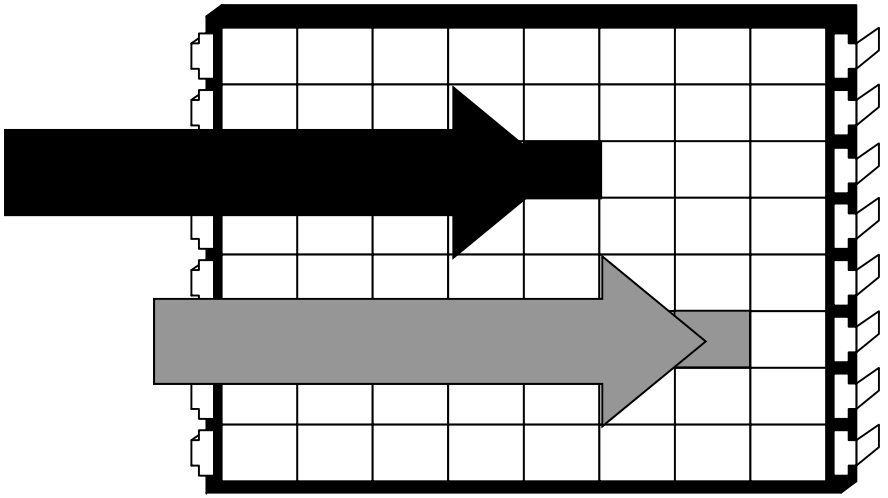
The importance of resolution

A pixel

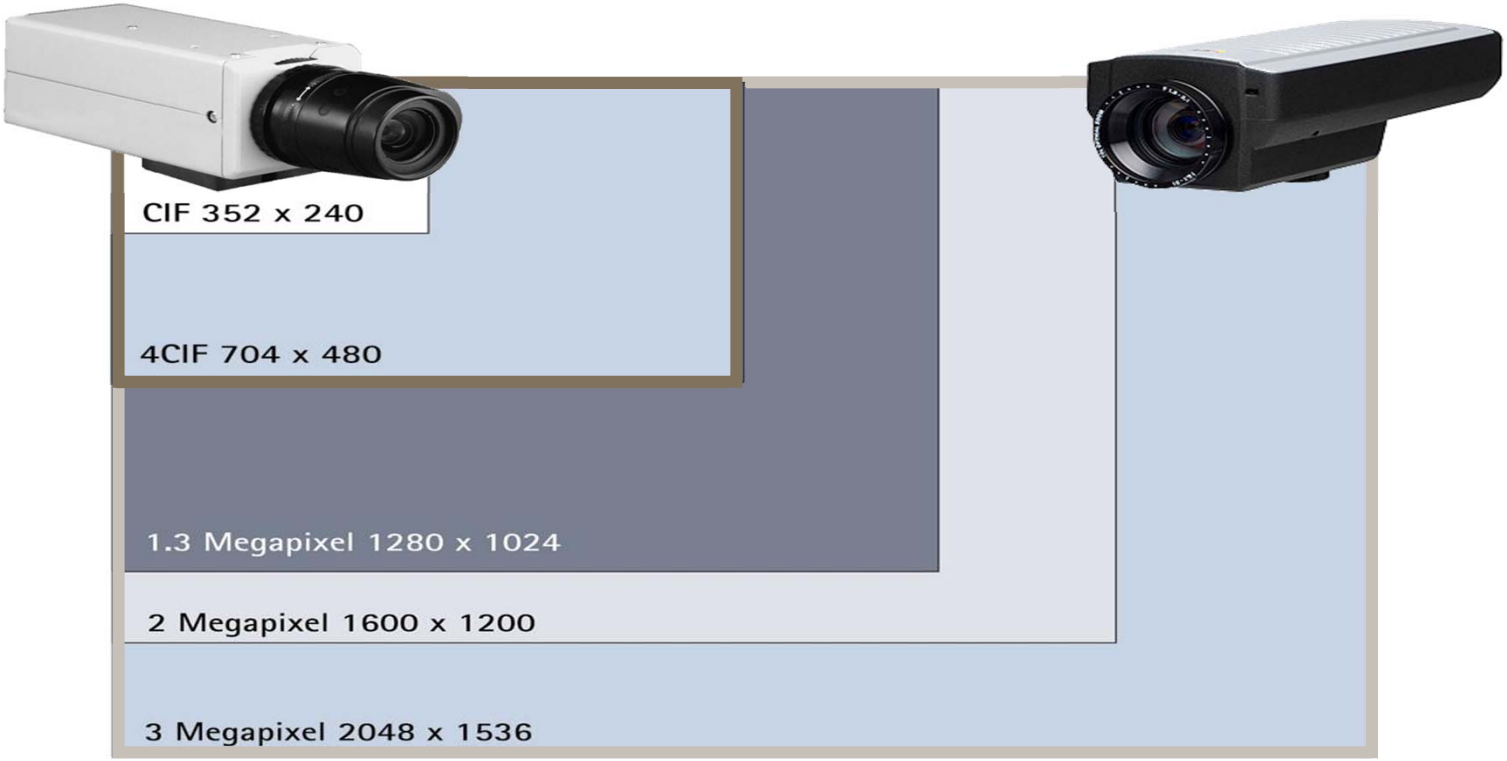
> The smallest individual unit that makes up the final image

> 1 million pixels make a Megapixel sensor



What is resolution?

The implication of resolution



Facial recognition

Why and When

> When ID is very important

> Unmanned areas

> High cost equipment or money is involved

> Live monitoring for entrance to a building

> After the fact

Let’s do the math!

