MANIFESTO

DATA UNCHAINED: HOW TO TAKE BACK CONTROL

Klarrio
STREAMING AHEAD

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01

INTRODUCTION

OUR CONTEXT

At Klarrio, we design cloud native, cloud agnostic software solutions to empower our customers to control their data, limit cloud costs, and optimize performance.

What we do only partly defines us. Whether you're a customer or Klarrio staff, the key to getting the most out of our alliance is to understand all the intricate aspects of our identity.

This is the purpose behind our manifesto. It clarifies Klarrio's core beliefs and reasons for existing, from our historical context to controlling our destiny.

CONNECTIVITY, CLOUD, AND THE NEW ECONOMY

The last few decades have been marked by several significant developments: the rise of broadband, cloud computing, Internet of Things (IoT), and the emergence of modular software architectures like iOS and Android.

"New economy" companies have introduced innovative services and products, shaping the current digital landscape. Understanding this historical perspective is crucial for anyone working in our industry.

THE AGE OF CONNECTIVITY BEGINS

Around the turn of the millennium, one major milestone caused a significant shift toward today's digital economy: **the switch from dial-up modems to broadband internet.**

Before broadband, internet connections were sporadic and slow, and few devices connected to the internet. In the early 2000s, broadband internet rapidly spread to households. By 2004 the number of connected devices exploded.

As broadband internet speeds and Wi-Fi technology improved, mobile internet connections also became faster and more affordable. The introduction and rise of 3G and 4G technologies significantly accelerated our transition to an always-connected world. In 2007, the release of the first iPhone led to a new realm of iOS applications, prompting the launch of the Google Play Store and the app ecosystem for Android devices in response.

This widespread connectivity, along with the rise of Machine-to-Machine (M2M) communication and IoT, led to an astronomical surge in internet-connected devices.

Today, in many countries, household access to broadband is considered a basic utility. According to 2023 data from Statista, approximately 65.7% of the world's population is connected to the internet, with a staggering 15.14 billion devices online.

CLOUD TECHNOLOGY AND THE NEW ECONOMY

Parallel to connectivity developments, there was another important milestone: the emergence of the cloud. Cloud technology became available in the US by 1998, and by 2003 it had spread to some regions of Europe as well.

Cloud computing originated as a means of generating revenue from excess infrastructure by making it available to lease or rent. The amount of computing power, storage, and bandwidth was previously accessible only to a select few.

The capacity and flexibility of these new cloud solutions opened the door to novel business opportunities for small companies and startups, leading to the emergence of a new cloud-based economy.

"New economy" companies are disruptive and fundamentally different from the big, traditional firms that dominated the scene. These cloud native companies didn't just shift to the cloud, they were born in it.

Tech startups that are now giants began popping up on the scene in the early 2000s. LinkedIn debuted in 2002, Facebook was launched in 2003, Airbnb was founded in 2008, and Uber followed in 2009. Netflix, founded in 1997, is an interesting case. Initially a mail-order competitor to Blockbuster, Netflix transitioned to a streaming model in 2007.

What these "new economy" companies have in common is that they all incorporate some form of messaging, chat, or other communication functions into their services, and their core business propositions are driven by data and customer insight.

A NEW DATA APPROACH

In the past, with fewer connected devices and users, data demands were modest. However, this demand skyrocketed in the new data era. The traditional client-server architecture, where a single server responds to client requests, proved inadequate for handling the increasing volumes of data, often leading to bottlenecks.

Relational databases—which were relatively static and managed using standard query environments like SQL—became insufficient in a modern digital landscape characterized by diverse data types, including images, movies, and music, as well as unstructured text.

To tackle these challenges, most of the "new economy" companies developed their own software frameworks. These frameworks were designed to be always-available, secure, and high-performance, capable of managing large data volumes efficiently. They embraced distributed computing, replacing the traditional client-server architecture with a more dynamic and scalable publish-subscribe (pub-sub) model.

