Rittal – The System.

Faster – better – everywhere.

Shopping
as an experience

Rittal solutions for commerce

RITTAL

FRIEDHELM **LOH** GROUP

More options
in the digital world

Digitalization is shaping our future – and our present. It has an impact on our private and professional lives, and on social, political and economic developments.

Digital content has become an integral part of everyday life – we stream music and films, communicate through messenger apps and online platforms, use the Internet for research and shopping, and benefit from digital payments and online banking. The digital world promises to deliver more opportunities, flexibility and convenience.

Data about our behaviour can be shared and traded. It can be systematically stored and analysed using artificial intelligence. Data is set to revolutionise traffic planning and medical diagnostics. It also has huge changes in store for commerce, paving the way for brand-new business models and services.

If you thought the Internet was life-changing, just wait till you see what's next. The Internet of Things is changing the world as we know it once again!

Brendan O'Brien,
Aria Systems

The "Internet of Things" brings people, machines, sensors and software together and makes it possible to measure and analyse every little detail of everyday life – from the music we listen to and the films we watch, to the amount of time we spend on a website, how often we play sports and how fast our hearts beat. (Almost) everyone and everything is now online, functioning as both measurement and control parameters all at once.

MALE
AGE
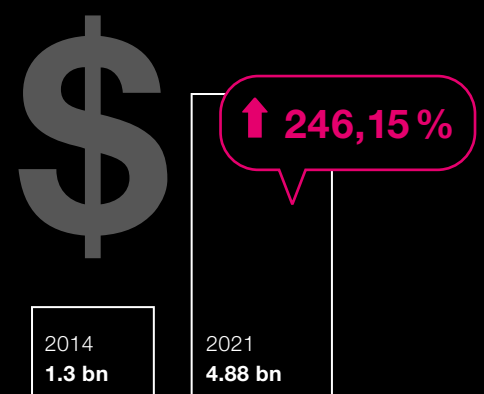30

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Shopping has never been smarter

Online shopping is booming – it is fast, easy, open 24/7 and offers a huge range of products. In the digital age, goods can be ordered at any time and from anywhere.

Moving forward, brick-and-mortar retailers will have to live up to this challenge. They have to offer their customers convenience and functions similar to those available through online shopping. But they do have some advantages – many customers still need direct contact with the product. When it comes to complex products, brick-and-mortar stores are the only places that offer personalised consulting that addresses specific customer needs. This direct, face-to-face contact reinforces the bond between the customer and retailer.

The future is digital
Intelligent technologies help turn a shop floor into a "smart" store where customers can enjoy a fully networked shopping experience. This transformation is known as "smart retail" – the digitalization of commerce.

A trip to a smart store could look something like this – customers are identified on their smartphone before even entering the store. They then receive personalised product recommendations and discount coupons on their phone and on displays throughout the store. Smart dressing rooms with augmented reality mirrors suggest suitable outfits without customers having to try them on. Infrared beacons generate heat maps and reveal how customers move around within the branch. This information can be used to optimise shop floors and position products more effectively. There are also no long checkout queues, as all goods are logged via RFID and automatically billed.

