Rittal – The System.

Faster – better – everywhere.

FRIEDHELM **LOH** GROUP

Rittal Edge Data Center

Scalable, flexible solutions for every requirement

RITTAL

Rittal edge solutions

Industry 4.0, automated financial t ansactions, mobile streaming and self-driving cars all demand super-fast processing, top-level security, and uninterrupted availability. Rittal edge solutions deliver just that. They allow you to securely and precisely save, process and share large quantities of data in real time, wherever it is needed. Comprehensive planning, fl xible project management and reliable commissioning allow us to implement your customized edge solutions quickly, anywhere in the world.

Contents

Latency: The New Challenge

The sensors in the IoT devices deliver data that needs to be collected, processed, evaluated and saved – quickly and as close to the source as possible. This physical proximity is key to low latency. If the data has to travel long distances to and from processing centers in the cloud, it eats time. Too much time.

Significant Scalability

To keep up with the fast pace in the market, and to meet demands for efficiency businesses have to install standardized and modular IT architecture solutions. These are scalable systems that can adapt or expand performance based on demand. Standardization can also incorporate existing systems, so there's no need to start from scratch.

Security First

Cyberattacks, hacks, and security breaches are in the headlines. Unauthorized access to confidential data can have political, economic, and even health implications. Protecting sensitive data and systems is a challenge in two main areas: digital data security, and physical access to and safeguarding of the data center and IT racks. Both must be guaranteed at all times.
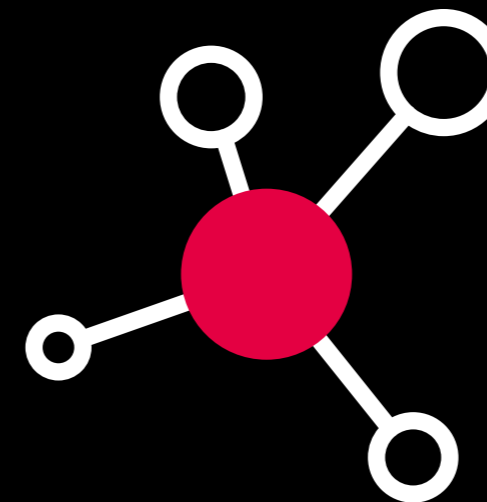
Uninterrupted Availability

No one likes to be interrupted, and it's no diffe ent with data: An uninterrupted data connection between the solution and the data supplier is the most important prerequisite of data availability. In contrast to data security, availability depends on technical functionality. Even minor errors can have wide-reaching implications, especially in devices that work in single-digit milliseconds.

Data volumes are growing – and you need to grow with them

Over the next few years, data volumes are set to explode: Recent studies suggest that the volume of data generated globally will increase from 33 zettabytes (33 billion terrabytes) currently to 175 zettabytes by 2025. Analysts have identified the In ernet of Things as the driving force behind this development.

In future, edge computing will become highly relevant across all industries. It can significantly educe storage and transmission costs, because large volumes of data can be pre-processed by local edge computing solutions, and only relevant data is subsequently transmitted to a cloud or IT infrastructure. In this way, an edge data center closes the gap between conventional local data processing and cloud-based data processing, and guarantees minimal latency plus maximum reliability and protection.

Maximum efficiency in a minimal space

## Edge data centers with innovative cooling technology

In industrial operations, building management, the logistics chain and logistics centers, the market for applications with edge data centers is continuously expanding. The emphasis here is on efficiency and eliability. Rittal's innovative cooling units in the Blue e+ series with integral heatpipe herald a new dimension in efficiency, p ticularly for edge data centers at the lower end of the output range.

Application example:

This edge solution is perfect for production and IoT sensor data capture, and for managing all types of data.

