

Crisis as a catalyst

Why Europe's energy crisis calls for a technology
overhaul of energy retailers across the continent

November 2022



KALUZA



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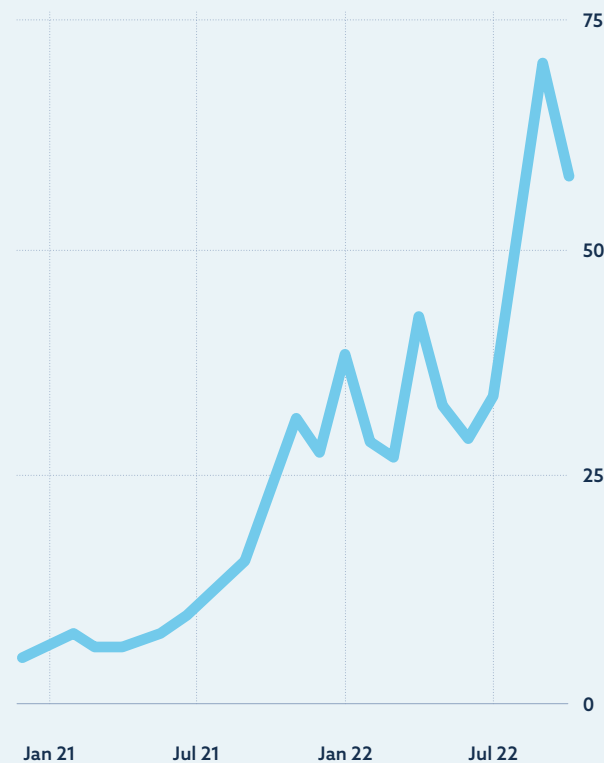


Introduction: A continent in crisis

Natural gas prices across Europe have increased more than five-fold¹ since January 2021, and volatility is expected to continue. Energy retailers and their customers are reeling from the consequences of prodigious supply and demand-side shocks in upstream energy markets, most notably from the war in Ukraine and the ensuing geopolitical fall-out. Across Europe, nearly €500bn² has been spent to date to alleviate the pain for businesses and consumers, on top of loans, bailouts and nationalisations of some energy firms.

With no end to the crisis in sight, prices will remain volatile and how governments and energy retailers respond to support customers will be the subject of intensifying scrutiny. Energy itself has now been weaponised as part of the war in Ukraine, and this has profound implications for every stakeholder in the energy value chain across Europe.

EU Natural Gas Import Price (USD/MMBtu)



Dramatic interventions and ailing business models

Across the continent, increasingly expansive interventions have been made by governments to protect households and businesses from the impact of soaring wholesale prices. Unprecedented measures like capping unit fuel prices, windfall taxes on generators, state bailouts and emergency credit lines to businesses have all been implemented at scale.

Whilst it may be too early to gauge the efficacy of various government interventions, there is already a clear takeaway for energy retailers: the need for agility and resilience in the future. Week after week, market volatility has provided fresh examples of ailing business processes arising from retailers' outdated software.

¹ [YCharts.com](https://ycharts.com/indicators/eu_natural_gas_import_price) - European Union Natural Gas Import Price

² [Euractiv: 'European governments splurging €500bn to cushion energy crisis: report'](https://euractiv.com/en/energy/european-governments-splurging-500bn-to-cushion-energy-crisis-report-report), September 2022



Clearly, the technology used until now is not the technology we need for the future:

- Average **customer call waiting times** to speak to their energy retailer have **increased by up to 75%**³
- Overall **household debt to energy retailers has tripled** in 12 months⁴
- 'National Meter Reading Day' on 31st March ahead of the UK government's price cap increase saw a **fourteen-fold increase in online account log-ins**, with many apps and websites crashing as a result⁵
- **65% of retailers** have seen an increase in customer requests for **bills to be paused or reduced**, and **35% have seen a rise in late payments**

There is no doubt that all energy retailers will have to endure further wholesale volatility in the coming months.

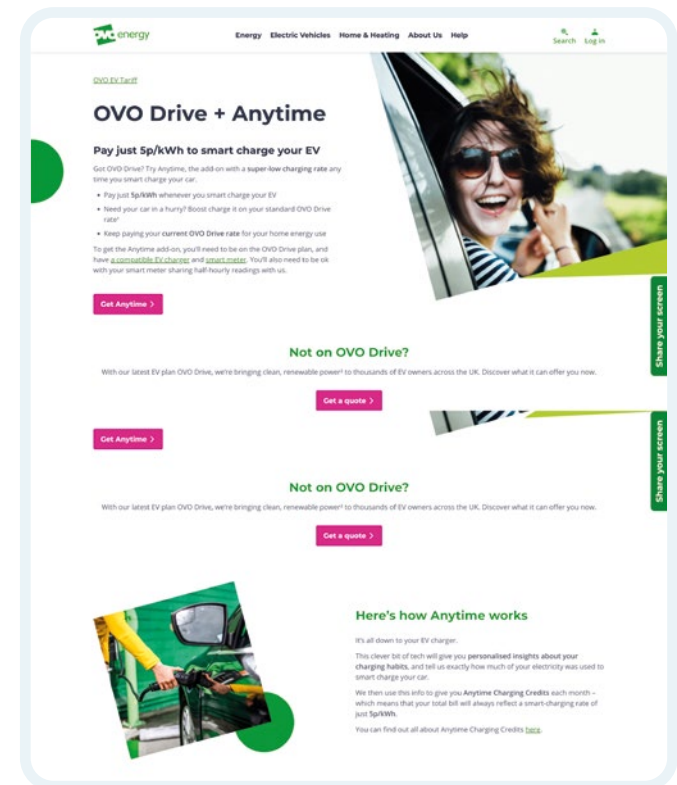
Energy 2.0

The climate emergency is compounding the need for change and current events are actually *accelerating* the transition to net zero in many ways.

