

Snapshot

Navigance: A cloud-based software service for the chemical industry

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What is cloud computing? How can it help chemical producers access the capacity, technology and expertise they need easily now? And how does Navigance build on proven, secure cloud platforms to provide a tailored solution to optimize your operation?

In a recent study by Navigance of the chemical manufacturing sector, the challenges producers face, and the part digital technologies can play in addressing them, half of all experts we interviewed said they see significant benefits in putting their plant data in the cloud.

Many are already considering doing so, either now or in the near term, and forecasts predict adoption in the industry is set to rise. Only 19% of those we asked had serious concerns about doing so, mostly due to an unfounded perception that all cloud services are inherently insecure.

Of the proportion that remain, perhaps some are still unsure of what cloud computing is, how it works, the benefits it can bring and, more specifically, its potential for the chemical production. So let's take a quick look at each of those points in turn.

WHAT IS CLOUD COMPUTING?

Cloud computing is a way of accessing IT resources such as processing power, storage and data analytics on demand via the web. It's used by many different industries for many different purposes, ranging from email and virtual desktops to data backup and disaster recovery, customer-facing web applications to software development and testing.

You pay only for what you need when you need it, rather than having your own servers, data centers, and software on site (with all the complex installation, maintenance and security demands that come with them). You can also scale up at speed to add the capacity and capabilities you need cost efficiently.

In this article we'll look at different types of service that can be layered on top of each other to help you realize such benefits, and how Navigance then goes further to add tools and expertise that help increase plant availability and optimize your chemical process. And, in a future post, we'll further explore the benefits of cloud services in more detail, including security far more robust than can be achieved on premise.

THE THREE TYPES OF CLOUD COMPUTING

With cloud computing, you can access three different types of service, each of which builds on top of the others to enhance it further.

- Infrastructure as a Service (IaaS): this is the cloud equivalent of a traditional server on your company premises, providing computing power and data storage. With IaaS, you still need to install and operate applications yourself, but you do it in the cloud – there's no longer a physical box on your site.
- 2. Platform as a Service (PaaS): the next layer involves adding additional services on top, such as a software application. This might be a database or search engine, development and testing tools, data analytics tools or other interfaces. Again, you install and manage them yourself but they sit on a cloud server. Well-known providers of laaS and PaaS include Amazon Web Services (AWS) and Microsoft Azure.
- 3. Software as a Service (SaaS): in this third layer, the entire application server and software is consumed as a cloud service you pay for as you go and grow. There's no need to install or operate the application yourself as the underlying infrastructure it needs is all taken care of within the service. The application still needs configuring to meet your specific business needs, but a cloud provider with the right expertise can take care of that too. Some common examples of SaaS providers you may have heard of are Salesforce.com and Dotmatics' Electronic Lab Notebook.

This collection of cloud services enables you to adapt and innovate to meet changing demands quickly. You can deploy consistently and at pace anywhere in the world, in minutes or hours rather than days, weeks or months. And you can adjust capacity up or down to cope with peaks and troughs in activity and avoid over-provisioning resources.

They also offer a way to avoid the expense of having your own physical infrastructure, which might often sit idle, while benefiting from the economies of scale that come with accessing shared online resources.

HOW NAVIGANCE FITS IN: ON-TAP TOOLS AND EXPERTISE

Using cloud-based SaaS offerings enables you to access technologies and expertise that might otherwise be out of reach, due to either budget or resource constraints.

One example is machine learning and other types of artificial intelligence, which most chemical producers recognize has a key role to play in efficiency gains but either don't know where to start, can't spare the personnel needed to do so, or both.

Navigance is a SaaS solution that is built on top of the laaS and PaaS layers from Amazon Web Services, one of the world's most recognized and widely deployed cloud providers. We combine AWS' tools, computational, and data storage cloud with our own chemical process and data science expertise to provide comprehensive chemical production analytics.

Depending on what you need, you can quickly and easily visualize your plant data for easier and more informed analysis, introduce 24/7 monitoring and proactive alerting to prevent downtime in your plant, or get round-the-clock recommendations to help optimize process efficiency.

