Val's utterances semantic training
617	38%	required human intervention
627	39%	handled optimally by Val without human intervention
1,628	100%	Total calls including abandonments

Results - Continuous Improvement

Initial 30% abandonment rate was largely caused by an excessively detailed process for customer documentation.

The team implemented semantic understanding/NLP i.e. AI auto-selects the enquiry category and subcategory in the drop-down menu based on the user's initial utterance.

Results improved over time.

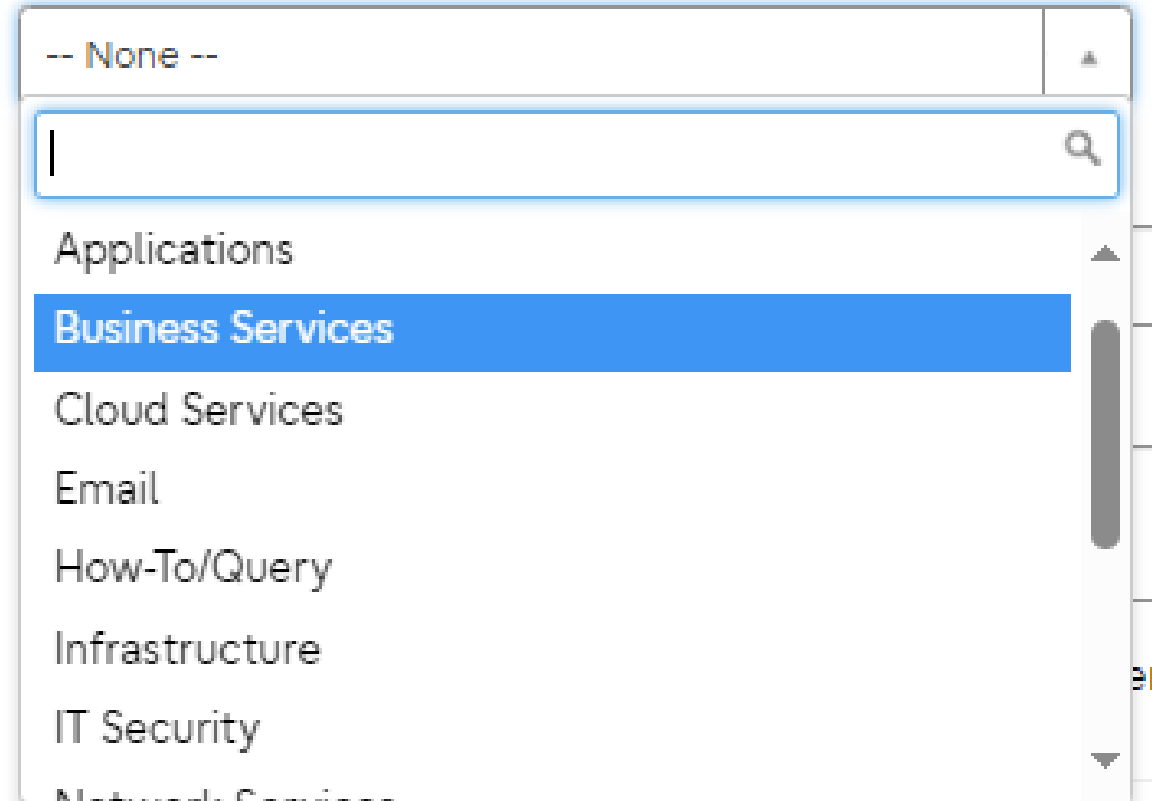
Change resulted in higher number of accurate incident tickets raised via the conversational AI agent Val.

Abandonment rate dropped from 30% to 6%.

By the end of the year the % customer service enquiries fully resolved by Val without human intervention rose to 69%.

Excluding calls that would have been abandoned anyway, total rate of call resolution 94%.