Energy has become increasingly intertwined with national security, prompting renewed focus on homegrown renewable generation, as well as the electrification of heat and transport. The EU are even looking to mandate rooftop PV across commercial, public and residential buildings before the end of the decade⁶. Bundled product offerings look set to become more important to retailers, not only to diversify their P&L, but to make decarbonisation easy for their customers with innovative propositions comprising energy, hardware, controls and flexibility services.

In 2021, OVO Energy, one of the UK's largest energy retailers, launched a pioneering energy proposition named 'OVO Drive + Anytime'.

This combines an electric vehicle (EV) charger, smart metering and flexibility services to offer a 'type-of-use' tariff, applying bill credits to guarantee customers a fixed, reduced kWh electricity rate for charging their EV.



3 Utility Week: 'Average call waits times for customers rise by 75%', July 2022

4 Yahoo Finance UK: 'Energy bills: 6 million households already in debt before October rise', August 2022

5 'Billing and Payments: How well do you know your customers?' A Utility Week research report in association with Mastercard, July 2022

6 PV Magazine: 'EU wants rooftop PV mandate for public, commercial buildings by 2027, residential by 2029', May 2022



By 2030, there will be more than 100 million^{7,8} distributed energy resources (DERs) in homes across Europe. This presents a tremendous commercial opportunity for retailers to fundamentally reshape the relationship they have with their customers. These households will want innovative tariffs which provide device-based billing for heating or car charging, optimisation of their consumption to avoid price spikes, or even an export rate to sell excess solar back to the system operator.

The value of this to customers has already been demonstrated - the world's largest domestic vehicle-to-grid (V2G) program, run in partnership between OVO Energy, Kaluza, Nissan Motor Company, Cenex and Indra Renewable Technology - enabled EV drivers to save up to **€835 / £725⁹** per year through optimised charging and selling their car's surplus energy back to the grid.

There are three fundamental reasons energy retailers will be centre-stage in the energy transition:

- 1 With an array of DERs in the home, customers will demand a single-service provider and intuitive experience to manage everything easily
- 2 The myriad of DERs needed to fully decarbonise the home necessitates an open ecosystem where no single manufacturer has overall control
- 3 Tariffs and energy billing are the unifying thread across all devices and services of a net zero home

Energy retailers therefore have a crucial role to play beyond the immediate energy crisis to help decarbonise customers' homes. The future of energy is analogous in many ways to high street retail - customers visit a store, choose their brands, try out their preferred products and check out. There is a single bill and experience from the retailer, not from each of the brands which they have purchased from. This poses a truly exciting new role for energy retailers as the one-stop shop for the majority of customers who want to be able to decarbonise simply and affordably.

7 [Virta: 'The state of EV charging infrastructure in Europe by 2030'](#), May 2022

8 [Wood Mackenzie: 'Europe to install 45 million heat pumps in the residential sector by 2030'](#), August 2022

9 [Kaluza: 'Case study: Kaluza-enabled vehicle-to-grid \(V2G\) charging'](#), February 2022





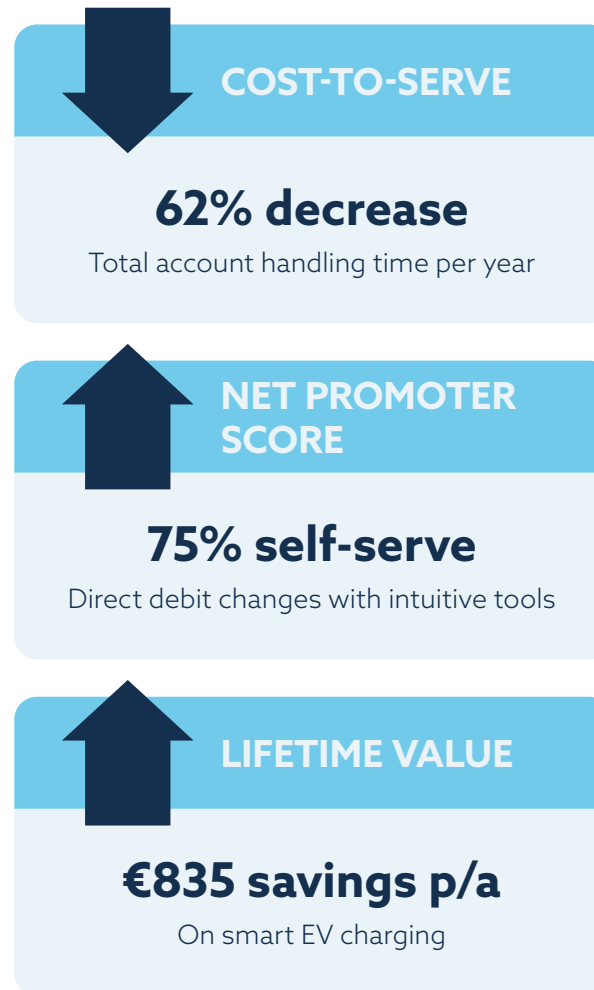
Three crucial outcomes: Costs, Customers, Commercial

"The next few years are going to be all about cost-to-serve" - this prediction is surfacing in conversations with leaders across the industry.