Your benefits at a glance:

- Interfaces to all sensors, machines and devices
- Low latency in critical applications
- Capture and analysis of unstructured data to avoid unnecessary transmission to the cloud
- Interface to other edge data centers and to superimposed services in the cloud
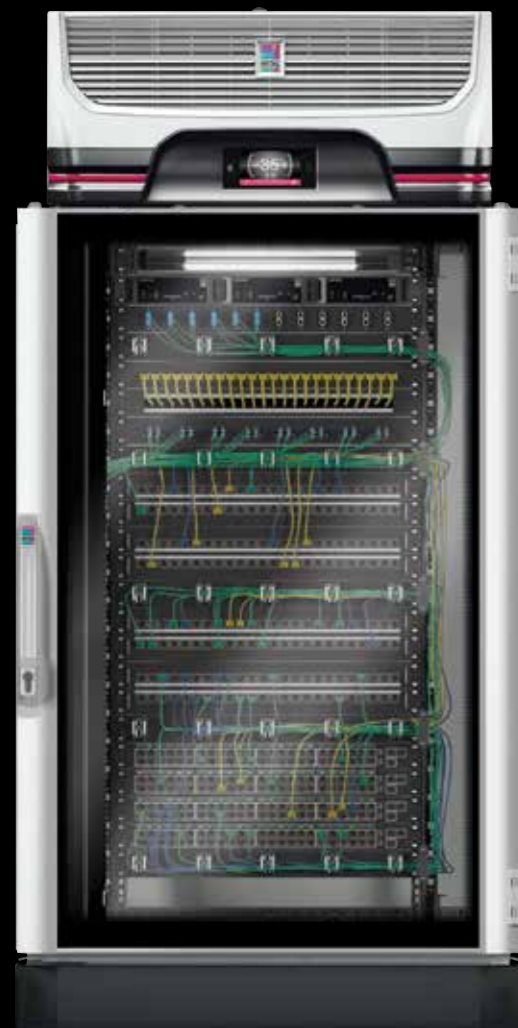
IT infrastructure	Product description	Packs of	Model No.
IT rack	Network/server enclosure TS IT, IP 55	1	5504.131
IT power	PDU metered 16 A/1~	2	7955.201
IT cooling	Roof-mounted cooling unit Blue e+ for IT 1.7 kW	1	3312.800
IT monitoring	Temperature/ humidity sensor	1	7030.111
	Access sensor	2	7030.120
IT security	Smoke detector	1	7030.400
IT accessories	IT LED system light, 600 lm	1	7859.000
	CAT 6, Network Cable Organizer	1	7044.110
All the variants shown are sample configurations. Individually adaptable.			
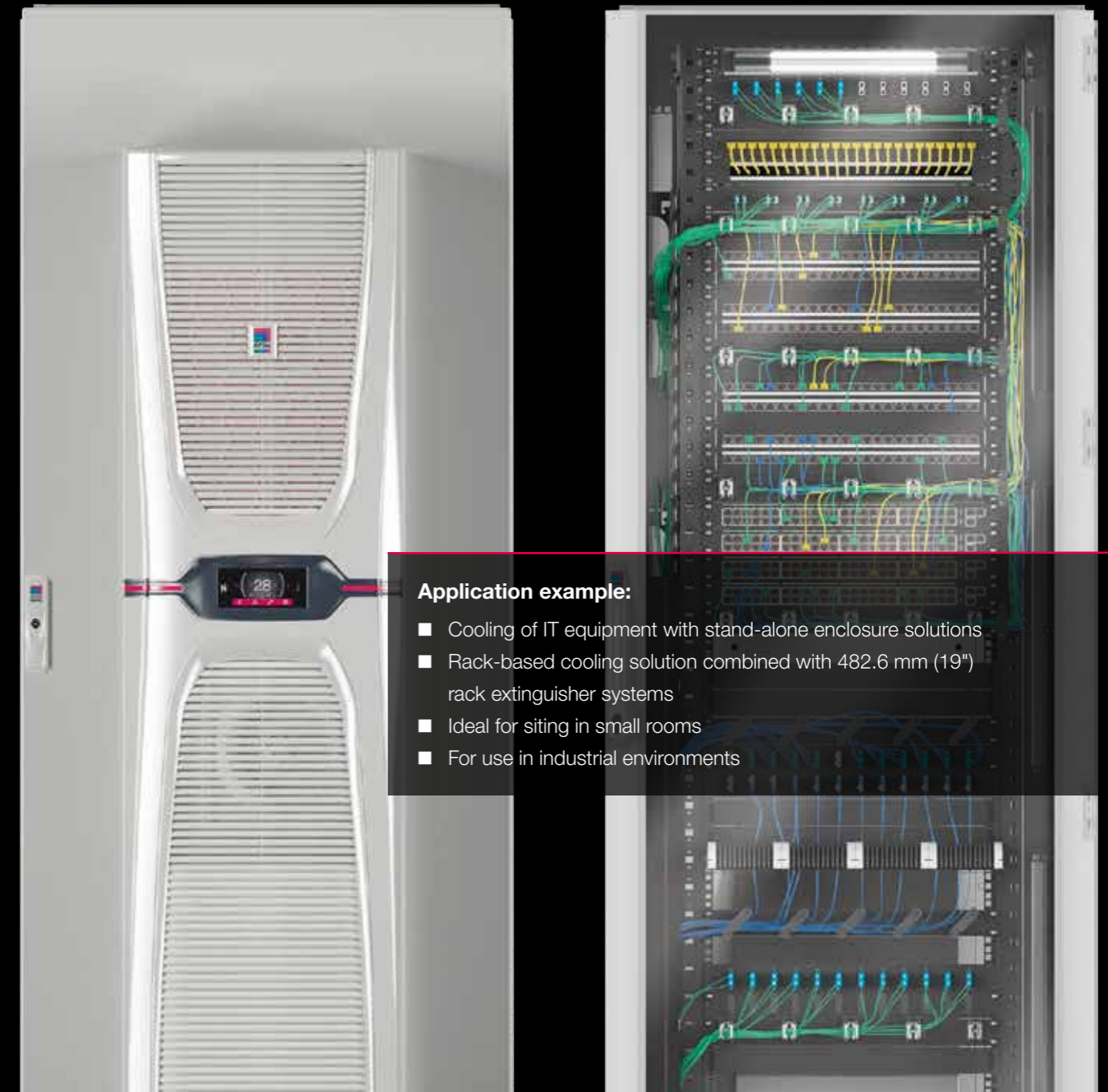
Application example:

