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Intelligent programmed decision processor

Keyfeatures

- ▶ Integration into existing network
after a weak point analysis
- ▶ Integration into existing hardware components
through standardised data interface
- ▶ System coupling is combined
e.g. with controlled entry
management- and billing-system
and danger alarm detection module etc.
- ▶ Enormous cut backs in cost through intelligent configuration
after the danger levels have been investigated by asp
- ▶ Image analysis of the standard condition in real time,
therefore creating no overloading of the network recording equipment
- ▶ Deciding help and redundant documentation with malfunction
through our danger protection and security management

aspo
media
networking systems

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Intelligent programmed decision processor

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System architecture

The video system **WebView** has been designed for the connection of video cameras over a wide distance, to a centralised system as a „Cross bar“.

Therefore **WebView** is considerably different to conventional systems.

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Background

- ▶ Danger protection and security management
- ▶ Protection of property
- ▶ Security over warehouses, products and dangerous materials
 - ▶ Integration of video and danger alarm detection systems
 - ▶ System coupling in connection with
 - ▶ Management- and billing-system

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The components

Sensors deliver signals and supply **WebView 2** with information

- ▶ Sensors that can also be integrated
 - ▶ e.g. movement detector, fractured glass sensor and all known devices from conventional alarm systems
 - ▶ complete alarm system with corresponding exit (Jailer or better RS232)
 - ▶ fire alarm system (i.d.R. RS 232)
 - ▶ any electrical signals
 - ▶ time dependant condition
 - ▶ movement in video image
 - ▶ error condition in data network or on webview component

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The components

WebView 2 instruct the actuator to manage functions responding to the decision from the decision processor.

- ▶ Responses can be
 - ▶ Archiving images from involved cameras
 - ▶ Opening and closing electrical contact
 - ▶ Control from alarm system, etc.
 - ▶ Operation of telephone dialling equipment with or without announcement
 - ▶ Sending of Emails or SMS
 - ▶ Carry out any scripts to the central computer or decentralised modules
 - ▶ Pops up the video transmission on display module
 - ▶ Operates moveable cameras
 - ▶ Sends information on a serial sub system

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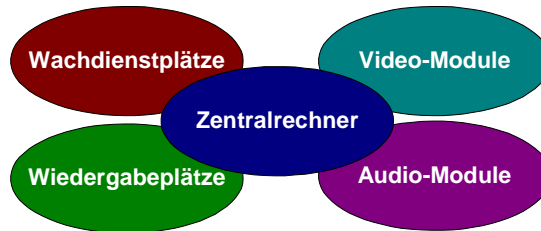
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Module from WebView 2

- ▶ Central computer
- ▶ Video-module
- ▶ Display-module
- ▶ Audio-module

- ▶ Observation place
- ▶ Security guard place



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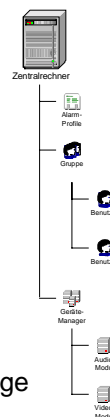
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Central computer

- ▶ Central data base
 - ▶ For controls
 - ▶ Profile administration-
 - ▶ Operator and equipment manager
 - ▶ Alarm profile
 - ▶ etc.

- ▶ Organisation of the replication from alarm profiles at the **WebView** -video-module
- ▶ Archive control and organisation of the image transportation in the central image archive



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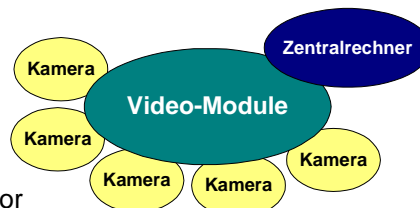


Central computer

- ▶ Audio queue and disposition from voice messages and announcements to segmented ELA over audio module
- ▶ Central interface to alarm systems
 - ▶ **WebView** -Software breakout required
- ▶ Performs the configuration and network management



Video-module



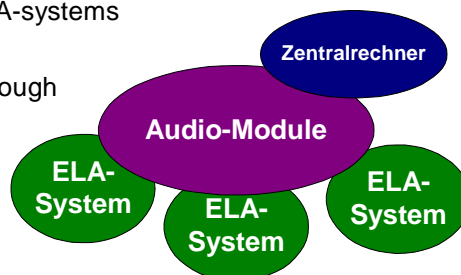
- ▶ The module works separately from the central computer
- ▶ If video data is to be archived, for performance reasons, the archiving is always carried out at first in the module, then reaches centralisation at a later point
- ▶ Functions as router and builds up a network for digital cameras with a second network card
- ▶ For further development this step will be dropped, the **WebView 2**-Video-module takes over the digitalisation