The reality is that it's really not as dichotomous as that - **cost-to-serve (CTS)**, customer **lifetime value (LTV)** and **net promoter score (NPS)** are inextricably linked.

A singular focus on CTS at the expense of the other metrics is a doomed strategy. Increasing LTV has the potential to deliver much greater cumulative value. However, reaching this stage requires being able to remove friction from key customer journeys. For example, issuing correct bills on time, delivering resilient digital services and operating an efficient contact centre. Retaining customers at the end of their contract, or engaging them in additional services such as electric vehicle charging, becomes insurmountably challenging if core experiences are under-delivering.

Kaluza is working with leading energy retailers to 'move the dial' on profitability factors within their control.



Getting billing operations right

There is no task more fundamental to an energy retailer than their meter-to-cash process. Its importance is crystalised when analysing its impact on all three metrics - CTS, NPS and LTV.

Legacy, monolithic energy platforms run 'batch billing' processes whereby a tranche of customer data is processed periodically and only at these times are validations applied to the data to discover if it's billable. This results in high, spiking workloads with a lag between when the root cause of an exception happened and when an agent tries to resolve it, making that resolution more costly. Customers are left in the dark until their account successfully completes the billing process, increasing the likelihood of them making contact with their retailer.

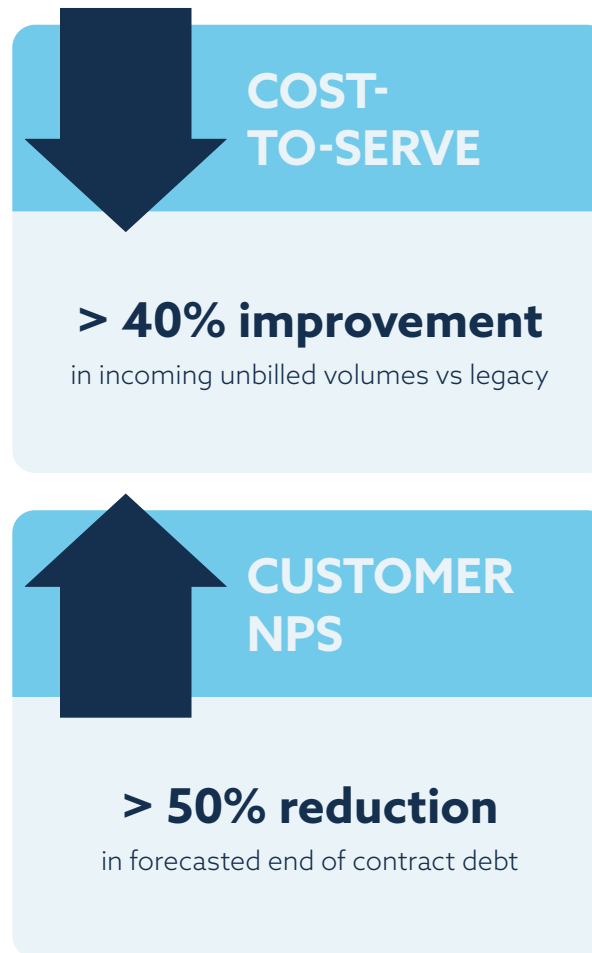
In today's industry, customers increasingly demand and deserve better. With price volatility and unpredictable weather patterns, billing customers three months after they use their energy underlines the need for new solutions.



Gone are the days when customers could approximately predict their bill and these long billing cycles can cause stress and 'bill shock' when the bill is finally received. Instead, retailers using the latest technology can provide customers with daily updates on their account status and real-time balances. As a result, NPS increases and call volumes are measurably reduced.

Retailers also benefit from real-time billing and data processing to enable same-day switching of customers - an experience which batch billing will never be able to provide. As soon as a customer has accepted a new contract, their smart meter sends a read to their previous retailer, which instantaneously generates a closing statement and sends this bill to the customer with a link to pay or receive their refund. This reduces debt risk, collections cost and improves customer experience - put simply: everyone wins.

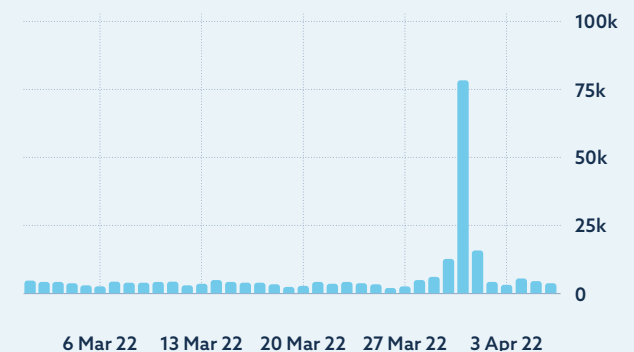
Real-time billing capabilities are simultaneously reducing cost-to-serve and protecting customers during the energy crisis.



