MOBATIME

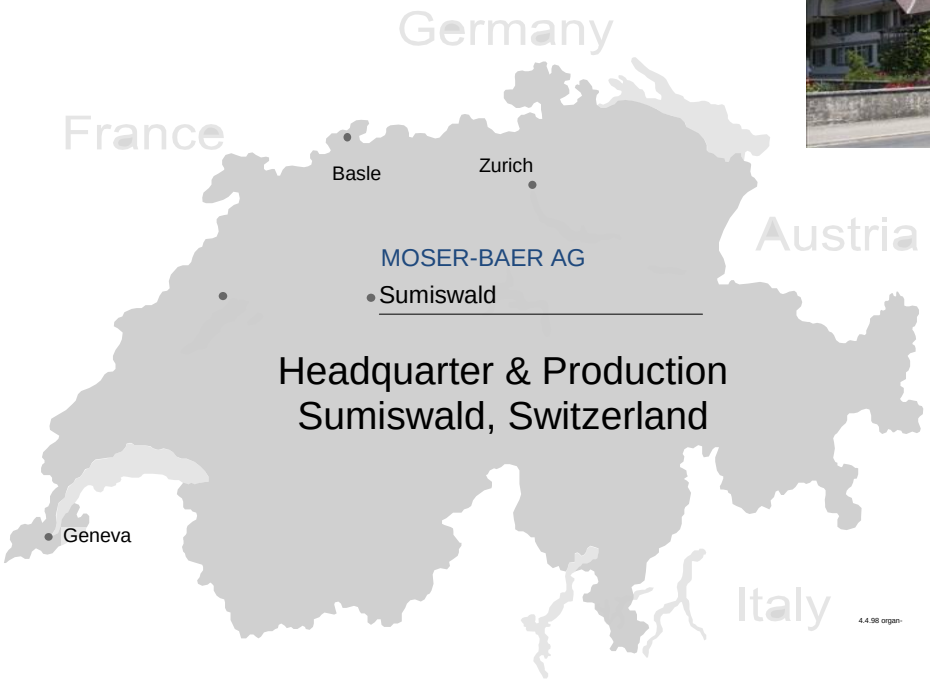
# Welcome

BERTSCHI
Instrumentos

1. MOSER-BAER Group

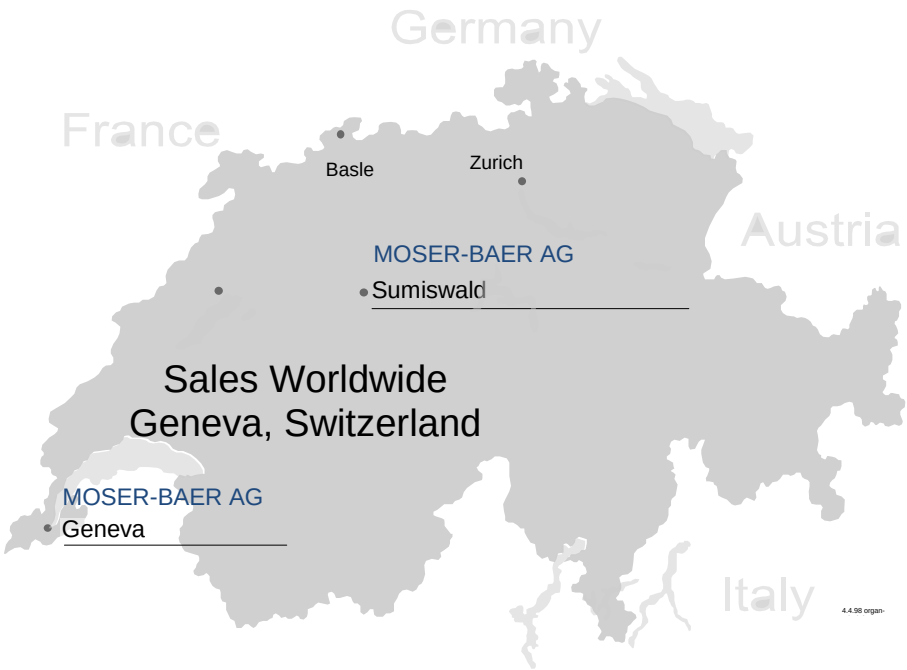
2. MOBATIME
   - Sectors and Markets
   - Time Systems
   - Products
   - Project References

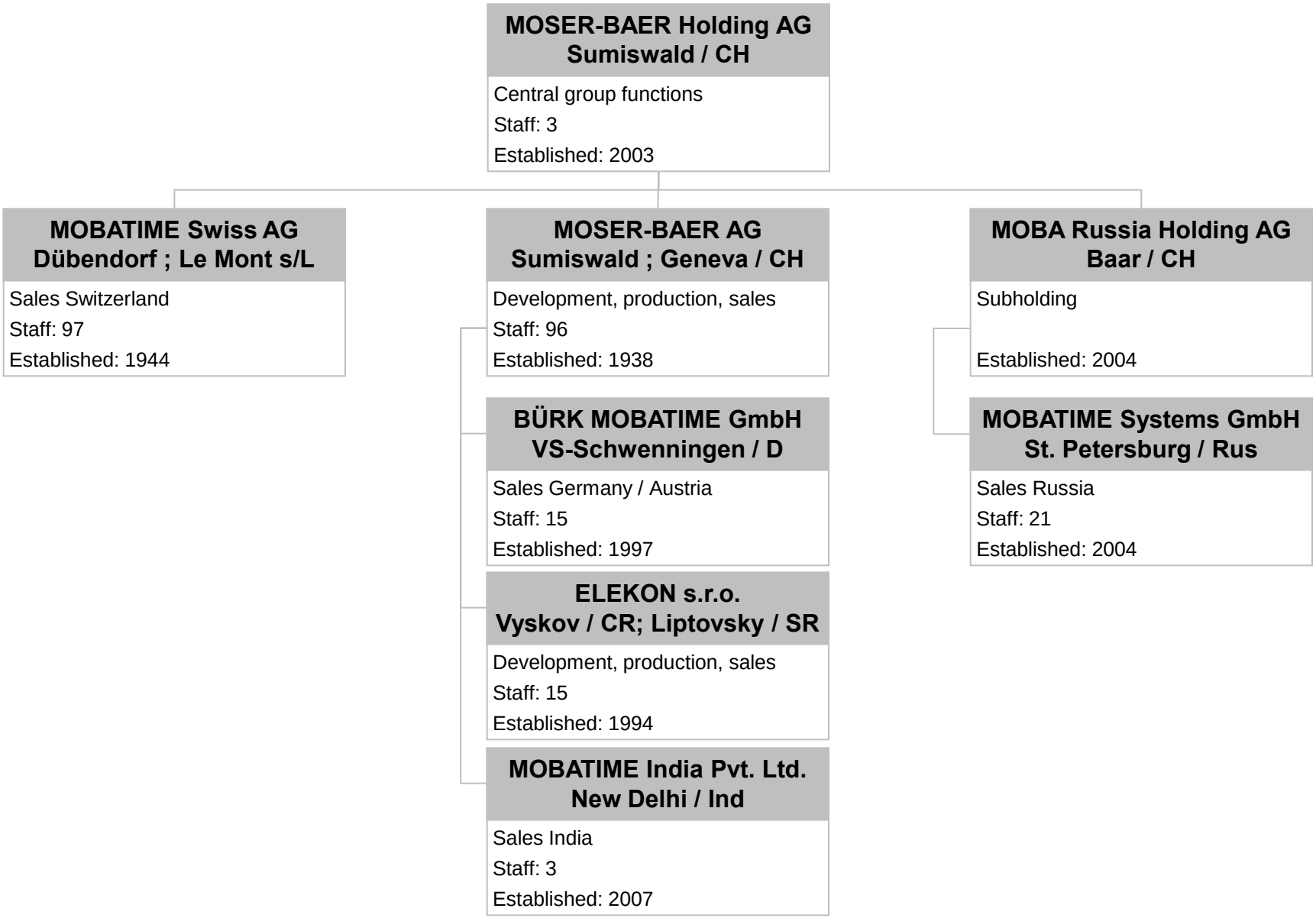
# 1. MOSER-BAER Group


Germany
France
Basle
Zurich
Austria
MOSER-BAER AG
Sumiswald
Headquarter & Production
Sumiswald, Switzerland
Geneva
Italy
4.4.98 organ-


- Established 1938
- Shareholders:
  Moser and Augstburger-Moser families
- Group with six operational companies;
  Headquarter in Sumiswald / Switzerland
- Active worldwide

- Areas of competence include electronic components, precision mechanics and ICT
- Products:
  - Clock and time systems
  - Products with time reference
  - Medical equipment
  - Third-party products
- 250 staff; CHF 41 million cons. Turnover
- ISO 9001; ISO 13485


Germany
France
Basle
Zurich
Austria
MOSER-BAER AG
Sumiswald
Sales Worldwide
Geneva, Switzerland
MOSER-BAER AG
Geneva
Italy
4.4.98 organ-


MOSER-BAER Holding AG
Sumiswald / CH
Central group functions
Staff: 3
Established: 2003
MOBATIME Swiss AG
Dübendorf ; Le Mont s/L
Sales Switzerland
Staff: 97
Established: 1944
MOSER-BAER AG
Sumiswald ; Geneva / CH
Development, production, sales
Staff: 96
Established: 1938
BÜRK MOBATIME GmbH
VS-Schwenningen / D
Sales Germany / Austria
Staff: 15
Established: 1997
ELEKON s.r.o.
Vyskov / CR; Liptovsky / SR
Development, production, sales
Staff: 15
Established: 1994
MOBATIME India Pvt. Ltd.
New Delhi / Ind
Sales India
Staff: 3
Established: 2007
MOBA Russia Holding AG
Baar / CH
Subholding
Established: 2004
MOBATIME Systems GmbH
St. Petersburg / Rus
Sales Russia
Staff: 21
Established: 2004

# MOSER-BAER Group – Group Structure

**MOSER-BAER Holding AG**
**Sumiswald / CH**

Central group functions
Staff: 3
Established: 2003

**MOBATIME Swiss AG**
**Dübendorf ; Le Mont s/L**

Sales Switzerland
Staff: 97
Established: 1944

**MOSER-BAER AG**
**Sumiswald ; Geneva / CH**

Development, production, sales
Staff: 96
Established: 1938

**BÜRK MOBATIME GmbH**
**VS-Schwenningen / D**

Sales Germany / Austria
Staff: 15
Established: 1997

**ELEKON s.r.o.**
**Vyskov / CR; Liptovsky / SR**

Development, production, sales
Staff: 15
Established: 1994

MOBATIME India Pvt. Ltd.
New Delhi / Ind

Sales India
Staff: 3
Established: 2007

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**Baar / CH**

Subholding
Established: 2004

**MOBATIME Systems GmbH**
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Sales Russia
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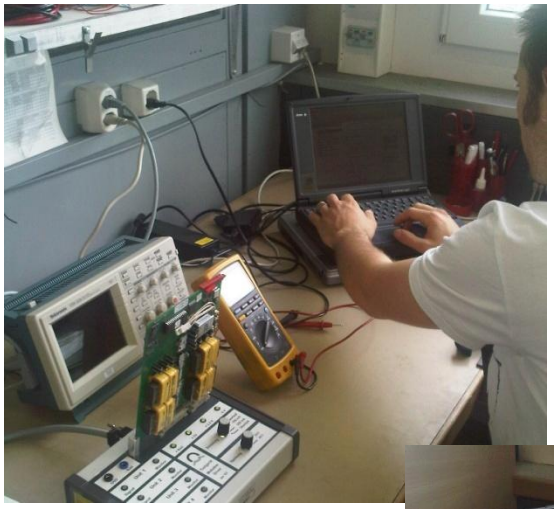
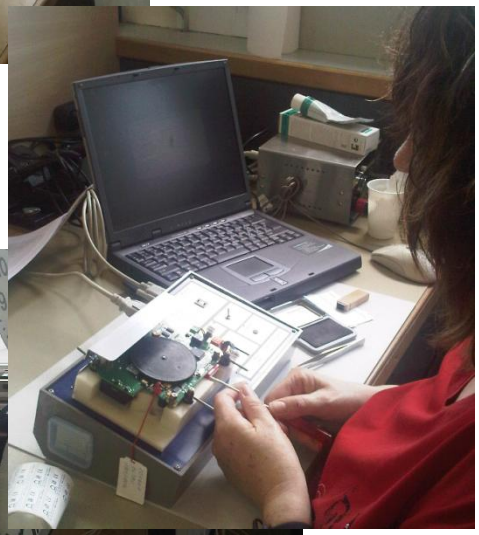
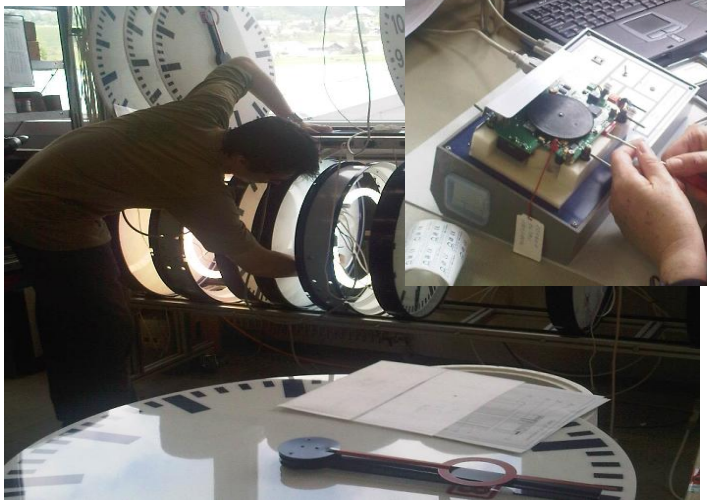