The scenario: A Gate Entrance

Steps to know

Performance	Face width	License plate
Strong identification	120 pixels	15 pixels /character height
Recognition	80 pixels	10 pixels
Detection	40-70 pixels	

> Facial recognition simple math – Width in Inches X # of Pixels/ face= Total resolution needed

> A “normal” face is 6.3 in wide

> Recommendations for face width for positive ID varies from 60-80 pixels

> 32 ft of gate entrance requires:

((32 * 12) * (60 to 80)/6.3 inches per face) ≈ 3660 to 4875 pixels

384” * 60/6.3 ~ 3660 pixels (Use 1=P1347 H=2560 + 1=P1344 H=1280 Total = 3840)

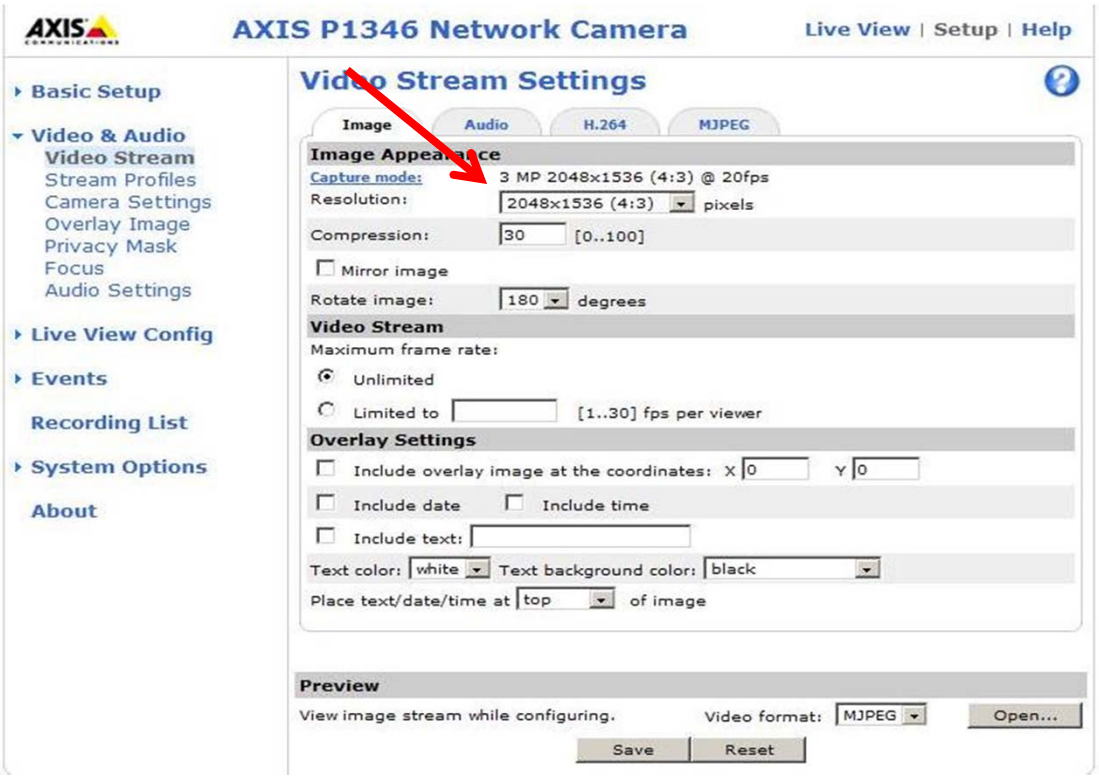
384” * 80/6.3 ~ 4875 pixels (Use 2=P1347 H=2560 Total = 5120)