A robust digital architecture

Another pertinent example of delivering on NPS when it really mattered was 'National Meter Reading Day' in the UK. On 31st March 2022, amid a flurry of media hype, millions of customers rushed to submit meter readings the day before the regulator's price cap increased by 54%.

Account log-ins were x14 higher on 'National Meter Reading Day'



Kaluza's client, OVO Energy, was the only major UK energy supplier not to suffer an outage during this unprecedented industry event.



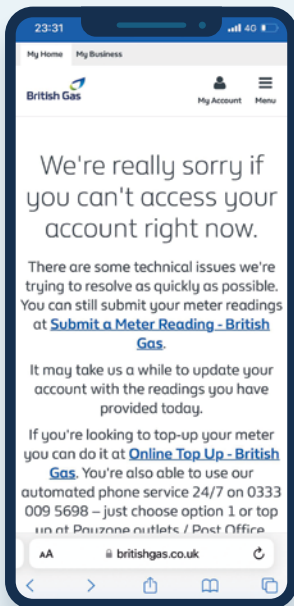
Not only did OVO Energy demonstrate its resilience - it also received over 15,000 customer satisfaction survey responses throughout the day, with **88% of customers giving a 'satisfied' or 'very satisfied'** rating for their experience.

The platform's ability to effectively respond to the demand is testament to the strength of its design. Unlike other platforms based on monolithic or 'synchronous microservices' models, Kaluza's architecture is characterised by a resilient and high throughput data backbone, with distributed microservices running separately from each other.

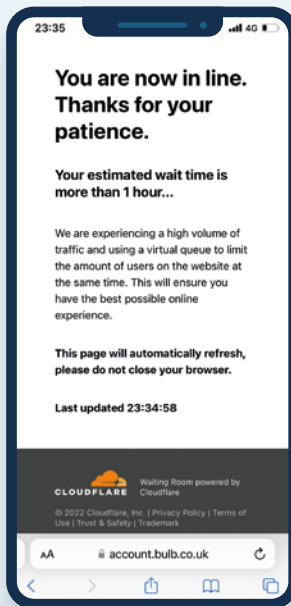
This not only provides a data platform from which critical insight and innovative energy products can be built, but also limits the scope of service issues to isolated areas, preventing a domino effect of malfunction across the platform, such as the web and mobile experiences that customers depend on.

Major UK energy retailers suffered app outages on 'National Meter Reading Day'

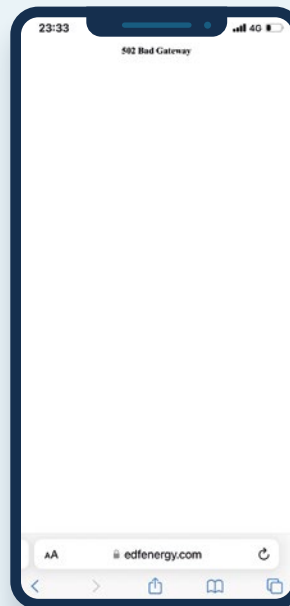
British Gas



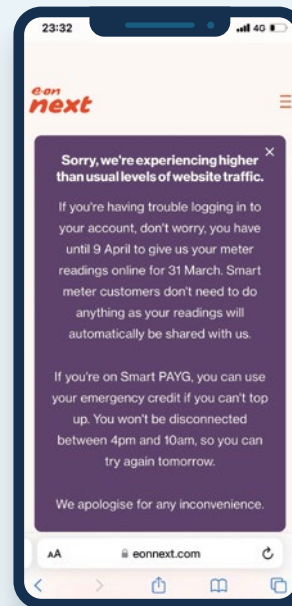
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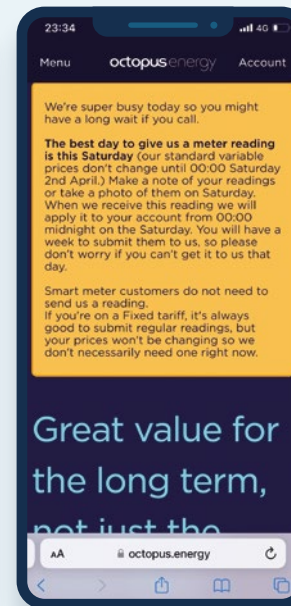
EDF Energy



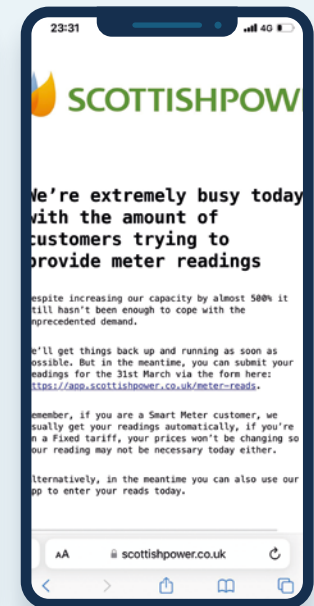
E.ON Next



Octopus



Scottish Power





Compelling propositions

Beyond getting the basics of billing and digital architecture right, there is a wave of change coming which will demand energy retailers provide entirely new services and experiences for their customers.

