Bloor

Ingres NeXt Database
and Application Modernisation

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Ingres NeXt, then, is Actian's attempt at a comprehensive and flexible strategy to enable digital transformation through database and application modernisation (and particularly via cloud migration) while addressing or avoiding these pain points. It thus aims to stand as an alternative to more conventional approaches to digital transformation, achieved primarily through the use of automated migration utilities, asset reuse, and a high degree of flexibility and customisation, among other things.

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Introduction

Actian has been, and continues to be, the software company behind Ingres, a fully SQL-compliant, transaction-oriented database, since its inception more than three decades ago. Over the years, Actian has branched out into related data management software, including data integration, data warehousing, edge data management and more. It has more than 3000 customers worldwide across all market sectors, including a significant number of Fortune 100 companies, such as FedEx, Citi, and McKesson. Moreover, Actian has adopted the philosophy that there is no *"one-size-fits-all"* approach to data: that every data management system, and therefore every customer, is unique, and must be treated as such. This philosophy has helped shape Ingres NeXt, Actian's approach to digital transformation through database and application modernization, including cloud migration.

But before we get to that, we should establish what these terms actually mean and why they're worth paying attention to. Although technically we would describe cloud migrations and database/application modernizations as specific kinds of digital transformations, at a fundamental level they all speak to the same core desire to move from your existing, presumably outdated system to a more modern one, leading to improved efficiency, greater performance, reduced costs, or what have you.

What's more, digital transformation has become especially popular in recent years, driven by both the rising acceptance of the cloud and the tragedy of Covid-19. For the former, this is largely because the cloud has proven itself as a mature and reliable piece of technology that can deliver on many (if not necessarily all) of the benefits it promises. Moreover, by changing the business model for technology adoption and consumption, it has made digital transformation an enticing and realistic possibility for organizations of any size. For the latter, it is because the realities of working from home and the need for other contactless business transactions (particularly in regards to, say, retail, wholesale, and manufacturing) during a quarantine seems to have woken organizations up to both the benefits and necessity of good digital infrastructure.

That said, the desire for digital transformation in some form or another is far from new. Before the cloud reached its current popularity, for instance, it was big data that spurred it on. And regardless of the motivating factors, the difficulties are much the same as ever: *"big bang"* digital transformations are high-risk, expensive, difficult, lengthy, disruptive, and frequently wasteful (in the sense that tried-and-tested resources – such as long-established business logic – are often thrown out along with the old system) endeavors that by all accounts fail at least as often as they succeed.

Ingres NeXt, then, is Actian's attempt at a comprehensive and flexible strategy to enable digital transformation through database and application modernization (and particularly via cloud migration) while addressing or avoiding these pain points. It thus aims to stand as an alternative to more conventional approaches to digital transformation, achieved primarily through the use of automated migration utilities, asset reuse, and a high degree of flexibility and customization, among other things. This results in a solution that can coexist with your existing system, replacing it piece by piece as you deem necessary and at your own pace, that exists to support your unique path to a modern data infrastructure.

The purpose of this report is to discuss the approach Actian have taken with Ingres NeXt, to highlight the advantages afforded by it, and to encourage you to consider these issues – and how to address them – when planning your own digital transformation efforts.

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What is it?

Ingres NeXt is a strategy for database and application modernization, and an associated collection of products and services, provided by Actian. It strives to address common issues and pain points with modernization attempts in order to minimize risk and maximize flexibility. The latter in particular allows it to accommodate a variety of approaches to modernization.

The two products at the heart of Ingres NeXt, apart from Ingres itself, are the Avalanche Cloud Data Platform and the OpenROAD 4GL (meaning 'fourth-generation programming language'). These offerings provide compatible – and highly complementary – but fundamentally independent methods for modernizing your systems, via cloud data management for Ingres and the Avalanche Cloud Data Platform and (legacy) application migration and modernization for OpenROAD. We will speak to each in turn.

Ingres and the Avalanche Cloud Data Platform

When modernizing your database and data management systems with Actian, you can opt for one of four largely discrete deployment options and pricing structures. You can simply deploy and manage Ingres yourself, either on the cloud (a *"Bring Your Own License"*, or BYOL, model) or on-premises, but more interestingly – and we suspect this will typically be the more appealing option – you can leverage Ingres, and optionally another database of your choice, as part of the fully-managed and cloud-native Avalanche Cloud Data Platform. Actian describes the latter as either a *"Database-as-a-Service"* (DBaaS), where you purchase new licenses, or as a *"Platform-as-a-Service"* (PaaS) where you leverage an existing ULA (Unlimited License Agreement).

