Report #187

Vodafonewatch

Vodafone's AI-based NOC overhaul steps up a gear

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NETWORK

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- Migration of first line support tasks to Celfocus-supported *CIAS* system set to extend to 'big four' territories of Germany, Italy, Spain, and UK.
- Target is 50% of functions to be zero-touch by end of 2020.
- System used throughout *COVID-19* lockdown, while executives worked remotely.
- Project said to reflect shift to new collaborative models within Vodafone and its ecosystem.

Vodafone is moving to the next stage of a major, digital revamp of its network operations centres (NOC) in Europe, taking a new set of cutting-edge fault detection and resolution techniques into its largest markets.

Installation of the *Cognitive Intelligence and Automation Suite* (*CIAS*) — focused on speeding-up of 'first line' network support tasks — has been enabling a phased refresh of Vodafone's regional *Atlantic* and *Danubius* NOCs, which cover all of the operator's European territories.

Deployment of a *CIAS* minimum viable product (MVP) has been completed for networks in Portugal and Romania, which are the two territories in which those NOCs reside and form the project's "*lead markets*".

In recent weeks, the system has also been brought live for some network functions in Vodafone's largest market Germany, and Simon Norton, Head of OSS Operations & Digital Transformation in Vodafone's Group Network Operations (GNO) organisation, said that the operator was "*on the cusp*" of bringing *CIAS* into being for Italy and Spain.

Automated journeys are to be extended to the UK over the coming months, too. "*Our target for the year ahead is to go deeply across the 'big four' European markets*", said Norton.

The nuts and bolts

The *CIAS* project kicked off in 2018, with a focus on automation of regular and repetitive first line support functions. It is one of Vodafone's latest family of efficiency initiatives — key to protecting cash flow in the face of the industry's ongoing revenue growth challenges. The project is said to be closely watched by the Group's senior management, with progress reported into **Alberto Ripepi**, Deputy Chief Technology Officer (CTO) at Vodafone.

CIAS forms one part of Vodafone's ***Digital Technology Programme*** — which focuses on digitisation of the "*entire lifecycle of the network — the planning part, the deployment part, and the running part*", according to Mario Volonterio, Head of OSS & Network Infrastructure Engineering at Vodafone. The *Digital Technology Programme* can be seen as a sister initiative to the Group's more high-profile *Digital First* scheme, initiated in 2017 and focused on expansion of consumer-facing systems like the *MyVodafone* app and chatbot *TOBi* (*Vodafonewatch*, #156). "*Digitisation doesn't end with providing... digital interactions with our customers*", said Norton.

On a practical level, *CIAS* has been led by Volonterio's OSS team, within Vodafone's Group Technology division, and supported by Portuguese systems integrator (and former Vodafone Portugal investment) **Celfocus**. Technology enablers include Cloudera (for analytics and CI), Resolve Systems (for automation software), and Celfocus itself (with its *Celfocus Omnichannel* portal).

GNO is essentially the project's internal client — it manages first line services for individual OpCos and, following a process of centralising functions into the two regional NOCs for the Group's European operations, is now looking to make further agility and cost gains via the revamp, under *CIAS* and other programmes, of its consolidated *Assurance for Europe* management layer. The transformation is being led by Norton, who since the start of 2020 has been heading up (and "*driving digital transformation within*") Vodafone's OSS operations.

While *CIAS* is focused on enabling "*zero-touch*" functions within NOCs, **parallel GNO initiatives** concentrate on developing '*predictive*' capabilities, based around AI and digitisation of field operations, through delivery of new enablers to engineers, such as augmented reality, chatbots, and mobile apps.

50:50 manual–digital split target for 2020

Vodafone has a range of KPIs for the *CIAS* project, but its headline goal is to deliver an 80%-reduction, over three years from inception, in the "*effort allocated to first line support activities through automation*".

According to Norton, the initial roll outs for Portugal and Romania have exceeded target for monitoring tasks — classed as "*ingestion, correlation, and classification of alarms, and the determination of next step actions*" — with 95%-'*coverage*' achieved in the former country, and 99% in the latter.