$

⬆ **246,15 %**

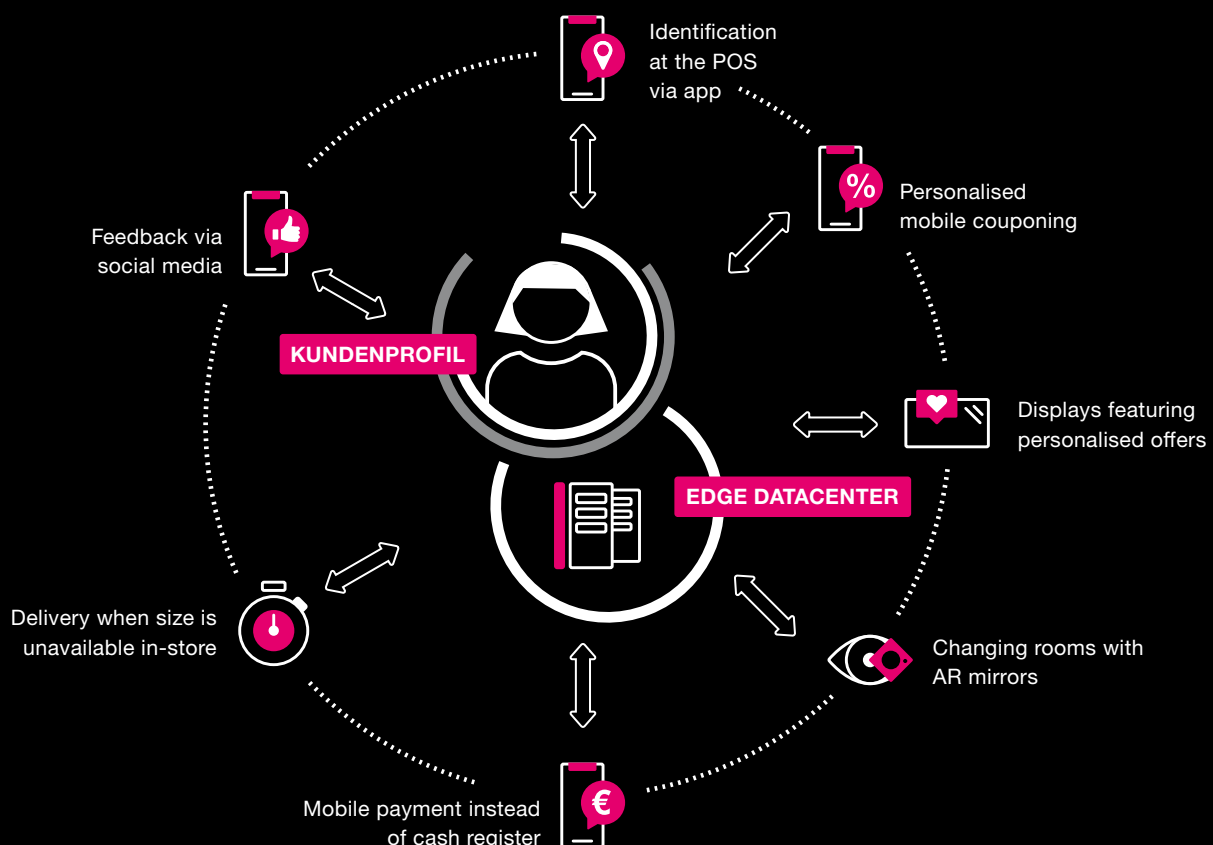| 2014	2021
1.3 bn	**4.88 bn**

Global growth in
e-commerce turnover
in US dollars[1]

Optimising customer contact through digitalization

Until just a few years ago, it was almost a given that customers would go to a nearby retailer to get advice on a product or service before buying it. Surging globalisation and the availability of information and products online at the click of a mouse have fundamentally changed the way people shop in recent years. Brick-and-mortar retailers need to respond to this development with a great deal of creativity and a willingness to innovate if they are to continue to succeed in the market moving forward. The retail sector in particular needs to recognise trends early on and make smart decisions for the future.

The customer experience trend
Perhaps the most far-reaching change involves the relationship between retailers and their customers. As customers, we have become more impatient and want our requirements met quickly. We are much more critical, fully aware of the enormous leverage our purchasing behaviour has. We are also more demanding and want to create our very own customer experience – as customers, we determine the sales channel, the type of delivery and how we pay.

Identification at the POS via app

Personalised mobile couponing

Feedback via social media

KUNDENPROFIL

EDGE DATACENTER

Displays featuring personalised offers

Delivery when size is unavailable in-store

Changing rooms with AR mirrors

Mobile payment instead of cash register

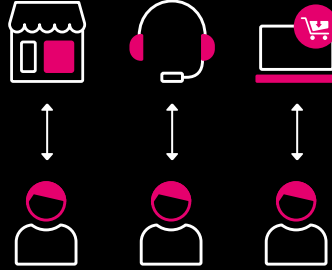| **Single-channel**	**Multi-channel**	**Omnichannel**

A retailer sells exclusively through one sales channel.	The individual sales channels coexist but don't interact.	The individual sales channels are networked and customers can switch between channels.