How to use the Pixel counter in the camera

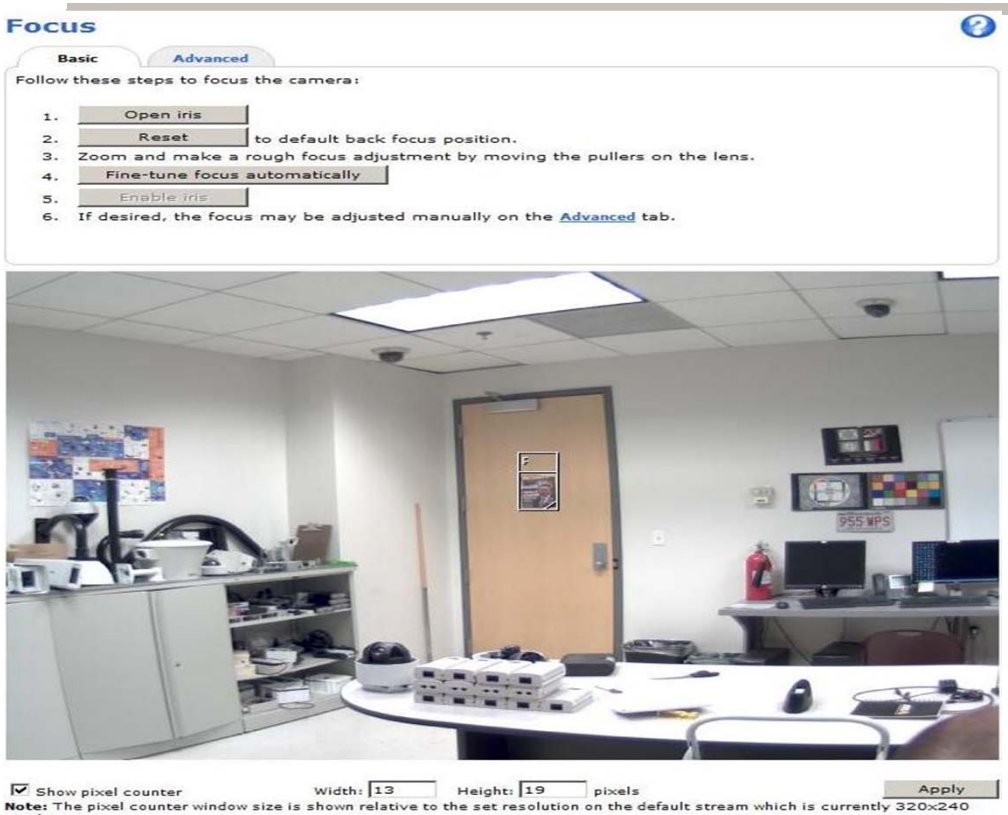
How to configure pixel counter

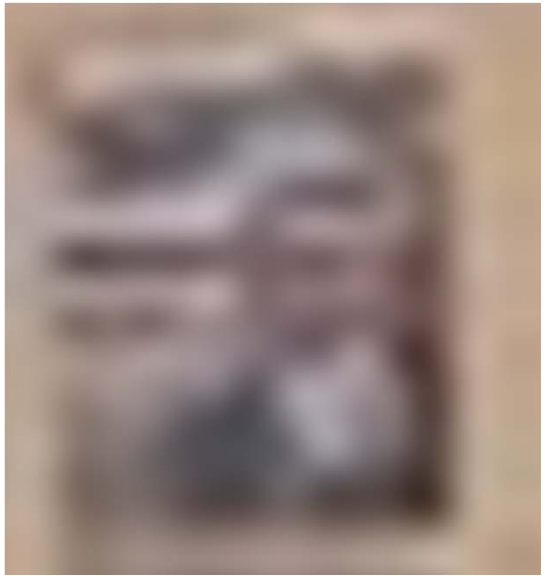
1. By default it is 60
2. Adjust it by resizing box

Understand your resolution determines the amount of pixels

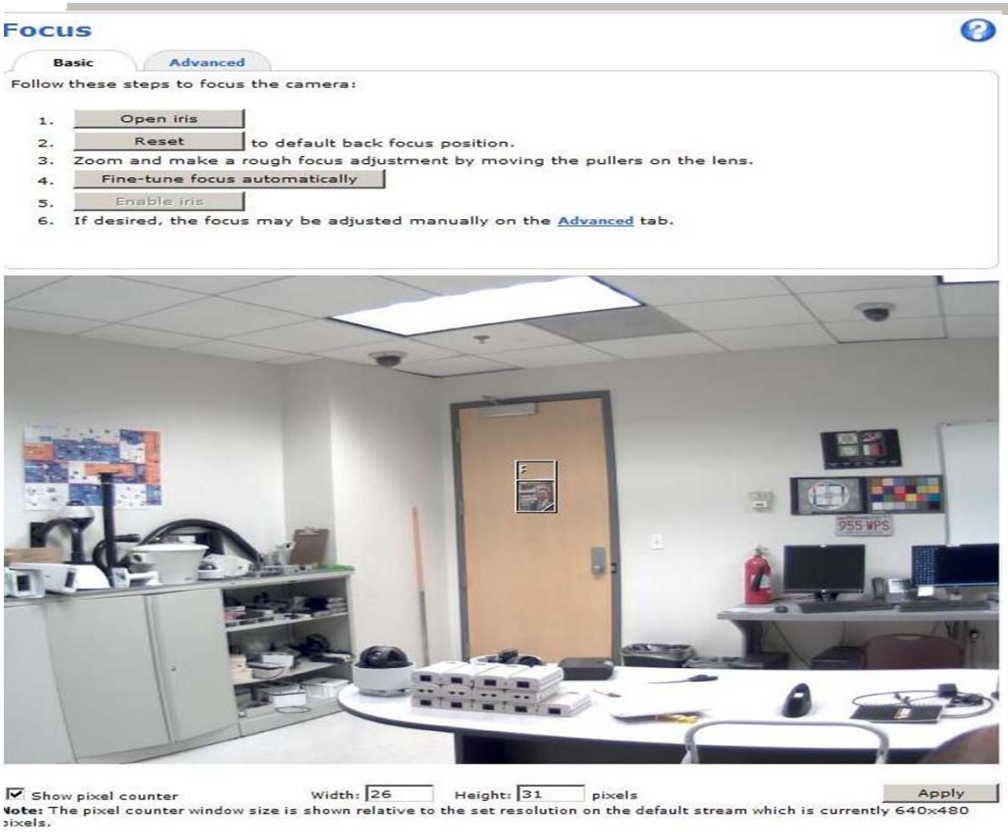


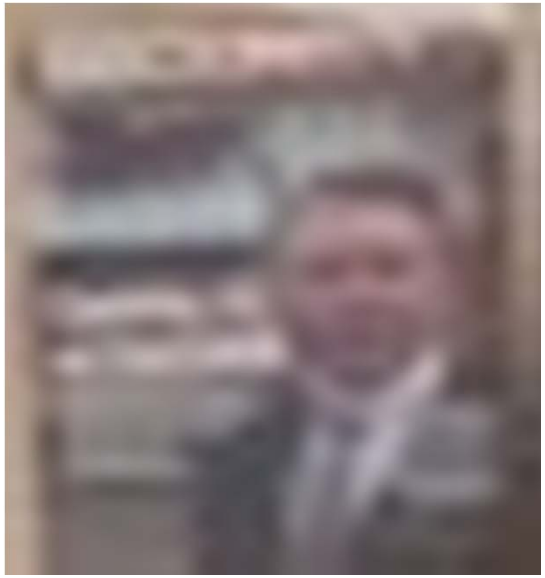
320 x 240 - 20 Feet- 13 Pixels – 4mm lens