* Nature of Issue



Sample Conversation Scripts

Amelia [08/30/2022 02:46:03]: Hi Fujitsu, I am Val your virtual assistant trained to help you with IT Service Desk related queries.
Amelia [08/30/2022 02:46:03]: How can I help you today?
Fujitsu [08/30/2022 02:46:34]: windows defender did not install
Amelia [08/30/2022 02:46:36]: Sure, I can help you to create an incident ticket.
Amelia [08/30/2022 02:46:36]: Is this ticket for you or on behalf of someone else?
Fujitsu [08/30/2022 02:46:44]: Requesting for self
Amelia [08/30/2022 02:46:46]: Please enter the description of the incident.
Fujitsu [08/30/2022 02:49:46]: Migration to Microsoft Defender has not been completed
Amelia [08/30/2022 02:49:48]: Do you have any supporting documents/images that you would like to upload to support the incident details?
Fujitsu [08/30/2022 02:50:51]: Yes
Amelia [08/30/2022 02:50:52]: Please upload your document/image.
Fujitsu [08/30/2022 02:51:00]: The file was successfully uploaded
Amelia [08/30/2022 02:51:00]: Your attachment has been uploaded successfully.
Amelia [08/30/2022 02:51:01]: Please review your incident information below:Incident Logged For: fujitsu@fujitsu.comIncident Category: StorageIncident Subcategory: WindowsDescription: Migration to Microsoft Defender has not been completedAffected Device: A1B2C3D4E5F6G7 (Laptop PC)
Amelia [08/30/2022 02:51:02]: Does this information look correct?
Fujitsu [08/30/2022 02:51:08]: Yes
Amelia [08/30/2022 02:51:09]: Please stay with me. I'm creating an incident ticket for you...
Amelia [08/30/2022 02:51:11]: Incident created with ticket number: INC3367802.
Amelia [08/30/2022 02:51:12]: Can I assist you with anything else?
Fujitsu [08/30/2022 02:51:18]: no
Amelia [08/30/2022 02:51:19]: Thank you.
Amelia [08/30/2022 02:51:20]: This conversation has been closed.

Basic conversation just repeats back user request details

Call length shorter than human 5:17

Sample Conversation Scripts

Amelia [09/05/2022 08:55:08]: Hi Fujitsu, I am Val your virtual assistant trained to help you with IT Service Desk related queries.

Amelia [09/05/2022 08:55:09]: How can I help you today?

Fujitsu [09/05/2022 09:03:43]: request new chair working from home

Amelia [09/05/2022 09:03:46]: Sure, I can help you to loan an office chair.

Amelia [09/05/2022 09:03:46]: Is this ticket for you or on behalf of someone else?

Fujitsu [09/05/2022 09:03:56]: Requesting for self

Amelia [09/05/2022 09:03:58]: Which office will the chair be collected from?

Fujitsu [09/05/2022 09:05:24]: Level 2 , 46 Sale Street, Freeman's Bay, Auckland, 1010, New Zealand

Amelia [09/05/2022 09:05:26]: Please provide the business justification of this request.

Fujitsu [09/05/2022 09:05:53]: Working from home, require chair that conforms to HR recommendations

Amelia [09/05/2022 09:05:55]: Please review your request information below:Request Logged For:

fujitsu@fujitsu.comCollect Location: Level 2 , 46 Sale Street, Freeman's Bay, Auckland, 1010, New ZealandBusiness

Justification: Working from home, require chair that conforms to HR recommendations

Amelia [09/05/2022 09:05:55]: Does this information look correct?

Fujitsu [09/05/2022 09:06:09]: Yes

Amelia [09/05/2022 09:06:11]: Please give me a moment while I log a Service Request for you.

Amelia [09/05/2022 09:06:16]: I have passed this request on to the relevant team for you; please note it can sometimes take up to 5 Business days to take effect. In the meantime, if you would like to track the status of this request, please use this ServiceNow reference number REQ0924764.

Amelia [09/05/2022 09:06:18]: Can I help you with any other enquiries?