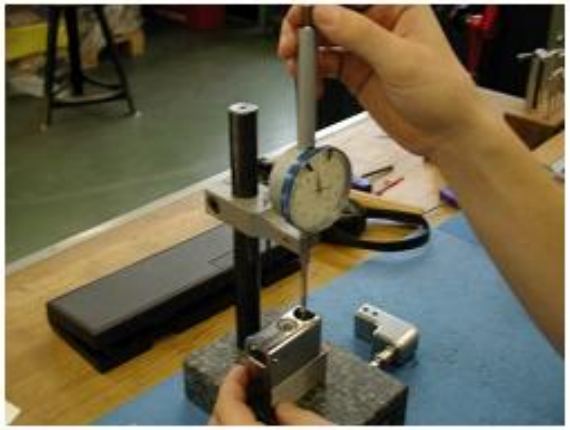


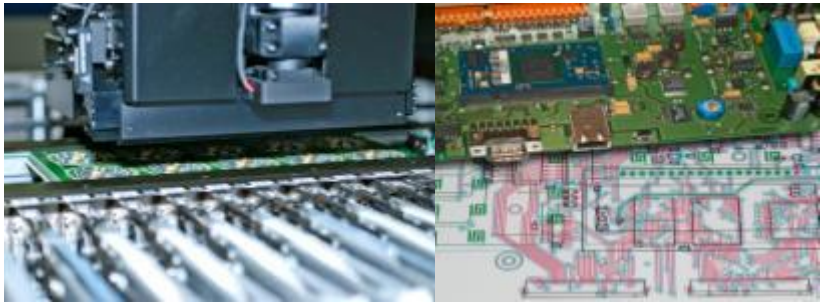


- More than 70 years of international business activity
- Global distribution and support organization, direct and with partners
- Custom solutions
- Swiss quality in development and production
- State-of-the-art production facilities
- Broad, highly qualified development and manufacturing competency
- Long-standing, loyal staff


C 600 L


MOBATIME





## Electronic components

- Electronics development and layouts
- PCB assembly
- Wiring
- Final assembly and quality control

## Precision mechanics

- Design for manufacturing
- Milling, turning, drilling, grinding
- Surface treatment, labelling, cleaning
- Assembly and quality control


## ICT

- Software development
- Network technology
- Telecommunications

MOBATIME

- Own products
- Clock and time systems:
  - Master and slave clocks
  - Clockworks
  - Special clocks
- Time servers and network synchronisation
- Products with time reference: Access control, time registration, voice recording, LED displays, etc.

MOBATEC

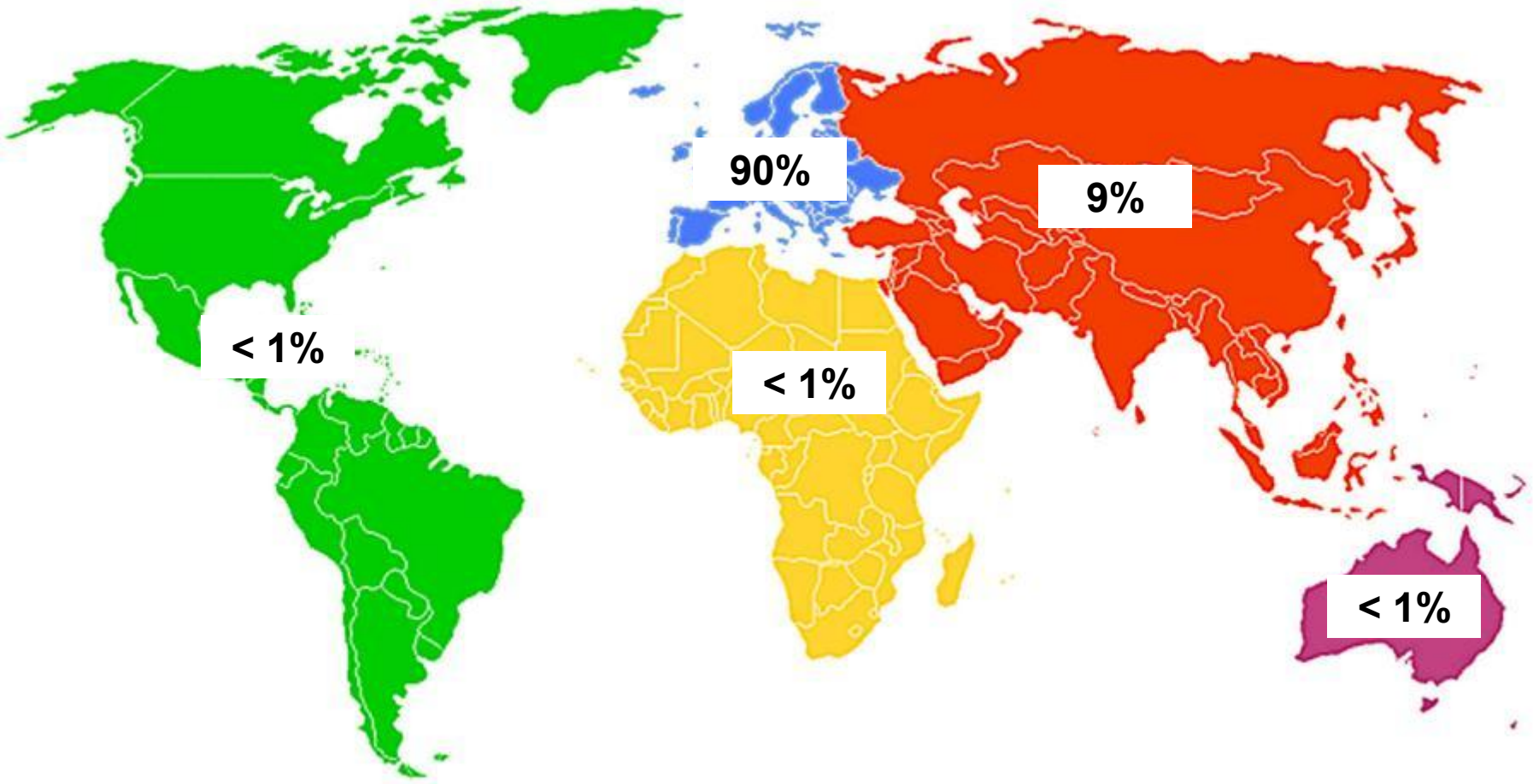
- Cooperation partners and contract manufacturers
- Prototypes, small and medium-sized series
- Sectors:
  - Medical equipment
  - Automotive, machine construction, aerospace, power generation, engine construction, defence industry, industrial applications, etc.

# 2. MOBATIME

- Sectors and Markets
- Time Systems
- Products
- Project References

# Sectors and Markets


- Railways
- Subways / metros
- Airports
- Power plants
- Hospitals
- Schools / universities
- Public buildings
- Municipalities
- Industry / automation
- Networks (ICT)




Basis: consolidated turnover of Moser-Baer Group 2009, MOBATIME division (CHF 37 million)

## Airports / air traffic control

- Airports: Basel, Brunei, Cairo, Dalian, Frankfurt, Kuala Lumpur, Lisbon, Moscow, Sao Paulo, Singapore, Tehran, Toronto, Zurich
- ATC: Skyguide Zurich/Geneva, Oslo, Brussels, Amsterdam, Riyadh

## Power plants

- Projects: Oman, Saudi Arabia, Greece, Sweden, Norway, Dubai, Australia, Chile, Philippines, USA, Finland, Germany, Switzerland, Portugal
- Customers: ABB, Siemens, Hyundai

## Industrial/business premises

- Industry: ABB, BMW, Daimler, Hero, Hoffmann-La Roche, Rolex, Rieter, VW, Clariant
- Business premises: Zurich insurance, Credit Suisse, Swiss National Bank, UBS, Kuwait stock exchange

## Railway / underground / tram

- Railways: Mexico, Germany, France, Italy, Portugal, Switzerland, Singapore, Taiwan, Turkey
- Underground/subway: Naples, Minsk, New Delhi, Sao Paulo, Vienna
- Tram: Düsseldorf light railway, Florence

## Hospitals / schools / universities

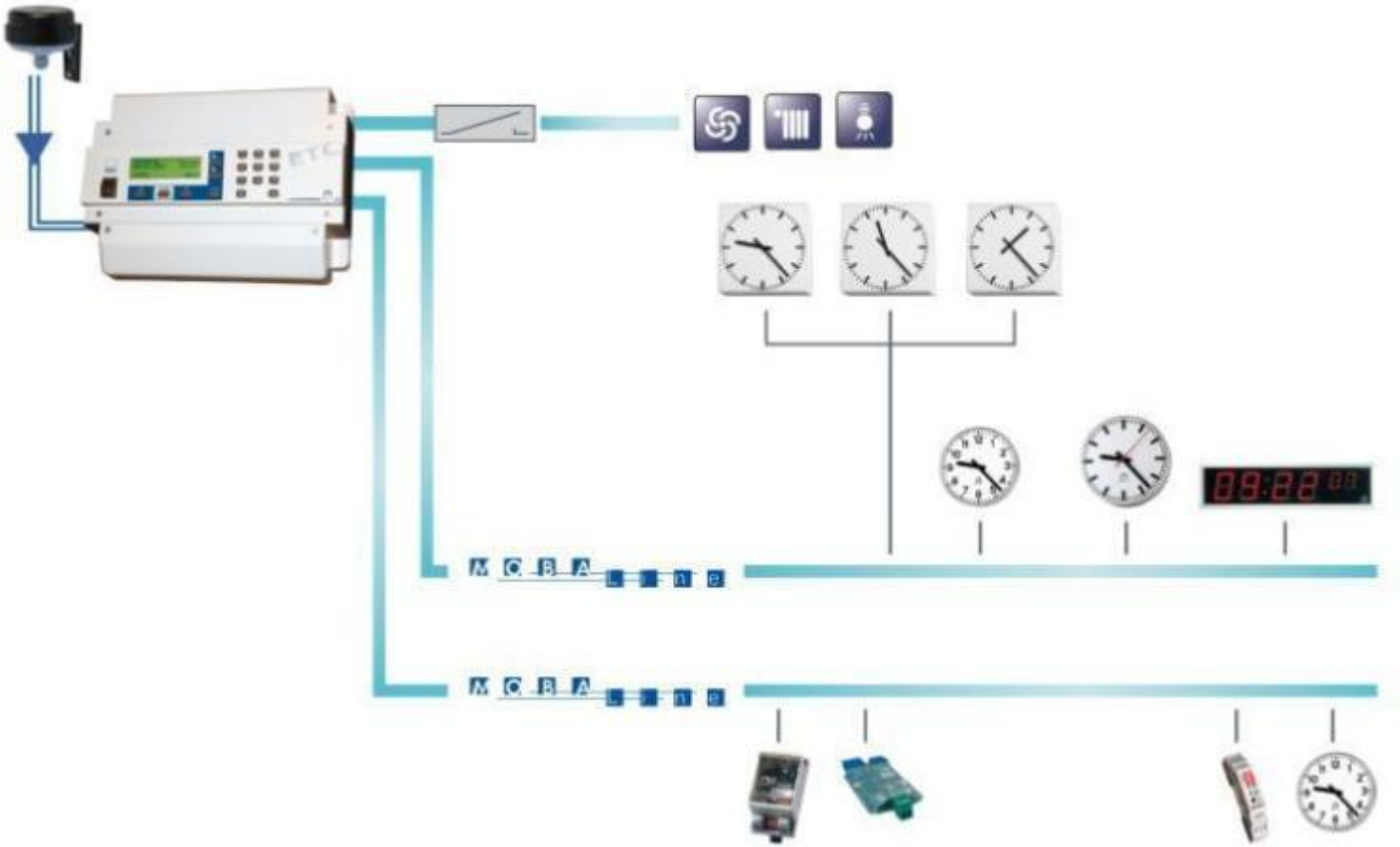
- Hospitals: Inselspital Bern, Zurich university hospital, numerous cantonal hospitals, Bremen, Berlin, Vienna, Greece, Russia
- Universities: EPFL Lausanne, ETH Zurich, Berlin / Heidelberg / Istanbul universities
- Numerous schools around the world