As the Navigance services are deployed on the already firm foundation of AWS, they can be easily configured to meet your specific needs and priorities and scaled up fast. What's more, you also benefit from the many proven data security and privacy features that come with the AWS platform. And, for complete end to end protection, we also provide tools to safeguard your data in transit to and from the cloud servers. We'll manage the complex task of setting up the secure data feeds required, leaving your own team free to add value elsewhere.

POWERFUL PARTNERSHIPS

If you're already considering calling on expert support to make the most of cloud computing and the possibilities it helps unlock, you're not alone.

Most of over 100 chemical companies surveyed by Strategy& said they planned to use a mix of in-house and partner expertise for some of their most pressing technology objectives. And well over half said machine learning and other types of AI application were likely to be a shared venture or entirely outsourced to partners.







For those already embracing the cloud, according to research by Accenture, the benefit that had surpassed their upfront expectations was the ability to share information with partners, suppliers and customers, and the collaborative advance this made possible.



If you're ready to experience such benefits for your chemical plant operation yourself, talk to Navigance today. Or if you want to know more about the benefits of cloud computing and its robust security you can count on, read our blog on the subject.

Cloud security and how Navigance protects your data

Security concerns still hold some chemical producers back from realizing the benefits of cloud computing. But serious, long-mature service providers have made huge strides in data security and privacy – and can help you solve other operational headaches too.

IN THIS ARTICLE YOU CAN READ ABOUT:

- Security in the cloud
- How Navigance protects your plant data

One of the biggest barriers to digitalization in the chemical sector in recent years has been a reluctance by some producers to fully embrace cloud computing. Their main concern: that it's not secure enough to protect proprietary or commercially sensitive operational data.

The irony of this is not only do the on-premise technologies they use instead need ongoing local maintenance, management, and

all the investment that entails, but they may also be less secure than the online alternative.

For all of today's most notable cloud service providers, security is both central to their offering and vital to their reputations. What's more, they offer their services from data centers located within the EU or other regions to suit customers' needs or preferences, and so fall under those regions' jurisdiction and regulations.

By not adopting cloud technologies, chemical producers miss out on all the benefits and

opportunities that come with them. Benefits their competitors may already be enjoying.

Rapid deployment, instant scalability, and improved cost efficiency are the main advantages. We'll explore these benefits in more detail, and the increased rate of cloud adoption they're fueling, in our next blog.

Here, we'll look at the reasons to feel confident you can realize the benefits of cloud services without risking your data's integrity.

CLOUD SECURITY: STRONGER THAN EVER

Managing the security of any type of business computing can be costly and time-consuming. From data encryption and firewalls to role-based access controls, 24/7 monitoring and maintenance, plus the regulatory compliance and certification that go with them, it's a lot to keep on top of, especially if your core competencies lie somewhere else.

While it may be tempting to think keeping everything on site gives you more control of your data and applications, and limits the number of people with access, the reality can be quite different. It makes increasingly little sense to take on this burden.

The measures put in place to protect the data of those using cloud services has never been more robust than they are today. So much so, Gartner insights predicted workloads processed using public cloud services would suffer at least 60% fewer security incidents in 2020 than those that used traditional data centers.



The most reliable cloud providers will provide multi-layer security that includes all of the common-sense measures you should expect as a minimum: access controls, encryption of all data in transit and at rest, network protection, and security for applications.

Many go even further, adding rock-solid physical data center security, continuous validation, and protection against the mass deletion of files. And they continuously monitor for threats, suspicious login attempts and other suspect activity.

A further benefit of using cloud over on-premise computing resources is they offer the reassurance of 24/7 availability of critical data and applications more cost effectively. In traditional data centers, disaster recovery meant mirroring key systems onto backup servers that sat idle for most of the time. In contrast, cloud services replicate them in multiple, secure locations so that if one source goes down another takes its place almost instantly.

So it's not surprising to see that more and more companies put their data into the cloud to leverage all these operational as well as security benefits.

NAVIGANCE SECURITY MEASURES

At Navigance, we provide Software as a Service (SaaS) that relies on the sharing of large volumes of data both upfront during implementation and continuously. So it's vital to provide highest-level security to satisfy privacy needs and strict regulatory demands.