Fujitsu [09/05/2022 09:07:14]: request screen for work from home

Amelia [09/05/2022 09:07:16]: Sure, I can help with Monitor Request.

Amelia [09/05/2022 09:07:17]: Is this ticket for you or on behalf of someone else?

Fujitsu [09/05/2022 09:07:22]: Requesting for self

Amelia [09/05/2022 09:07:24]: Is this a request for replacement hardware?

Fujitsu [09/05/2022 09:07:29]: No

Spelling error is acceptable

Categorises home monitor/ screen as Service request

Sample Conversation Scripts

Amelia [09/05/2022 09:07:30]: Is this a request for New Starter hardware?

Fujitsu [09/05/2022 09:07:35]: No

Amelia [09/05/2022 09:07:36]: Please provide the business justification of this request.

Fujitsu [09/05/2022 09:08:15]: Work from home, require a screens that conform to HR recommendations

Amelia [09/05/2022 09:08:18]: Please review your request information below:Request Logged For: fujitsu@fujitsu.comReplacement Required: NoBusiness Justification: Work from home, require a screens that conform to HR recommendations

Amelia [09/05/2022 09:08:18]: Does this information look correct?

Fujitsu [09/05/2022 09:08:32]: No

Amelia [09/05/2022 09:08:33]: What would you like to edit?

Fujitsu [09/05/2022 09:08:38]: Business Justification

Amelia [09/05/2022 09:08:40]: Please provide the business justification of this request.

Fujitsu [09/05/2022 09:09:00]: Working from home, require screens that conform to HR recommendations

Amelia [09/05/2022 09:09:02]: Please review your request information below:Request Logged For: fujitsu@fujitsu.comReplacement Required: NoBusiness Justification: Working from home, require screens that conform to HR recommendations

Amelia [09/05/2022 09:09:02]: Does this information look correct?

Fujitsu [09/05/2022 09:09:13]: Yes

Amelia [09/05/2022 09:09:15]: Please give me a moment while I log a Service Request for you.

Amelia [09/05/2022 09:09:20]: I have passed this request on to the relevant team for you; please note it can sometimes take up to 5 Business days to take effect. In the meantime, if you would like to track the status of this request, please use this ServiceNow reference number REQ0924768.

Amelia [09/05/2022 09:09:21]: Would you like any further assistance right now?

Fujitsu [09/05/2022 09:09:38]: no

Amelia [09/05/2022 09:09:40]: Cool, thanks a lot.

Amelia [09/05/2022 09:09:42]: This conversation has been closed.

Editing the request

Correct spelling still acceptable

Call length shorter than human 14:34

01

Automation must be multi-channel

02

The right automation tool depends on the use case (one-click, self-help, self-heal, mass-heal)

03

XLAs need objective as well as sentiment-based measures

04

Accuracy of the Configuration Management Database (CMDB) is essential

05

The quickest route to volume reduction; review self-service password reset

06

Make your Digital Assistant sticky from day 1 or lose users forever...

07

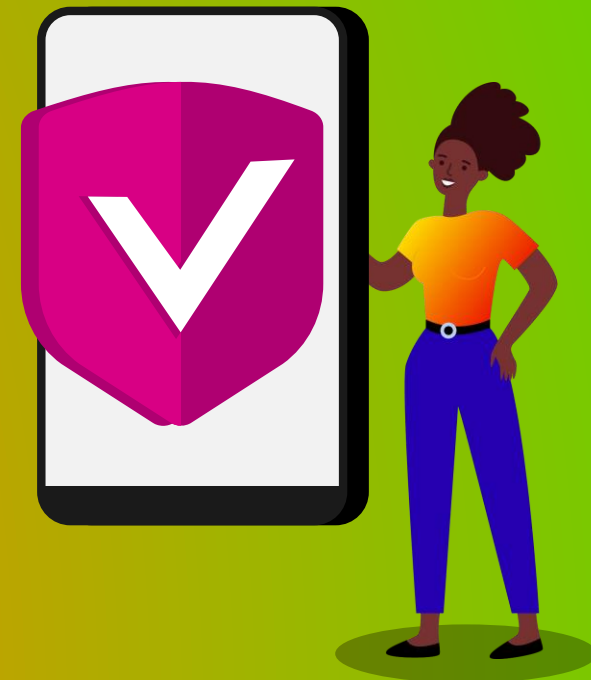
Complete a Lean analysis of processes before you automate