## Public buildings / miscellaneous

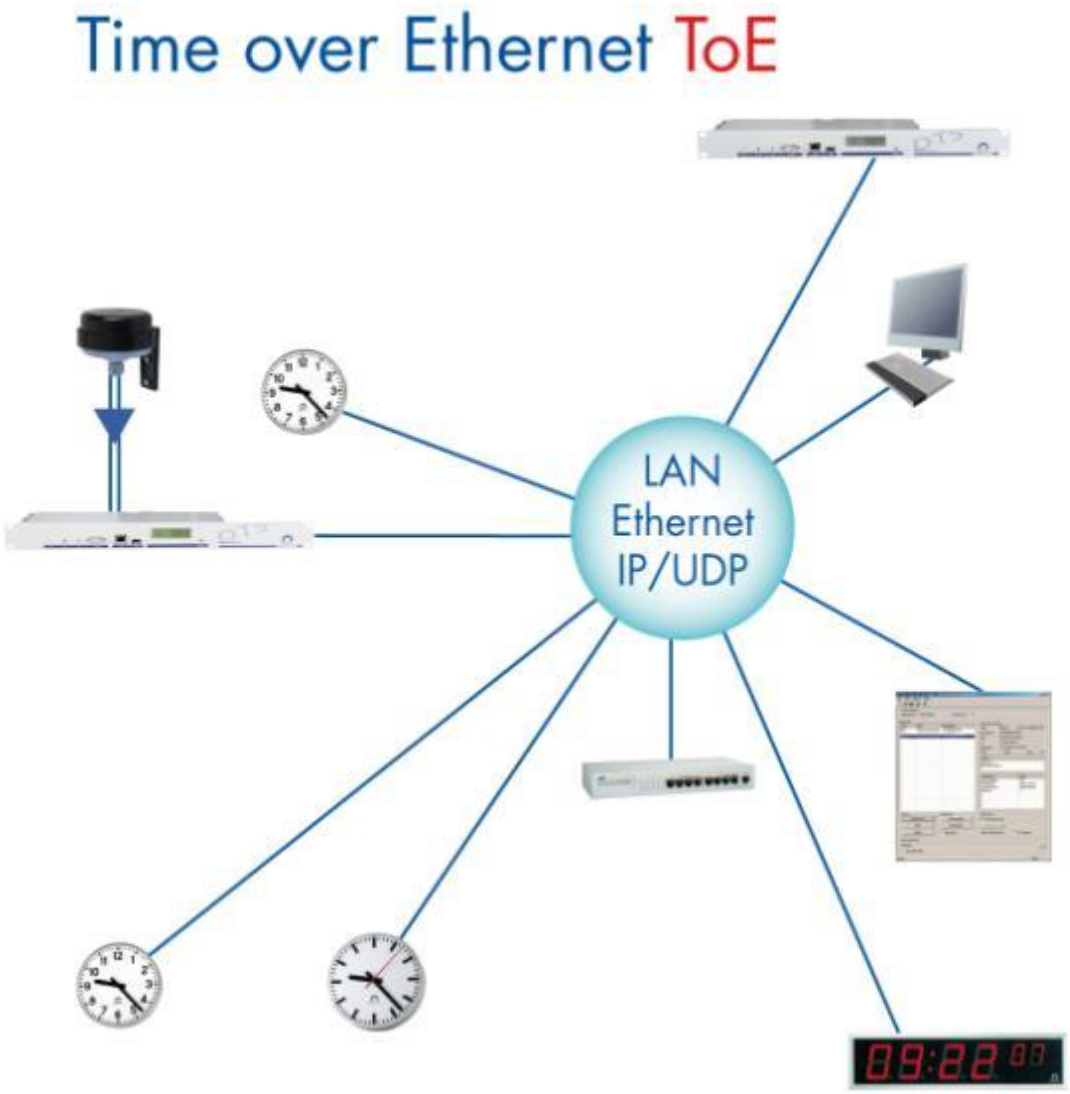
- Public buildings: Bundestag Berlin, federal administration Bern, public administration Cairo, Athens transport ministry
- Miscellaneous: Radio/TV studios in Zurich/Geneva, Radio Prague, Abu Dhabi race circuit

# Time Systems

# MOBALine Time Distribution



# Wireless Time Distribution WTD


Time over Ethernet ToE
LAN
Ethernet
IP/UDP

# Products


DTS


ETC


ETC
CompuTime Center
15:03:46
09.05.2008
Tuesday
STATE
MENU


MasterTimeCenter
MTC
MOBATIME


14:23
08:26


WED 23 NOVEMBER 09 25
-13 °C AIR 09 18


12:47
12:47
12:47 59
12:47


12:46
THU
8 APR
12:46


THU 29 JUN
NEW YORK 07:47
LONDON 12:47
FRANKFURT 13:47
TOKYO 21:47
SYDNEY 22:47


09:23 58


NEW YORK
LONDON
TOKYO
LOCAL TIME
07:47
12:47
21:47
05:47


18:43
18:43 26


KR461
ADDRESS
ON
AUTO


GPS

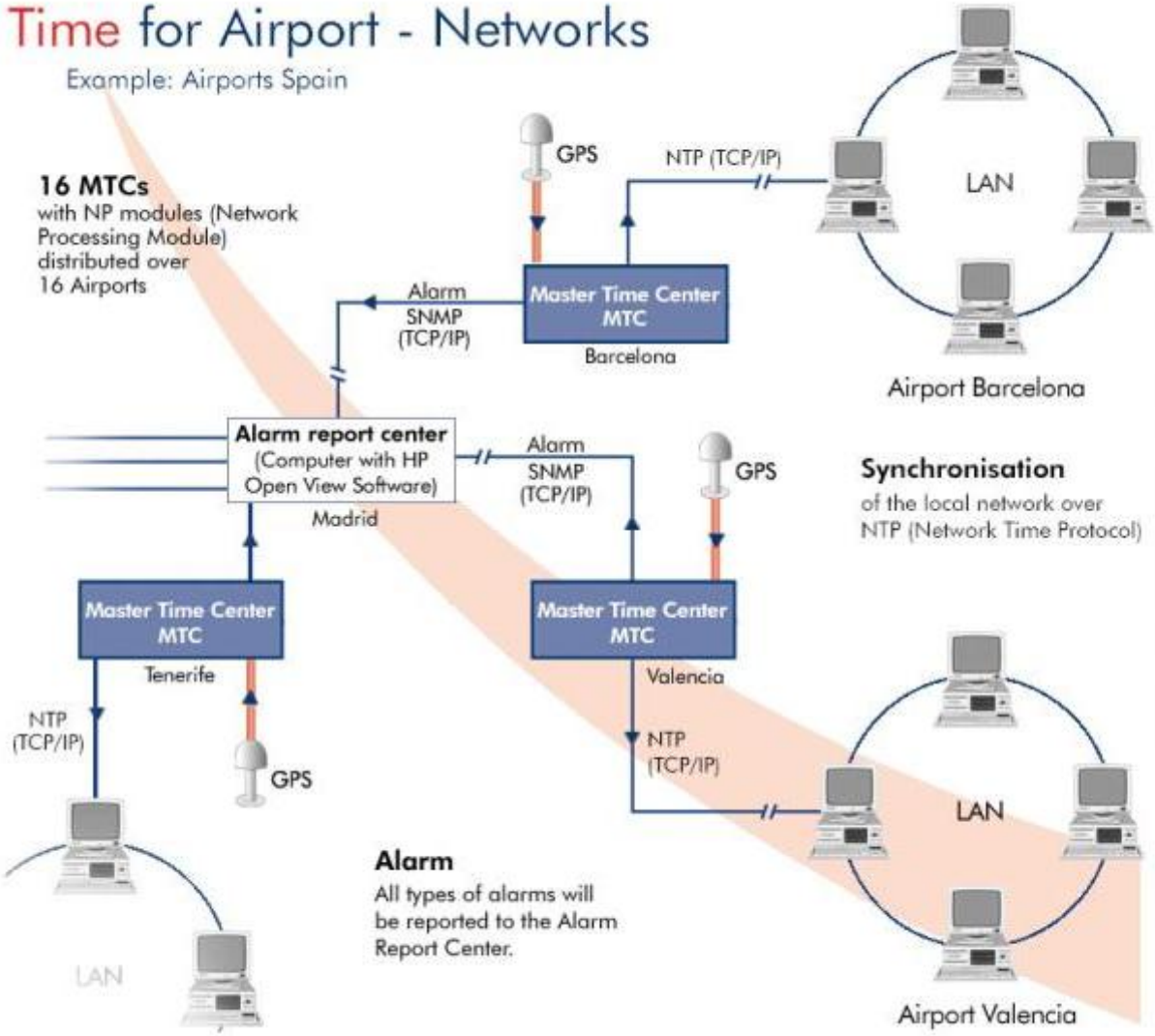

WTD
DCF (202842)
MODE / INIT
STATE
yellow
green
white
brown
+ 5..30 VDC
GND
SIGNAL OUT+
SIGNAL OUT-
POWER IN /
SIGNAL OUT