Although it will always have a cloud component, Avalanche supports hybrid deployment over public clouds and on-premises installations. Support for virtual private clouds in this regard is planned for release in 2022. Moreover, Avalanche is deployed to the cloud using Docker containers with Kubernetes orchestration. In terms of the platform itself, Avalanche effectively acts as a common center for a range of Actian data services, including, for instance, its data integration, data warehousing, and edge data management offerings. Third-party data services can also be included at this level, most notably services and products from Actian's substantial partner base.

These data services are backed up by platform-wide monitoring, authentication, alerting, maintenance, and a wide range of other shared services that act mostly under-the-hood. What's more, a data fabric (which, again, could leverage third-party tools) is employed to tie these two service layers together. Finally, the platform is compatible with various development tools and APIs, including SQL and OpenROAD (which we will get to shortly), and can also offer custom connectors when necessary.

The most important thing to take away from this, at least for the purposes of this paper, is the range of options that Actian provides you with: you can deploy with Avalanche or without; you can deploy with Ingres or without; your solution can be self-managed, or managed by Actian; if you opt for Avalanche, you can deploy purely to the cloud or commit to a hybrid deployment; and regardless of using Avalanche or not, you will still have access to third-party solutions. This makes the solution highly flexible and allows it to be used across a wide range of environments and use cases.

OpenROAD and app migration

OpenROAD is a development tool employed and offered by Actian. More specifically, it is a database-centric 4GL that is designed to help you build applications quickly and easily, and in particular to help you migrate away or otherwise modernize applications that sit on legacy systems.

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Actian's chief insight in creating OpenROAD is that business logic does not age, or at the very least ages far more slowly than the technology it runs on: while database software that's half a century old may no longer be fit-for-purpose, this is far less likely to be the case for the business logic contained within that software. On the contrary, half a century of use has likely honed it into a robust mechanism for doing what you need it to do: it has, if you will, stood the test of time. Therefore, rather than rebuilding your apps from scratch, OpenROAD allows you to take existing business logic and both decouple it from its existing user interface and layer one or more new interfaces on top of it. A number of tools are offered to this end.

Suppose, for instance, that you want to modernize a green screen mainframe application. OpenROAD offers *"Application By Form"* (ABF), that will partition the app into a series of forms: a fairly basic but significant improvement over most green screen apps. An additional tool, abf2or (in other words, 'ABF to OpenROAD') can then extract out the business logic underlying your app and migrate it to OpenROAD, keeping the form-based approach but making it far more accessible by placing it on the OpenROAD Server. If you don't want to stop there, you can then apply a second tool – WebGen – that will effectively repeat the process to take your OpenROAD app and generate a corresponding web application. Note that this process is incremental: you do not have to move to the web if you don't want or need to. You can also use OpenROAD to simply create greenfield web apps from scratch.

Like Avalanche, OpenROAD is available in whole or in part through several different deployment options and pricing structures. This includes deployment as a service (via an Actian hosted and managed OpenROAD Server), as a self-managed server, or as a fat client. You can also deploy ABF by itself. These options differ in utility – the latter two are notably more limited, and

don't interact with the web at all – but the variety of options provided is beneficial nevertheless.

It's also worth noting that the process described above won't just take an old app, make it more accessible, and give it a fresh coat of paint. Rather, when the app is moved to OpenROAD, it will extract out the business logic underlying it and store it separately from its new interface in the OpenROAD Server. Reusing existing business logic like this massively reduces migration risk while at the same time sparing you effort, since it prevents you from needing to recreate potentially decades of work and refinement from scratch. Moreover, decoupling your app's business logic from its interface means that multiple interfaces for the same app can exist at once with the same underlying business logic, each of which can then be employed according to the needs of your users. For example, it allows your apps to cater to veteran mainframe programmers who are deeply aligned with the green screen, younger developers who have never interacted with one, and even entirely non-technical users simultaneously. This is a significant advantage.