Real-time availability and the ability to process very specific customer, product and environmental data are fundamental to these services that offer a unique customer experience. These enormous volumes of data need to be processed by edge data centres at the point of sale to ensure optimum performance.
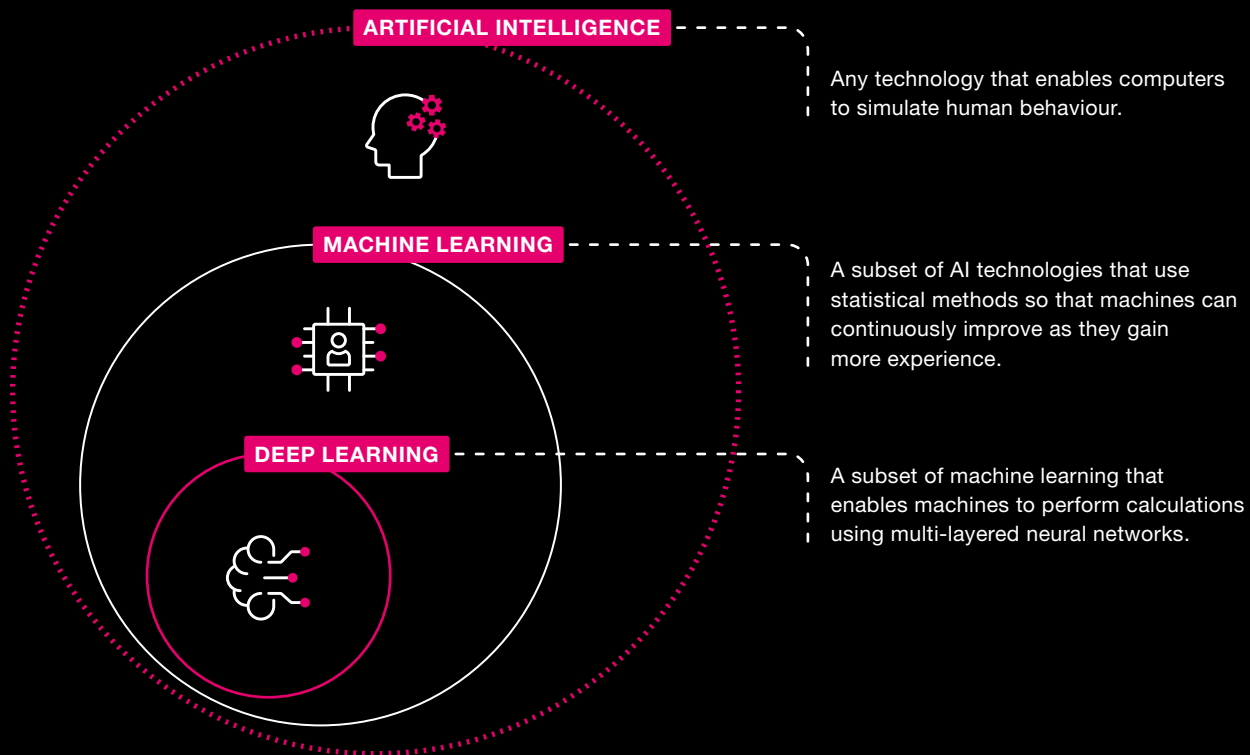
The omnichannel trend
As customers, we decide what we buy as well as when, where and how – whether it's in bricks-and-mortar stores, on a mobile device or online. For retailers, the key to success is enabling customers to combine all three contact points in a way that best suits their individual needs.

Customers need to be able to start their shopping trip at home on the computer, continue it on their smartphone while on the go, and complete it in store. Knowing about what is being bought online makes it easier to advise customers in store. Goods ordered online can be picked up in store using click & collect, and if a store doesn't have the right size in stock, it can be delivered with minimal hassle.