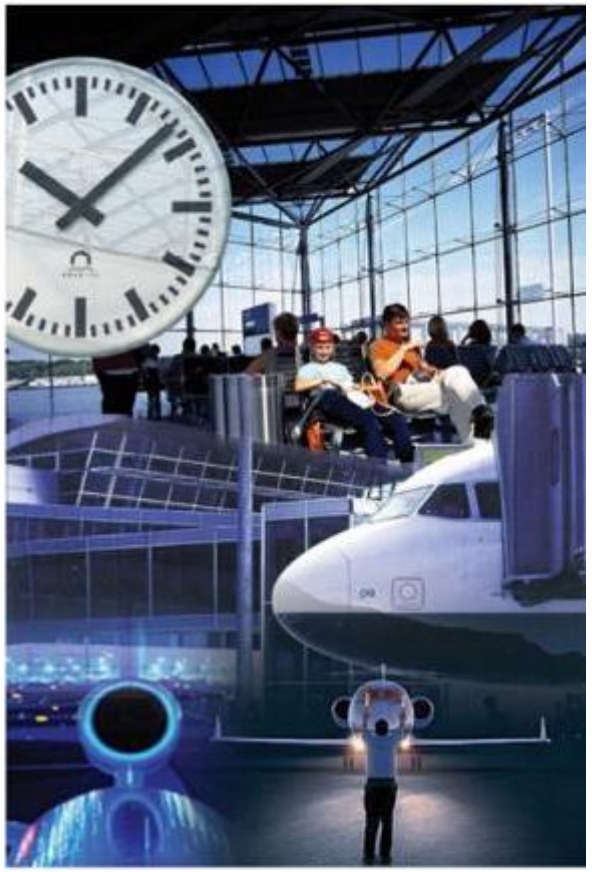

orbit
orbit
orbit

# Projects References

# Time for Airport - Networks

Example: Airports Spain

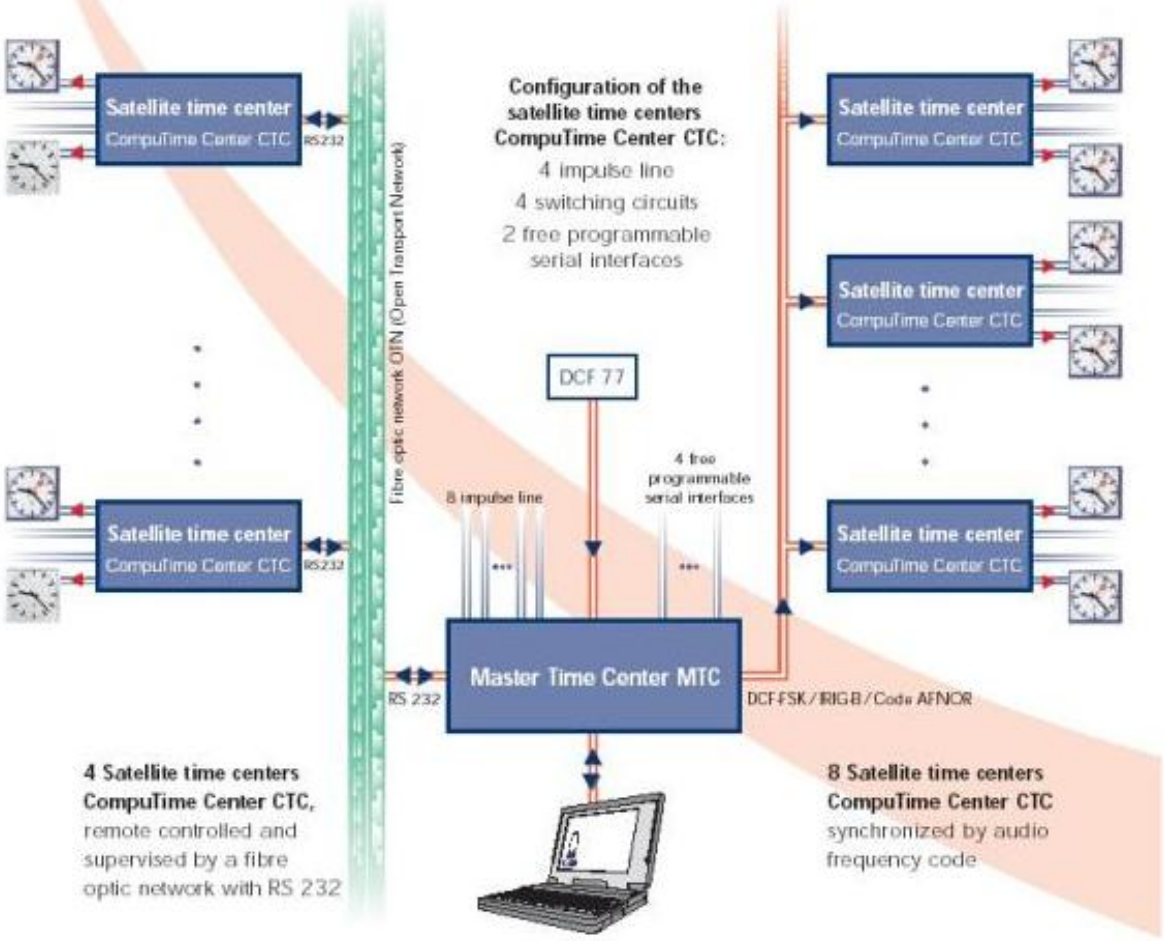


Independent time centers, synchronised by means of GPS receivers, distribute the time locally with different time codes (IRIG-B, serial, network NTP). Alarm reports will be sent to a central unit through SNMP traps over national networks.

# Time for Public Local Passenger Transport

Example: Stadtbahn Rhein-Ruhr, Düsseldorf



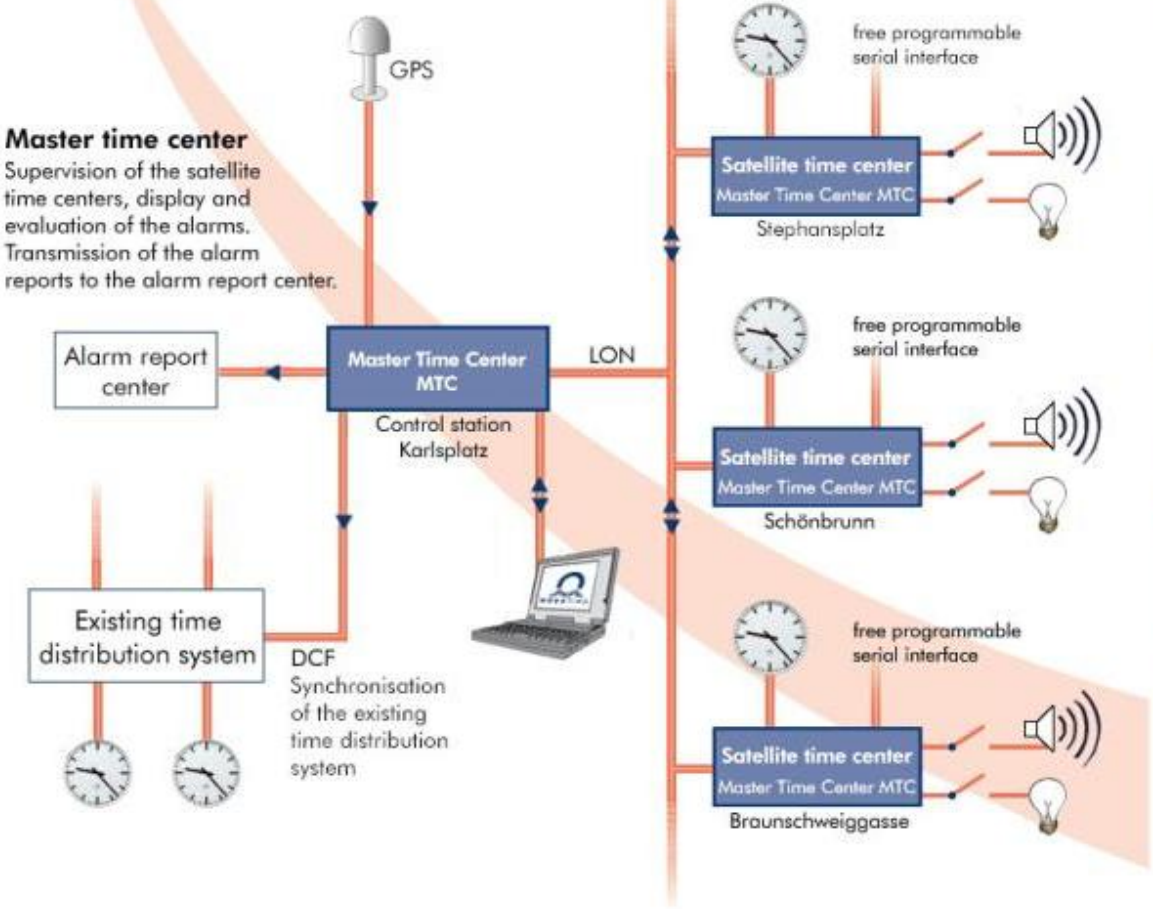

Time synchronisation of time centers by means of bi-directional fibre optic technology or a conventional 2-wire line (uni-directional).

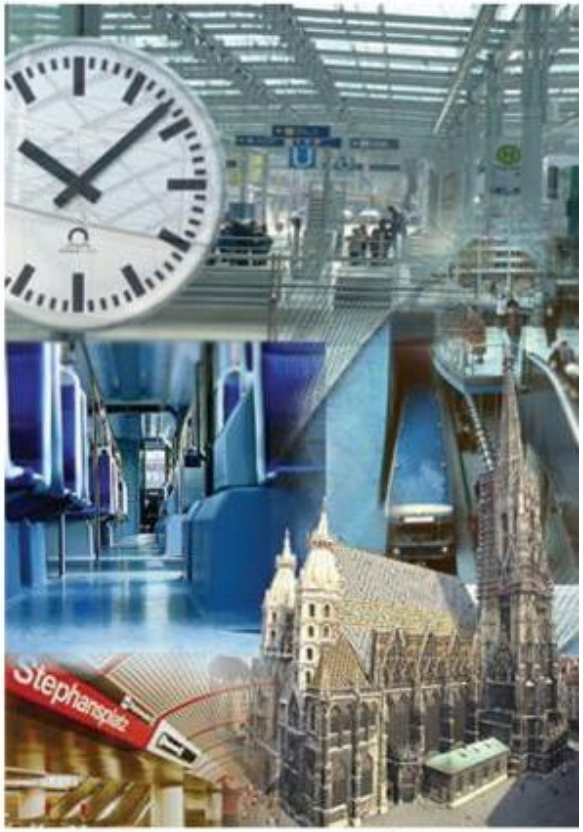
# Time for Metros

Example: U-Bahn Wien

**29 satellite time centers MTC**
remote-controlled and supervised by means of communication system LON

**Master time center**
Supervision of the satellite time centers, display and evaluation of the alarms. Transmission of the alarm reports to the alarm report center.