Display-module

- ▶ The module works separately from the central computer and is used purely as display engines
- ▶ Shows the operator definable images

Audio-module

- ▶ The module works separately from the central computer
- ▶ Interfaces to existing ELA-systems
- ▶ Works independantly through with one or more audio queues

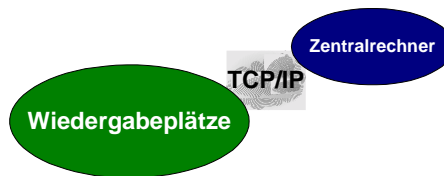


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Observation place

- ▶ Is a normal PC with windows 2000 and is connected to the central computer
- ▶ The **WebView** software installation is **not** necessary
- ▶ The data is completely transmitted over web browser (Microsoft Internet Explorer >5.5)



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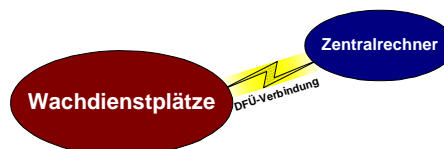
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Security guard place

- ▶ Similar to the observation place
 - ▶ needs little throughput
 - ▶ band width intensive routines - forward and rewind are not possible
- ▶ As well as this, events that have taken place are combined with protocol data and archived



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Topological network structure for **WebView 2**

- ▶ As core transmission network **WebView** use the 100 Mbit ether net for continious transmission
 - ▶ 100 Mbit/s Ether net
 - ▶ over 64kBit/s ISDN

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Theoretical values

The following chart represents the experiences with the use of **WebView**.
The actual image rate depends also on factors like "amount of moving image dots"
"contrast" and "picture information".
Under optimal conditions the values can clearly be exceeded.

Throughput	Frames per Second	Practical e.g.
64 kBit/s	10	1 Cam, 10 fps
128 kBit/s	20	1 Cam, 20 fps
1 Mbit/s	185	9 Cams, á 20 fps
2 Mbit/s	420	21 Cams, á 20 fps
100 Mbit/s	12000	400 Cams, á 30 fps

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Equipment administration

- ▶ The address assignment and configuration with TCP/IP is carried automatically through to the central computer
- ▶ The **WebView** component is configured and registered in the central computer
 - ▶ Specific equipment is not needed for the configuration and it is carried with a drive module to the type of equipment used
 - ▶ With installation of the equipment, Mac address and drive name are given
 - ▶ The equipment configuration goes automatically after the booting and is supplied from the central computer



Network management

The central computer observes the complete **WebView** operational system

- ▶ Functions involved network components
 - ▶ on layer 2 and 3
- ▶ Check the functions of the **WebView** processor on the module
- ▶ Memory status from the video module
- ▶ Availability and quality of the video images
- ▶ Availability of audio module
- ▶ Check the electric interface
- ▶ Status inquiry connected alarm equipment



Network management

- ▶ Faults are handled as an event, the decision processor deposits the reaction.
- ▶ On the **WebView**-module and central computer the processes are controlled through internal routine and when necessary restarts or generates a service requirement.
- ▶ The Daemon concept enables the intergration of **WebView** into a cluster. For this purpose, exists the control routines and implementation for the cluster server from Veritas.



Memory concept

- ▶ For reasons of the system performance, in the event of an alarm, all images are saved decentralised, to enable the large amount of throughput to be kept free for the operator
- ▶ Saved frames are assigned to the event that has occurred and registered into the central computer simply as saved place image source
- ▶ At a later date the image information gets copied to the central archive without the operator noticing.



Display concept

- ▶ **WebView** works on a dynamic display basis, the display varies from
 - ▶ Booking type
 - ▶ Source-IP-address
 - ▶ Authentication

- ▶ In this way different surfaces for the individual display module, observation place and security guard place are generated



Video detection

- ▶ Digital image processors are used for the recognition of movement from images, the video image gets compared with a defined mask and herewith distinguishes the different sensitivities
 - ▶ Object size
 - ▶ Object speed
 - ▶ Object movement direction
 - ▶ Colour change from image dot quantity



Evaluation and arbitration logic

- ▶ The **WebView -decision processor** is the basis of the decision finder. The decision processor analyses all processes and through the alarm profile leads to the decision, on what definable action should be executed.



