

# MOBOTIX

## HiRes Video Innovations

2009

# Why are **IP**-Cameras still in the minority ?

# Why HiRes-Cameras Are Still In The Minority ?

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## Arguments of the analog community against HiRes Cameras:

- require too much network load
- expensive cameras and lenses
- require too much storage
- PC is overloaded by displaying high frame rates
- PC can handle only few HiRes cameras
- centralized Video Management Software is overloaded by
  - unpacking and decoding MPEG4
  - image analysis
  - down scaling of image size for displaying
  - down scaling of image size and frame rates for recording

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**but, would you buy a still camera for the family with 0.1 megapixel?**

# Resolution Makes The Difference



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# The Main Question in Video-Security is

**not** Analog or IP

**but** LowRes or HiRes

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**==> HiRes is only possible by using IP cameras**

# Why **high-resolution** video?

## 1. Better image quality ==> more effective post-processing

- Higher resolution offers more detail
- Better photofit pictures and better image analysis

## 2. Less cameras necessary ==> **reduced system costs**

- One Super Wide Angle covers an entire room
- One camera for four lanes of a gas station



## 3. Digital zoom and pan ==> **more robust and less maintenance**

- No moving parts necessary when using 3D digital image processing
- Virtual PTZ with 360 degree with lens distortion correction
- **Hemispheric** technology generates better scene overview

# High-resolution Video Reduces The Number Of Cameras



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**==> One single camera for 4 gas pumps**

## The advantages of **high-resolution video**:

- Considerably more detail in the image
- Superior overview thanks to wide angle system
- Less cameras necessary
- Virtual PTZ (no moving parts)
- Hidden camera systems thanks to hemispheric technology

**==> High-resolution video reduces the number of cameras required**

# What does **high-resolution** mean in general?



# Resolution Does Make A Difference



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# Do **high-resolution** video systems require more storage capacity?

## Do **high-resolution** video systems require more storage capacity?

- Four analog cameras at a gas station need the same exact amount of storage capacity as **one** single high-resolution camera that alone can monitor four gas station lanes
- Customizing the image format - resolution and image size - to the application, reduces storage capacity
- Hiding image areas reduces storage capacity

**==> each camera should be adapted individually**

**==> HiRes requires comparable storage capacity when correctly adapted**

# Free Image Format Choice Reduces Storage Capacity



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**Do high-resolution video systems require more bandwidth on the network?**

## Do **high-resolution** video systems require more bandwidth on the network?

- Four analog cameras at a gas station need the same exact amount of bandwidth as **one** single high-resolution camera that alone can monitor four gas station lanes
- Customizing the image format - resolution and image size - to the application, reduces bandwidth
- Hiding image areas reduces bandwidth
- A **decentralized system structure** reduces bandwidth up to **zero**