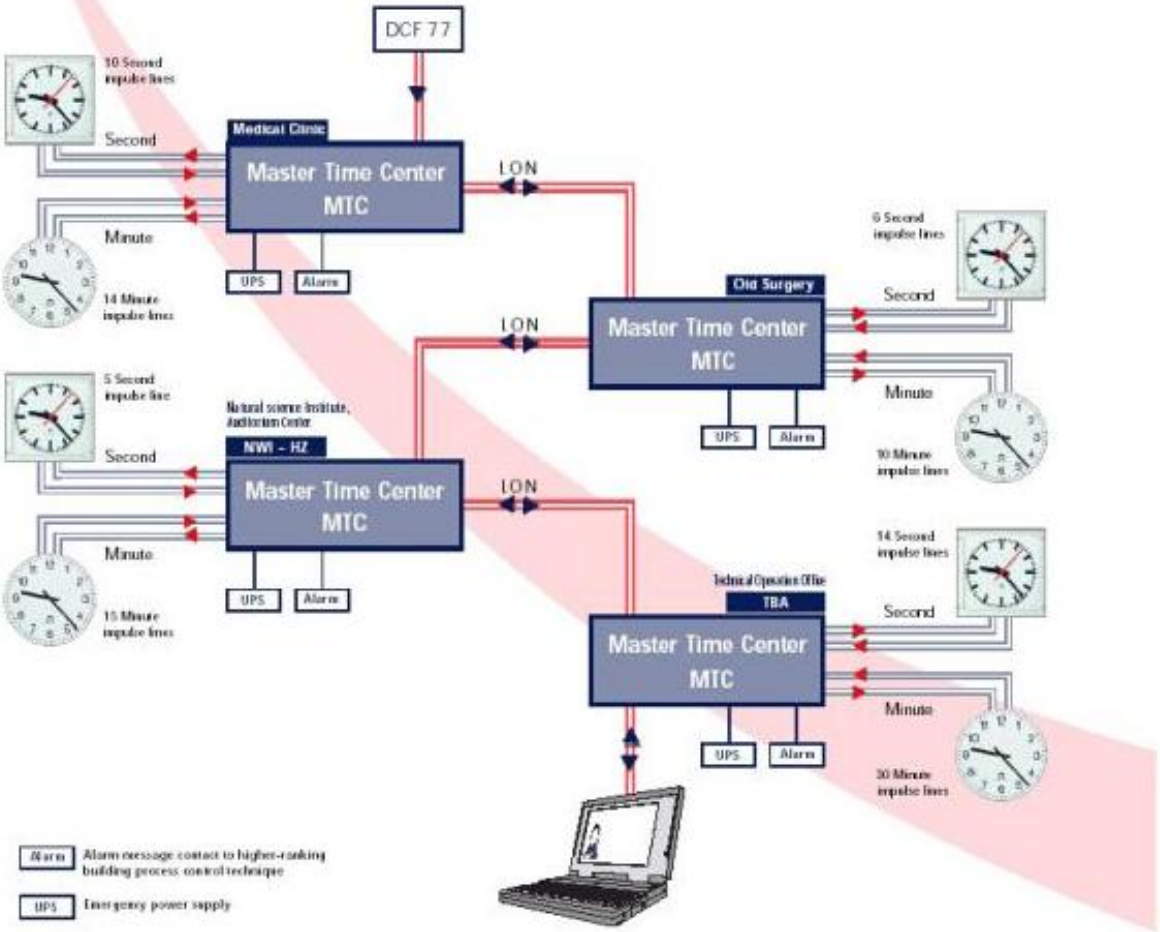


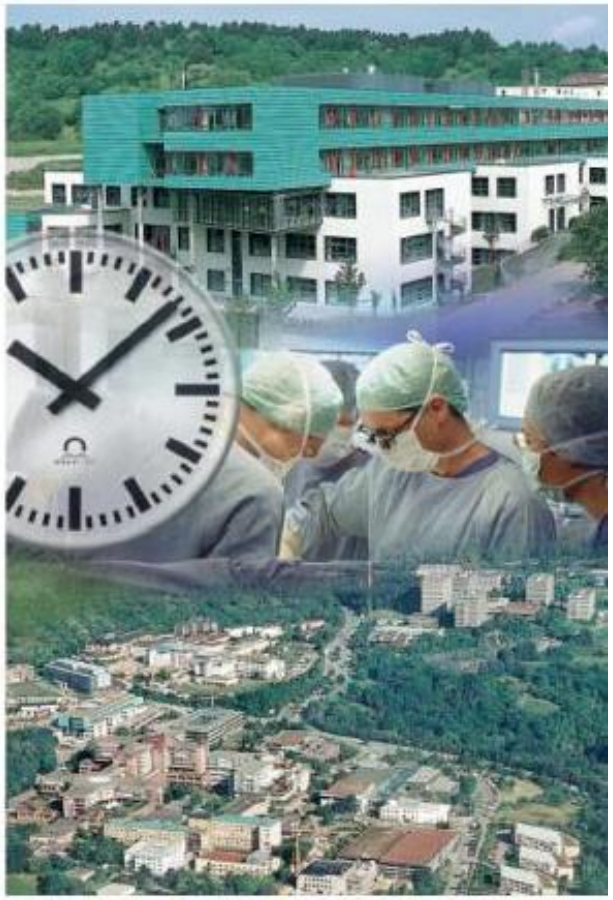




Time distribution system with supplementary functions as control of loud-speakers and illumination as well as free programmable serial interfaces on each site.
Configuration, operation and supervision of the whole system possible from each satellite time center by means of a portable computer.

# Time for Clinics and Hospitals

## Example: University Clinic Tübingen / Germany



Linking of several computer controlled time management systems through LON-bus (Local Operating Network). Automatic line supervision by means of loop-back slave clock lines.

# Time for Airports

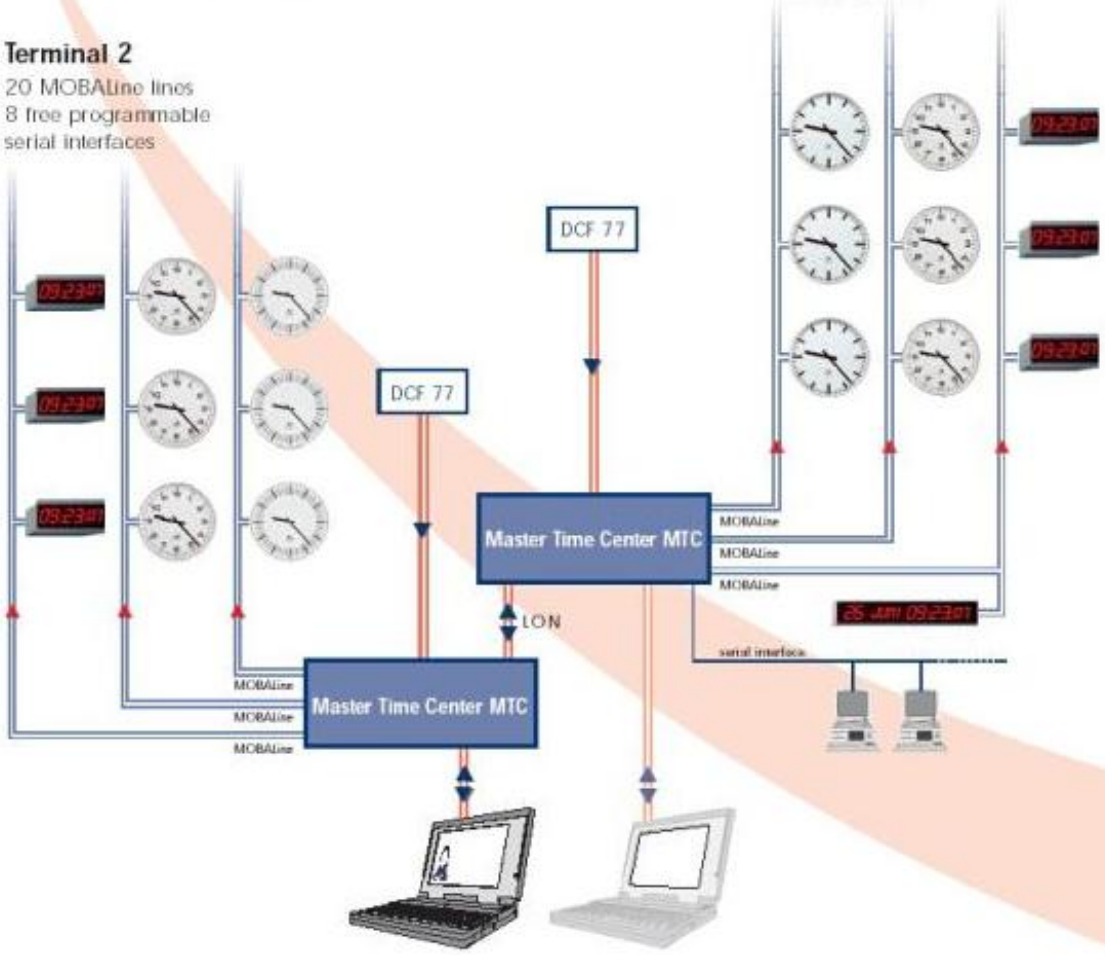
Example: Flughafen München

**Terminal 2**

20 MOBALine lines
8 free programmable
serial interfaces

**Luggage distribution hall**

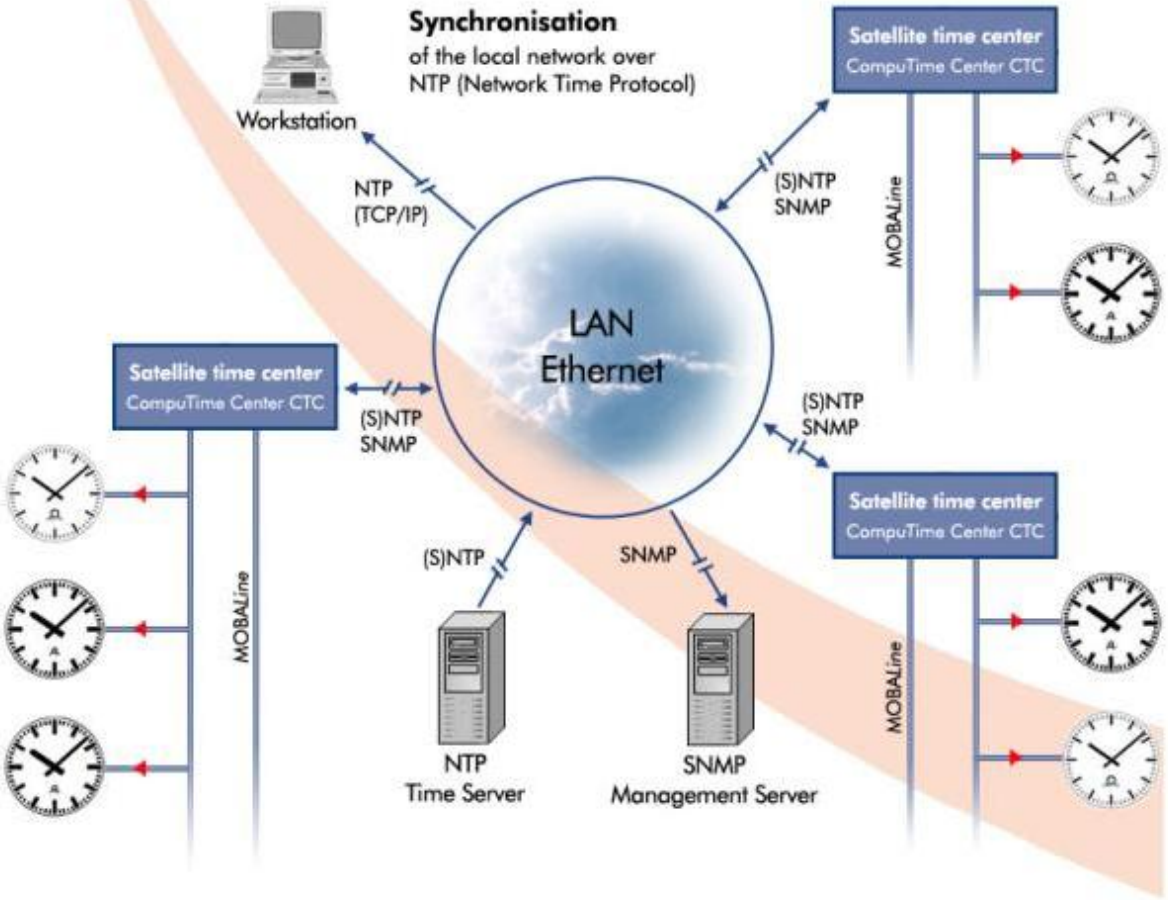
8 MOBALine lines
4 free programmable
serial interfaces

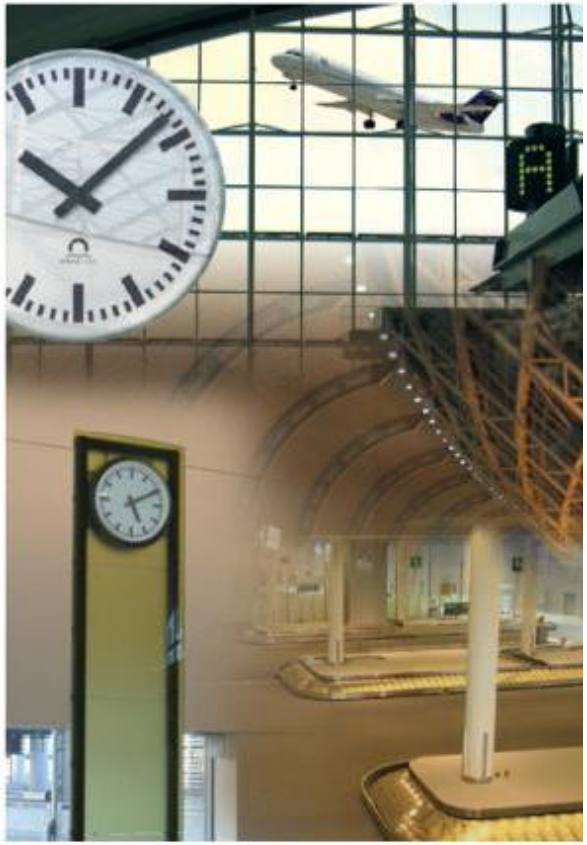



Linking of two computer controlled time-keeping stations over the LON-bus (Local Operating Network). Self-setting clock system with programmable interfaces for the synchronisation of a master computer.