Every aspect of the entire shopping process is tailored to the individual customer at all times. This is only possible if retailers analyse and understand their customers' shopping habits, online behaviour and lifestyles. Data, configurations or settings stored on one channel must also be available on others.

Edge computing makes it possible to manage and process this data in real time, thus laying the groundwork for a smooth shopping experience across all channels.

Intelligence
generates profits

ARTIFICIAL INTELLIGENCE

Any technology that enables computers to simulate human behaviour.

MACHINE LEARNING

A subset of AI technologies that use statistical methods so that machines can continuously improve as they gain more experience.

DEEP LEARNING

A subset of machine learning that enables machines to perform calculations using multi-layered neural networks.

2 "Smart Store" white paper by the EHI Retail Institute and software provider Microsoft

Artificial intelligence

Smart shelves, intelligent anti-theft systems, autonomous branches – around 70 per cent of retail managers[2] see artificial intelligence (AI) as the trend that will dominate the next few years. AI processes huge datasets with deep learning algorithms to derive findings that enable companies to predict customer behaviour and respond accordingly.

Smart shelves, for example, use intelligent algorithms to constantly update product prices based on shelf life, stock levels and demand. The automated system ensures the warehouse is emptied by the time new products arrive, without lowering product prices too steeply. When customers take items off the shelf, they scan them and pay for them automatically via an app on their smartphone. At the same time, stock levels are updated and the smart label is unlocked for the RFID barriers at the exit. Predictive analytics are also set to play a major role. Particularly suppliers that offer on-trend products – fashion retailers, for example – can benefit from these predictions, ensuring they have the right product in the right place at the right time.

If retailers are to offer artificial intelligence at the point of sale, they need to set up a decentralised, networked IT structure with edge data centres in their branches.

Intelligent logistics
Customers have been spoiled by online retailers. While in the past they would have waited weeks to get the goods they order, delivery times have now dropped to as little as one day. Modern logistics should ideally allow for same-day delivery. At the same time, optimising warehousing is essential because having one item too many or too few in the storeroom costs the retail sector approximately $ 1.1 trillion every year. That is why supply chains, ordering processes, and fulfilment and inventory systems need to be fully synchronised and interconnected, as comprehensive, real-time inventory management is the only way to deliver the omnichannel experience customers are looking for.

Tracking systems that "know" the location of orders are already the standard. State-of-the-art systems are also used to monitor conditions such as temperature, which is critical for food products and medicine, for example. On top of that, distance-based pricing models and predictive delivery – when customers decide when they want to receive their order – need access to current traffic and environmental data if they are to be cost-effective and reliable.

Edge data centres ensure inventory, customer and logistics data can be quickly processed on site.

Rittal Finland –
The smart way to shop

Anyone who goes to a supermarket nowadays wants to do their shopping quickly and easily. The foodstuffs should above all be fresh, though they must also be available in sufficient quantities. While that all sounds straightforward, it is not that easy to achieve this in practice. Innovative retailers like Lidl are therefore relying on the concept of the "smart supermarket" and are establishing additional data centres inside their branches. Since all the locations are networked with each other, the supermarket discounter can check the inventory in real time and optimise planned deliveries. The cash register systems, bottle deposit machines and security cameras are also interlinked. All this calls for a data centre that is available around the clock.

Together with the experts from Lidl, Rittal Finland has developed a solution for the flexible and rapid deployment of data centres at every branch. Rittal TS IT racks are also used that have been adapted to the budget supermarket's individual requirements. For example, it was not possible to retrofit existing branches with IT technology rooms. That is why a closed solution was developed that also operates with electronic door locks and security cameras. The IT racks are based on the standard products but they have been adapted to Lidl's requirements by means of special cable guides, ceiling fans, filters and cooling lines.

Results

Now, Lidl is monitoring its inventory levels in real time in order to improve the ordering processes even further. This way, customers always find their favourite products on the shelf. Optimising inventory also adjusts the amount of perishable foodstuffs available to the actual demand. As a result, less foodstuffs are thrown away into the garbage at the end of their shelf life, meaning that Lidl operates more economically and helps to protect the environment.

