

# data centre infrastructure

## the critical challenge of the live environment

Nowhere in business is the impact of cause and effect more immediate than in data centres, where even a momentary power interruption can create severe disruption to financial markets, internet traffic, high-volume commercial transactions or telecommunications services.

Modern data centres are designed with maximum possible resilience and redundancy to ensure that any risk is avoided, with new facilities now achieving extremely high levels of guaranteed availability. As the world's dependence on instantaneous data transmission grows exponentially, not least through web-based processing and applications such as cloud computing, these levels of performance will become even more crucial.

The design of plant and equipment is also increasingly specified to improve energy efficiency and sustainability in ways that reduce the environmental impact of these power-hungry installations. This will be equally important for large corporations,



conscious of the CSR implications, and for colocation centres, whose multiple customers will be applying pressure for efficiency and sustainability throughout their supply chains.

### updating operational facilities

Although many new data centres are under development and planned, much of the expanding volume of data traffic passes through existing facilities. A significant proportion of these are a decade old or more, having been built in response to the rapid spread of fast internet

connectivity and the requirement for continuous IT operation. These facilities need to upgrade and refresh their technical infrastructure to meet more stringent standards of regulation and a more exacting and demanding marketplace. The relentless increase in volume and shortage of capacity are also putting pressure on existing data centres to rationalise and reconfigure their space to maximise availability.

Whether the requirement is to replace ageing, inefficient infrastructure or to convert previously unused areas of the

building to new data rooms, the work will need to be carried out without any risk of jeopardising active operations elsewhere in the building. It is an extremely tricky business, described by MITIE's Luke Mann as "trying to decorate the hallway through your letterbox". Simple though this analogy may be, it sums up the challenge faced by the MITIE experts who work in live data centre environments.

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**Existing data centres need to upgrade their technical infrastructure and rationalise space without jeopardising active data operations in the building.**

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The extensive power, cooling and support systems that keep the servers up and running 24/7 are highly sensitive and demand scrupulous attention to detail. This striking combination of scale and complexity is rarely appreciated outside the industry: very few of the millions of people whose business or personal lives depend on data processing and communications will ever set foot inside this secure and protected environment.

### **understanding business risk**

The first principle of any data centre project is to understand the risk profile it presents to the customer's business and, in the case of colocation centres, the end users' businesses. In a new build project, an exhaustive process of risk assessment and mitigation will be part of the whole design and installation contract, ensuring that the facility is fail-safe when it becomes operational. In the live critical environment, the risk is here and now: as we plan and execute the work, we have to consider the impact of every action on the servers that are actively processing data within the building.

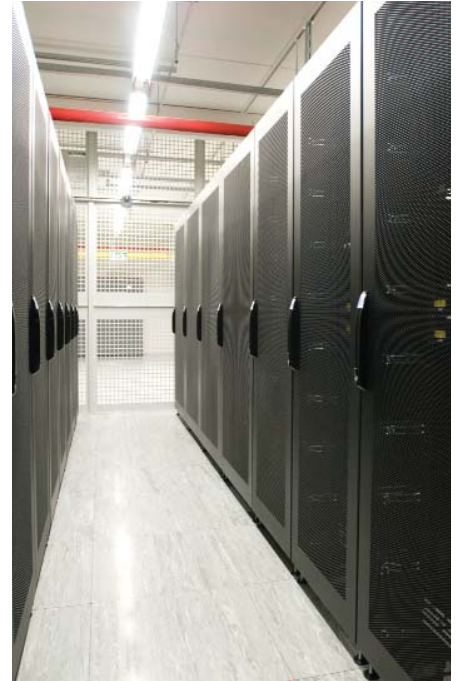
In replacing the resilient power supplies for a building, for example, all operational activity has to be migrated from one safe haven to another to ensure there is absolutely no interruption. We control and manage the internal environment, ensuring that the server rooms are totally isolated from the movement, temperature changes and contamination associated with building works. This calls not only for a meticulous delivery strategy, but also very close cooperation with the customer, from the earliest planning stages to final commissioning.

MITIE's preferred approach, therefore, is to build a collaborative platform with each of its customers, through total engagement at all levels from operatives to directors. These partnerships often begin with relatively small projects, such as refurbishing one data room, which enables us to become familiar with the customer's requirements. Data centre owners and operators will often have only small in-house technical teams and may depend on us to design and deliver the required infrastructure on time, on budget and to the highest specifications. As we build trust and confidence in our capabilities, our involvement expands into a long-term partnership: our account with one major colocation operator, for example, has now extended to the development of one of the largest new data centres in London, as well as major work in Europe.

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### **consummate industry expertise**

What MITIE brings to this relationship is the experience and knowledge of how to design the infrastructure so that the risks can be mitigated; we have some of the top industry experts amongst our specialist team. They make an intensive analysis of the requirement, opportunities and obstacles before drawing up our proposal, with a full consideration of alternative working sequences to determine the most cost-effective and compact programme.

We then supply, install and test the plant and equipment, and commission the backup power systems and supporting infrastructure. All this is conducted through an exceptionally rigorous methodology of assessment, planning, delivery and documentation, to cover all contingencies.

Before and during this process, we regard it as vitally important to articulate the detail of how we will go about the work. An open approach to all activities is a major factor in managing risk, as well as providing transparency for contract negotiations. Customers have a right to know what the job will cost them,

and to receive firm guarantees of output, uptime and efficiency. We always work as principal contractor, taking full accountability for the outcome and managing the engineering ourselves to ensure flawless delivery. In some contracts, we also take this through to operation and maintenance.

### a robust track record

MITIE has established a reputation as a market leader in the extension and development of live data centre facilities, with an impressive portfolio of projects and accounts. Our customers include blue-chip organisations in the international banking, data provider, systems integration and telecommunications sectors, as well as major colocation data centres with multi-customer configurations. This robust track record of successful projects is testimony to the calibre of specialist engineering skills within MITIE's dedicated data centre infrastructure team, and the diligence and commitment with which we serve our customers' needs.

**Above all, we maximise value to our customers by applying creative thinking to immensely complex situations through our unique combination of innovation and experience.**

Our designs are distinguished by being both practical to implement and efficient to run, encompassing a range of low-energy resilient concepts that we use to reduce power consumption and improve power usage effectiveness (PUE). MITIE, with its strengths in energy management and infrastructure development, offers valuable expertise to help owners and



operators achieve greater energy efficiency and in particular to cut energy wastage in cooling and other environmental control systems.

Above all, we maximise value to our customers by applying creative thinking to immensely complex situations. In one project, for example, a colocation data centre was tendering for a client with very specific criteria, particularly around resilience, and with a go-live date that made new build impossible. MITIE was able to help the colocation provider secure this business, through our proposal to house the client's entire infrastructure in a completely new plant deck within the existing data centre. This involved removing the roof at 70 metres, and constructing a new mezzanine floor above the live plant switchrooms, whilst maintaining full operation and business as usual to the other tenants. All works were completed within the non-negotiable deadline, at a busy inner city site, with carefully scheduled weekend crane lifts, critical migrations and interfaces as part of the package.

As the demand for data centre capacity and the required standards of performance continue to rise, MITIE is more than ready to meet the challenge, and help its customers secure the opportunities, through our unique combination of innovative engineering and proven experience.

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