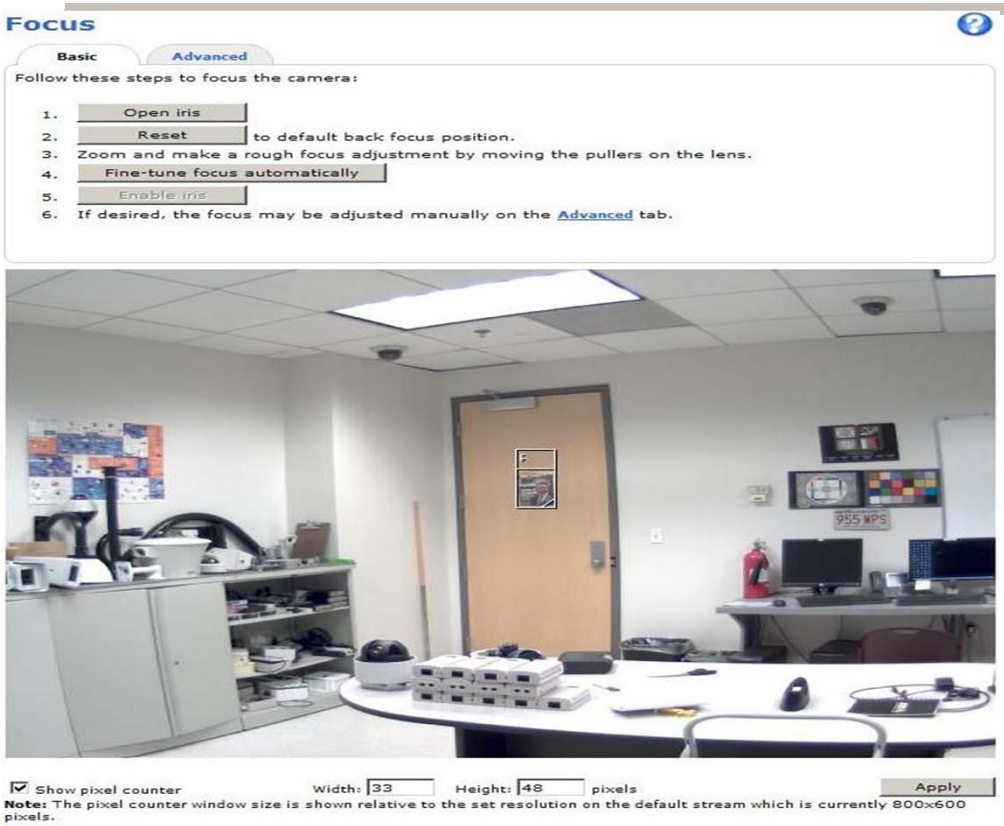


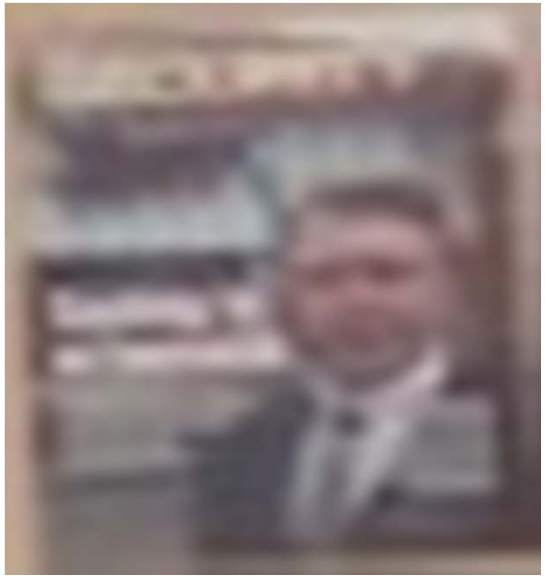
640 X 480 - 20 Feet- 26 Pixels – 4mm lens