Retailers will need to provide modular propositions which are highly personal and can effectively respond to genuine customer needs. This could incorporate hardware alongside energy supply, optimisation and servicing contracts in a simple monthly fee or rewards scheme.

All of this is seamlessly integrated into billing operations and the core customer lifecycle. To succeed, the retailer cannot treat data and insights as an afterthought - this must be truly embedded in their technology architecture.

The one-stop shop to decarbonise the home



1

Customer is interested in solar and storage. Retailer app utilises smart meter data to suggest indicative system size and price.



2

Home assessment and installation are carried out. Appointment can be made with installer via retailer's app or contact centre.



3

Customer enrolls in optimisation via retailer app. They can track status, costs and CO2 savings in the app and on a consolidated bill.



4

Customer later purchases an EV. Smart meter data notifies retailer and prompts cross-sell opportunity for a 'smart charging' upgrade.



5

EV is enrolled in optimisation. Home & public charging are incorporated into the bill. Charging parameters are managed via retailer app.



To provide a compelling decarbonisation journey, retailers must blend an ecosystem of capabilities with the right digital customer journey. This shifts the technology platform from a cost centre to a driver of growth.

The result is that the retailer becomes a one-stop-shop for customers to achieve cost savings, protect against price volatility and reduce their carbon footprint in an easy-to-understand way. Much like the iPhone, simplicity on the surface is underpinned by a complex array of hardware, software and integrations with an ecosystem of partner modules.

The energy crisis is proving that legacy technology platforms are fragile and slow when they need to be resilient and flexible. Ultimately, a technology overhaul is required to ensure the sustainability of retailers during future crises, as well as to seize the seismic opportunities arising from the energy transition.





Transformation necessitates new technology: Three architecture schemas

The case for transformation in energy retailers across Europe has been made abundantly clear by the energy crisis. Onerous processes around billing, industry interaction and digital architecture all impede fulfilment of the three crucial outcomes: CTS, NPS and LTV.

The common thread tying all of these together (and for that matter, almost any service or experience an energy retailer provides) is the technology platform. The tech platform generates and sends bills, processes meter reads, receives industry settlement data, sends service communications, manages customer queries to the contact centre - just about every process or task which a modern energy supplier may carry out.

Legacy 'monolithic' technology platforms and their limitations have been referenced earlier in this paper. Indeed, many of Europe's biggest energy retailers still run on such platforms, though a transition is underway to modernise the tech stack. Three technology architecture schemas and their implications for the modern industry will now be considered.

"The energy crisis has made clear the crucial need for European retailers to focus on technology architecture that can deliver a future-proof business model. Now, more than ever, technology will be key to help retailers overcome the challenges of today and step out of this moment stronger than before. Accelerated speed to market and new revenue streams, enabled by an appropriate technology stack, will set digital retailers apart and make the difference for the future."

Arturo Negredo
**Accenture Technology Industry Lead
for Utilities Europe**



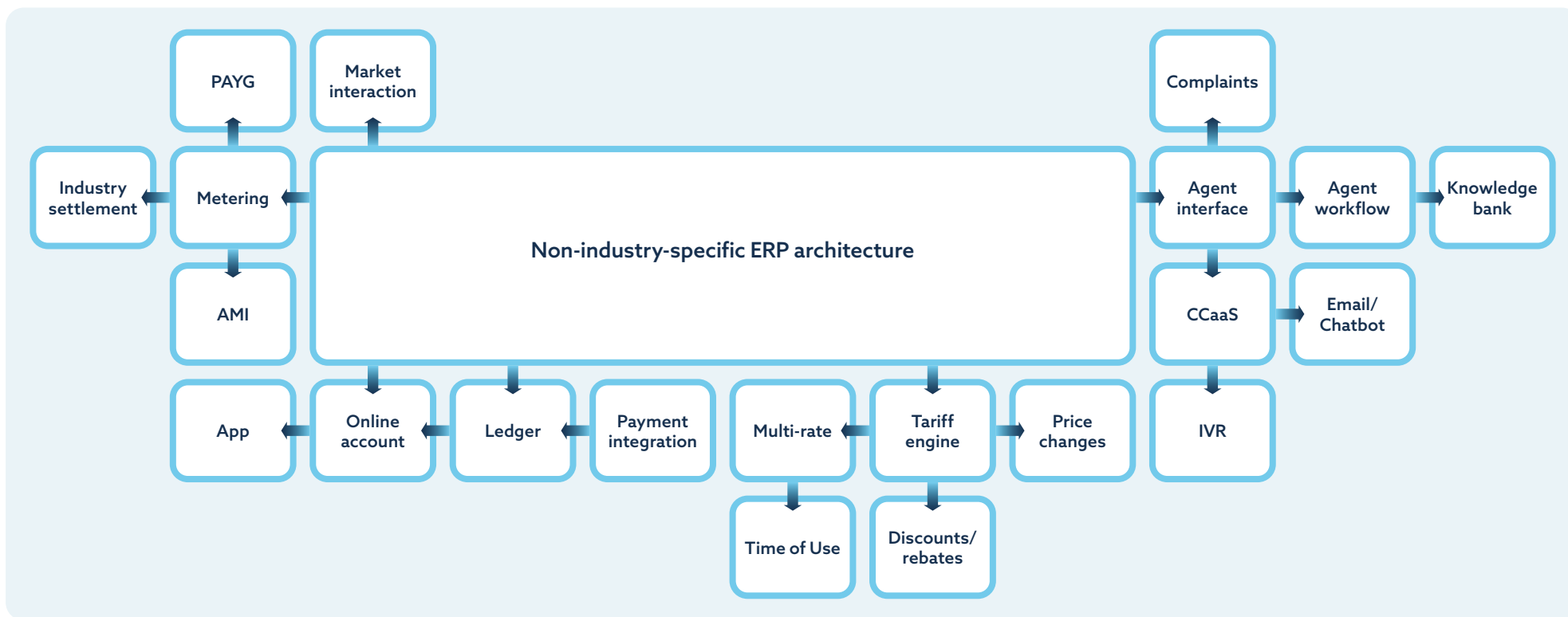
1. 'Monolithic Dinosaur'