08

Build Digital Assistant workflows to be modular and reusable

09

Traditional "L1/L2" structures aren't designed for proactive response and shift-left



The generative AI system seemed to learn more from the POC than from the knowledge repository so expectations needed to be tempered as it took longer than initially planned to be customer ready.

Post POC enhancements meant the system delivered on the brief and now works very well.

It has reduced cost to serve and time taken to resolve service calls. Fujitsu is investing further with Emi.

The Amelia system has other potential healthcare uses in situations where there are decision trees. Some of these are already live with Health customers outside Australia:

- Scheduling Out Patient appointments
- Scheduling Pathology and Diagnostic Imaging
- Providing a Medicines Information service for prescribers in hospitals
- Poisons Advice Lines
- TGA advice lines
- Pharma reporting Adverse Drug Events
- PBAC submissions

You know Val, now meet Emi

■ AI Driven, Fully Conversational

- Intent recognition – detect the topic, and what the user is asking for
- Sentiment analysis – detect emotion in the conversation, react accordingly
- Emi can ingest data (websites, procedures) and use this to answer questions
- Emi learns from Service Desk staff during escalations e.g. when to escalate an issue to a human

■ Two interfaces

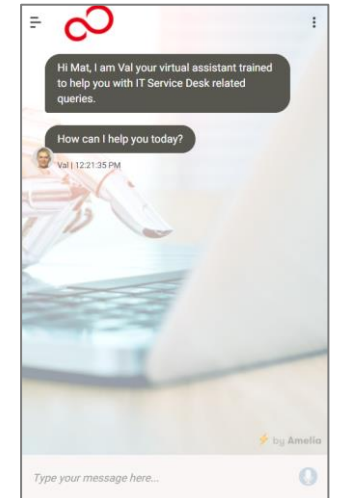
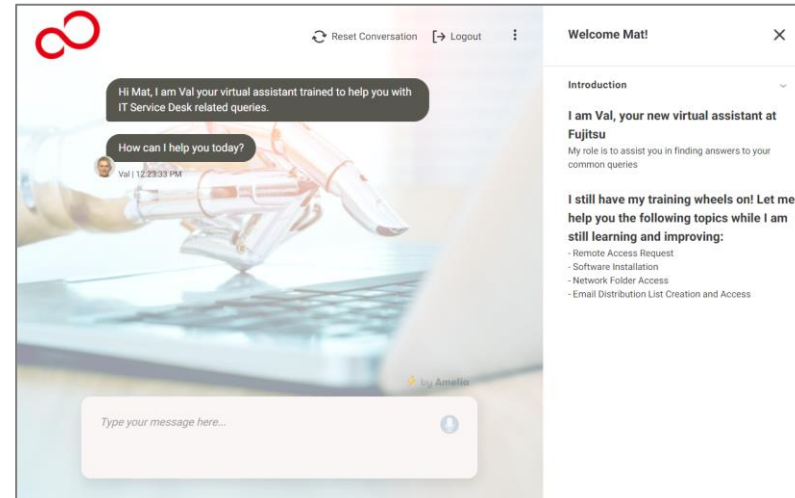
- Standard chat interface – mobile, tablet, laptop, desktop
- 3D, animated visual interface for Face to Face customer kiosks

■ Supports multiple methods of sharing information with users

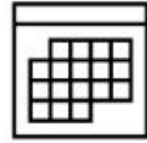
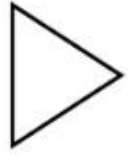
- Chat panel, resembling standard messaging clients (left side)
- Collapsible, auto-updating info panel (right-side)
- Present data as maps, images, charts, tables
- Present forms, lists for end-user input