- Cooling of IT equipment with stand-alone enclosure solutions
- Rack-based cooling solution combined with 482.6 mm (19") rack extinguisher systems
- Ideal for siting in small rooms
- For use in industrial environments

IT infrastructure	Product description	Packs of	Model No.
IT rack	Network/server enclosure TS IT, IP 55	1	5508.131
IT power	PDU metered 16 A/1~	2	7955.210
IT cooling	Wall-mounted cooling unit Blue e+ for IT, up to 3 kW	1	3312.810
IT cooling	Air duct for wall-mounted cooling unit Blue e+ for IT	1	3312.820
IT monitoring	I/O unit for CMC III	1	7030.040
IT security	Fire alarm and extinguisher system DET-AC	1	7338.121
IT accessories	IT LED system light, 600 lm	1	7859.000
All the variants shown are sample configurations. Individually adaptable.			

Reliable, redundant and fail-safe

Edge data centers in the small output category

Edge data centers can handle a wide variety of tasks, not just data capture and condition monitoring. With critical processes, such as controlling traffic flows or mo   oring production processes, it is particularly vital for an edge data center to reflect the availability of the application. Scalable redundancy is the key here.

Application example:

IT infrastructures comprising just one or two IT racks must still offer the same featu es as a large data center. This begins with a reliable power supply and cooling, and extends through to monitoring. Smaller edge data centers are ideally suited for distributed installation across various locations for processing data in real time (for example, traffi monitoring and control).