This is the traditional technology architecture, which gives rise to many of the pain points discussed in this paper. It is composed as a single, monolithic system designed to carry out 'batch billing'. Typically deployed on-premise, not only is it increasingly complex and expensive to maintain and update, but many of these

platforms are industry-generic enterprise resource planning software - meaning they struggle to handle many of the discrete and specialised operations of energy retail.

Like the dinosaurs themselves, this architecture looks set for extinction. It has been endlessly customised with perpetual bolt-ons, widgets and offline processes which have

been necessary over years and decades to keep it working and capable of meeting an organisation's needs. Not only is it industry-generic, but when it was launched, concepts like smart meters, time-of-use tariffs and customer apps did not even exist. It is no wonder, then, that it struggles to accommodate such services and experiences which are increasingly 'table stakes' in today's market.





Three major problems with this architecture arise for energy retailers:

1 Extensive manual intervention: as the technology is not purpose built, adapting it to work for an industry with many bespoke processes and regulations requires constant, labour-intensive 'patching up'. Over time, this 'patchwork' becomes increasingly convoluted and prone to failures, with risk to customer NPS. As functional teams also develop offline processes to 'work around' the system, business continuity also becomes a risk.

2 Old and restrictive code impedes the development of new digital experiences for customers: the code underpinning this technology is often decades old - pre-dating the era of mobile apps. This means a front and back end which are highly interdependent - as a result, building seamless digital experiences is expensive and arduous, if not completely impossible.

3 Costly maintenance and upgrades: having been built before the advent of cloud-native software - and all of the consequent benefits - maintaining and enhancing the technology is slow, complicated and expensive. Small upgrades can require wider organisational changes and dedicated transformation projects, amounting to a hugely increased CTS.

In summary, this truly is a dinosaur - a brittle tech stack fighting a losing battle to keep up with the pace of change in regulation, technology and customer expectations. It keeps energy retailers locked into a costly operating model and impedes the development of new products and services. All of this has detrimental effects on the three crucial outcomes of CTS, NPS and LTV.

2. 'Spaghetti alla Microservices'

The 'Spaghetti alla Microservices' architecture provides an alternative to yesterday's pain points of the 'Monolithic Dinosaur'. It is industry-specific software and its focus on energy billing improves customer NPS while being cloud-native helps to reduce CTS during implementation and in-life.

This architecture is composed of dozens of microservices from one provider - modular programs exclusively focused on a specific task or process with many cascading connections. Whereas the 'Monolithic Dinosaurs' may have delivered some valuable automation for energy retailers back in their day, the 'Spaghetti alla Microservices' struggles to deliver further CTS benefits of automation due to the high interdependency and the extent of logic that needs to be built between modules for it to function.



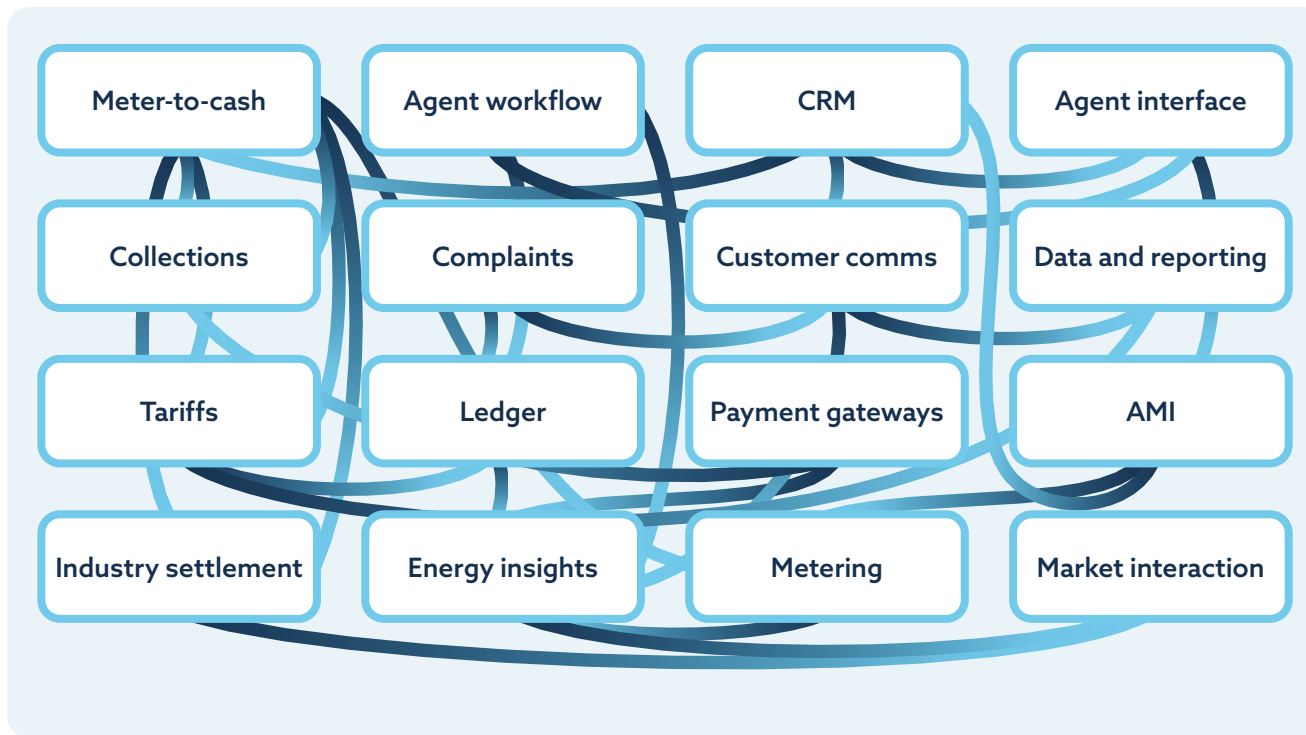
It provides far greater 'out of the box' functionality than the 'Dinosaur' architecture, however it falls down in four key areas:

1 Lacking expertise: building everything in-house on one platform likely means being the best at nothing. It's difficult for a single provider to simultaneously achieve superiority over the market-leading CRMs, workflows and billing platforms.

2 Lacking flexibility: by its nature, this technology platform is more rigid and prescriptive on the operating model and processes which the client must adopt. This gives retailers no flexibility to tailor implementation to their org structure, priorities and culture - meaning lack of opportunity to differentiate.

3 Cascading failures: the highly interdependent nature of this architecture means it is inherently prone to cascading failures - when one domino falls, the rest follow. We saw this in the 'National Meter Reading Day' example.

4 Sole reliance on one provider means energy retailers are completely tied to their roadmap, priorities and limitations.



In summary, this spaghetti architecture does offer material improvements on its predecessor in terms of cost-to-serve and ease of implementation. Where it falls down, however, is its considerable rigidity and the limitations borne out of competing on multiple fronts of capability, preventing it from leading in any.



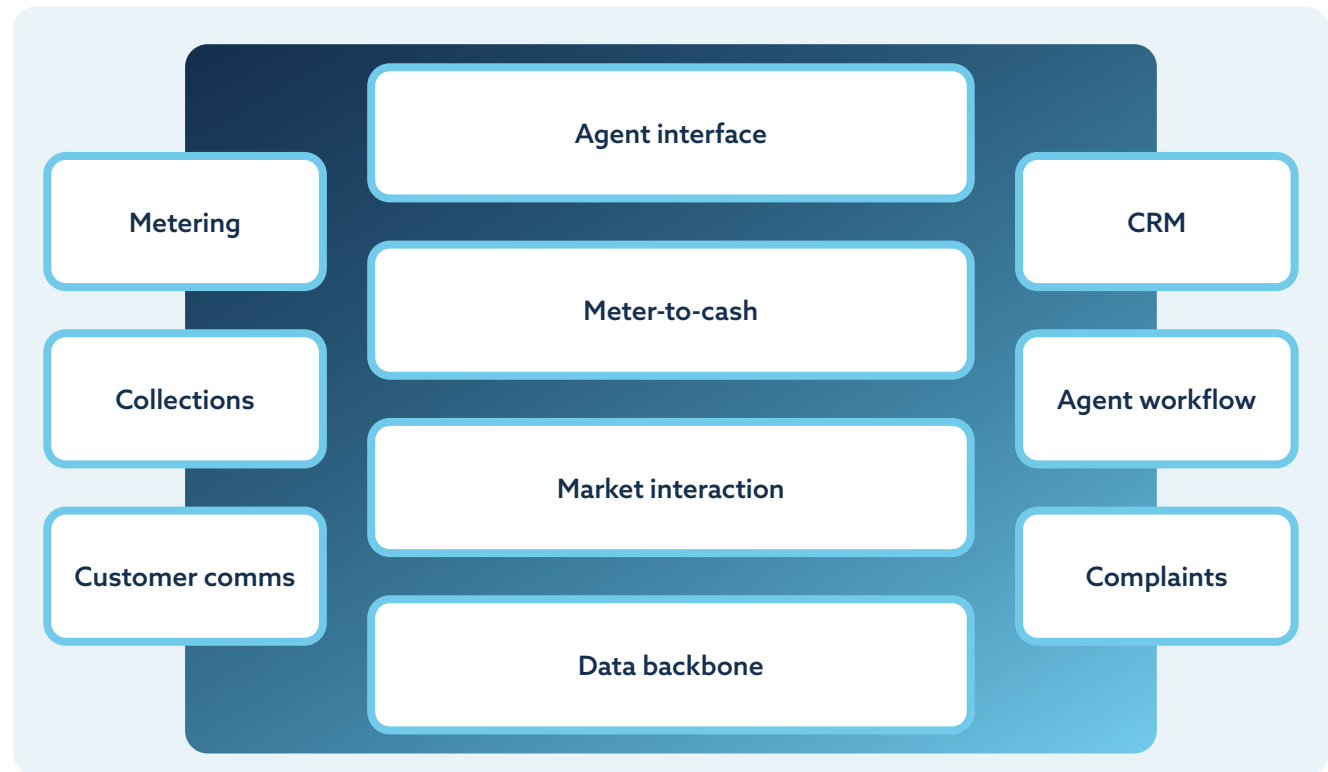
3. Composable Building Blocks

Finally, the 'Composable Building Blocks'. An extensible technology architecture which comes with core energy industry functionality alongside 'out of the box' integrations with best-in-class partners across other areas.

