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Embrace a production mindset to drive AI at scale, utilizing a CoE

Wipro supports National Health Service Scotland to progress toward the institutionalization and large-scale application of AI

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Tom Reuner | Senior Vice President

Josh Matthews | Senior Research Analyst

Defining Future Business Operations

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Innovation that produces real-life business outcomes is central to accelerating an organization's journey toward the [OneOffice](#)—with the aim of connecting the front, middle, and back offices to create a frictionless digital experience for customers, employees, and partners. Within this context, we have gotten used to discussing automation and its institutionalization, in particular around concepts like Centers of Excellence (CoEs). Similar discussions around AI, however, are few and far between: On the one hand, AI is still a fairly immature set of technologies and approaches. On the other, there is an overlap with centralized efforts around Analytics and IT Operations. To bring some sense to this problem, we discussed these challenges with executives from Wipro and its client, National Services Scotland (NSS) (that houses National Health Service Scotland [NHSS], the national healthcare system), a non-departmental public body that provides advice and services to the rest of NHSS, and other public sector organizations.

Those discussions had a unique poignancy as the Wipro-NSS collaboration has been a central plank of Scotland's response to Covid-19. In the words of Steve Roud, Director of Innovation and Transformation, the pandemic came at the best and/or worst possible time, depending on your point of view—as the newly established CoE had just reached its “minimum viable product” (MVP) stage. Covid meant a massive shift towards new, previously unthought-of use cases—so what was intended to be an iterative project with a clearly defined PoC very quickly became a production environment for AI deployment during a crisis throughout NSS and NHSS. The lessons learned from this engagement provide valuable insights into the institutionalization as well as large-scale application of AI.

A Center of Excellence focused on outcomes and bringing use cases into production can be a catalyst that overcomes silos and accelerates innovation

Like in many organizations, data scientists and data assets of NSS were confined to silos without any governance or centralized support. Until recently, data scientists developed algorithms on laptops, with no single unified data portal, no way of managing user access and privileges, and no possibility of collaboration between teams. Consequently, NSS had difficulties in putting models into production and could not leverage on existing building blocks to deliver optimized solutions. To progress toward cross-functional collaboration and workflows, NSS decided to set up two Centres of Excellences (CoEs): One focused on Data Virtualization to allow a single point of access to disparate data sources across NHSS, and a second one on Data Visualization enabling Tableau access for business users to create reports and share metrics with a wider audience.

Based on existing expansive engagements with NSS, Wipro got engaged to initially validate the proof-of-concept for the CoEs. To better understand the implications one has to appreciate the history of NSS as well as the fundamentally changed demand environment through Covid-19. NSS was not only delivering services to the NHSS but it was selling services as well. The strongest demand was for data and analytics services

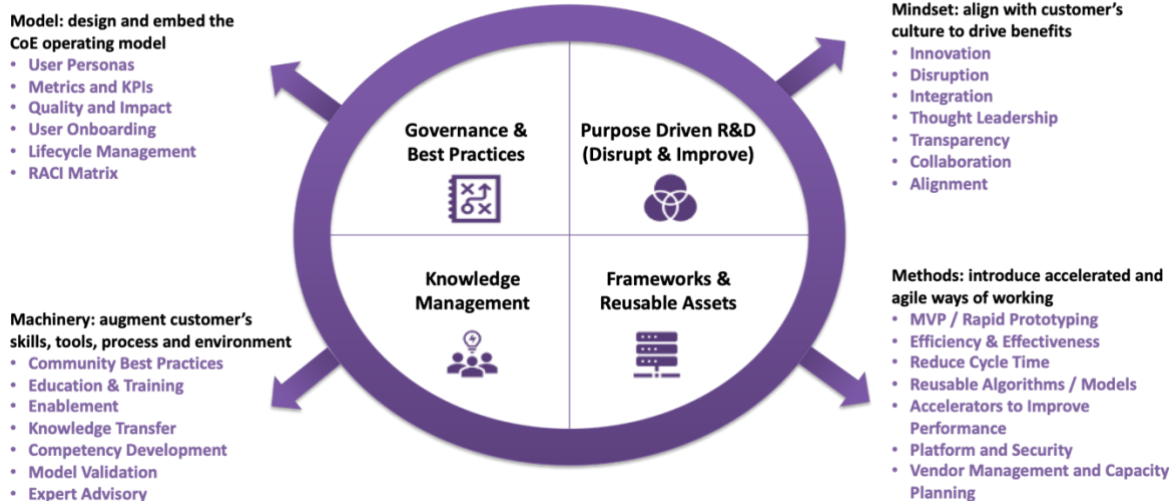
which had seen an exponential increase in growth. Having sold these services for almost 20 years, NSS took an honest assessment of their strategic positioning and concluded that they wouldn't be able to compete and would suffer in terms of credibility if they were not investing in upskilling and being able to build complex models in Machine Learning (ML) and Natural Language Processing (NLP). Yet, with the pandemic, all those considerations were turned upside down:

"[with Covid] we very quickly discovered that the nice, neat proof-of-concept we'd wanted to do very quickly became a production environment. And probably before we were ready, and that I think is, where we got the benefit of working with a partner like Wipro because it would probably have fallen apart around our ears if we hadn't had Salman Taherian [Wipro AI Advisory Lead] and the team involved in that"

Steve Roud, Director of Innovation and Transformation, NHS Scotland

The details of Wipro's approach to setting up an AI CoE are outlined below:

Wipro 4M Design Principle for AI CoE



With that in mind the capabilities to enable the CoE consisted of the following activities:

- Setting up and activating an NSS-hosted Azure ML environment, enabling services to cover AI/ML operations, creating example templates for data ingestion.
- Support for the data scientists in enabling a collaborative notebook environment for data sharing and modeling, conducting AI/ML training for registered users,

providing technical and advisory consultation for service users, deploying and supporting AI/ML use-cases.

- Validation and operationalization in applying the validation process defined by the CoE to assess the validity of the produced models, producing validation reports, and operationalizing passed models into production.
- Finally, the skill transfer to and technical handover of the CoE.

What are the success factors for setting up an AI CoE?

While it might sound counterintuitive the pandemic forced the AI CoE on a path to success, albeit with the wisdom of hindsight and with consequences that nobody wants. As Steve Roud had explained the approach went from a risk-averse examining of proof-of-concepts, to becoming a production environment literally within a few weeks. This is what sets this engagement apart from the plethora of AI PoCs that never really progressed, not least because of a lack of executive sponsorship and/or effective change management. At the outset of the collaboration with Wipro, the strategic focus for the AI CoE has been enabling self-service and reusing assets while the North Star was the “ability to feed data through an almost automated decision engine.” Within that context the learnings on that journey can be grouped in three areas:

- Be clear about focus areas
- Focus on self-service and enablement
- Make explainability an integral part of your strategy (including proving the MVP)

Building on the point of literally being forced to take on a production mindset, when asked about the lessons learned from the journey so far, Steve reflected: **“the thing I would do probably next time is that I would establish that core team much earlier. We’ve had really good, strong professional input from Wipro, but I don’t think we maximized that. Not being able to face off a dedicated set of resources on occasion, that probably hasn’t been to our benefit. It hasn’t detracted from what we’ve done, but it probably has slowed down the rate at which we’re learning.”**

Aligned to that is that Wipro has evolved from being an implementation partner to becoming a transformation partner. This can be seen in the way NSS praised Wipro for its horizon scanning capabilities and effectiveness. Steve was very transparent in describing that he was surprised how complicated the AI was. Wipro not only helps in identifying the relevant technologies and approaches but connected those to use cases that helped NSS to accelerate the decision process and building the business case.

The other valuable lesson for organizations that are also looking to set up an AI CoE is that Steve and his team do neither see themselves as the leads for running all projects nor do they expect Wipro to be involved in the long run. Steve summed it up succinctly: **“We don’t want to be the owners of this. We want to be the enablers.”**

Therefore, self-service is the guiding principle for all activities. He added, by offering a platform and marketplace, the idea to **“enable the data science community to say what do you have, what products have already been built, what approvals do they**

have, and then they already have access to those datasets, in which case, they can just begin to consume, not just the datasets and the products, including any models we've built, or they don't have access, but they can request access automatically through the platform to say, I am a clinician in such and such hospital, I have an interest in cancer intelligence, and can have access to the data. And that's approved through the information governance processes that are in place at the backend. So the idea ultimately is that we will not just produce but we also facilitate, reuse as much as we possibly can."