In this model, the concept of a single server is replaced by asynchronous communication via brokers. They serve as middlemen, facilitating the flow of messages with specific topics from publishers to subscribers.

Unlike the traditional client-server model, where there is a one-to-one relation between client and server, a pub-sub system features decoupled entities that can act as either publishers or subscribers. This allows any number of subscribers to subscribe to messages from a single publisher, offering a more scalable communication pattern.

THE BLOOM OF OPEN SOURCE SOFTWARE

These "new economy" innovators weren't traditional software licensing houses. Their end goal wasn't to commercialize this new technology; it was simply a means to meet their business needs. So, they open-sourced their new architectures and shared them with the community, hoping for contributions and improvements.

Numerous distributed, scalable software architectures have been open-sourced, including Cassandra from Facebook in 2008, Spark from Berkeley University's AmpLab in 2010, Kafka from LinkedIn in 2011, Kubernetes from Google in 2014, and Jaeger from Uber in 2015, to name just a few.

This surge in open source activity fostered a vibrant community, giving rise to new software houses like Confluent and Databricks. Many firms began offering both commercial and non-commercial open source license agreements.

02

OUR HISTORY

DECADES OF DATA ENGINEERING EXPERIENCE

What's Klarrio's place in all of this? While the company was founded in 2016, its roots go back to around 2000, when this whole new world started to emerge.

All of our core leadership team—Kurt, Dirk, Martin, and Bruno—started their careers in the telecommunications industry. They developed gateway firmware for broadband equipment, embedding full triple-play TCP/IP stacks into compact, cost-effective hardware, and were involved in the standardization of remote device management protocols like TR-69.

In 2010, while working at Technicolor, the future founders of Klarrio got the opportunity to launch an incubation program called Virdata, which set out to build the first PaaS for the Internet of Things.

This multicloud IoT platform demonstrated horizontal scalability for hundreds of millions of connected devices, at unprecedented low infrastructure costs. They leveraged the cloud native, distributed computing, open source frameworks developed by the "new economy" companies.

Initially they chose open source tools and the cloud to overcome the enormous cost of full-blown data centers or expensive, proprietary distributed solutions. This necessity turned out to be fortunate, as it led them through a valuable learning phase that spanned over a decade.

In 2016, after the Virdata project ended, the core team decided to put their collective insights and hard-earned experience to good use in a new service-oriented entity. They founded Klarrio.
Their open source framework approach was somewhat unique. Our founders were not just using open source tools, but engaging with the creators of their tools, overcoming initial challenges, learning and growing alongside them.

The adaptability and experience gained from navigating the challenges and opportunities of the evolving digital landscape continue to define us. Klarrio has embraced these changes, rather than ignoring or criticizing them.

"The intense focus on efficient software development, while working with limited resources like memory, computer power, and storage, has always influenced Klarrio's approach in software development. It forces you to think twice before adding new functionality."

Kurt Jonckheer, Klarrio's CEO & co-founder

DECADES OF INNOVATION

2003
- Triple Play SW development on VoIP, IPTV, and Internet for 2Wire, Thompson, and ALU

2009
- SWCPE development of a distributed Middleware
- Formulization on TRP-069 remote management standard

2011
- Driving the first device & application management cloud

2012
- Launch of Portico & launch of Incubation program Virdata

2013
- Device Management as a Service launch
- 1st Distributed Cloud Application on IBM SoftLayer

2014
- Reworked ingest leveraging Kafka
- Launch of Cassandra as a Service
- CES 2014 launch
- CIOReview, top 50 'Most Promising Utilities Technology Solution Provider' Award
- Affiliated partner / sponsor Berkely's AMPLAB

2015
- NetApp EMEA Innovation Award
- Patents awarded on IoT connectivity patterns
- Launch of Spark as a Service