# Time for Airports

Example: Toronto International Airport, Terminal T1



Decentralized CTC Submaster clocks, sychronized from NTP Time Server by means of the airport LAN.
Selfsetting analogue clocks controlled by MOBALine

# Time for Clinics and Hospitals

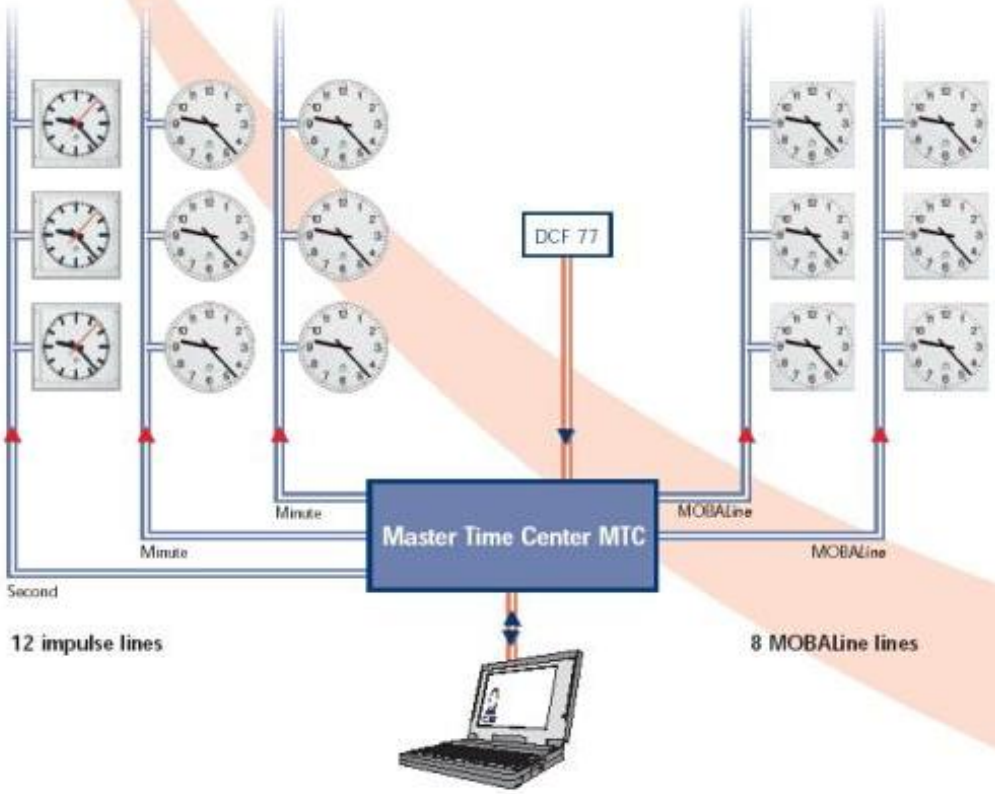
Example: Klinikum Fulda

**Old building**

total 180 existing impulse slave clocks

**Extension building**

at present 10 new MOBALine slave clocks (self-setting)



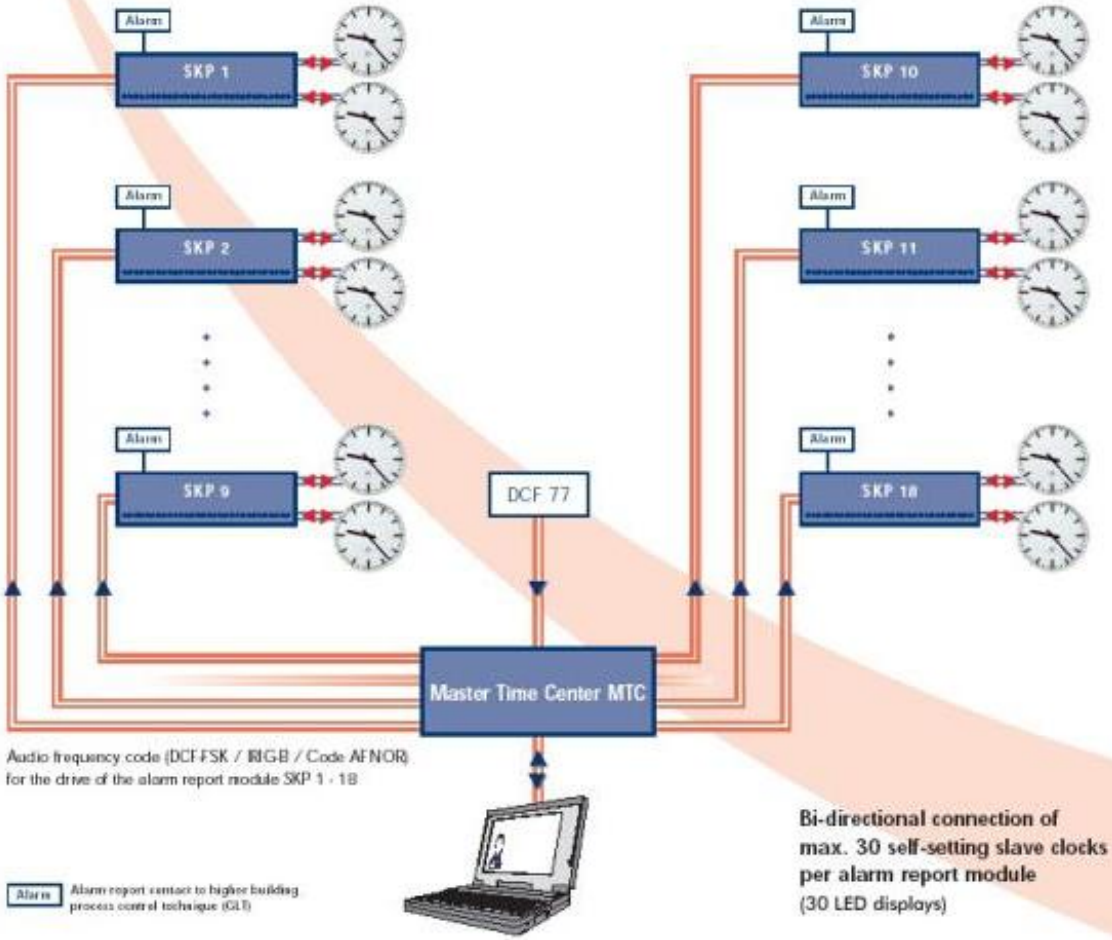

**12 impulse lines**

**8 MOBALine lines**

Operation in parallel of impulse lines in the old building and self-setting clock lines in the extension building with only one time center.

# Time for Building Technique

## Example: Neue Messe München




**Bi-directional connection of max. 30 self-setting slave clocks per alarm report module**
(30 LED displays)


Self-setting time distribution system for 18 exhibition halls with special alarm report modules (SKP) for bi-directional operation of the slave clocks.

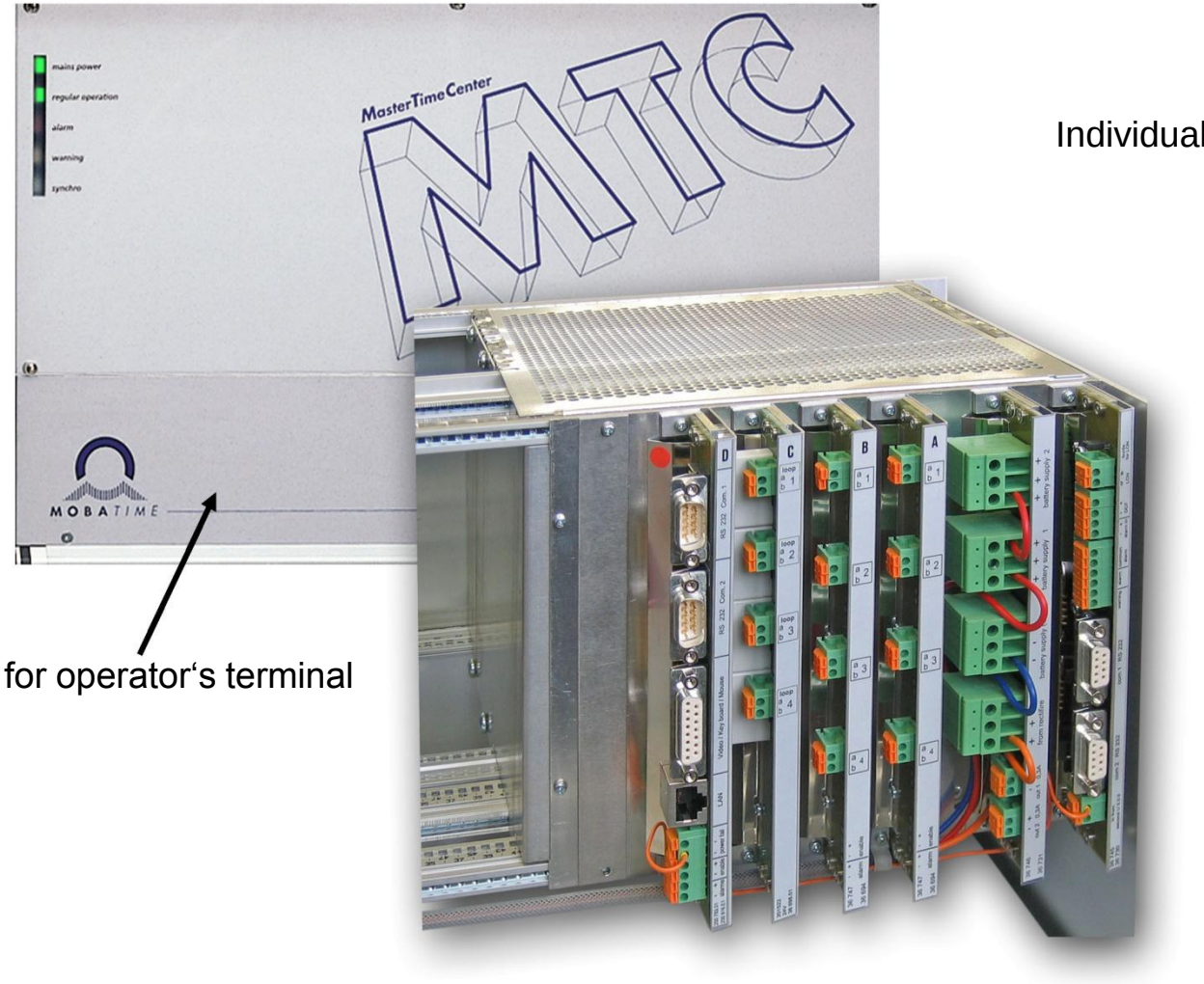
# Appendix


## MTC – Master Time Center

Control Center for

- Time Distribution Systems
- Mains Frequency Supervision

Indicators for the present state of operation




Individual terminals for each module

Drawer for operator‘s terminal


## CTC – CompuTime Centre

Master Clock

- Multi-functional
- Modular
- Multiple line


## *CTC à la carte*

The modular design allows numerous different configurations according to your requirements.


## ETC – EuroTime Centre

Versatile Master Clock

- Ideal for Clock Systems of small or medium size
- Submster Clocks
  (i.e. Railway Stations)


## Mini Master Clock HN 50

- GPS, DCF 77
- Up to 20 Impulse clocks 12 V or 24 V
- Polarized Impulses 1 min, ½ min
- One programmable relay

## DTS – Distributed Time System

- NTP – Timeserver
- GPS – Synchronization
- Redundant operation
- DCF77 time-code output
- Serial and IRIG-B / AFNOR outputs
- Linux operating system

# DTS 4135 Master Clock

## LAN connection
- RJ 45, 10/100 Mbit, half- or full-duplex
- remote operation control: Telnet, SSH, SNMP V3

## Lines
- 2 IRIG-B 122/123 (digital and analog), AFNOR-A/C, DCF-FSK line
- 1 DCF-time signal output (current loop passive)
- 2 selectable DCF, programmable pulses: pps, ppm, pph or user defined up to 5Mhz
- 2 serial selectable RS232/485. RS 485 for clocks supervision (DTS 4801), RS232 for script-file programmable telegrams.

## Alarm
- 1 output potential-free relay-contact and 1 input (opto-isolated).

## Front
- USB connector for system update command/ configuration file download.
- Display and push button for system status (IP address ….), alarms, current time / date.

## Power supply
- 1 x mains power, 85 - 265 VAC, 50/60 Hz
- 1 x DC in, 24VDC, +20%/-10%

# DTS / 4801 (2) Master Clock

## LAN connection
- RJ 45, 10/100 Mbit, half- or full-duplex
- network services: DHCP, NTP (Client / Server, Peer, Broadcast, Multicast), SNTP, TIME, DATE, DAYTIME, SNMP (Traps,GET, PUT), E-mail.