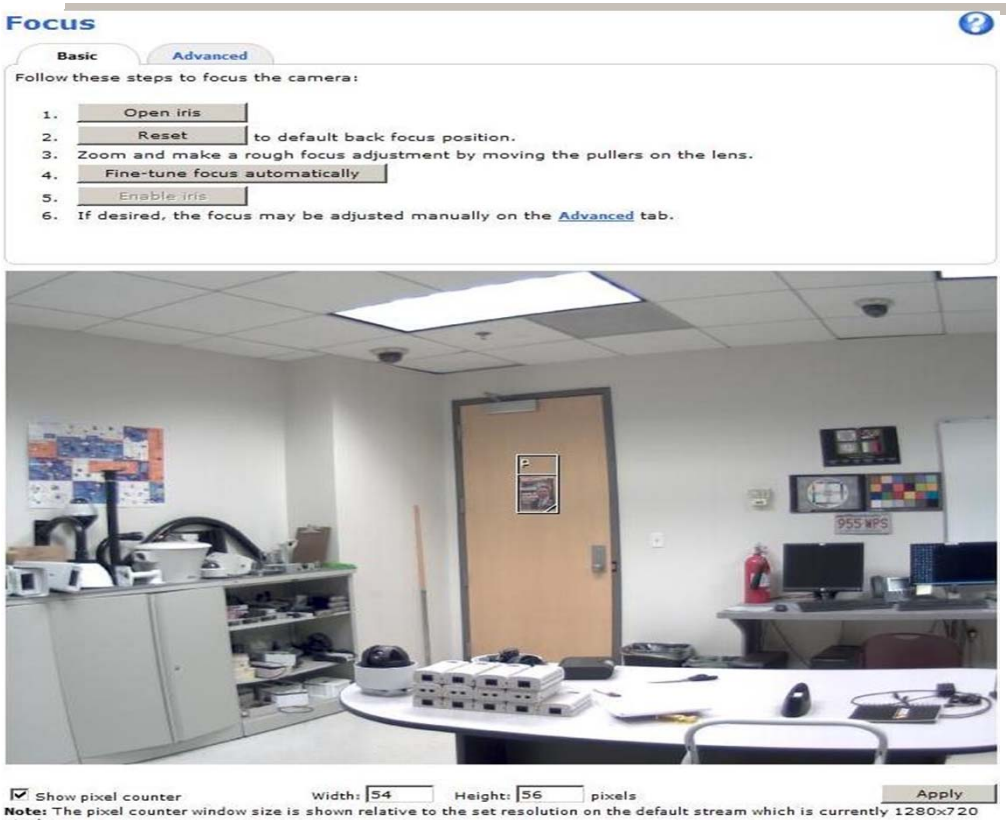


800 X 600 - 20 Feet- 33 Pixels – 4mm lens

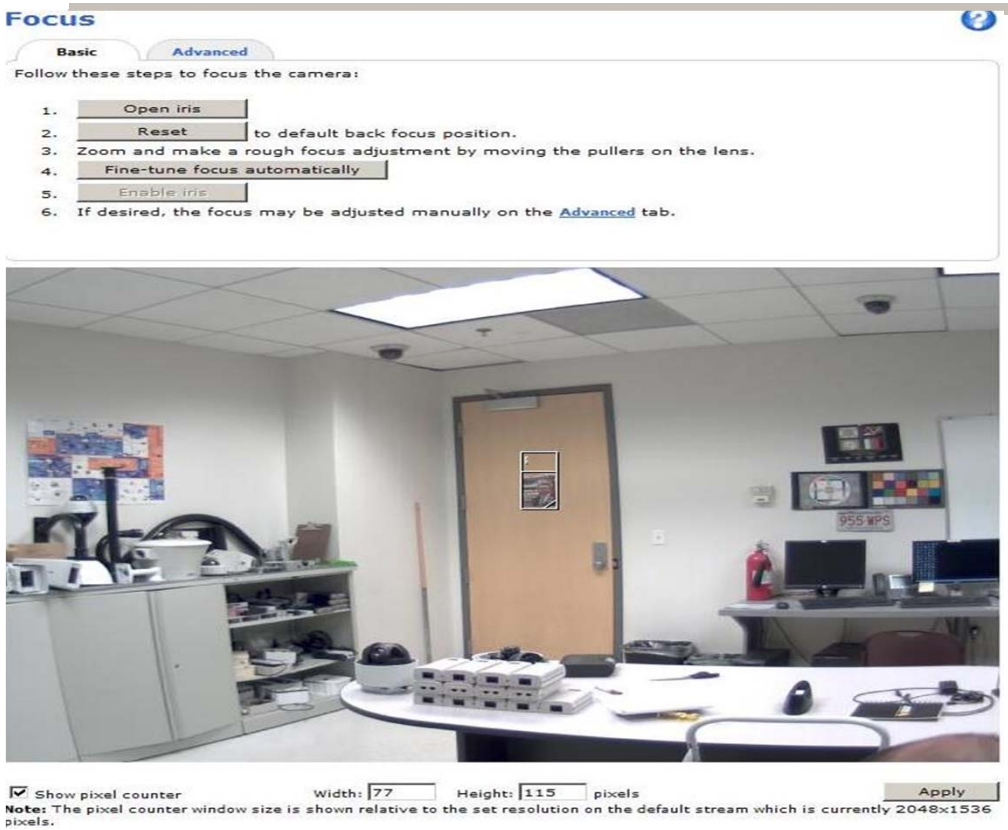




1280 X 720 - 20 Feet- 54 Pixels – 4mm lens

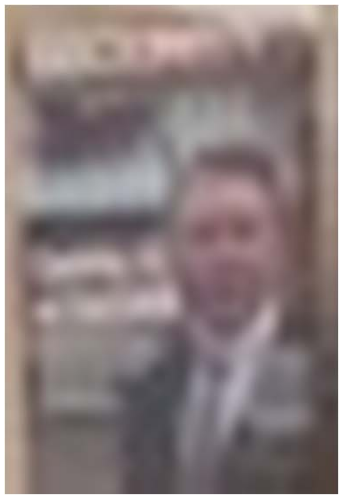


2048 X 1536 – 20 Feet- 77 Pixels – 4mm lens



The higher resolution = more pixels

4mm
13 Pixels
320X240



4mm
26 Pixels
640X480

4mm
33 Pixels
800X600

4mm
54 Pixels
1280X720

4mm
77 pixels
2048X1536

Image Usability

What is Image Usability?

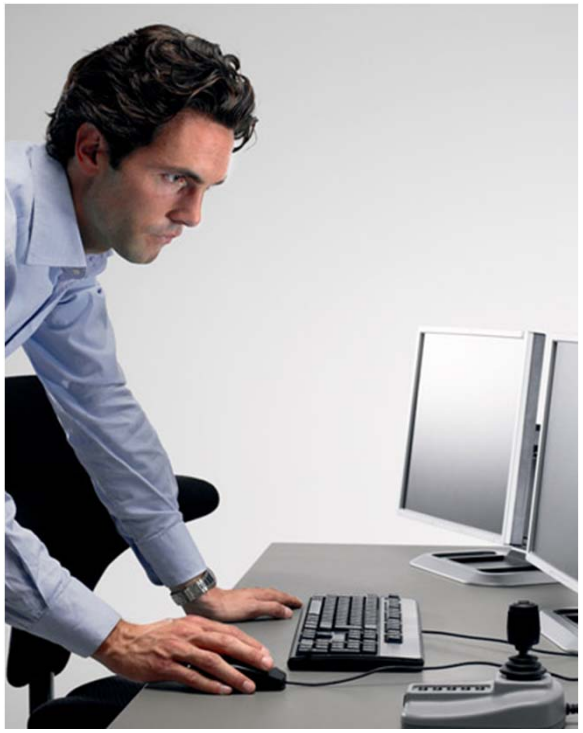
Image Usability means:

> **Ensuring** that your video can be used for the purpose that your system is designed for

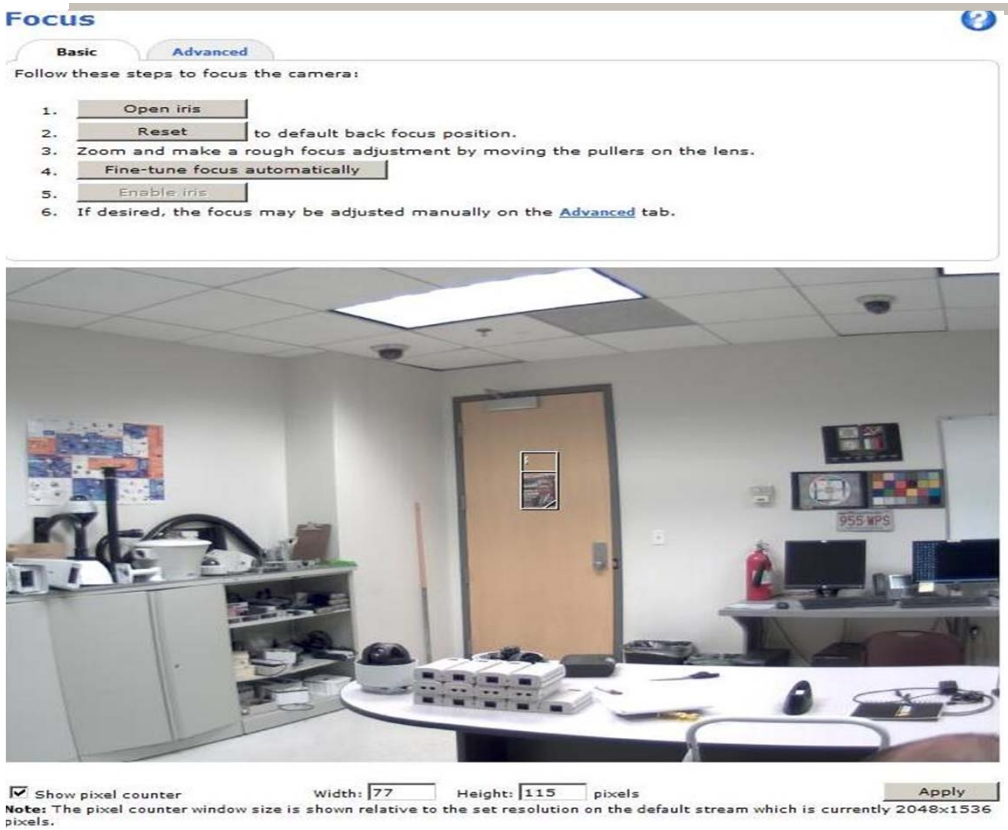
> **Focusing** on your specific needs and application

> **Helping** you by

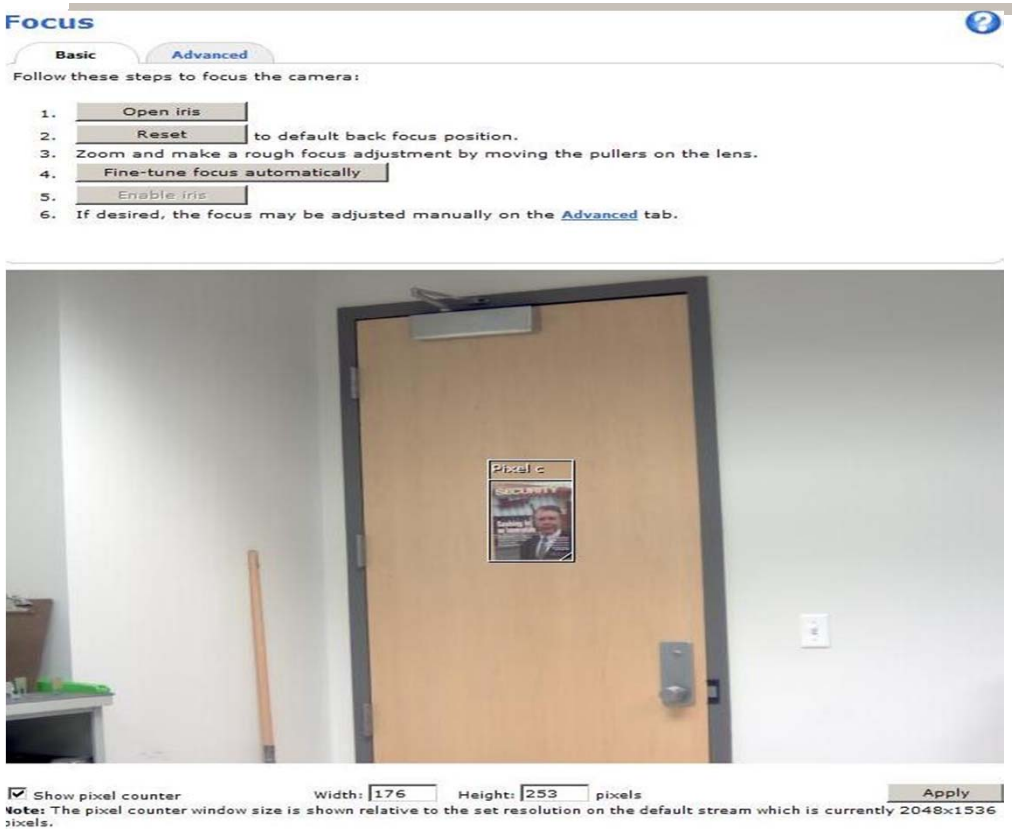
- Sharing Axis' experience and competence
- Delivering the right network video products
- Providing tools and tutorials
- Giving you access to Axis' partner network