2016
- Launch of Klarrio Belgium (EMEA)
- 1st customer assignments Q2 2016
- Office Quellinstraat, Belgium
- Incubation program Virdata terminated

2017
- Launch of Klarrio the Netherlands (EMEA)
- Launch of Klarrio USA (NA)

2018
- Launch of Klarrio Australia (APAC)
- Launch of SRE Service
- Delivery of Talking Traffic PaaS
- CIO Applications, Top 10 EMEA data analytics services company

2019
- Launch of Klarrio Germany (EMEA)
- Klarrio is Streaming Ahead - rebranding
- Delivery of Belgian SmartCities Platform
- IDSA Member

2020
- Klarrio 2.0 strategic plan launched
- New Offices Plantin en Moretuslei, Belgium
- Gaia-x 'Day 1' Member

2022
- Launch of Klarrio's academy 'tutorrio'
- Launch of Klarrio Iberica (EMEA)
- introduced Mobility Service

2023
- 4 tutorrio graduates
- Internal launch towards ISO27001 certification
- GlobalTech CIO, Top 10 Companies at the forefront of providing Big Data solutions & impacting industry
- Expansion of new additional office floor

2024
- ISO 27001:2022 Certified
- ...and more to come

THOMSON MULTIMEDIA technicolor virdata Klarrio STREAMING AHEAD

03

THE CHALLENGES AHEAD

What began as a novelty quickly disrupted the entire industry. Initially adopted more by B2C (business-to-consumer) companies like Netflix and Uber, these new technologies and architectures are now increasingly being integrated into traditional B2B (business-to-business) environments.

A CONFEDERACY OF CRISES

This digital transformation crisis stems from a perfect storm of several interconnected causes. At Klarrio, our software solutions are specifically designed to address these challenges.

THE CLOUD DELUSION

Often, driven by relentless industry buzz and limited operational knowledge, companies are increasingly adopting Software-as-a-Service (SaaS) and Platform-as-a-Service (PaaS) models, believing them to be more cost-effective than managing their own software.

While this can hold true when taking advantage of on-demand capacity as needed (elastic horizontal scalability) or operating on a smaller scale, companies often migrate to the cloud without fully exploring the long-term implications or considering other options.

THE BURDEN OF LEGACY IT

Many major enterprises that have been around for a long time have so far failed to modernize and integrate decades of IT legacy. Instead, they continue to rely on patchwork optimizations. At a certain point, however, the situation becomes untenable, and a fundamental rework is needed. Until then, these non-integrated legacy systems keep generating massive amounts of siloed data.

INSTANT-GRATIFICATION CULTURE

In today's "always-on" digital world, the expectation for immediate responses has become the norm. For example, online shopping offers delivery within 24 hours or even the same day, television has transitioned to instant, on-demand streaming, instant messaging has overtaken slower communication methods and so on.

To keep up with their customers' expectations, every business aims to act faster and be more proactive. In this fast-paced environment, quick data insights are crucial. However, traditional data analysis tools often struggle with handling large volumes of diverse data types with low latency while faced with unpredictable data demands.

Consequently, there is a growing need for real-time data processing and data streaming architectures. However, the reality is that many businesses are not yet adequately prepared or informed to implement them. Businesses also fall victim to the instant-gratification mindset. All too often, they mindlessly migrate everything to the cloud, or use out-of-the-box proprietary Paas & SaaS offerings because it seems like the quickest and easiest choice, without performing a thorough analysis of the long-term costs, privacy risks, and other consequences.

DATA GOVERNANCE

As the importance of data continues to rise, the way it is handled is under scrutiny as well. Many businesses are still unaware how to properly ensure that their data is secure, manageable, understandable, up-to-date, and compliant.

Regulations introduce an additional layer of complexity. For instance, a data management architecture considered secure and compliant in one jurisdiction may not be satisfactory in another. Multinational organizations must navigate a mosaic of data laws which can be challenging.