"By offering a platform and marketplace, the idea to enable the data science community to say what do you have, what products have already been built, what approvals do they have, and then they already have access to those datasets, in which case, they can just begin to consume"

Steve Roud, Director of Innovation and Transformation, NHS Scotland

Another key area is explainability which is a key part of the process in a sector that is strong on governance. Wipro is leveraging its HOLMES ETHICA (Explainable, Transparent, Human-in-loop, Interpretable, Common Sense, Auditable) framework to develop an effective model validation process. The CoE engages with representatives working on a national steering group for AI ethics, alongside Scotland's Chief Clinical Informatics Officer and Public Health Scotland that oversees activity in this area—although liability is assumed from the AI CoE's perspective. These tools may well fall under the software as a medical device regulation for example an algorithm designed to aid decision making. But the challenge for the CoE is that even any minimal viable product has to be close to 100% effective given the sector.

Insights on measuring the progress of the AI CoE

Measuring a CoE that works both in a public sector as well as in a commercial setting is not easy. With that in mind, perhaps the most telling example is the improvement of blood supply that is central to Scotland's Covid response. The work on models undertaken by the CoE resulted in 97% success on monthly forecast allowing them to effectively matching donors and recipients. Moreover, the CoE has expanded the range of forecasted blood types and associated blood groups and their accuracy, increasing the collection of evidence to users when making decisions. The key for Steve and the team was to reduce waste, which was essential to the Covid response but also led to a reduction in spending. In more technical terms models produced by the CoE allowed for the optimization of the algorithmic run-time (per scenario) from 112s to 0.8s for real-time dashboard interactivity. This is critical for the adoption of self-service that the team is championing.

Bottom-line: Clarity about focus areas and enabling self-service are the key to setting up an effective AI CoE

The AI CoE journey for NSS provides a compelling example of partnership between an enterprise and services partner to scale innovation across complex organizational boundaries and support the organization's transformation journey. By insisting (or in this case being forced) that AI is developed for and run in a production environment rather than in the haven of a PoC, organizations can reap the benefits of cross-functional data assets. All too often, AI PoCs are either just a fig leaf for innovation or more of a science project. From a service provider point of view, Wipro is an example of working around clients' requirements, aligning to their challenges rather than pushing clients toward existing assets and trying to cross- and upsell. The industry urgently needs more client testimonials like this to get a grasp for the institutionalization of innovation.

HFS Research authors



[Tom Reuner](#) | Senior Vice President

Tom Reuner is Senior Vice President, IT Services at HFS. Tom is responsible for driving the HFS research agenda for IT Services including the change agents of Intelligent Automation and AI. A central theme of his research is the increasing link between technological evolution and evolution in the delivery of business processes. In particular, he will focus on the Future of Work and the testing of innovation.

Prior to HfS, Tom worked as Head of Strategy at Arago. His deep understanding of the market dynamics comes from having held senior positions at analyst firms including Gartner, IDC and Ovum where his responsibilities ranged from research and consulting to business development.

Tom has a PhD in History from the University of Göttingen in Germany. He lives in London with his wife and in his spare time he works on improving his culinary skills to distract him from the straining experience of being a Spurs supporter.



[Josh Matthews](#) | Senior Research Analyst

Josh Matthews is a Senior Research Analyst at HFS Research, based in Cambridge following a Master's programme covering Engineering Management at Cambridge University's Institute for Manufacturing (IfM). His research tackled operational and environmental improvements in industry, and the implementation and management of sustainable initiatives. On behalf of the university, Josh worked on consulting projects with Unilever, as well as SMEs in the tech and marketing spaces.

Josh had previously graduated from Loughborough University with a first-class master's in Chemical Engineering; over the course of this degree he spent a year at Total in the oil refining industry, and a semester at UC Santa Barbara, publishing work which is currently being commercialised on low-CO2 hydrogen production.

Josh is a keen cricketer, former competitive swimmer, and dabbles in racket sports... while also being partial to a Sipsmith perfect serve and most things edible.

A night cityscape with a network overlay of red dots and yellow lines. The background is a dark city at night, with many buildings lit up. Overlaid on this is a complex network of red dots connected by thin yellow lines, creating a web-like pattern across the entire image.

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