

# Enterprise Case Study: Using Machine Learning to Boost Call Center Customer Satisfaction

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How Oracle Intelligent Bots reduced call center wait times by 97% and resulted in 60% "Awesome" rating from students

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## Summary

### Catalyst

The release of senior school exam results in the summer is a peak time for university service centers, when prospective students wish to enquire if they have the right grades to get into their desired course. To meet this peak demand, the University of Adelaide brought in Rubicon Red, an Oracle cloud provider and consultancy, to build a chatbot based on artificial intelligence (AI) that would be used as the first line of support when calls came in, relieving the pressure on human agents. The result has been a success, with a significant reduction in call wait times and call drop-out rates.

### Ovum view

Rubicon Red is an Oracle Platinum Partner focused on Oracle-cloud-related services, with a history in the middleware space. Rubicon Red's customer, the University of Adelaide, had a serious service center degradation problem when exam results were released each year and high school students would call to ask, "Are my results sufficient to get a place?" and "For which courses do I have the grades?". During this period, there is a massive spike in traffic to the university's service center, and the challenge was to find a solution that would scale to the peak for a period of two to four weeks. The option of hiring additional staff, training them to a standard so that callers would receive a consistent experience, and ensuring they performed well during the period of peak demand was too expensive. Rubicon Red's solution was to build a chatbot that would be deployed on the university's Facebook Messenger Platform to help students obtain their adjusted Australian Tertiary Admissions Rank (ATAR) score (the number used to gain entry to a university).

The chatbot design was text-based, powered by Oracle Intelligent Bots (a feature of Oracle Autonomous Mobile Cloud Enterprise), and able to converse with students using natural, conversational language while maintaining a context thread in the interactions. As the bot was hosted on the Facebook Messenger Platform, the chatbot platform was also able to access basic data about the student, such as demographics, location, gender, and preferences, for input into its intelligent analytics model.

One of the key performance metrics for the university's service center is the average call wait time. With the introduction of the student ATAR enquiry chatbot, the number of calls to the center dropped by 40%, and this led to the average call wait time being reduced from 40 minutes to approximately 90 seconds. This was a remarkable result and a major success story.

### Key messages

- Rubicon Red leveraged Oracle Intelligent Bots to create a natural language, text-based chatbot that resulted in 40% fewer calls and 97% less hold time on the university's phone-based enquiry service. As a result, 60% of students rated the bot as "Awesome."
- The AI/natural language means the bot infers what a user means without having to hard-code every possible question. This vastly improves the bot's ability to provide a correct answer.
- Rubicon Red, an Oracle Platinum Partner, used AI chatbot technology available from Oracle. Oracle has been building this AI capability in-house and embedding it into its infrastructure, platforms, and products for several years.

- Rubicon Red worked with business analysts to build the bot without coding. Business analysts can easily modify the bot without having to contact central IT.
- The chatbot is a success at University of Adelaide, providing valuable support to its service center staff during the peak period when exam results are released.
- The success of this initial pilot project has led to additional chatbot projects being planned in areas where they can help the university scale service delivery and significantly improve the student experience.

## Recommendations

### Recommendations for enterprises

The technology to create intelligent conversational chatbots, whether voice or text-based, is available today. Rubicon Red demonstrated how well such a solution can work in a service center during a high-pressure, peak-traffic period, and by dealing with most of the predicted queries, the solution gave human agents time to handle more complex queries.

With the chatbot being able to address the most common questions, the solution resulted in a huge drop in the number of calls to the call center, and thereby reduced call wait times significantly. AI technology today can conduct conversations within specific domains.

Ovum recommends first using this technology for what can be called "low-hanging-fruit" opportunities. Once this technology has been proven, there is potential to explore other applications within an organization.

## Using AI-based chatbots

### Setting the business context

For Rubicon Red, finding the right solution means understanding the business objectives of its client. Furthermore, Rubicon Red is an agile/DevOps practice, so it aims to have a solution in place as quickly as possible to gain valuable feedback from the customer and then iterate to refine it. For the University of Adelaide, chatbots looked like the best approach.