Alarm profile

- ▶ The alarm profile can be compared to a fire wall. The information gets filtered with the following parameters:
 - ▶ Date and time
 - ▶ Day
 - ▶ ID of the trigger sensor
 - ▶ Class of sensor (camera, network, etc.)
 - ▶ Manual activities and deactivation
 - ▶ Timeout by pre-alarm of the same trigger/release or the involved logical event group.



Alarm profile

- ▶ The alarm profile is completely replicated on all involved video modules, so that the decision and alarm execution is possible, if the central computer is not available or obtainable.
- ▶ The found decision goes to a number of definable actions. Thereby one chooses the appropriate action
 - ▶ Action for the evaluated alarm type
 - ▶ Action for the sensor in question or sensor group



Event administration

- ▶ Triggered alarms lead to an event. Alarms arrive in the same sensor group, then they are classed with the same event, if a logical coherence exists. This must be initially configured.
- ▶ Images, because of an event, that have to be archived or shown, get classed as a trigger event.
- ▶ If an event is recognised as irrelevant, this complete event with involved images, can be cleared later.
- ▶ The documentation for the observation place is carried out by event orientation, so that "together searching" of the involved cameras as well as the unnecessary multiple documentation is dropped.

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External module

- ▶ **WebView** makes room for the additional integration of detection routines. Hereby a programmed interface is provided with the shell

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Signal in and output

- ▶ For the in and output of electrical signals, an external module is fallen back upon, this has 24 Opto coupling in and output. The maximum mode tension is 24 V DC.
- ▶ Additional relays are used for the realisation of control. I/O-Module relays are standardised into support equipment. The connection is carried out over an 100 Mbit ether netport.

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Interface to existing system

- ▶ Most of the existing systems use, with external pieces of equipment, the serial interface for the communication. This can be brought into **WebView** to improve the information precision. Not only the “alarm” information gets transmitted, but also which sensor has recognised the alarm.
- ▶ This is important for **WebView**, that through these, the deciding process changes and adapts to the new known knowledge through this.
- ▶ Over the software breakout it is possible to find the interface.



Video display and control

- ▶ **WebView** provides the following possible controls:
 - ▶ shows camera x on monitor y at position z
 - ▶ shows run 1,2,3,4,5....99 on monitor y at position z
 - ▶ shows 1,2,3,4 on monitor y
 - ▶ turns dome x to horizontal and b to vertical
 - ▶ Zooms dome x in or out
 - ▶ Archive camera x (for duration of time t) and then generates a new event
 - ▶ move to definite position a with dome x
 - ▶ generate alarm for sensor x and carry out a decision
 - ▶ delivers the last x event numbers

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Video display and control

- ▶ Additional in archive
 - ▶ hole event list
 - ▶ show event x
 - ▶ single image
 - ▶ forward and rewind (fast and slow)
 - ▶ fixed image

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Audio module and ELA interface

- ▶ From working stations with head sets it is possible to input the system with announcements. These can be static, retrieved and played out or just a recorded message and sent out
 - ▶ Herewith can be defined
 - ▶ At which loud speaker or loud speaker groups the announcement shall be sent to
 - ▶ Before or after signal e.g. gong
 - ▶ Priority of the announcement
 - ▶ "Rehearsal announcement", this announcement is only sent when the operator is content with the message
 - ▶ Save the message to running events
 - ▶ Automatic generated message with various voice fragments

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Audio module and interface

Attention:

The audio functionality due to the „Store- and Forward-Konzept“ is not suitable for live transmitting. There is always a delay/time lag to be taken into account, with a queue of messages, one of priority can be put forward.



Failure and redundant concept

- ▶ **WebView** is constructed so that single components can be disturbed without a complete function failure.
Take care of the following:
 - ▶ The consequent replication of profile and configurations
 - ▶ The central configuration
 - ▶ The multiple interpretation of critical processes

- ▶ The restart, after failure of the processor after installation of the basic software is easy, the whole configuration is replicated in all active modules and by an empty restart they are transmitted automatically to the central computer

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Strange access

- ▶ For security guards and network failure it is necessary to have an outside access. The log-in to the router goes directly over the ISDN-Network. The router checks the user name, password and source number.
- ▶ If required, a call back can be defined, so that the connection is always carried out by **WebView** after authentication.
- ▶ The registering to the system is only possible from specified IP-addresses.