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FACTORY
OF THE FUTURE

High Tech Product Design
and Production

COMPUTER MANAGEMENT FOR MISSION-CRITICAL ENVIRONMENTS

INTEGRATED DESIGN AND AUTOMATED MANUFACTURE IN THE FACTORY OF THE FUTURE

Since Henry Ford introduced the assembly line technique for mass production of the Model T automobile in the early 20th Century, businesses around the world have striven to streamline the design, development and production of manufactured items.

Today, more than ever, there is a demand for integrated design and automated manufacture that enables corporations to design and prove new products and to manufacture them as cost-effectively and efficiently as possible.

The world is entering a new paradigm, in which the benefits and advantages of teamwork and interaction between different departments within an organisation yield spectacular results; in both product design and corporate profitability.

The most successful companies, today and in the future, bring together teams of people: to collectively create new prototypes, develop them until they are perfect and then launch them into manufacture and to the end customer.

To do so requires a collaborative approach – one that demands tools to link the teams, to enable information to flow, to produce effectively at scale and aid in the control of the whole production environment.

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KVM – A SOLUTION FOR THE FACTORY OF THE FUTURE

Successful products need a structured process of collaborative creative design, managerial overview, productionising and efficient manufacture. Reinforced by accurate reporting and supervision throughout the whole process.

By far the best method of bringing people and systems together is to deploy common tools, for all to share, to manipulate and access identical information.

All this can be achieved through the use of KVM matrix switching. Enabling comprehensive access to the core and essential computers and manufacturing tools that form today's and tomorrow's factories of the future.

INTEGRATED DESIGN

Product design today is achieved using sophisticated computer-based design tools and programs. Complex and expensive hardware is needed to provide service to designers, allowing them to develop their ideas into conceptual designs.

Products may be developed, demonstrated and tested totally within a computer system; allowing fine tuning of the design instantaneously – on-screen at any size – giving everyone a sense of a real product before the first prototype is built. Saving time, effort and cost in bringing a product to market more quickly and cost-effectively than ever before.

AUTOMATED MANUFACTURE

Working prototypes, parts lists and assembly procedures can be produced directly from design computers.

Once in production on robotic assembly lines, full oversight and control is vital. The most efficient plants utilise central command and control: many independent processes are managed by a few operators from a common control room with shared data.

Management oversight of inventory, manufacturing status, quality control and output volumes is achieved through integrated reporting and logistics tools. Sharing and common access to computers delivers to everyone identical, up-to-date information on which to base decisions.
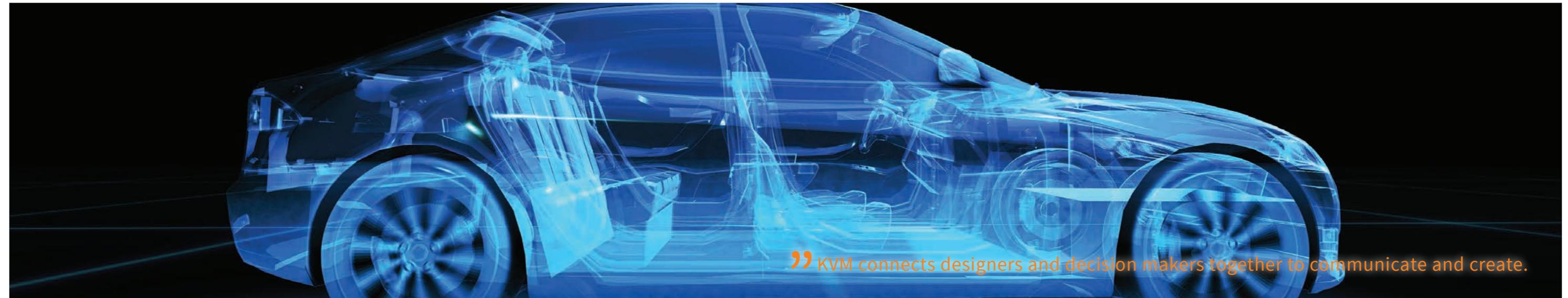
DESIGN Create Communicate **KVM** Fabricate Control **MANUFACTURE**

> KVM brings together design and manufacturing in the factory of the future.