Initially, chatbot technology was based on a text interface and was rules-based, with limited capabilities. The introduction of the latest AI technology has allowed for several advances, including voice-controlled interfaces and conversational exchanges, where AI-enabled systems can track the context of a conversation across a series of questions and answers.

Rubicon Red's choice of using text removes the technological challenge of voice control, so it offers a simpler solution from the outset. When the payoff for the customer is significant, e.g. dramatically reduced wait times, using text over voice is less of an impediment.

The University of Adelaide faced the challenge of scaling out its operation during the peak summer exam results period, and of offering students a consistent, high-quality experience. Hiring additional

staff to cover the peak period is costly, as new recruits need to be trained up to the required standard. A machine-based solution exploiting the latest advances in AI looked like the best option.

## Technical solution

With the introduction of the chatbot from the university's Facebook Messenger page, potential students could find out their adjusted ATAR scores in their own time, rather than sitting on hold in phone queues or waiting for an email response.

Adelaide trained the chatbot to understand context, enabling it to provide more natural, conversational responses, using questions that the service center had encountered in previous years. For example, the bot interprets the following as equivalent: "What's my grade," "what's my score," and "what's my test result."

Questions focused on which schools students graduated from and their final scores at their schools, and the chatbot responded with the student's adjusted ATAR score. The chatbot is highly interactive, with images and buttons, not just simple text. Using Oracle's advanced AI capabilities, the bot learns as it goes along, making it more powerful the more it is used. There is also the option of adding a voice interface to the chatbot, technology that Rubicon Red is already experimenting with in-house.

The chatbot conducted roughly 2,100 unique conversations on day one, many more than initially anticipated. This resulted in a 40% drop in calls to the university's service center. This, in turn, led to a huge reduction in the average wait time for phone calls to the service center – from an average of 40 minutes to around 90 seconds. Service center staff were therefore available to address more complex queries and handle the email backlog.

The introduction of the adjusted ATAR chatbot meant students did not have to wait to find out their adjusted ATAR scores; in the busiest hour, there was approximately one user every five seconds. The University of Adelaide asked students to complete a short survey on their experience, with three options: "awesome," "neutral," and "terrible." More than 60% of users rated their interaction as "awesome."

Following the success of this initial pilot project, additional chatbot projects are being planned in areas where they can help the organization scale service delivery and significantly improve the student experience.

## Oracle's AI technology

Oracle has been investing in AI technology for several years, embedding its AI engine across its cloud solutions: infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS) including mobile, and software-as-a-service (SaaS). For enterprises wanting AI capabilities (such as with Zero Admin products) Oracle's cloud services with incorporated AI offer a shorter time to a completed solution.

For chatbot developers, many Oracle Intelligent Bots features are low-code, requiring no expertise in AI or advanced programming. Building chatbot conversation paths does require business domain expertise, and the development process will generally go through several iterations until it is right.

Oracle Intelligent Bots is part of Oracle Autonomous Mobile Cloud Enterprise, which offers a complete platform for developing, managing, and connecting chatbots to back-end applications with natural language processing, natural languages understanding, and machine learning. It also offers the ability

to develop, manage, and connect mobile apps, and deep user behavior and app/bot performance analytics produce large amounts of information that can be used by both developers and marketing teams to improve both the product and user engagement.

## How Rubicon Red plans to take this technology further

Rubicon Red sees its solution as applicable across multiple industries, where there is a need to dynamically scale customer service, and where AI can be exploited to efficiently manage this issue.