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Why it matters

B y themselves, Avalanche Cloud Data Platform, Ingres and OpenROAD are all competitive products in their respective fields. However, it is only when you consider them as part of a more holistic modernization strategy – in other words, Ingres NeXt – that their strengths become completely apparent. In this paper, for instance, we have repeatedly mentioned the versatility in deployment and pricing that these products offer, as well as the numerous options they provide you in terms of their actual functionality. This is no accident: in fact, the confluence of all of these features speaks to Actian's greater modernization strategy.

To wit, the ultimate goal of Ingres NeXt, and the greatest strength of Actian as a vendor in regards to database and application modernization, is to provide a highly flexible and customizable (if not actually bespoke) suite of tools that adapt themselves to what the customer wants and needs rather than to act as a prescription (some might say a straitjacket) for what the customer *"should"* do. Essentially, Actian recognizes that it exists to support your journey to digital transformation, and that it does not know your business or your company better than you do, and structures its offerings accordingly. This is very much a good thing. Having said that, guidance is available is you desire it: Actian may not be an expert in your business, but it certainly is an expert in what it does.

There is also a sense of *"having your cake and eating it"* to Actian's collective offerings. Yes, they help you to move to the cloud, to modernize your apps, and all of that; but they also mitigate many common roadblocks for those processes. For instance, they allow you to modernize incrementally, at your own pace, and picking and choosing what you want to modernize and when. This allows you to leverage digital transformations in short hops, not sweeping changes, and without disrupting ongoing operations, or at least not to anywhere near the same extent as more conventional approaches.

Risk is similarly reduced, and for much the same reasons: small, incremental, potentially iterative changes are fundamentally less dangerous than trying to transform everything overnight. Moreover, OpenROAD is particularly good at reducing the risks inherent in app migration, because not only can it convert legacy apps for use on more modern platforms automatically (and thus more quickly and consistently than doing so by hand), it reuses large parts of them while still retaining and exposing the rest, meaning that even if the new version of the app doesn't work you still have the old one to fall back on. It also reduces disruption (and the potential need for retraining) resulting from app migration to almost nothing, because it allows you to simply keep running legacy apps – or, rather, modern apps that look and feel like legacy apps to the people who prefer it that way – alongside more modern interfaces effectively indefinitely, without introducing the element of duplication that a similar but more rudimentary approach would.

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Conclusion

A s we've discussed, Ingres NeXt is Actian's strategy for digital transformation using database and application modernization, that is designed to (but doesn't necessarily) leverage the Ingres database, the Avalanche Cloud Data Platform, and the OpenROAD 4GL, among other things.

Ingres NeXt is worth paying attention to because it acknowledges both the massive need, and desire, for digital transformation and modernization as well as the difficulties and shortcomings of conventional approaches to them, then takes steps to provide the former while mitigating the latter. Moreover, as it does so, Ingres NeXt places the reins in your hands, and allows you to drive your transformation efforts using whatever methods work best for you: it is there to support you, and to provide you with the tools you need to successfully modernize, not to prescribe a purportedly *"one-size-fits-all"* solution that realistically does not exist. At least in this regard, we certainly approve.

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About the author
DANIEL HOWARD
Senior Analyst,
Information Management and DevOps

Daniel began his career in the IT industry relatively recently, in only 2014. Following the completion of his Masters in Mathematics at the University of Bath, he started working as a developer and tester at IPL (now part of Civica Group). His work there included all manner of software development and testing, usually in an Agile environment and usually to a high standard. In the summer of 2016, Daniel left IPL to work for Bloor Research as an analyst, and the rest is history.

Daniel works primarily in the data space, though he dabbles in development, testing, and DevOps. The former often (though far from always) involves working alongside his father, Philip Howard, while the latter allows him to leverage the technical expertise, insight and 'on-the-ground' perspective garnered through his old life as a developer to good effect.

Outside of work, Daniel enjoys latin and ballroom dancing, board games, skiing, cooking, and playing the guitar.

Bloor overview

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We provide actionable strategic insight through our innovative independent technology research, advisory and consulting services. We assist companies throughout their transformation journeys to stay relevant, bringing fresh thinking to complex business situations and turning challenges into new opportunities for real growth and profitability.

For over 25 years, Bloor has assisted companies to intelligently evolve: by embracing technology to adjust their strategies and achieve the best possible outcomes. At Bloor, we will help you challenge assumptions to consistently improve and succeed.

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