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KVM connects designers and decision makers together to communicate and create

KVM aids product production and performance reporting

D E S I G N

CREATE

Product design of all items today, from the smallest microelectronic personal device to cars and the largest buildings, is achieved using sophisticated CAD software running on powerful computers by teams of designers working together. Their greatest efficiency is achieved through common access to individual platforms, enabling each designer to access any computer at will and ensuring they work on the latest design version.

COMMUNICATE

Images of product designs can be displayed on computer terminals, conference room screens and massive video walls so that design teams may collaborate and interact. Final designs can be reviewed by other decision makers, like marketeers and senior executives. Essential to that process is a flexible and reliable link to the designers' platforms for real time product presentation and modification.

KVM

FABRICATE

Production lines spread over vast distances and populated with automatic machines operate continuously to maintain full production capacity and minimise downtime. Systems that need to communicate constantly amongst themselves and with plant operators must be served by robust, secure communication and fail-safe redundant networks.

INTEGRATE

Production processes require constant supervision, even when fully operational and running at peak performance. All stages in the production line are monitored from a distance in a central control room that integrates information and presents status updates to responsible controllers and managerial staff. Making the appropriate data available, to the right people, at the right time, is critical to production performance.

M A N U F A C T U R E

" KVM connects designers and decision makers together to communicate and create.

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KVM DELIVERS SOLUTIONS

KVM is ready to deliver solutions across the entire design and production process to the factory of the future; providing support to designers, communicating ideas between departments, streamlining and overseeing production lines and helping data reporting and management information flow.

Fabricate

Automated production facilities need the robust and reliable features provided by KVM extension to connect operators to remote machines for control and supervision.

Control

KVM extenders and switches provide the vital information flow needed by control room operators to monitor and supervise the production process. Up-to-the-minute inventory, production rates and performance information can also be readily accessed to support the ongoing managerial decision-making process.

Create

KVM enables designers to access powerful remote CAD tools and switch between them with ease. No longer must they remain at a fixed location, tethered to a single machine, but can move freely around a site and share resources with colleagues – leading to more productive and creative results, greater collaboration, reduced equipment and software costs and complexity.

Communicate

The ability to communicate ideas, designs and concepts is an essential element in the design process and fundamental to successful prducts. The capability inherent in KVM's switching and data management technology makes it simple to share resources: to stimulate group working, present ideas to executives and inform colleagues.

KVM SWITCH

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FACTORY OF THE FUTURE
KVM - NEW DIMENSIONS
IN PRODUCT DESIGN

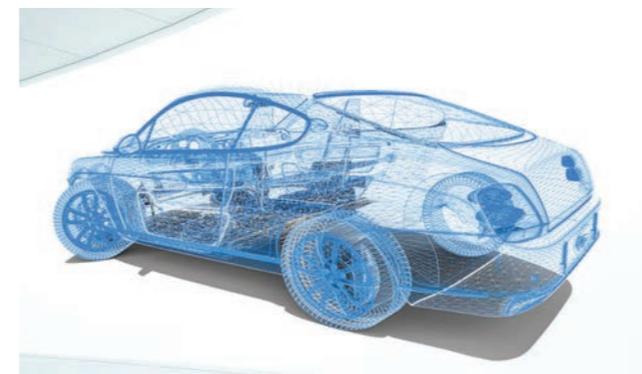## VISUALISATION AND COLLABORATION

Design and modify
Using shared resources and common hardware, designers can quickly and easily access the latest product design version from any workstation.

Collaborate effectively
Group collaboration with colleagues is made efficient and effective. Changes are made in real time and displayed on any screen, anywhere.