This makes it essential to have a flexible and adaptable approach to data governance, one that can accommodate different legal requirements and cultural norms related to data handling and privacy.

THE INFORMATION AVALANCHE

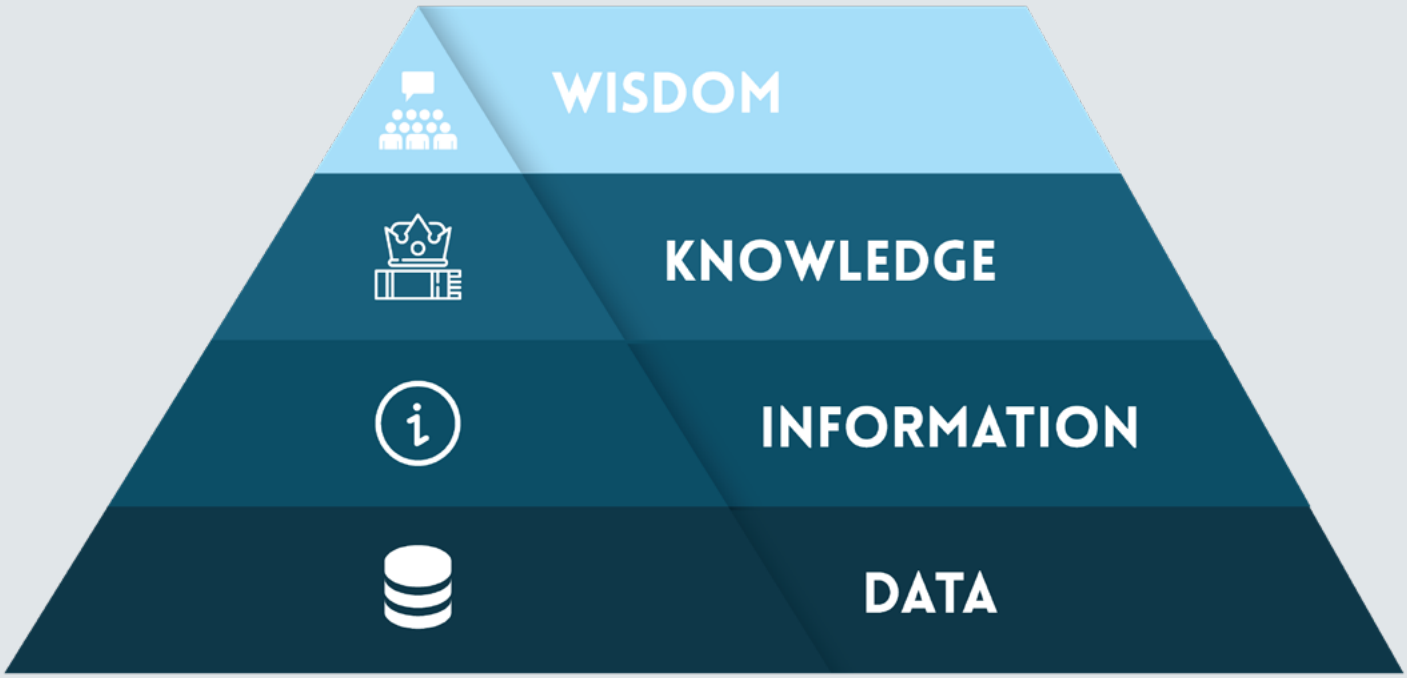
Since 2010, there has been a consistent annual increase in the volume of digital data created. According to Statista, 120 trillion gigabytes of data were created in 2023, 60 times more than in 2010. The amount of data created each year is anticipated to surge more than 150% by 2025.

"We must harness the Internet's energy before the information it has unleashed buries us"

Vinton Cerf, Internet pioneer

Enterprises and organizations generate vast quantities of both structured and unstructured data that require processing, analysis, and integration. Vinton Cerf, one of the internet pioneers, characterized this as an "information avalanche," emphasizing the overwhelming flow of data.