**==> The concept of the system structure is essential**

## Image scaling, image analysis, frame scaling, recording of **HiRes video streams** require

- a huge increase in computer performance

**or**

- an expensive multiple PC structure

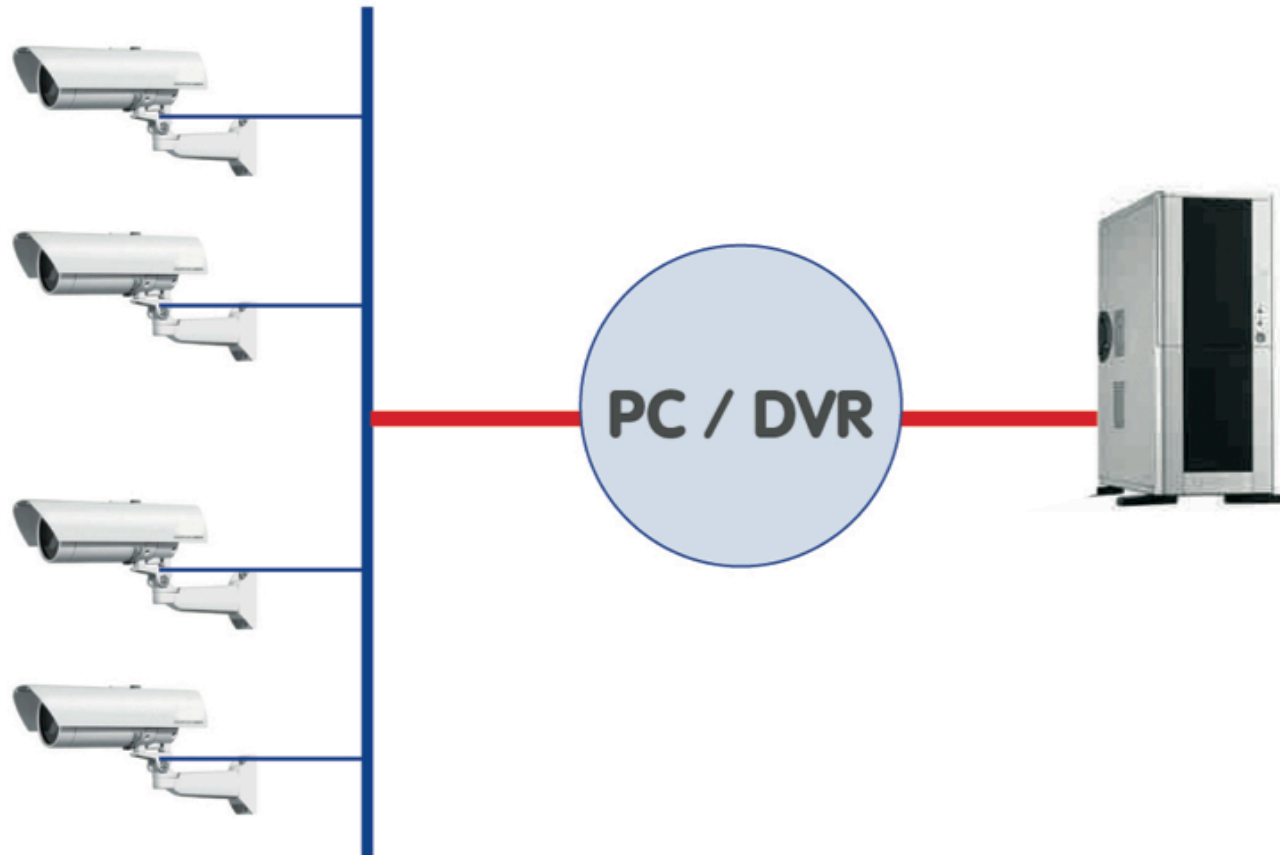
**or**

- a new **decentralized system architecture** by outsourcing more functions from the central management PC into the camera

# What is a **decentralized** system concept ?

# The Differences In The System

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**==> PC and the network are the bottlenecks**

## The key features of a **decentralized** system concept:

- Image processing takes place in the camera
- Event recording and management (e.g. VideoMotion) takes place in the camera
- Recording is managed by (and **inside**) the camera itself !!!  
(via network on PC or internally on Flash)

**==> The decentralized system reduces the load on the PC or DVR**

## Flash & USB-stick recording does NOT require DVR or PC

- Autonomous recording without PC or Server connection
- With internal video ringbuffer and data management
- No recording and no video management software necessary
- No network load
- No mechanical moving parts
- Burglar-proof with an USB memory via cable

**==> the cost efficient way of recording**



**==> external recording via network to NAS is also possible**

The decision in 2001 to use  
a **decentralized** system architecture  
allows **MOBOTIX** to build **HiRes** Video Systems



# Why are **high-resolution** systems not used everywhere?

## Why are **high-resolution** systems not used everywhere?

- Lack of education in the market
- Not every manufacturer offers high-resolution technology
- The **centralized system structure** of existing systems (video management software on PC) is overloaded by too **many** high-resolution cameras

(more computing power, server, bandwidth, etc. are needed)

**==> Many HiRes systems are too expensive because of their system structure**

# Is **high-resolution** video too expensive?

## Is high-resolution video too expensive?

- The combination of high-resolution cameras and old centralized system concepts require more computing power (more servers, PCs) and is therefore, too expensive
- MOBOTIX offers a **decentralized system concept** with storage management through the camera and inside the camera

==> weatherproof gas station camera for four gas lanes ~1000 €

(including 16 GB recording for 2 days, lenses, software and wall mount)