Present a true image
Virtual images appear on large screens at true life size. Delivering greater clarity and perspective to prototype visualisation.
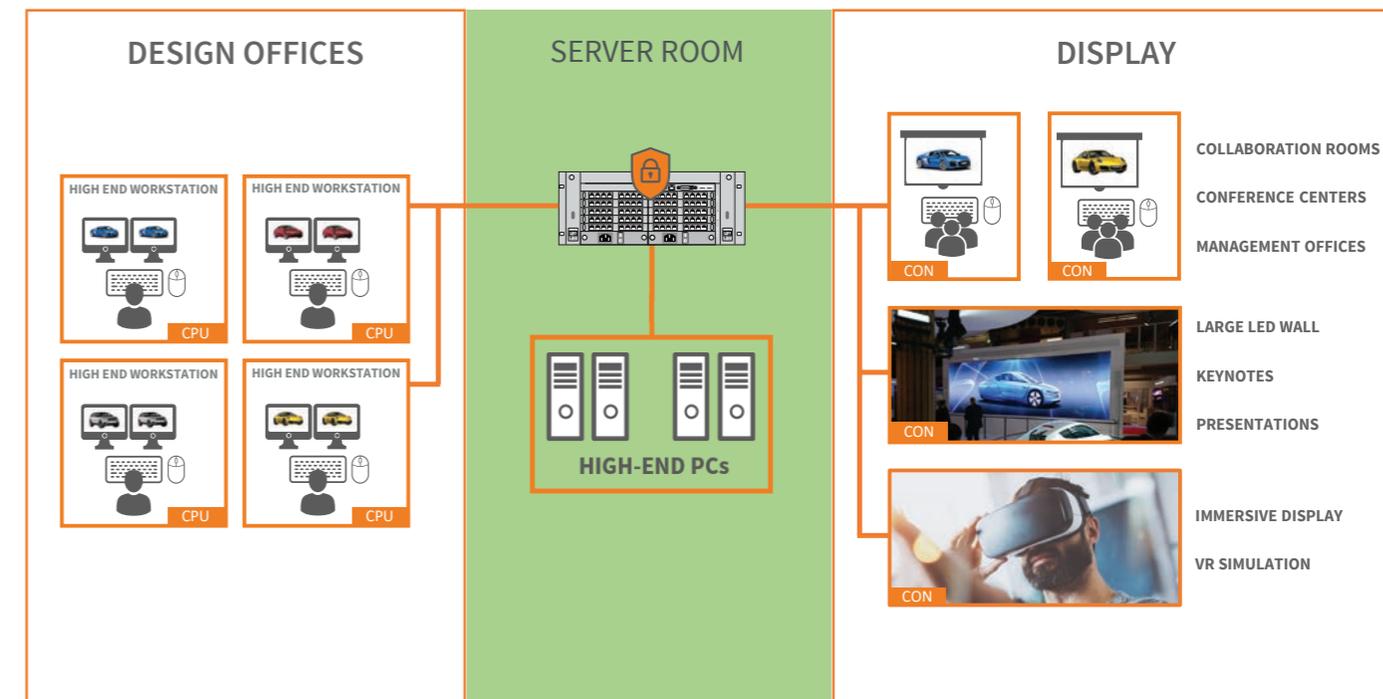
BENEFITS IN THE DESIGN ENVIRONMENT

- Enhanced security
- Comfortable and quiet working environment
- Flexibility in location
- Enhanced collaboration
- Real time display of design modifications
- Life-size, true-colour representation
- Virtual reality presentation