This growing complexity of data corresponds with the concepts of the DIKW pyramid (Data, Information, Knowledge, Wisdom). The challenge extends beyond the sheer volume of data. It involves transforming data into meaningful information, actionable knowledge, and ultimately, wisdom for informed decision-making and problem-solving.



RETAINING CONTROL

Many enterprises and organizations, lacking in-house IT infrastructure expertise, often resort to generic SaaS and PaaS solutions. However, once they are committed to a proprietary cloud model, they lose control over key aspects like performance, security, intellectual property, and long-term costs.

Another concern is the thoughtless outsourcing of critical IT operations or processes, leading to a dependency on one-size-fits-all SaaS or PaaS solution providers who don't have their customers' best interests at heart. Frequently, these companies maintain full ownership of their software solutions, benefiting from a strategy that locks in their customers.

Relying on "fool-proof" technology or third-party proprietary solutions just doesn't work.

To mitigate these risks, enterprises and organizations should prioritize strategic partnerships with experienced, trustworthy partners. Such collaborations should focus on maintaining independence, achieved through co-development initiatives, comprehensive training, and effective knowledge transfer.

In the long run, each enterprise and organization that neglects these challenges will lose control over its destiny.

It doesn't have to be this way.

04

WHAT WE STAND FOR

Our core belief is that each enterprise and organization should control its destiny.

This means maintaining custody of their data, software, services, and core intellectual property.

It's our moral duty to strive towards a future where people truly control their data, a future-proof society that runs on open source and distributed frameworks, resilient against interference by any dominant hyperscaler or distant authority.

Future-proofing is about more than data custody, however. It's also a matter of the environmental impact of wasting digital resources. We design sustainable software that keeps the best interests of our society in mind.

STANDING OUT

Our approach differs from one-size-fits-all service vendors who take the easy route, focusing on leveraging sales and generic PaaS and SaaS hyperscaler offerings, while ignoring the negative impact on their clients' budget, data governance, and performance. We believe that's fundamentally wrong.

Our point of view is not about going against the grain. It's about going towards what we believe, and not towards only living opportunistically in the delusions of the day.

CONTROL YOUR DESTINY

The popular narrative of "moving everything to the cloud" is not a one-size-fits-all solution. We take a tailored approach, carefully evaluating each business case to determine the most effective strategy.

We might, for instance, design a multi-vendor set-up, running a software solution simultaneously across multiple public cloud providers to ensure scalability and prevent vendor lock-in. Additionally, we could integrate on-premises solutions—equivalent to cloud in efficiency, leveraging cloud native technologies within a data center (DC)—to form a robust hybrid (multicloud and on-premises) strategy.

Such an approach mitigates the risk of dependency on a single vendor, while maintaining flexibility and control over where services are deployed, providing a truly adaptive and resilient infrastructure.

Whatever our customers need, we have the expertise to build it.

Want to learn more?
Check out our projects.

REMAIN INDEPENDENT

Once you move your organization's data to proprietary cloud services, you may be unable to migrate to other solutions without considerable implementation effort—becoming entirely dependent on one service provider that can increase their fees on a whim.

This vendor lock-in can also jeopardize business continuity: if your business-critical processes are entirely dependent on one provider and the service is down, your business operations will be interrupted and forced to a halt.

To the contrary, when leveraging open source frameworks and custom, cloud agnostic solutions, you are in control of business-critical components. This strategy minimizes dependency on any specific cloud infrastructure and keeps all options open.

ENSURE PERFORMANCE & RELIABILITY

When using SaaS and PaaS services, you have no control over performance. Multiple processes might be running on the same (virtual) machine, so what you get is inconsistent at best. If your application or use case absolutely requires low latency, responsiveness, reliability, this is obviously a major issue.