## Lines
- 1 (2 by DTS 4802) configurable self setting MOBALine or Impulse line
- 1 (optional only by DTS 4801) configurable as IRIG-B 122/123, AFNOR-A/C, DCF-FSK line
- 1 selectable DCF, programmable pulses: pps, ppm, pph or user defined up to 5Mhz
- 1 serial selectable RS232/485. RS 485 for clocks supervision (DTS 4801), RS232 for script-file programmable telegrams

## Alarm
- 1 output potential-free relay-contact and 4 inputs (opto-isolated)

## Front
- USB connector for system update command/ configuration file download
- Display and push button for system status (IP address ….), alarms, current time / date …..

## Power supply
- 1 x mains power, 85 - 265 VAC, 50/60 Hz
- 1 x DC in, 24VDC, +20%/-10%

## METROLINE

- Single and Double sided, round.
- With or without illumination.
- Weather resistant light metal case, color RAL 9006 white-aluminium, powder coated.
- Dimensions: round Ø 50, 60, 80 cm
- White clock dial with black line marks or Arabic numbers.
- With or without second hand (several moving modes).
- Arched acrylic glass.
- Pulse controlled, radio controlled (DCF 77), MOBALine, IRIG-B, Serial RS 232 / 422 / 485, LAN Etherneto r self controlled (Quartz).

## PROFILINE

- Modular concept with modern design.
- Single and double sided, 4-sided cube.
- With or without illumination.
- Weather resistant aluminum case, nature anodized.
- Dimensions: round Ø 50, 60, 80 cm
  square 40, 50, 60, 80 cm
  cube 60, 80 cm
- White clock dial with black line marks or Arabic numbers.
- With or without second hand (several moving modes).
- Flat mineral glass cover or impact protected glass.
- Pulse controlled, radio controlled (DCF 77), MOBALine, IRIG-B,
  Serial RS 232 / 422 / 485, LAN Ethernet
  or self controlled (Quartz).

## STANDARD

- Robust clocks suitable for industrial companies, work rooms, sport centers, swimming pools.
- Round models light metal made (aluminium), flat glass.
- Special accomplishments: ball throw resistant (BW), steam resistant (DD).
- Diameters: 25, 30, 40, 50, 60 and 80 cm.
- Single or double sided clocks.
- Pulse controlled, radio controlled (DCF 77, MSF, WWVB), MOBALine, IRIG-B / AFNOR, mains power synchronized or self controlled (Quartz).

## STANDARD V2A

- Robust clocks in a nobel look, suitable for industrial companies, banks, schools, sport centers, swimming pools.
- Round models stainless steel made with flat glass.
- Diameters: 30, 40 and 50 cm.
- Single or double sided clocks.
- Pulse controlled, radio controlled (DCF 77, MSF, WWVB), MOBALine, IRIG-B / AFNOR, mains power synchronized or Self controlled (Quartz).

## SLIM-M (SLIM-metallic)

- Flat clock in a SLIM like very aestetic design.
- High quality, powder-coated steel case with flat glass.
- Round clock dials with a size of 30 cm diameter.
- Single sided and double sided clocks.
- Pulse controlled, radio controlled (DCF 77), MOBALine or self controlled (Quartz).
- Mounting ring for single-sided clocks, wall and ceiling bracket available, all with simple snap-in mounting.

## SLIM and SLIMQUAD

- SLIM clocks are extra flat and made in a modern design.
- Diameter of clock dials:
  25, 30 and 40 cm
- Square: 30 x 30 und 40 x 40 cm.
- Single sided or double sided clocks.
- Pulse controlled, MOBALine or Self controlled (Quartz).

## ECO

- Clocks for a lot of several applications in offices and  administrations.
- High quality, white plastic case, acrylic glass.
- Round clock dials with a size of 30 and 40 cm diameter.
- Single sided and double sided clocks.
- Pulse controlled, radio controlled (DCF 77), MOBALine or self controlled (Quartz).

## MODERNA

- For industrial or business applications.
- Modern design.
- Flat metallic case, acrylic glass.
- Dimensions of clock dial: 30 x 30 und 40 x 40 cm.
- Single or double sided clocks.
- Pulse controlled, MOBALine, mains power synchronized or self controlled (Quartz).


## DC-Clocks

- 7 segment display in red, green, yellow and blue.
- Display date, hour, minute, second and temperature.
- Display highs: 57 / 100 / 180 mm
- Visibility up to 25 / 50 / 90 m
- Pulse controlled, radio controlled (DCF 77), MOBALine, IRIG-B, serial time telegram (IF 482).


## DK-Calendar clocks

- Dot matrix display in red or green.
- Display date, hour and minute, month, week-day.
- Display highs: 57/30 mm
- Visibility up to 25 m
- Pulse controlled, radio controlled (DCF 77), MOBALine, IRIG-B, serial time telegram (IF 482).


## DIGI H, DIGI D

- Dot matrix display in red, green, yellow and blue (not all types).
- Display date, month, weekday, hour, minute and second
- Pulse controlled, radio controlled (DCF 77), MOBALine or self controlled (Quartz).


## World Time Zone Displays

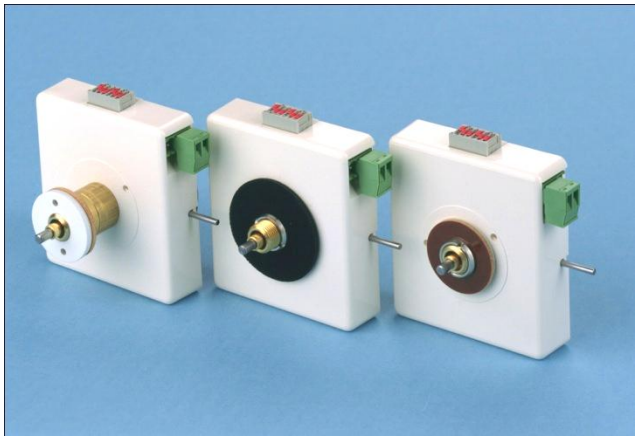
- Character height 25, 50 and 120mm
- Viewing distance 10m, 25m and 60m
- horizontal: max. 8 zones
  vertical: max. 6 zones
- Colour: red / green
- Individual zone-layout


## CRISTAL

- Digital Clocks – powered and controlled by MOBALine
- For indoor installation.
- Maintenance-free. No batteries required.
- Best readable, wide angle LC-Display.
- Casing colors: aluminum or white.
- Operating temperature: 0 ... 50°C.
- 2 programming keys.
- CristalTime: Hour / minute or alternative date display.
- CristalDate: Hour / minute, date, day of week and week number, multilingual with temperature, event countdown, world clock with site or city names.


## DSC-Series

- High bright display
- 180 mm character height
- Ingress Protection:
  IP 65 available
- Brackets available for
  wall- and ceiling- mounting



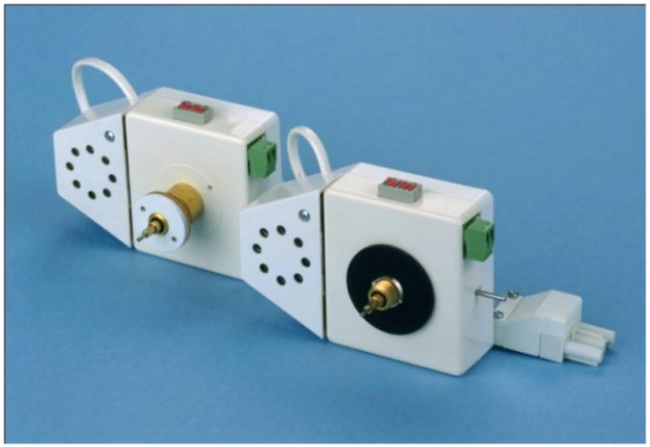
## Minute Impulse Movements

### NU 90

- Minute impulse movement, for clocks up to Ø 80 cm (12 to 60V).

### NU 91

- Minute impulse movement, for clocks up to Ø 80 cm (24V), no DIP switches.



### NU 90 SYN

- Minute impulse movement with synchronous second hand, or clocks up to Ø 80 cm

AA0 and EE0

## Minute Impulse Movement

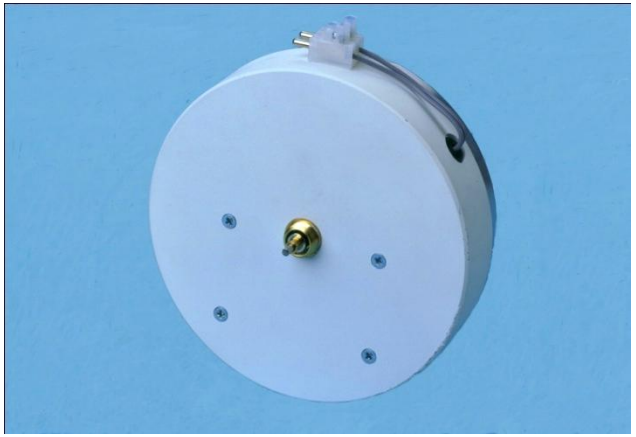
### AA0

- Minute impulses, flat construction, for clocks up to Ø 40 cm.

## Second Impulse Movements

### EE0

- Second impulses, flat construction, for clocks up to Ø 40 cm.



E1G

## Second Impulse Movements

### E1G

- Second impulses, absolutely noiseless, for clocks up to Ø 40 cm.

## MOBA*Line* Movement

### SAM 00

- Self setting MOBALine- movement for clocks up to Ø 40 cm. Axis for hour- and minute hand.

### SEM 00

- Self setting MOBALine- movement for clocks up to Ø 30 cm. Axis for hour-, minute and second hand.

**MW 10, MW 20, MW 24**

- Minute impulse movements for facade clocks.
  Ø 120 – 500 cm

**DMU 140**

- Movements for self-setting facade clocks. (only under glass)
  Ø 80 – 140 cm


**DMU 350**

- Movements for self-setting facade clocks.
  Ø 120 – 350 cm

## Battery movements series 192

**AD 192** (further available: AM 192, AW 192)
- DCF 77 Radio time signal receiver for BU 192.

**BU 192** (further available: BU 192 WWVB)
- DCF 77, MSF 60 or serial ASCII controlled. Battery powered, battery lifetime up to 6 years. Serial output to control up to 3 slave movements BU 192 in cascade.

**FU 192** (further available: FU 192 WWVB)
- Radio controlled, consists of a BU 192 and AD 192 (removable).

**QU 192**
- Temperature compensated quartz for autonomous battery operation, battery lifetime up to 6 years. Serial output to control up to 3 slave movements.

**GU 192**
- GPS radio clock movement with built-in satellite-antenna receiver and connected mini antenna, for independent, self-setting outdoor clocks.

Examples of 190 series movements

## Movements series 190

### BU 190(t) 230  BU 190(t) S 230

- DCF 77, MSF 60 or serial ASCII (RS-232) controlled. 230 V powered. With or without second hand. Moving mode of second hand selectable by DIP-switch. Serial output to control up to 3 slave movements BU 190 in cascade.

### MLU 190(t)

- Powered and controlled from MOBALine.

### MLU 190(t) S 48 / MLU 190 S 230

- Same as above, but with second hand.

### SU 190(t) S 230

- Controlled and supervised over serial RS 485 commun. protocol. 230 V powered.

### IBU 190t S

- Minute Impulse movement for hour, min and seconds. 230 V powered.

### ATBU 190(t) 230  ITBU 190(t) S 230

- Controlled from IRIG-B, AFNOR or DCF-FSK audio frequency time code signal. 230 V powered.

## LAN Movements series 190

### NBU 190(t) 24/PoE

- NTP movement for Multicast or Unicast (IP-based, DHCP or manually via Net Device Manager) synchronization.
  Special output to control und power up to 3 slave movements BU 190 in cascade.
  Powered over Ethernet.