Navigance security measures

- ✔ Web-based access, with strict role- and account-based rights
- Advance Encryption Standard (AES) for secure data uploads, storage and access
- Pseudonymization, data segregation and storage in separate, encrypted cloud vaults
- ✓ ISO-certified Amazon Web Services (AWS) cloud storage
- ✓ Regional tenancy on servers (e.g., EU/GDPR or US)
- ✔ Regular encrypted data backups
- ✓ 24/7 threat monitoring

We use a combination of measures as standard to protect sensitive data from unauthorized access or loss. These measures keep production teams firmly in control of their information at all times.

There's no need to give Navigance access to your DCS. You can benefit from our services by enabling a secure one-way data push to the cloud, and you stay in control at all times of which data is shared. We offer a choice of options for secure automated data transfer to suit a plant's policies and preferences. And industry-leading Advance Encryption Standard (AES) protects all data transfer, storage, and connections.

We use 'pseudonymization' to remove any direct association between a plant and its data. Information is segregated and stored in separate encrypted vaults within a virtual private cloud so it can't be pieced together for unwanted eyes. A 'no access' paradigm is applied by default, meaning access to any data is only possible when it is explicitly granted for a specific account or role.

CONFIDENCE AND COMPLIANCE

Navigance cloud storage is ISO-certified and provided by Amazon Web Services (AWS). This means you can be confident of all the security benefits that comes with this world-leading Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) provider. (You can read more about the IaaS, PaaS and SaaS layers of cloud computing here.)

In addition, regional tenancy on Navigance instances means you can choose where your data is stored (in the EU or USA), to comply with data use and protection regulations such as GDPR. All data is backed up regularly in encrypted form. And we

employ 24/7 threat monitoring to keep all data and storage safe from attack.

IN SUMMARY

With today's high security standards, your chemical operation can adopt and realize the many benefits cloud-based technologies bring now.

The top service providers will be able to provide robust, multi-layered security that far surpasses

what's usually possible by local teams managing on-premise IT systems and data storage.

What's more, making the move to the cloud enables you to cost efficiently tap into additional capacity and expertise when you need it. There is no need for your IT department to install or maintain any special software so that the plant teams can access Navigance services - it's easily accessible within a web-based interface from your standard browser. Find out more about the benefits of cloud services and how cloud services work in our other blog article on the topic.

Navigance can help you take the next steps and use your data securely to get you working smarter. We can connect with your own IT experts to discuss what you need and what's possible. So talk to us any time.



Cloud services in the chemical industry: reliability, scalability, and rapid adoption

In part three of our focus on cloud services, we look at the benefits and opportunities these technologies offer to chemical producers and the accelerated adoption they're now driving in the sector.

IN THIS ARTICLE YOU CAN READ ABOUT:

- Cloud adoption in chemical production
- The benefits of cloud computing

In our previous articles on cloud computing we've examined the different layers of service chemical producers can harness to digitalize aspects of their operation and cost effectively add

capacity and capabilities beyond the scope of their own plant resources.

We also focused on the robust security measures the leading cloud platform and service providers use to ensure any data hosted or used in the cloud remains protected at all times, with its owners always in full control.

Here, we'll look at that rate of adoption of cloud services, which has accelerated in recent years, and benefits such as rapid deployment, instant scalability, and improved cost efficiency that are driving the change.

CLOUD ADOPTION IS ACCELERATING

Cloud computing is becoming more and more important in our everyday lives, at work, at home and everywhere in between.

Many of us now use tools such as Google Drive, Microsoft OneDrive, and Apple iCloud to store and share important files, photos, and communications. All are cloud-based services that work without us giving them much thought. Our mobile devices and the online services they're connected to do their work behind the scenes.

Meanwhile, businesses increasingly innovate in the design, manufacture, and delivery of products and services using cloud-based development platforms like Amazon Web Services (AWS) and Google Cloud Platform (GCP). And the increasing rate of cloud adoption suggests not only that it's here to stay, but also that its usefulness and potential is broadening too.

In late 2019, a survey of 'the future of the cloud' by Logic Monitor forecast that over 40% of enterprise workloads would run on public cloud platforms by the end of 2020. In contrast, it predicted just 27% would run on premise, down from 37% at the time of its research. Of course, that was before Covid-19 struck.

Gartner points out that the impact of the pandemic on traditional ways of working has seen cloud adoption accelerate to the point it's becoming the 'new normal'. By 2025, it predicts, 85% of enterprises will operate with a 'cloud first' principle.