IT infra-structure	Product description	Packs of	Model No.
IT rack	Network/server enclosure TS IT, IP 55	2	5509.790
IT power	PDU metered 32 A/1~	4	7955.211
IT cooling	LCU DX, single, 6.5 kW	2	3311.492
IT monitoring	CMC III monitoring system	1	7030.000
IT security	Fire alarm and extinguisher system DET-AC	1	7338.121
	Add-on unit DET-AC	1	7338.321
IT accessories	IT LED system light, 600 lm	2	7859.000
	CAT 6, Network Cable Organizer	4	7044.110

All the variants shown are sample configurations. Individually adaptable.

Highly available, compact and safe

Edge data center in a security safe

Data such as personal patient data is highly sensitive and must be protected from theft, while production data must be protected from physical threats such as dust, fi e and splashed water.
The Micro Data Center provides the perfect housing for edge data centers.
The numerous options available, coupled with the opportunity of baying, permit a high degree of fl xibility at the point of use.

Application example:

With its modular layout and option of dismantling and reassembly at any time, your edge data center expands to accommodate your growing requirements. The security safe provides complete protection from physical threats in a minimal space up to the required resistance class, and ensures the requisite fail-safeness for automated production in Industry 4.0 environments.

IT infra-structure	Product description	Packs of	Model No.
IT rack	Micro Data Center Level E	1	7999.009
IT power	PDU metered 32 A/1~	2	7955.211
IT cooling	LCU DX, redundant, 6.5 kW	1	3311.493
IT monitoring	CMC III monitoring system Compact	1	7030.010
IT security	Fire alarm and extinguisher system DET-AC	1	7338.121
IT accessories	IT LED system light, 600 lm	1	7859.000
	CAT 6, Network Cable Organizer	2	7044.110

All the variants shown are sample configurations. Individually adaptable.

Scalable in multiple dimensions

Edge data center in the medium output range

Edge data centers are always defined by the application. CPU-in ensive applications may require multiple enclosures with a higher cooling output.
The modular system from Rittal safeguards your growth plan, as it is scalable in terms of size, redundancy and maximum load.

Application example:

Smart cities, interconnected vehicles and streaming services bring with them the challenge of continuous availability of safety-relevant data. This calls for data centers with a maximum degree of fail-safeness. Edge data centers are the answer, being exceptionally energy-efficient with a small footprint.

IT infrastructure	Product description	Packs of	Model No.
IT rack	Network/server enclosure TS IT, IP 55	4	5510.131
IT power	PDU metered 16 A/3~	8	7955.232
IT cooling	LCP Rack DX, 12 kW	3	3311.420
	Condenser unit for LCP DX	3	3311.360
IT monitoring	CMC III monitoring system	1	7030.000
	Automatic door opening (ADO)	4	7030.500
IT security	Fire alarm and extinguisher system DET-AC	1	7338.121
	Add-on unit DET-AC	3	7338.321
IT accessories	IT LED system light, 600 lm	4	7859.000

All the variants shown are sample configurations. Individually adaptable.

Clearly defined availability

Availability is the main parameter for assessing IT and data centers. When it comes to availability, every fraction of a percentage point means several hours less downtime per annum. This translates into hard cash. A concept for protection from physical threats is therefore in every company's business interest.

In the TIER classification, a data center's availability is defined as a percentage of downtime to overall system time.

TIER IV
High-Availability room

Monitoring period	Restricted operation (maintenance)
5 years	0

Downtime	Annual IT downtime
1 downtime over 4 hours	0.8 hours

99.991% availability

TIER III
Basic Protection Plus room

Monitoring period	Restricted operation (maintenance)
5 years	0

Downtime	Annual IT downtime
2 downtimes over 4 hours	1.6 hours

99.982% availability

TIER II
Basic Protection room

Monitoring period	Restricted operation (maintenance)
2 years	3 downtimes over 12 hours

Downtime	Annual IT downtime
2 downtimes over 4 hours	22.0 hours

99.749% availability

High availability to suit every application

Edge data center in a security room

Application example:

Innovative services provided by regional and local government demand the highest standards of security for storing sensitive citizen data and protecting it from manipulation, as well as real-time and long-term data processing. Additionally, data centers must often adapt fl xibly to local situations and offer the option of dismantling and reassembly at another location.
The modular, scalable edge data centers in the Rittal security room meet all these requirements – the optimum solution for efficient e-government applications

IT infrastructure	Product description	Packs of	Model No.
IT rack	Network/server enclosure TS IT	6	5510.110
IT power	PDU metered 16 A/3~	8	7955.232
IT cooling	LCP Inline CW, 30 kW	3	3312.540
IT monitoring	CMC III monitoring system	1	7030.000
	I/O unit for CMC III	1	7030.040
IT security	High-Availability room (HVR)	–	Project management
All the variants shown are sample configurations. Individually adaptable.			

The flexible modules concept

Edge data center in a container

The IT infrastructure is significantly impacted by ever-growing data volumes. Demand for CPU and storage capacity is growing at a similar pace, leading to a need for more server and storage systems, yet space to increase the footprint of the IT infrastructure is limited. Rittal's data centers in containers offer the perfect solution, because the standardized systems are installed in a short time and the concept is individually tailored to your requirements.

IT infrastructure	Product description	Packs of	Model No.
Container	RiMatrix Data Center Container all-in-one, max. IT output 35 kW	1	RDC-AIO 35/3-M-II
IT rack	Server rack	3	5510.009
	Network rack	1	5511.009
IT power	Low voltage distribution	1	7857.009
	UPS, modular, 40 + 20 kW	1	DPA UPScale ST TS 8
	PDU metered 16 A/3~	4 x 2	7955.232
IT cooling	LCP Inline DX, 12 kW	5	3311.430

All the variants shown are sample configurations. Individually adaptable.

Application examples for Rittal container solutions:

- Lack of space, because more IT hardware is needed as data volumes grow
- Influence of IoT and Industry 4.0: Data exchange between the machines and data center must be guaranteed
- With edge data centers, the computing performance is provided locally, data volumes are reduced, and pressure on the main company data center is relieved

Benefits of Rittal container solutions:

- Customized container solutions on a platform basis
- Predefined modules are individually compiled to create a container data center
- Pre-configured container solutions can be up and running in next to no time
- Project planning by Rittal
- Turnkey delivery of a field-tested solution complete with comprehensive documentation

If there is no suitable space available in the office building, factory hall or institution, it may be possible to site the edge data center outdoors. The modular container from Rittal is the ideal platform for combining predefined solutions of server, power and cooling containers. Numerous options and a choice of redundancy classes mean that solutions are precisely aligned with customer requirements.

Cloud? Or Edge?
Better still: both

Rittal and Innovo Cloud deliver innovative IT and cloud infrastructures from a single source

With the rise of Industry 4.0 and the Internet of Things (IoT), more and more machines and devices are equipped with sensors that supply vast quantities of data. Forecasters are predicting the global data volume will grow tenfold to more than 175 zettabytes by 2025. Edge computing brings data processing closer to the source of the data. Cloud structures can be used for central analysis and global distribution of this data. Cloud computing capacity can also be extended ad infinitum and made available on demand. Innovo Cloud and Rittal have joined forces to supply and operate a basic infrastructure for Industry 4.0 and IoT applications, making it easier for you to configu e and run data centers quickly and cost-effectively, while at the same time eliminating costly, maintenance-intensive, infl xible, unwieldy or even insecure IT infrastructure and application scenarios.

Cloud expertise from Innovo Cloud

- Modern cloud technologies for automated deployments based on Kubernetes and OpenStack
- Located in Germany
- Virtual or dedicated private cloud
- Bank-level compliance
- Managed platform and application services
- Transition partner
- Transformation enabler: Let our experts take your application and IT landscape to the next automation level
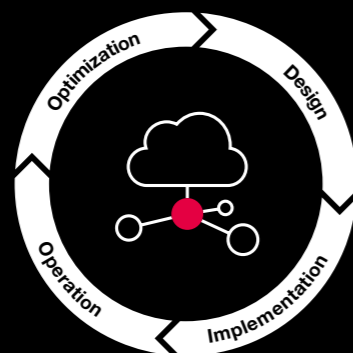
Edge infrastructure expertise from Rittal