The project has been going extremely well since the design phase. The experts from Rittal have delivered what they promised. They have clearly understood what we need in our stores

Patrik Sundgren,
IT Infrastructure Manager, Lidl

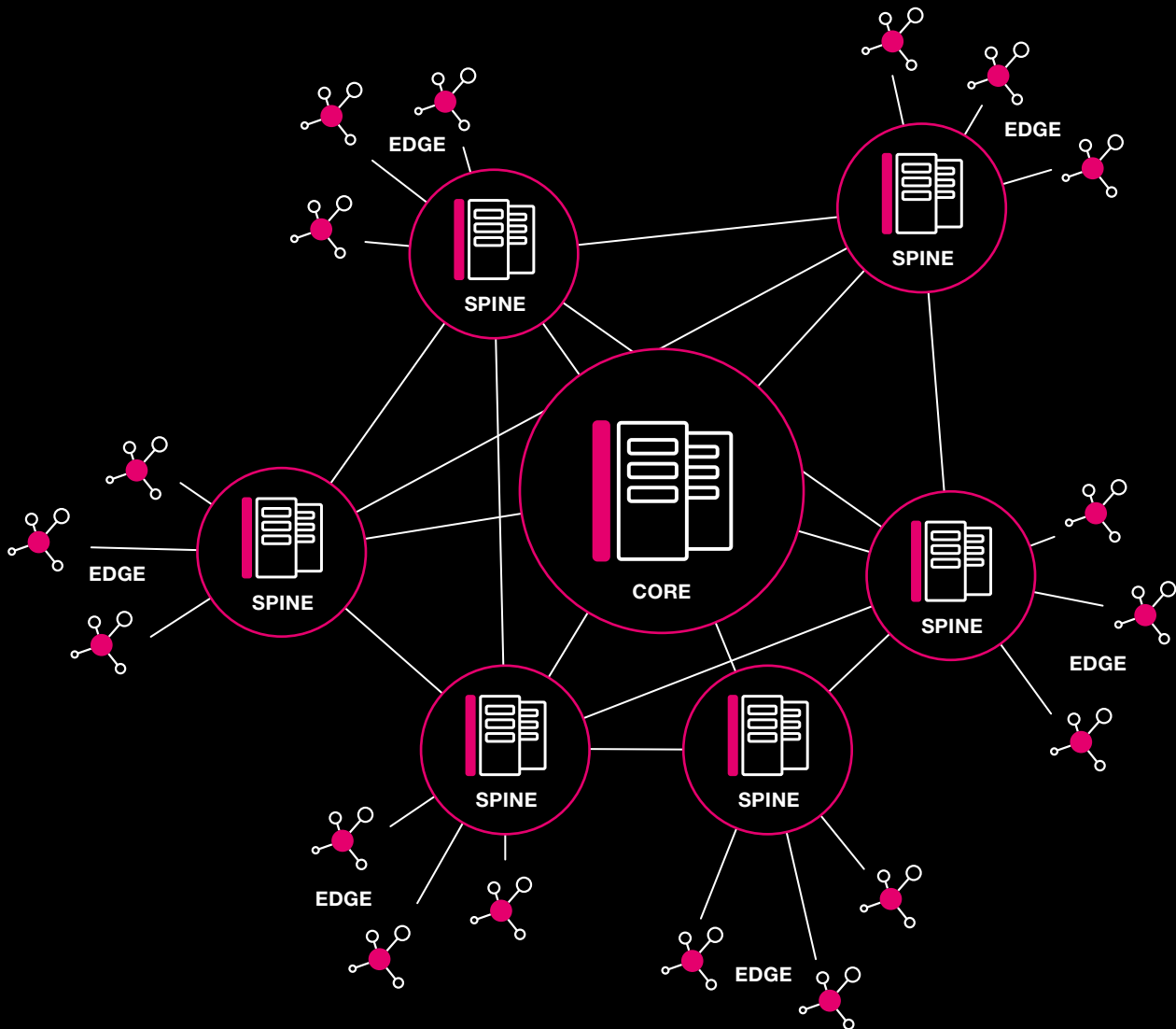# Italian retailer – the customer is king

The supermarket is running low on coffee beans. An automated order is then placed with the wholesaler. Blissfully unaware of this supposed bottleneck, customers can still enjoy their cup of steaming, hot coffee just like any other morning – after all, the customer is king, as the old saying goes. Situations like this are already commonplace at a large Italian supermarket chain. The company uses an IT infrastructure from Rittal to provide a unique shopping experience for customers and ensure high availability for its IT processes.