Additionally, most SaaS and PaaS providers don't provide real guaranteed SLAs (Service Level Agreements). In most cases, they only offer best-effort SLOs (Service Level Objectives) to meet service uptime for a limited number of services. If these SLOs are not met, service credits are provided for your next (e.g., monthly) billing cycle as compensation. This is worthless if you lost a chunk of income, or worse, all your data.

Many companies need stronger and better ways to ensure that the potentially business-critical services they depend on meet the service availability targets. They need stronger guarantees, and not just service credits as compensation for critical services not being available.

CONTROL EXPENSES

Many companies opt for using SaaS and PaaS cloud solutions because, at the entry point, the initial cost of getting started is very low or even free. For many companies that begin with small-scale rollouts or proofs-of-concept, this cloud model may initially be much cheaper than setting up hardware servers themselves.

But there is a catch. As the consumption of these companies grows (for example, the data volume or number of applications), the costs will also increase accordingly. This is something that organizations usually need to be made aware of since the general perception is that public cloud services are the most cost-effective option.

"At a large scale, creating solutions based on open source software can be ten times more cost-efficient than opting for proprietary SaaS and PaaS services."

OWN YOUR DATA

It's essential to have a flexible and adaptable approach to data governance, one that can accommodate different legal requirements and cultural norms related to data handling and privacy.

Additionally, the US Department of Justice has the right to obtain the data of any US-owned company. This includes Amazon AWS, Google Cloud Services, and Microsoft Azure. And under the new NIS2 regulations, it might get even more complicated if the government considers an organization "critical infrastructure".

The current geopolitical climate adds another layer of complexity. When regions refuse to work with each other or impose restrictions, it doesn't necessarily lead to positive outcomes.

Having control over where data resides also impacts business continuity: are you able to retrieve or backup all your data and move data to other locations? Not all SaaS and PaaS solutions provide (inexpensive)ways to export, backup, delete, or migrate data, so customers have very limited control over their data.

ENSURE TRANSPARENCY

Transparency can be an essential criterion for some organizations that need to have full visibility of their complete supply chain to know where the software is coming from and its exact functionality.

This is important because these companies must ensure that there are no backdoors or security vulnerabilities and that they know all the risks involved with using the software.

The issue with a proprietary cloud solution is that you don't get any transparency. In fact, you don't see the underlying software at all. You can read and accept the terms and conditions, but apart from that, it's a matter of blind trust without any real guarantee that your data will be protected or to which risks it is exposed.

"When you are giving away your data, you are giving away the future of your organization. How can you take responsibility for the products and services you deliver, when you don't even own the very engine that drives your enterprise?"

Customer testimonial

OFF THE SHELF AND INTO THE FUTURE

To help customers tackle the challenges mentioned above, Klarrio builds customized, cloud native, cloud agnostic and open source-based software solutions.

CUSTOMIZED

Car engines are specifically designed for each vehicle's purpose. No off-the-shelf engine has ever secured a win in a professional car race. Victory comes from owning an engine, knowing it thoroughly, and fine-tuning it to perfection.

Similarly, the majority of today's digital transformation challenges can't be fixed with the off-the-shelf, one-size-fits-all SaaS and PaaS solutions offered by dominant hyperscalers. Achieving solid data integration requires a hybrid infrastructure and a software layer—meticulously crafted to the needs of our customers.

CLOUD NATIVE & ELASTIC

In our age of hyperconnectivity, inconsistent workload variations are ubiquitous, and predicting how many resources—storage, bandwidth, computational power—you'll need is impossible with a traditional data approach.

That's why Klarrio's applications are built in a cloud native way and run in a distributed manner. This means they can handle the continuous launching and shutting down of underlying infrastructure (physical or virtual), without the whole system breaking down.

CLOUD AGNOSTIC

Klarrio's software stacks can run on (virtualized) on-premises servers, as well as cloud technology. But, because we never use any of the latter's proprietary SaaS, PaaS or other services, our solutions are never dependent on one specific hyperscaler or server. They can be moved about anywhere.