In chemical manufacturing specifically, the rate of adoption is also gaining pace. Back in 2014, Accenture found producers were mainly considering cloud-based Software as a Service (SaaS) offerings for functions not directly linked to the chemical production process, such as HR, accounting, sales, and marketing.



Today, they're increasingly being used across a much wider range of functions, from the running of day-to-day business operations and supply chains to product development.

Clariant, for instance – the parent company of Navigance – is migrating its many hundred global on-premise servers, including SAP, into the cloud. Its local servers have largely already made the move and are working well, with just two central data centers in Germany the last to do so. It expects to complete the process by mid-2022.

What's driving this broader, accelerated cloud take-up? Some commentators suggest it's the need to increase margins in a sector where they've traditionally been low. The subscription contracts typical of cloud services look more attractive than costlier and rolling technology licenses.

Another factor may be the desire of parent companies that are growing quickly through mergers, acquisitions, and divestitures to get their many different businesses using the same software at speed, and without a huge capital outlay.

COST SAVINGS IN THE CLOUD

So what benefits are those businesses that move more and more of what they do into the cloud enjoying compared with those still working on premise?

One of the major advantages is that the upfront costs of cloud computing are comparatively low, and the savings continue once you're up and running.

With many different customers using the same cloud service in a shared or 'multi-tenant' setup, the cost of licenses for hardware and software accessed online are usually lower than if you deployed them at your site, for your company's use alone.

On-demand and subscription-based models of payment also mean maintenance, software updates, support and security are all taken care of by your service provider's dedicated, expert teams. So there's no need to tie up your own personnel dealing with these points or troubleshooting along the way.

FASTER DEPLOYMENT AND UPGRADES

Speed of deployment is another big plus. Cloud servers can be set up and applications configured and installed in a matter of hours, far quicker than on-premise deployments. Cloud providers will also work to continually improve their service and offer their customers more. A continuous integration and delivery (CI/CD) methodology means they can deliver code updates and bug fixes much more quickly, frequently, and reliably than is possible with an on-premise setup.

The latest functionality can be available immediately for all users with the right access. And the capabilities they can access and enjoy keep improving incrementally all the time.

RAPID, EASY SCALING

With cloud computing, you only pay for the capacity you need, so you can add more of it or take some away whenever you need to.

For some small and medium businesses especially, this ability to scale at speed opens up possibilities previously out of reach under the on-premise model, with its high cost of some software licenses. There's no need for physical kit cluttering your own premises to give you headroom for growth.

As well as capacity, using cloud-based SaaS offerings also enables you to access capabilities and expertise that might otherwise be out of reach. Technologies such as machine learning, for instance, offer massive scope to improve operational efficiency but can be time and resource intensive. Cloud services can solve the headache of trying to find the necessary capacity and expertise internally by making them simple to 'turn on' instead.

IN SUMMARY

In short, making the move to the cloud enables you to quickly and cost efficiently tap into additional capacity, expertise, and the latest capabilities when you need it. It's why more and more producers are looking to harness cloud services to get ahead of market pressures to optimize their operations.

Navigance can help you take the next steps and use your data securely to get you working smarter. We can connect with your own IT experts to discuss what you need and what's possible. So talk to us any time.

You can find out more about the security of cloud services and how cloud services work in our other blog articles on the topic.

IT'S TIME TO OPTIMIZE YOUR OPERATION.

Navigance GmbH is a subsidiary of Clariant, one of the world's leading specialty chemical companies. Based in Munich, Germany, we provide software as a service to help chemical producers maximize plant uptime and optimize process efficiency at pace, whatever the digital maturity of their operations.

Navigance services help unlock the potential in plants' data using a unique blend of digital technology, hybrid process models, advanced analytics, chemical process and data science expertise, and ongoing support.

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This combination helps plant teams boost uptime and fine tune their process control variables to hit their critical objectives, automating time-consuming but essential tasks so they can concentrate on adding value elsewhere.

Our state-of-the-art, user-friendly software and exceptional, customer-focused service supports any continuous chemical process, regardless of technology license or catalyst. And we can't wait to show what it could do for you.

So let's talk about your plant's setup and needs. and tailor it to suit.

TALK TO NAVIGANCE TODAY

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FIND OUT MORE

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