==> **With the correct system structure, HiRes is even more cost efficient**

# Resolution Makes The Difference



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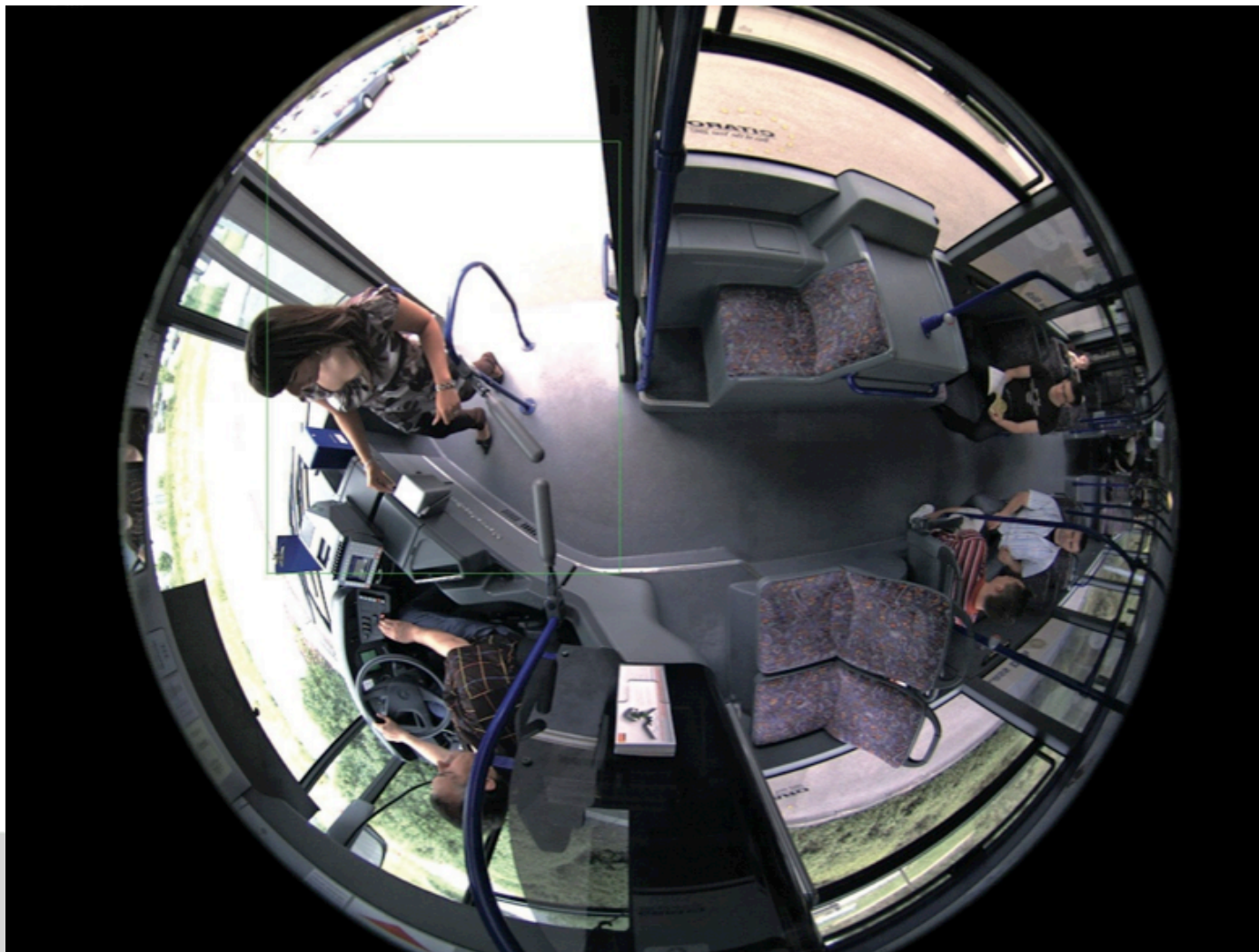


# New camera technology using decentralized & high-resolution systems

# Virtual PTZ Q22 Hemispheric Camera



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# Panorama: Q22 Hemispheric Camera



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# 180° Panorama Corrects Image Distortion **Inside** The Camera



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# Panorama focus: Q22 Hemispheric Camera



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Hemispheric technology is **efficient**  
only with **high-resolution** video  
only with a **decentralized** concept  
only with an **internal** recorder



# Conclusion

## The Essential Features Of MOBOTIX Camera Solutions



## 1. HiRes offers wider angle of view

- better overview & more details
- less cameras and therefore less costs



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## 2. Flash recording doesn't need external recorders or PCs

- autonomous recording without PC or server connection
- no recording software necessary
- zero network load
- no mechanical moving parts



## 3. Hemispheric technology offers full scene overview

- discreet camera design
- panorama view allows better perception of room orientation
- PTZ functionality with no mechanical moving parts



## 4. **Software onboard** forms complete solution

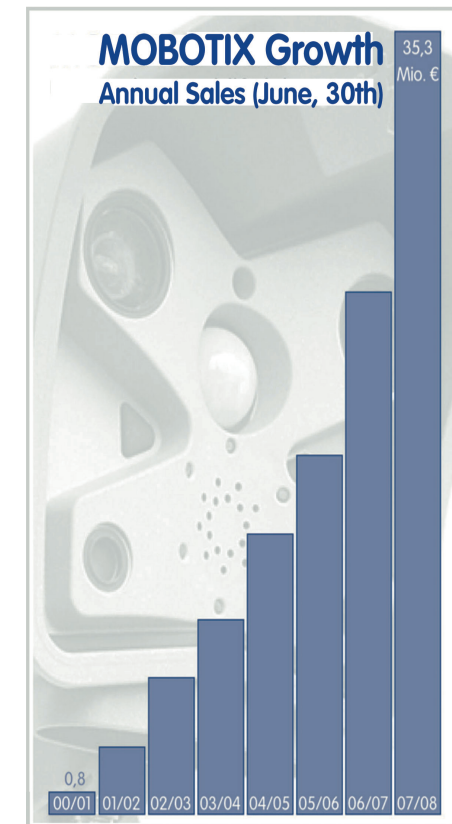
- supports full set of camera features (decentralized recording)
- no third party dependency
- free of charge and therefore very low system costs







- AG foundation in 1999
- Most successful IPO in 2007
- Revenue 35m Euro, export 65%, 200 employees
- Profitable: 4.9m Euro after tax, 19% EBIT
- Entire technology in-house
- Development and manufacturing of cameras, electronics & software in Kaiserslautern
- 60% global market share in megapixel





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# Security-Vision-Systems



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