01 KVM - NEW DIMENSIONS IN PRODUCT DESIGN

Visualisation and Collaboration

DESIGN OFFICES

HIGH END WORKSTATION
HIGH END WORKSTATION
CPU
CPU

HIGH END WORKSTATION
HIGH END WORKSTATION
CPU
CPU

SERVER ROOM

HIGH-END PCs

DISPLAY

COLLABORATION ROOMS

CONFERENCE CENTERS

MANAGEMENT OFFICES

CON
CON

LARGE LED WALL

KEYNOTES

PRESENTATIONS

CON

IMMERSIVE DISPLAY

VR SIMULATION

CON

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STREAMLINED FACTORY AUTOMATION AND PRODUCTION

Maximize production efficiency
Embedded and distributed computing brings news levels of automation to the factory floor, enabling robotic manufacture with less human involvement. Delivering faster production rates, greater accuracy and fewer production errors.
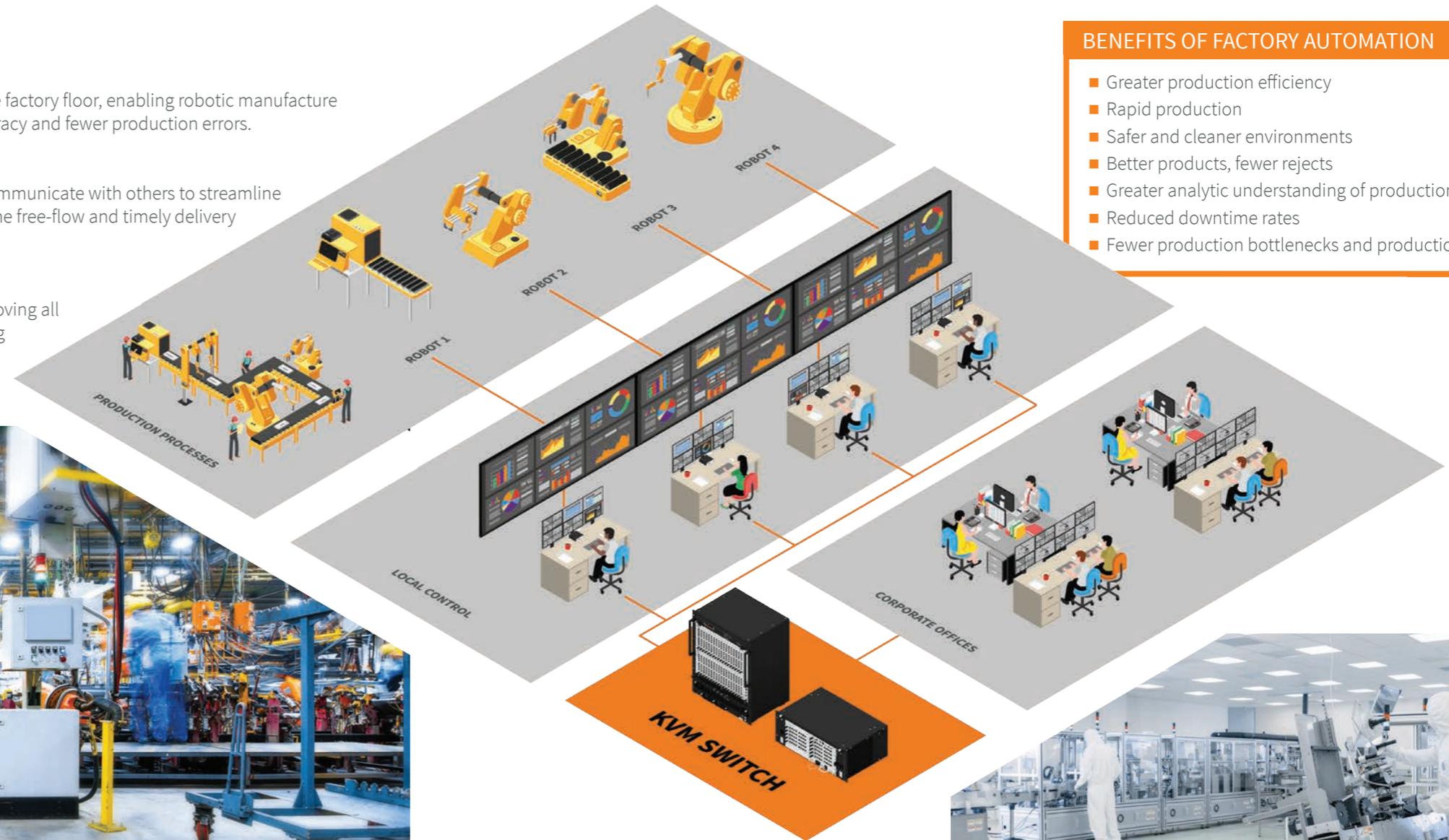
Self-managing production lines
Individual machines operate in a highly flexible, lean and agile manner and communicate with others to streamline the entire process from start to finish. Signalling between processes ensures the free-flow and timely delivery of sub-assemblies to maximise overall output.

Create cleaner production environments
Cleaner and clearer production areas are more efficient and safer places. Removing all computers to remote areas removes clutter and noise for an enhanced working environment and improves the operational reliability of hardware.