- Data processing and distribution at the point of origin
- Standardized, modular, scalable solutions for turnkey edge data centers
- Secure, precise implementation
- Comprehensive planning, flexible project management and reliable commissioning for global, demand-based implementation

The lifecycle IT
Scalable solutions and fl xible services for your data center at clearly calculable costs

Optimization
The efficiency, cost, sustainability an scalability of the installed solution are carefully analyzed, so we can work with you to identify optimization potential in your IT landscape.

Design
Once the concept has been developed, the solution modules are selected, and the investment (CAPEX) and operating costs (OPEX) are calculated.

Operation
You may opt to operate the data center yourself, or use a managed service from Innovo Cloud. You can also link into Innovo's central data centers, e.g. for backup purposes or to cushion peak loads.

Implementation
The physical infrastructure (electricity, cooling, monitoring, security) is set up, with the option of either physical or virtual integration of IT components (server, storage, switches). This is followed by commissioning and sign-off

A smarter world with edge

The future is digital – for life and work

The extent to which the IoT transforms our future will depend on faster, scalable and more secure networks: Consumers and companies alike need reliable connections to large numbers of systems that coordinate our lives and work. Edge computing plays a pivotal role in this new, smarter world.

Edge computing quite literally moves computer applications, data and services away from centralized nodes to the very edge of the Internet, facilitating rapid on-site analyses and data processing in real time. This doesn't just benefit sec ors such as healthcare and transport, but any area of life which interacts with IoT devices.

Smart **Healthcare**
Maximum data security
Compliance with data protection
Implementation of private clouds

Smart **Telco**
5G networks
Mobile streaming
Urban security
Real-time risk detection

Smart **Industry**
Smart factories
Digital twin
Anticipatory maintenance

Smart **Finance**
Blockchain technologies
Real-time transactions
Smart contracts

Cloud technologies for Smart X

We view the cloud not as a place, but as a service model. You may opt to get your resources from a local edge data center, or from the high-MTBF Innovo Cloud data centers.

Our end-to-end expertise in operating data centers and applications gives you access to state-of-the-art cloud platform technologies (such as OpenStack, Kubernetes, Blockchain).

These platforms are made up of standardized service and technology components, compiled and custom-configu ed to your individual requirements. You decide whether to manage your resources yourself or use a managed service.

Maximum-security cloud services from Germany:
- 3 independent availability zones from Tier 3+ data centers in Frankfurt
- Germany's first Cloud Park at the Höchst industry park near Frankfurt

Lefdal Mine Datacenter
- Europe's most secure, cost-efficient and environmentally friendly data center
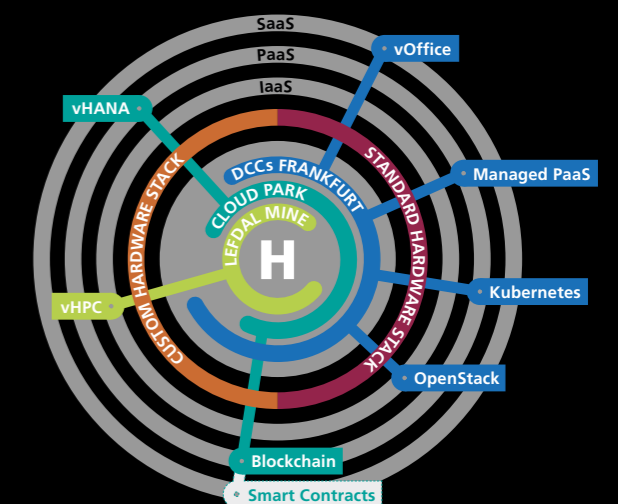
Rittal – The System.

Faster – better – everywhere.

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

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ENCLOSURES POWER DISTRIBUTION CLIMATE CONTROL IT INFRASTRUCTURE SOFTWARE & SERVICES

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