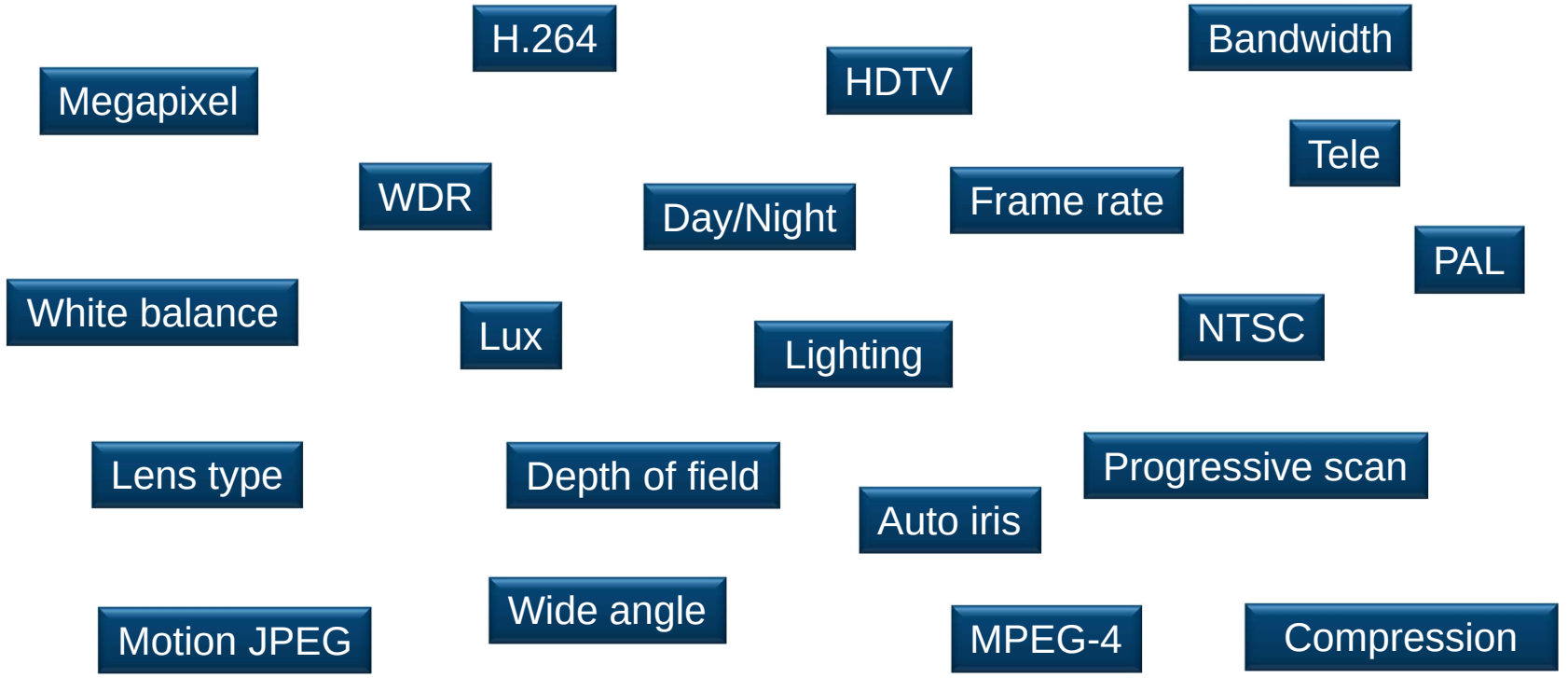
2048 X 1536 – 20 Feet- 77 Pixels – 4mm lens



2048 X 1536 - 20 Feet- 176 Pixels – 10mm lens



Which technology is most important?



Six simple steps to Image Usability

> Goal definition

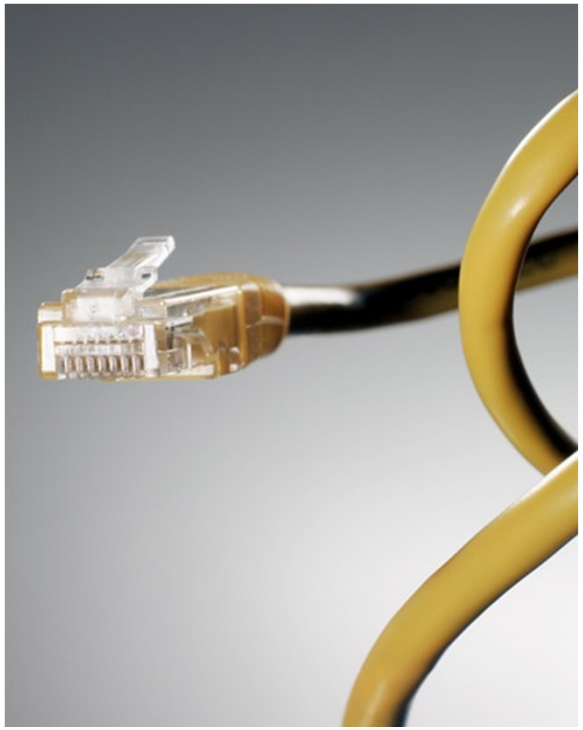
> Scene analysis

> Camera selection

> Camera mounting

> Camera configuration

> Screen calibration



1 – Goal definition

Goal definition

You need to decide the purpose:

> Overview surveillance?