BENEFITS OF FACTORY AUTOMATION

- Greater production efficiency
- Rapid production
- Safer and cleaner environments
- Better products, fewer rejects
- Greater analytic understanding of production rates
- Reduced downtime rates
- Fewer production bottlenecks and production delays

ROBOT 4

ROBOT 3

ROBOT 2

ROBOT 1

PRODUCTION PROCESSES

LOCAL CONTROL

CORPORATE OFFICES

KVM SWITCH

02 KVM - NEW DIMENSIONS IN PRODUCT DESIGN

Streamlined Factory Automation and Production

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PRODUCTION CONTROL AND OVERSIGHT

Effective control of production

Operators in a centralized control room monitor and control the whole production process from a single location. Fewer staff are required to manage a wider range of manufacturing steps with a better understanding of the whole system and how it operates.

Detailed information can be accessed individually or displayed on common terminals to enable collaboration between operators and swift and more timely response to unforeseen problems.

Purchasing, logistics and management reporting

Integration of processes surrounding the manufacturing effort, including purchasing, packing, shipping and statistical reporting, maximizes output flow. Achieved by wide access to different tools enabled through a KVM switching system.

BENEFITS TO THE PRODUCTION PROCESS

- Central decision making and problem-solving
- Fully integrated production process overview
- Widespread and timely reporting of output statistics
- Flexibility to expand and change production processes
- Greater security and reliability

CONTROL CENTER

KVM SWITCH

PRODUCTION

LOGISTICS

MANAGEMENT REPORTING

03 KVM - NEW DIMENSIONS IN PRODUCT DESIGN

Production Control and Oversight

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KVM stands for Keyboard-Video-Mouse, referring to the familiar workplace computer input and output devices.
Our mission-critical system solutions extend the distance between the computer and peripheral devices (keyboard, screen, mouse).
Allowing users to select between different source devices to create more comfortable and efficient working environments and
streamlined workflows. We offer KVM products for the switching, sharing, extension and conversion of all types of computer signals,
including analog and digital video and audio, USB and SDI video; applicable to all markets. Long distances are bridged by Cat X,
fiber or mixed cabling, depending on requirements and applications.

HOW DO COMPANIES BENEFIT FROM KVM?

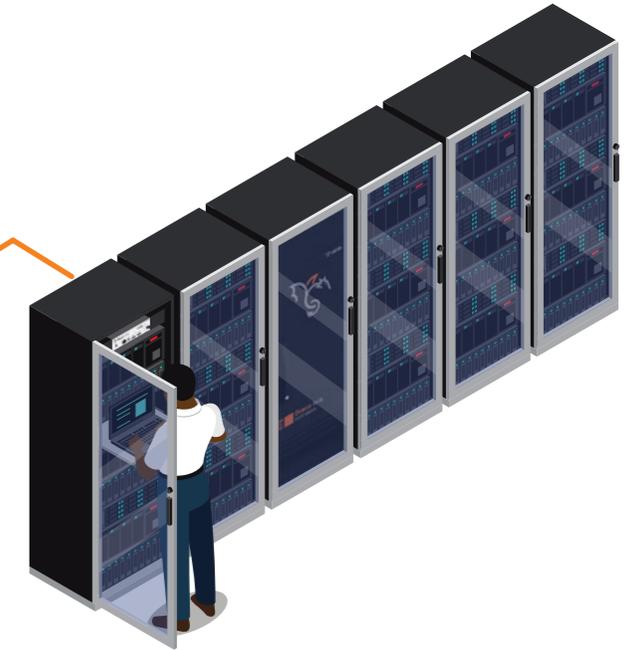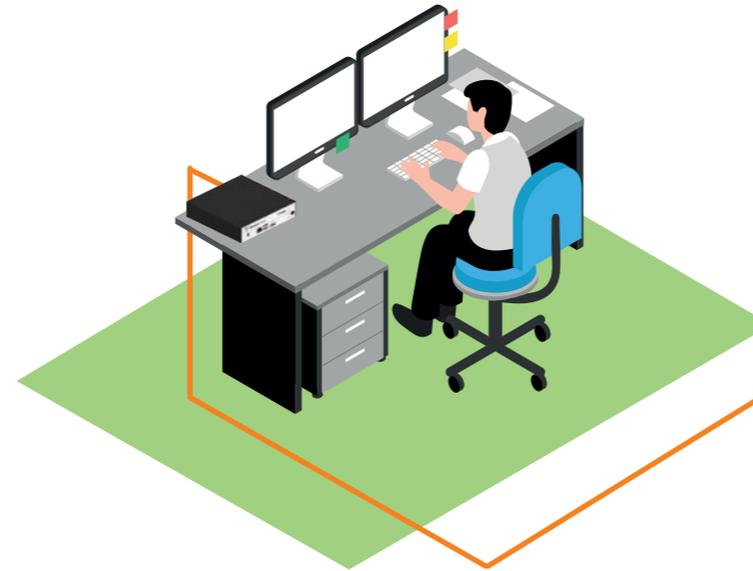### KVM enhances the workplace