Beyond that monitoring sphere, he described progress on automation of ticket journey management as "*reasonable*", saying that for Romania, "*typically, we're* [*seeing*] *anywhere between 40% and 50% of tickets being raised in an automated fashion, and then flowing through the lifecycle*".

As well as expanding beyond the initial *CIAS* footprint, geographically, GNO's focus is reducing journeys where human intervention is required to "*as close to zero as possible*". "*Our target for this year is to have those two markets, plus our big-four European markets, at the point of 50% on zero-touch*", said Norton.

> " *For the two live markets, we're very much in the process of now saying 'how do we go beyond MVP? How do we enhance what have we learned to get the KPIs up within target on their own?' Even though they're very good already, we want them to be better. And then we want to learn all of those lessons to say 'right now, how in this year do we accelerate rollout across our big-four EU markets? "* — Norton.

Staff upskilling and redeployment emphasised

Norton and Volonterio were blunt when it comes to the importance of *CIAS* to Vodafone, in light of increasing pressure on established operators for leanness and agility, and telcos' desire to become increasingly hands-on in terms of controlling and managing the building blocks of their network infrastructure.

Volonterio noted that the programme "*cannot fail because there are no other options than making these functions automatic*". According to Norton, "*we cannot fail on CIAS. It's the only show in town. It's vital*".

The two executives presented a multi-faceted business case for the project, going well beyond Vodafone's need to manage costs. "*Operational silence and operational excellence*" are also key goals, flagged Norton.

> " *Why is* [*the project*] *important? Well, first line teams are large and quite financially intensive. So it makes sense for us to look at how we evolve those teams, and over time start to redeploy people from those teams into some of the newer disciplines that are coming on stream in terms of network operations — so deploying them into digital roles, into DevOps roles...* [*This*] *is part of the wider upskilling and redeployment strategy that we're driving. "* — Norton.

Volonterio linked the importance of *CIAS* to the broader theme of next-generation networks and services. Expansion and introduction of edge-, network-slicing-, and *Internet of Things*-based services means network complexity is "*increasing at an exponential level*".

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With IoT, we are increasing the number of devices [and with] network-slicing — not now, but in maximum one year, we will be creating and removing networks dynamically… We have to ensure their performance. Without an automated system, [this would be] practically impossible. " — Volonterio.

Virtualisation and the coming roll out of open radio, core, and transport networks means that suppliers are no longer "*providing a box*" and as a result the "*end-to-end owner is not the vendor anymore — it is Vodafone*", said Volonterio. As such, Vodafone is "*on-boarding this complexity*". "*Our operations need to coordinate and understand what is not working in the application because something in the infrastructure is not working*", he added.

Longer-term, another driver is the broader platform strategy expected to underpin much of the Group's *Technology 2025* vision — which Group CTO Johan Wibergh recently indicated will be unveiled "*shortly*". Norton described GNO as building an "*ecosystem of capability*" in how networks are run, with *CIAS*' workflow automation and data lake "*sat very clearly at the core*".

New tech required new forms of collaboration

As well as enacting change within NOCs, Volonterio and Norton were keen to highlight the *CIAS* implementation as a new style of **partnership** by Vodafone — both in-house and with integration partner Celfocus.

Volonterio stressed that with the new and challenging nature of implementing AI, the engagement with **Celfocus** had not been a "*pure customer and supplier relationship*", necessitating a co-creation "*journey*". Further, the Group had required a partner that was "*at 'our level' in terms of understanding of the Vodafone environment*", while also having the capacity to enable the project (and being prepared to commit to a service-level agreement on its "*final success*"). As well as supporting implementation of the *CIAS* platform, Celfocus is helping staff squads that are running it within GNO, as Vodafone builds up its own internal capability.

Bruno Santos, Vodafone Group Networks Account Executive at Celfocus, emphasised the systems integrator's commitment with the project and its **close fit** with Vodafone's strategies of updating business processes in the GNO team and consolidating OSS tools. Once these applications are consolidated further, the partners will be able to accelerate *CIAS* deployment and enhancement across multiple markets, he added.

Internally, Norton described the project as a "*very important **joint venture***" between his and Volonterio's teams, reflecting a "*slightly different way around how engineering and operation functions can drive out and deliver solutions*". The "*classical*" approach would not have seen GNO "*quite as heavily involved in the delivery*". "*We've recognised that a different delivery model, more based on agile and DevOps principles, should be an accelerator not only for speed, but in terms of [delivering] really rock-solid, great solutions*", Norton said.