■ Integrate with other systems, eg: CMDB

- Present lists of supported info (eg: software, device types)
- Emi looks up info rather than asking (eg: device name)



Health System Use Cases



Starter Kit

Concierge

Appointments

General Questions
(FAQs)

Find a Doc

Confirm, Cancel,
Reschedule

Parking & Location

Symptom Checker

Self Schedule

Wait Times

Referral Request

Reminders

Departmental
Routing (Authenticated)

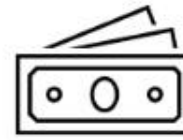
Reset Password

Check-in

Promote
Patient Portal

Update
Demographics

No Show /
Running Late



Financial

Clinical

Employees

Pay Bill

Medications

IT Service Desk

Billing Question

Results

Human Resources

Financial
Assistance

Immunizations

Onboarding

Cost Estimation

Pharmacy

Procurement

Insurance

Outcomes

Infrastructure
Monitoring

Economics – Health System Use Case

N.B. Overseas use case with useful metrics for local business case estimation

Financial Benefit

\$5.8M

Fully Adopted Annual Benefit

430%

Overall Program ROI

\$320K

Monthly Cost of Delay

Operational Benefit

40%

Overall Call Containment with Amelia

10%

Handle Time Reduction with Authentication and Triage

10%

Improvement in Agent Churn

12 Months

Ramp to Steady-State Benefit for Conservative ROI Calculations

- Recognize 46% reduction in agent workload at full adoption
 - Based on Hospital ABC interaction volume, conservative implementation and benefit ramp timing, and benchmark KPI improvements
- Achieve estimated \$11.5M in program benefit with no layoffs or operational changes required
 - Leverage natural attrition to reach new steady-state within 3 quarters
 - Excess agent capacity within new steady-state enables acquisition strategy with no new hires require

Conversations - Analytics - Amelia | MK6XJ7TPYSYAA - Agent - Agent

us.demo.amelia.com/Amelia/agent/MK6XJ7TPYSYAA/portlets?pickup=false

AMELIA Builder Deployment Analytics Administration Mike Kubo MK Online

CONVERSATIONS

- Active 0
- Ready 0
- Pending 0
- Closed 0

CONVERSATION

Before we proceed, I will need to verify you.

Amelia | Oct 3, 09:57:37 AM

I have texted you a 6 digit verification code. Can you tell me what it is?

678651

voice usdemo | Oct 3, 09:57:51 AM

Amelia | Oct 3, 09:57:51 AM

Your verification was successful.

Amelia | Oct 3, 09:57:51 AM

Thank you Mike.

Amelia | Oct 3, 09:57:51 AM

We will provide you with a new password that you will use to log in with. Once you log in, we highly recommend that you reset your password to something only you know. Are you ready for your new password?

yes I am

voice usdemo | Oct 3, 09:58:19 AM

Amelia | Oct 3, 09:58:11 AM

Your Patient Portal password has been reset and we will send your new password to the email we have on file.

Amelia | Oct 3, 09:58:12 AM

I believe that you wanted to cancel an appointment as well.

Amelia | Oct 3, 09:58:14 AM

Let me fetch your appointment details. I see 2 upcoming appointments. One on 11 Oct, Wednesday. And the other one on 04 Oct, Wednesday.

Amelia | Oct 3, 09:58:14 AM

Which one of these appointments do you wish to cancel?

Pickup

EPISODIC RECOMMENDATIONS

USER INFORMATION

SATISFACTION GRAPH

0.65 CSAT

FAQ KNOWLEDGE QUERY

MIND MAP

MY RESPONSES

start.airbeam.tv/r/B...

AMELIA

Text Message Today 9:57 AM

one-time code is 678651

Text Message

Apple Cash

E R T Y U I O P

S D F G H J K L

Z X C V B N M

space return

Thank you

FUJITSU