PRIVATE AND SECURE

We implement security and privacy by design and prioritize data ownership and protection. We're dedicated to our customers' compliance with GDPR / NIS2 regulations for privacy and security. We are a day 1 member of the International Data Spaces Association and Gaia-X. These initiatives promote secure, trusted data exchange, and data sovereignty.

REAL TIME

We are specialized in real-time data processing and event-driven architectures. This is particularly useful for immediate insights or actions based on all data in motion. With data streaming, you can avoid processing data in larger chunks, as well as the latency that batch processing comes with.

OPEN SOURCE

Most of the open source frameworks we use (for example, Apache Kafka, Apache Flink, Apache Spark) were designed to mitigate the digital transformation challenges. They empower you to remain in control over the business-critical parts of your solution—with minimal dependence on underlying cloud infrastructure and full customizability.

Open source licensing varies, with each license imposing specific terms. Some prohibit commercial use, while others require you to share enhancements with the community if used commercially. This could affect intellectual property (IP).

With over 13 years of experience in navigating the IP challenges of open source building blocks, we carefully evaluate each component to ensure compliance and protect your interests.

RESILIENT

Traditional software reliability focuses on preventing breakdowns using multiple failovers. Today, in cloud native environments, breakdowns are seen as inevitable and a key part of testing. This new approach integrates uncertainty into development—with applications designed for the cloud's flexibility. They can seamlessly transition between resources, maintaining operations even during failures.

"Chaos Monkey, an open source tool developed by Netflix, tests the resilience of applications by deliberately disrupting and challenging the infrastructure."

05

WORKING WITH US

Our core belief, that each enterprise and organization should control its destiny, fuels everything we do. Our unbiased approach is characterized by truthfulness, transparency, and directness. If you ask for our advice, you'll always get an honest answer.

AS A CUSTOMER

Our customers, ranging from large enterprises to organizations, are typically grappling with the challenges of managing vast amounts of data, stuck in their digital transformation or seeking to enhance or create a data-driven business model.

For most of our customized solutions, a certain data volume is needed to get the most out of our collaboration. And although the upfront investment could be higher compared to SaaS/PaaS services and the customer's involvement more intensive, they will ensure our customers maintain control over their digital destiny.

OUR STRUCTURED APPROACH

To help our customers, we typically assist them in preparing a forecast and estimating the data volumes they will be processing, storing, and using in the future. Based on these estimates, we can make an objective estimation to empower them to make the best strategic decision.

And while every project is unique, our five-step framework offers a glimpse of what to expect.

STUDY, DESIGN AND VALIDATION:
ANALYZING OUR CUSTOMER'S NEEDS TO CREATE A DETAILED ARCHITECTURAL AND TECHNICAL DESIGN.

BUSINESS SCOPE AND BUDGET:
DEFINING A MINIMUM VIABLE PRODUCT (MVP), FURTHER ANALYSIS FOR OPTIMAL SOLUTIONS, PLAN RESOURCES AND ESTIMATE BUDGET.

MVP IMPLEMENTATION:
IMPLEMENTING AND REFINING THE MVP, FOLLOWING THE AGILE METHODOLOGY.

PRODUCT IMPLEMENTATION:
IMPLEMENTING THE PROJECT FEATURE ROADMAPS AND INTEGRATION NEEDS IN TWO-WEEK SPRINTS AND (RE)VALIDATE DELIVERED WORK.

OPERATE AND TRANSFER:
CREATING AND PROVIDING PRODUCT DOCUMENTATION, COLLATERALS, COMMERCIAL CONTRACTS, HANDOVER, … .

WE'RE IN IT TOGETHER

Recognizing that different customers have unique needs, we provide customized support throughout the entire product lifecycle. This facilitates a continuous and adaptive learning process.