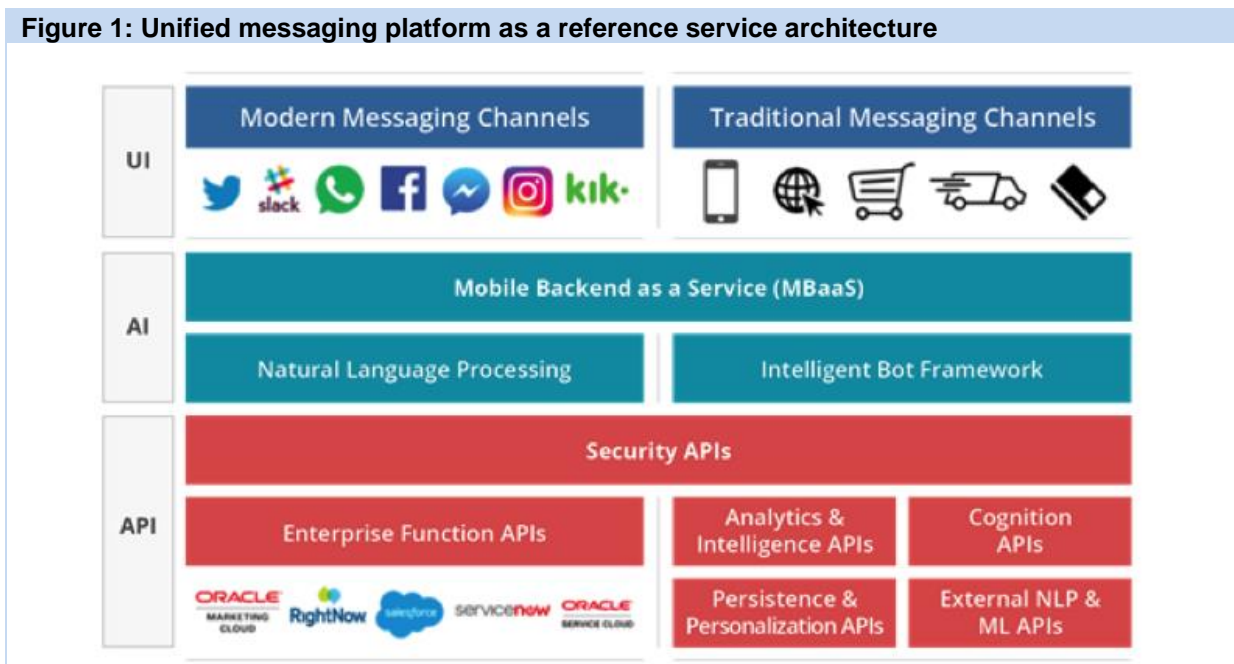
The benefit of human call center agents is that they can get to know students personally, however, this takes time, and does not scale well. Chatbots, on the other hand, can also respond to students in a personalized manner, while handling many more inquiries, achieving scale quickly while allowing human agents to deal with more complex student questions.

This was the university's first experience using chatbots, and the result was positive, laying to rest initial fears about the quality of service. The university is now planning future chatbot projects where it can help the organization scale service delivery and significantly improve the student experience.

Rubicon Red uses its state-of-the-art reference architecture to implement conversation-based messaging platforms catering for user interface (UI), AI, and integration through APIs. For Rubicon Red, adopting a conversational messaging reference architecture not only provides an accelerated and best-practice approach to creating chatbots, but is also a means for ongoing management, enhancements, and improvements, without impacting "business as usual" operations.

Rubicon Red uses agile and DevOps processes to engage with clients to roll out solutions that deliver quick business benefits and, importantly, lay a solid foundation for future implementations.

**Figure 1: Unified messaging platform as a reference service architecture**



Source: Rubicon Red

Rubicon Red is a globally recognized and awarded thought leader in Oracle Cloud Platform, headquartered in Brisbane, Australia (see <http://www.rubiconred.com>).

## Appendix

### Methodology

Ovum spoke with Rubicon Red about the use of its Oracle-based AI technology to solve the call center challenge at the University of Adelaide. Ovum also drew upon its expertise in AI technology and applications.

### Further reading

*2018 Trends to Watch: Machine Intelligence*, IT0014-003350 (October 2017)

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### Ovum Consulting

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