To transform and thrive in the future, energy retailers need a technology solution which delivers a **'sweet spot' of automation and composability** - a solution which is exceptional at core energy retail operations such as meter-to-cash and is also extensible around the 'edges'. It needs to provide seamless integration with tangential capabilities where innovation is rapidly occurring on multiple fronts - customer relationship management (CRM), artificial intelligence, contact-centre-as-a-service, to name just a few.

The 'Monolithic Dinosaurs' did a good job in their day of automating what was previously a largely analogue business model. Subsequently, the 'Spaghetti alla Microservices' brought with it improvements in its industry-specific design, however, offers relatively little benefit from further automation due to its convoluted architecture and the extensive logic required to connect the microservices.

Composability and automation are two principles upon which Kaluza was designed. Knowing where to optimise for automation versus where to optimise for composability is an important balance to strike. By building a platform that is industry-specific and cloud-native, technology providers are able to deliver exceptional outcomes for energy customers (NPS) whilst reducing CTS.





Extensible architecture is the key to providing retailers with the adaptability and resilience necessary to navigate the current crisis and deliver enhanced LTV in the future. There are five key reasons for this:

- 1 **Meter-to-cash automation:** born out of one of the UK's largest energy retailers, Kaluza has been focused on energy operational excellence since day one. Customer satisfaction (NPS) and cost reduction (CTS) are delivered via real-time account updates, high-quality billing controls and self-correction of billing issues before they ever touch a customer. The result is correct bills, on time, with minimal exceptions.
- 2 **Best-of-breed partners:** Kaluza integrates with industry-leading partners in areas like CRM and workflow management. So energy retailers aren't just always on the latest version of their billing platform, they're also always on the latest version of all their other essential services.
- 3 **Resilience through autonomy:** unlike the 'Spaghetti alla Microservices' architecture which synchronises in a database, Kaluza's microservices are decoupled from one another and integrate through a data streaming service. 'National Meter Reading

Day' brought these benefits to life, where this unique architecture ensured resilience and kept OVO Energy's services online when others were crashing.

- 4 **Single data backbone:** quality and accessibility of data is at the heart of every platform module. This provides clients with a single source of truth, regardless of which service this is coming from. Clients can drive all of their data requirements from a single source, with no need to worry about stringing together multiple products to produce reports and dashboards.
- 5 **Future-proofing through flexibility:** an extensible architecture allows for much greater flexibility to adapt at pace in an uncertain world. The energy crisis persists, but beyond that the energy transition is gathering at pace. A modular architecture of interchangeable building blocks enables a retailer to rapidly pivot in response to changes in regulation, competition or consumer preferences, to name a few.

"It's really important to think about the portability of secure data. This will be a global phenomenon which comes up in different ways - data portability is a very significant way that we will need to participate in the system in the future."

Bruce Hardy
**General Manager
of Emerging Business at AGL**





In summary: The current crisis is already catalysing an industry transition

The last couple of years have made clear the need for a technology overhaul for energy retail - we have seen, and will continue to see, unprecedented shifts in prices, regulation and customer needs. Consequently, frail operating models and brittle tech architectures have been exposed. These 'Dinosaur' platforms have been shown to be fragile when they needed to be flexible.

Modern energy retailers are waking up to the realisation that their technology platform can make or break their business, and is the source of many of their pain points today. Transforming the customer experience starts here. Utilising the right technology platform - one which is cloud-native and purpose-built for energy retail - can deliver transformational efficiencies in the core operational processes and a dramatic improvement in customer experience.

'Extensibility' is now front of mind for every energy retailer considering re-platforming and wanting to stay ahead of the curve as we transition to a decarbonised world.

Kaluza is uniquely positioned to deliver this optimal balance of 'out of the box' functionality and extensibility through an ecosystem of select partners to complement core meter-to-cash excellence.

The last two years have demonstrated the scale and pace of change the energy industry faces. This has been a wake-up call for what lies ahead on the journey to a post-carbon world. Those who are best-placed to win have realised this, and are leading the paradigm shift.



About Kaluza

Kaluza is a leading software platform powering the future of energy. From revolutionising billing to smart electric vehicle charging, Kaluza's SaaS technology is empowering some of the biggest energy suppliers to better serve millions of customers. Its live data platform transforms supplier operations, reducing cost to serve and boosting customer engagement. Powered by Kaluza, suppliers can invest in innovating for tomorrow's customers and drive decarbonisation with smart, low carbon technologies that not only reduce energy bills, but lay the foundations for a more flexible energy system.

www.kaluza.com