When assembling a project team, we ask customers to provide some people of their own as well, who are then invited to work alongside our data engineers in co-creating and co-developing software.

There are multiple benefits to this. It ensures optimal hands-on knowledge transfer, end up with a product they fully understand, and be capable of taking ownership once the solution has gone into production.

Beyond simply transferring knowledge, our engineers are also equipped to provide post-build, operational support services for our deployed software solutions. This includes training, maintenance, and site reliability engineering.

Customers will know the inner workings of our tools, instead of just knowing how to work with them.

AS KLARRIO STAFF

You need resourcefulness and a hefty dose of creativity to build a clever, customized, hybrid infrastructure. Not everyone can do it. But the Klarrio team can. Here you can experiment, grow, and continuously diversify your skills.

We steer clear of traditional consultancy models that typically involve sending out individual employees. Instead, we find that our best results come from collaborating in-house as a multidisciplinary team, tackling projects together.

We're strictly inclusive. We believe in equal treatment throughout all processes from recruitment to evaluation and career growth, regardless of gender, age, origin or nationality, education, interests.

OUR VALUES

OPEN COMMUNITY & OPEN SOURCE
Innovation is never conducted in isolation

DRIVE
Exercise your passion

NO STEREOTYPING
Pigeonholing is left at the front door

AUTHENTIC
Be genuine, be open-minded

HUMILITY
Arrogance is not an option

EDUCATION
Learning never stops

TUTORRIO: A DATA ENGINEERING LEARNING SPACE

Not everyone can do what our experts do, but with enough time and the right guidance, almost everyone can learn. Unfortunately, the field of data engineering is relatively new. Effective instructors must have not just theoretical knowledge but, more importantly, practical expertise to teach these subjects effectively.

tutorrio bridges this critical gap. Our goal is to empower individuals to master data engineering, from its foundational concepts to the latest open source frameworks. Beyond the technical skills, our curriculum extends to cover areas such as cloud economics and the ethical dimensions of data protection and privacy.

Our programs are limited to a small number of candidates, enabling tailored instructions and personalized feedback.

tutorrio was initially born out of a necessity to address the shortage of skilled professionals and to give potential talent, with no previous software or data engineering education, a chance to join our company. Selected participants are integrated into Klarrio as full-time employees from the start, receiving compensation throughout their training.

Thanks to our modular course material, we can tailor our learning plans to our target audience's technical background and specific needs. As we identified an increasing demand among our customers for enhanced team capabilities, tutorrio evolved. It now offers customized training to complement the various aspects of the software platforms we deliver.

Learn more about tutorrio.

tutorrio by Klarrio

#STREAMINGAHEAD

06

SO WHAT HAPPENS NOW?

While it's impossible to predict the future with absolute precision, we always think ahead to anticipate the unexpected. Learning from past experiences, remaining agile when facing new challenges, and staying ahead of game-changing trends are crucial.

The rapid evolution of disruptive technology will continue to accelerate at an extraordinary pace. To keep up, the appropriate mindset is just as crucial as the right technical skills. Challenges should not be considered obstacles but rather as opportunities for growth.

As Alan Kay famously said, "The best way to predict the future is to invent it." Traditional architecture will only take you so far. This is why we're building custom, cloud agnostic, and cloud native software solutions. To future-proof your data strategy, you need to make sure that your data is under your control, accessible, secure, resilient to failure, and that your platforms can handle it.

Those who look beyond the confusing marketing messages, who believe in doing things 'the right way' instead of the 'easy way', and who truly wish to take their destinies into their own hands will discover that building a sustainable and future-proof enterprise is not just possible, it's the right thing to do.

No matter what the future throws at you.

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Klarrio is specializing in large scale and real-time data processing implementations. Not only expertise, but more importantly, experience.

We go beyond being a mere software solutions provider for enterprises, embracing openness to let you control your destiny: no vendor lock-in, all open-source, with proactive and sustainable solutions.

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