The **agile-based** methodology underpinning the project has also been comparatively new for Vodafone, and ultimately Norton expects GNO to operate the *CIAS* platform via a "*full DevOps model*". "*That's a notable difference, perhaps, to the way that we previously approached some of these programmes*", he said.

Cultural changes

Fears around automation and wider human displacement are a live and increasingly mainstream issue, and Norton and Volonterio were keen to stress that *CIAS* does not just represent an expense-slicing technology upgrade — culture, skillsets, and ways-of-working within NOCs are seeing change, too.

Vodafone is not only making changes to be able to handle alarms "*in an automatic way*" but also "*transforming the mission [and] the scope of the activities in the NOCs*", said Volonterio.

Norton is seeking to build an "*adaptive, digital workforce*" within NOCs, describing "*manual, reactive, human-based*" activities as the "*kind of 20th century way of looking at operations*".

" *This isn't just a standard technology transformation programme. It isn't just taking the status quo and automating it, with all of its complexity… And, for our people, it represents a really exciting journey as well because we'll be offering all sorts of redeploy/upskill options… All of this is underpinned by a very robust set of training plans and redeployment plans.*

It's vital that as we start to become more reliant on a cognitive automated solution… the humans of tomorrow required to operate that kind of solution have to be almost equally comfortable monitoring the automation — perhaps more so… [and] being able to very rapidly understand how we tweak, how we refine those models. " — Norton.

Creating a working environment and culture where Vodafone can attract and retain staff with these skills is "*absolutely vital*" to backing up the objectives of *CIAS*, Norton added.

" *We're in a war for talent… Everyone wants the brightest and best software engineers, data scientists, etc., coming out of university. And we recognise that we need to make sure that we create the ecosystem, the culture, the business agility, to be able to compete in that market.*

The way that we're setting up for delivery is a really good example of breaking down perhaps the old cultural silos of engineering [that] 'do engineering and delivery', and ops 'receive it as a customer, and operate it'… We're already starting to blur those distinctions, to break down some of those old silos, because we realised that if we start to work really effectively… really promoting cross-functional working, really underpinning them with those modern delivery structures… all of these things are vital in terms of driving the right culture. " — Norton.

System stands up in COVID

The *COVID-19* lockdown has, inevitably, had some **impact** on how *CIAS* is being rolled out.

Accessing the system itself has not been an issue with the move to remote-working as "*everything designed to work on Vodafone premises is tested to be accessed remotely*", with a focus on "*guaranteeing quality in tough moments*", noted Volonterio. A recent *LinkedIn* post by GNO Director Ara Yildizli, Norton's boss, showed a picture of a people-less Vodafone NOC during lockdown, with "*invisible robots… working in the background*" and "*our talented engineers… dealing with complex network issues from their homes*".

Norton indicated that GNO has been ready for some time to switch on the system for troubleshooting in **Vodafone Spain**'s networks, but the changes in traffic patterns and load seen with the pandemic — and the increased attention being placed on network resilience — necessitated caution. "*As is fairly self-evident, we're being very careful in terms of change on the network at the moment, given the current circumstances… As soon as both parties — the Spanish market and Group — are comfortable that we can deploy, that change [will come] in*", he said.

Remote-working has also had a diluting effect on the project's **agile/DevOps** philosophy. "*Doing agile in a remote environment: of course it is doable, thousands of organisations do it*", said Norton. "*But it does have an impact in terms of the effectiveness of the teams, especially around all of that informal collaboration that just happens naturally when you've got a co-located, agile team. All of a sudden it now has to be a formal meeting and people have to book a call — so while we haven't seen dramatic decreases in productivity, of course it's a factor*", he added.

The **well-being** of staff who are working on the project at home has also been a key consideration — especially for those living alone. "*We have to be very, very cognisant around boundaries*", said Norton.

" Vodafonewatch gives a **helicopter view** about the business with a lot of knowledge worldwide, which is simply great to create a better understanding and awareness

*Feedback from user at **Vodafone***