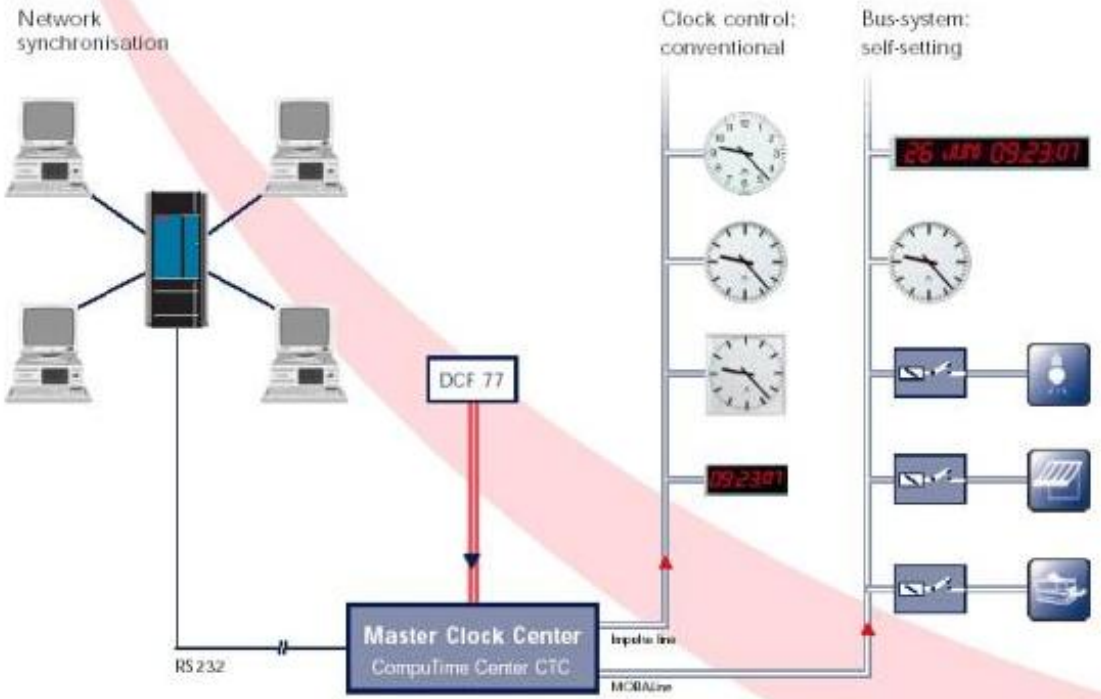
### NBU 190(t) S 24/PoE

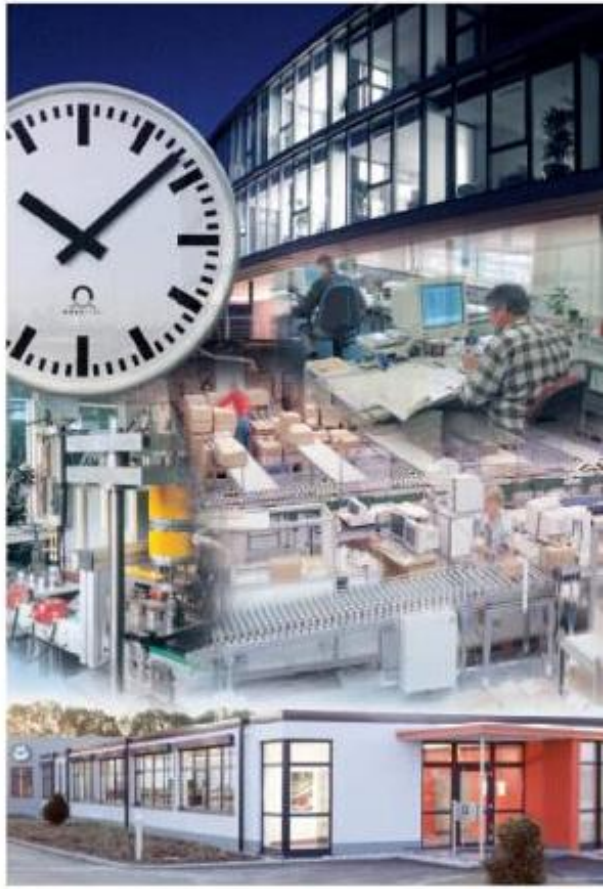
- Same as above, but with second hand.
  Moving mode of second hand selectable by DIP-switch.

# Typical Applications

# Time for Building Techniques

Example: small and medium enterprises

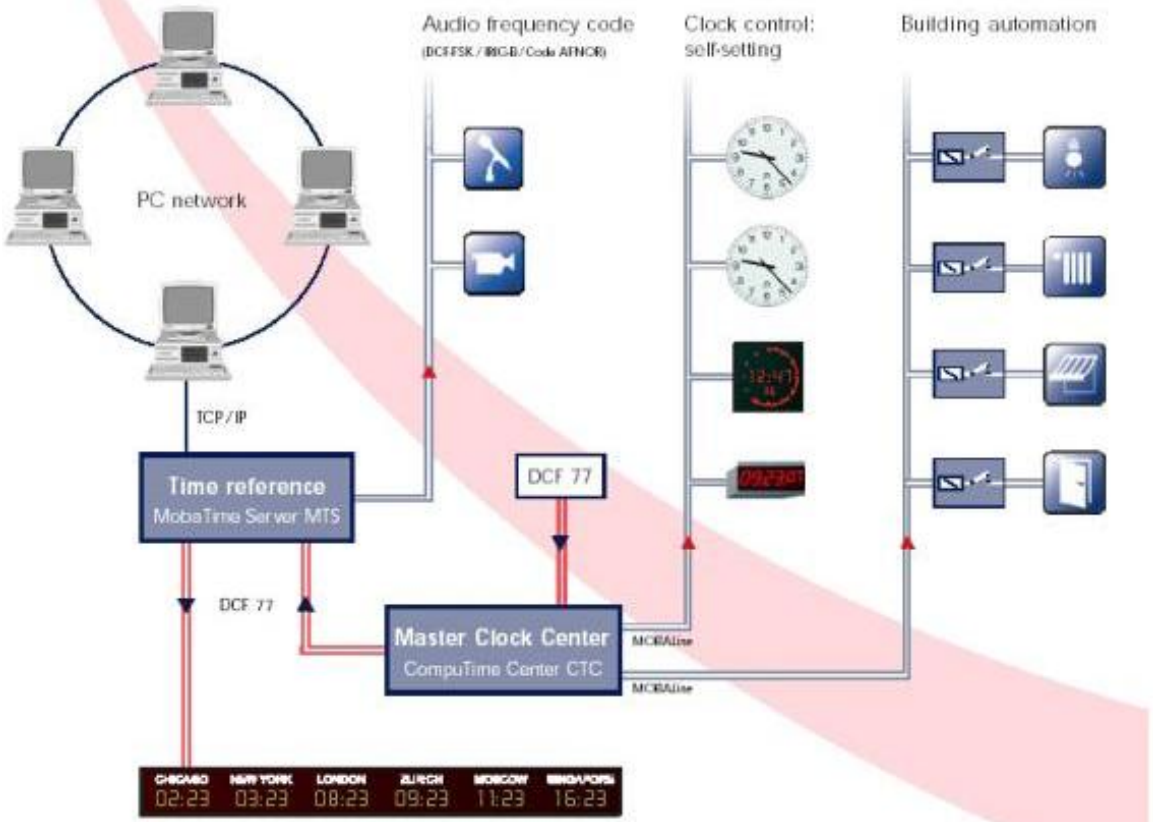


Universal time management system for control of clocks, network synchronisation and automation of building technical systems.

# Time for Banks and Insurance Companies

Example: a typical system configuration



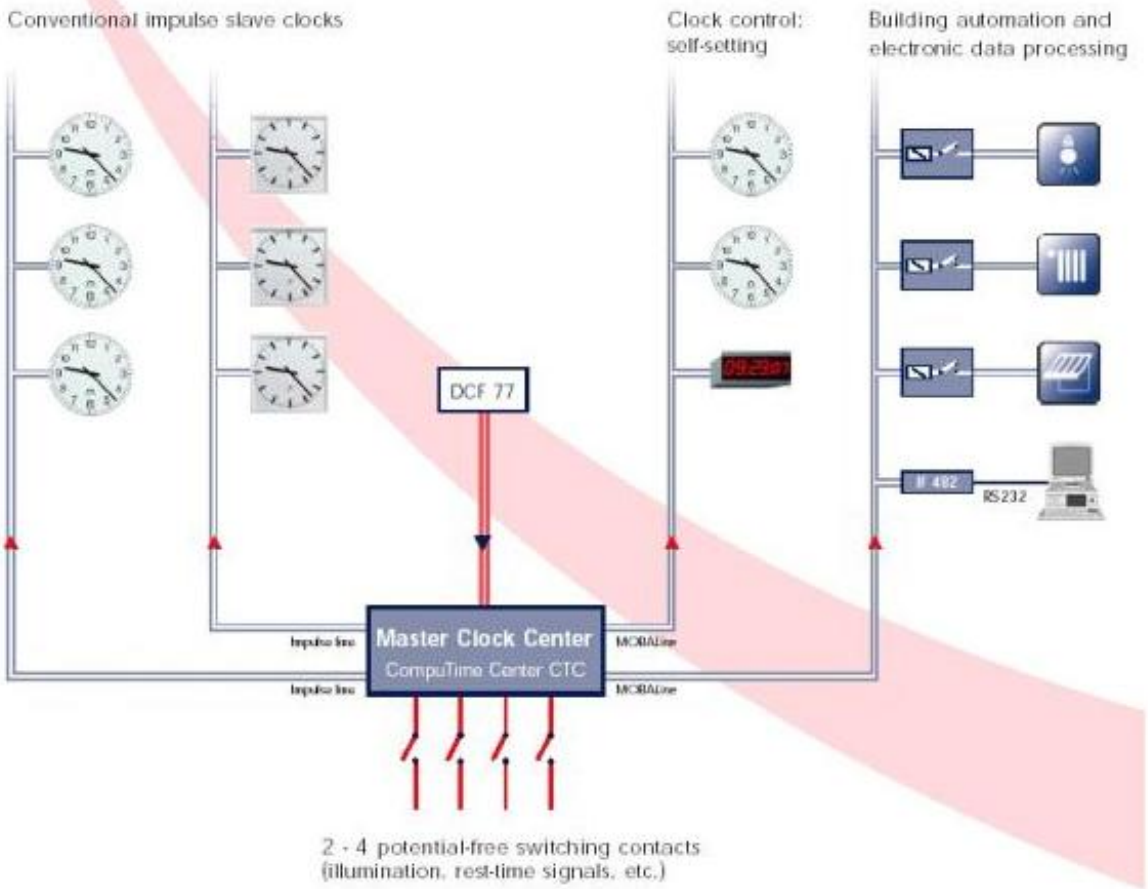


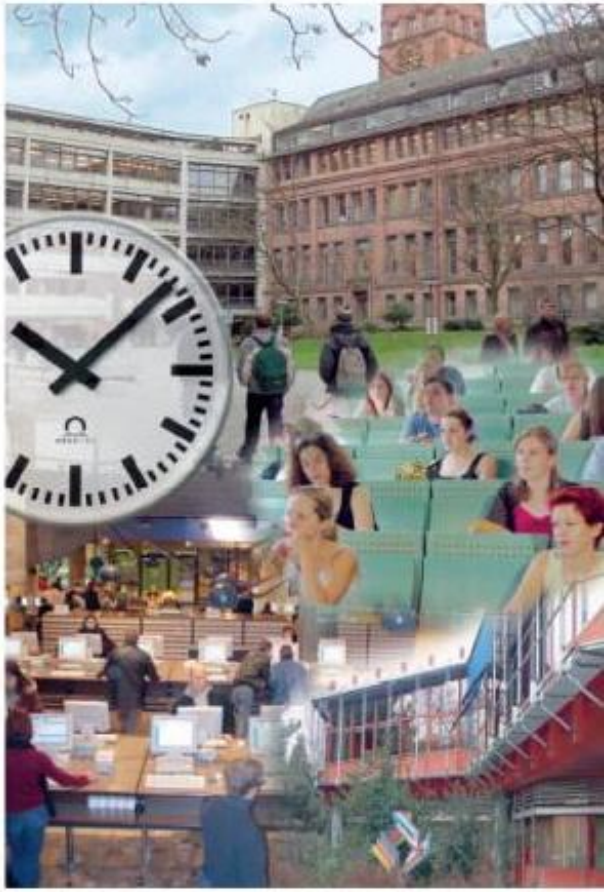
Multi-functional time management system for

- Clock control
- Network synchronisation
- Exact-time voice and image recording
- Building automation

# Time for Schools and Universities

## Example: a typical application



A typical time management system for education and research installations with additional building technique functions and electronic data processing synchronisation.

BERTSCHI
Instrumentos

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# Thank you for your attention

MOBATIME