These supermarkets, which are often located on the outskirts of cities, are gradually being equipped with an identical IT solution from Rittal. The Rittal Edge Data Center consists of two TS IT racks, two power distribution units and the CMC III monitoring solution and does not require a separate room for installation. Each of the racks is cooled with a roof-mounted Blue e+ cooling unit. The aim is to establish a uniform, standardised IT infrastructure in all supermarkets, ensuring high availability for all IT processes and, by extension, a unique customer experience. For example, digital price tags are set to be introduced in the future, which will eliminate the need to change tags on products or shelves when running promotions. Of course, for this to work, it is essential that these changes are also reflected at the cash register and the customer pays the correct price. The supermarket's IT infrastructure must run smoothly, as payment is also made via the customer's smartphone, which is faster than counting the cash in your wallet.

As per its service level agreement with the company, Rittal promises to send out a member of its maintenance staff within four hours if there is a system failure.

Rittal solutions for smart business models

Smart retail, the digital transformation of commerce, produces enormous volumes of data that have to be processed intelligently so they can be used to generate profit.

Edge computing – decentralised data processing at the edge of the cloud – allows for regular, high-frequency backups and provides quick and secure access to the generated data. Individual edge data centres in branches are connected via spine data centres in regional distribution centres to the core data centre at the head office. This data centre topology makes it possible to adapt to exact retail requirements, taking into account the geographical conditions of the individual branches.

Edge data centres support logistics and warehousing on site. They provide ideal conditions for analysing data on customer behaviour at the point of sale and personalising product information. Housed in dedicated, specially secured hardware, the data storage system also meets the stringent requirements of the General Data Protection Regulation (GDPR) with regard to data integrity and confidentiality.

Edge data centres

Edge data centres that are flexible, modular and decentralised can process data precisely where it is generated. Edge data centres offer short latency periods, maximum computing capacity and optimum security, making it possible to implement real-time applications.

Your benefits:
- Standardised, scalable solution
- Easy to implement
- Secure – even in tough ambient conditions
- Cost-effective – fitted with a highly efficient cooling solution

Edge data centres

Spine data centres

There is a hierarchical, networked system available for retail chains that connects various stores to a single depot. The edge data centres installed in the various branches are connected to spine data centres that function as concentrators in the regional warehouses and communicate with the private cloud data centre at the company's head office.

Edge data centres in containers are perfect for this application because they are standardised systems that can be installed quickly outside the warehouse, and their modular design means they can be tailored precisely to the relevant requirements.

Your benefits:
- Customised container solutions on a platform basis
- Up and running in next to no time
- Custom configuration comprised of predefined modules
- Certified security

Spine data centres

Core data centres

Core data centres

Rittal supports retailers with specially developed private cloud solutions that are integrated into the company's head office – otherwise known as the "core". IT security rooms meet the most stringent requirements and can be flexibly adapted to local conditions. At the same time, they can even be disassembled and reassembled at a new location.

Your benefits:
- Data stored on your premises.
- Data centre can be integrated into existing structures
- Room-within-a-room system for added protection against fire, water and smoke

High flexibility and availability

Rittal edge solutions are geared towards the specific requirements of your smart business model. Our scalable, modular system makes it possible to combine individual OT and IT components. This all-in-one solution provides everything from a powerful edge data centre with a software solution right through to the data centre in a container with IT-as-a-Service provided by our reliable outsourcing partners.

Rittal – The System.

Faster – better – everywhere.

- ■ Enclosures
- ■ Power Distribution
- ■ Climate Control
- ■ IT Infrastructure
- ■ Software & Services

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