- **Relocation of computers**
  Reduction of bulky computer hardware, noise and heat in the
  user environment.
- **Reducing workplace clutter**
  Operation of several computers and monitors by a single set of
  keyboard and mouse.
- **Easy access of resources**
  Convenient and instant access to a large number of connected sources.

KVM increases IT security

- **Access control**
  Limits access of source computers to authorized users.
- **Restricted internal access**
  Prevents unauthorized removal of data and injection of malware.
- **Prevention of unauthorized external access**
  The KVM system includes integral isolation against unauthorized network access or attack and guards against electronic eavesdropping.

KVM saves costs

- **Increasing the lifespan of computers and equipment**
  Locating sensitive computer equipment in secure and environmentally-controlled server rooms allows them to be maintained and
  managed in the best posible conditions.
- **Reducing hardware and software overheads**
  Users from different areas and workstations can access and share computers and licensed software tools at different times.
- **Efficient use of space and technical resources**
  Workstations can be flexibly reconfigured for various tasks and applications at the push of a button.
  Simultaneous access to content enables collaboration and cooperation between remote teams.

KVM Extenders

KVM extenders enable computer access from remotely-located
workstations. This makes it easy to protect critical CPUs and servers
from heat, dirt, moisture and unauthorized access.

Removing noisy, bulky, heat-producing computers from the
operator workplace creates a more pleasant, less-cluttered, working
environment Users' desks simply require basic peripheral devices:
monitors, keyboards and pointing devices.

KVM extenders provide great benefit in applications like data
centers, hospitals, financial floors, post production suites and in
extremely space-restricted environments on ships or in ATC towers.

KVM Matrix Switches

A KVM matrix switch enables access to, and management of, any
size of computer installation. Sources can be accessed, switched and
shared instantly by users. Any connected user console, consisting
of keyboard, mouse, monitor or other peripherals, can access any
computer within the network. Expensive equipment and software
licenses can be shared between multiple users accessing the same
computers from their individual workstations in real time.

The system supports all relevant computer video formats
up to 8K and higher resolutions as well as SDI and USB 3.0.
Switches include comprehensive features such as multi-screen
control and cross-conversion between AV signals and transmission
media (Cat X and fiber).

A secure IP interface provides remote users with seamless, location-
independent IP access via browser or client.
For maximum security, the core matrix is completely shielded from
the TCP/IP network.

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IHSE GmbH - Headquarters
Benzstr. 1
88094 Oberteuringen
Germany

Tel.: +49 (7546) 9248-0
info@ihse.de

Regional Offices

IHSE France
IHSE Germany
IHSE Austria
IHSE USA
IHSE South Korea
IHSE China
IHSE South Asia & Middle East
IHSE Asia

Paris, France
Tel.: +33 (678) 478 822
info@ihse.com

Shoham, Israel
Tel.: +972 (544) 320 768
info@ihse.com

Zwettl, Austria
Tel.: +49 (173) 590 711 9
info@ihse.com

Seoul, South Korea
Tel.: +82 (103) 752 401 3
info@ihse.com

South Asia & Middle East
Tel.: +91 (982) 113 918 6
info@ihse.com

IHSE USA LLC
1 Corporate Drive
Cranbury, NJ 08512
USA

Tel.: +1 (732) 738 878 0
info@ihseusa.com

IHSE GmbH Asia Pacific Pte Ltd
158 Kallang Way, #07-13A
Singapore 349245

Tel.: +65 (6841) 470 7
info-apac@ihse.com

IHSE China Co., Ltd.
Room 814, Building 3, Kezhu Road
No. 233 Huangpu District
Guangzhou PRC

Tel.: +86 (189) 888 381 11
info@ihse.com.cn

DESIGNED AND MANUFACTURED IN GERMANY