> High-detail surveillance?

> Deterrence?

> Detect or identify people?

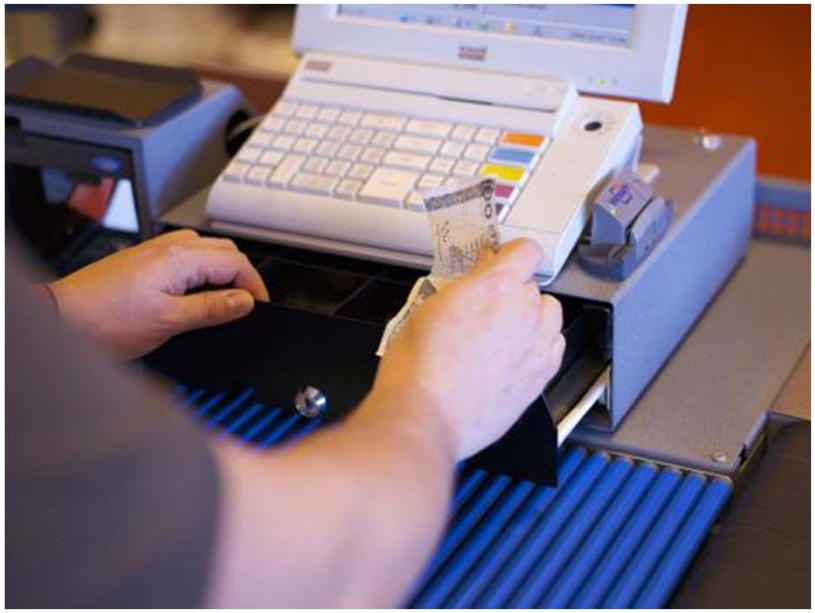
> Read license plates?

> Live monitoring or recording?

Goal definition – overview or high detail

Is overview enough...

...or high detail required?



Goal definition – deterring or discreet

Is deterrence a factor...

...or is discreet surveillance a priority?

Goal definition – detection or identification

Is it enough to detect people...

...or necessary to identify faces?

2 – Scene analysis

Scene analysis

Carefully analyze the scenes to be monitored:

>Area of coverage?

>Day and night?

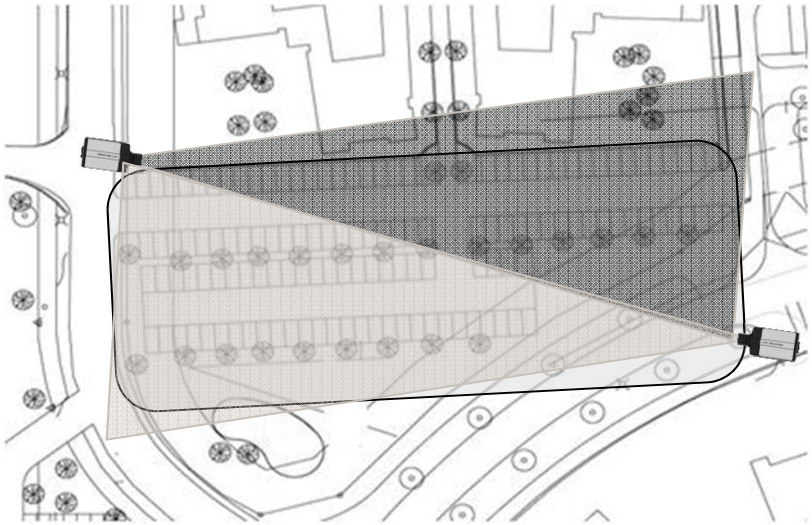
>Indoor or outdoor?

>Lighting conditions?

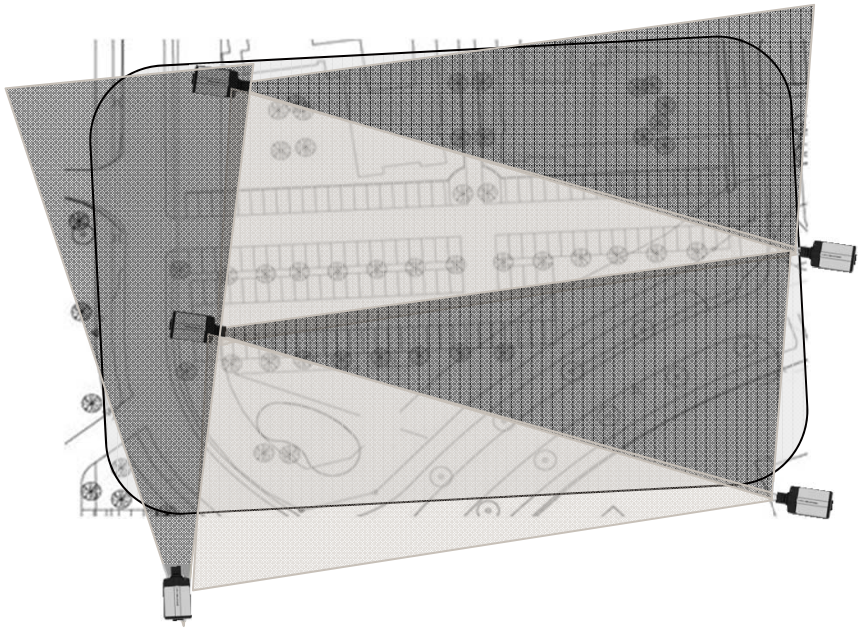
>Overt or covert surveillance?

Scene analysis – area coverage

Cover just the parking spaces...



...or adjoining streets, too?



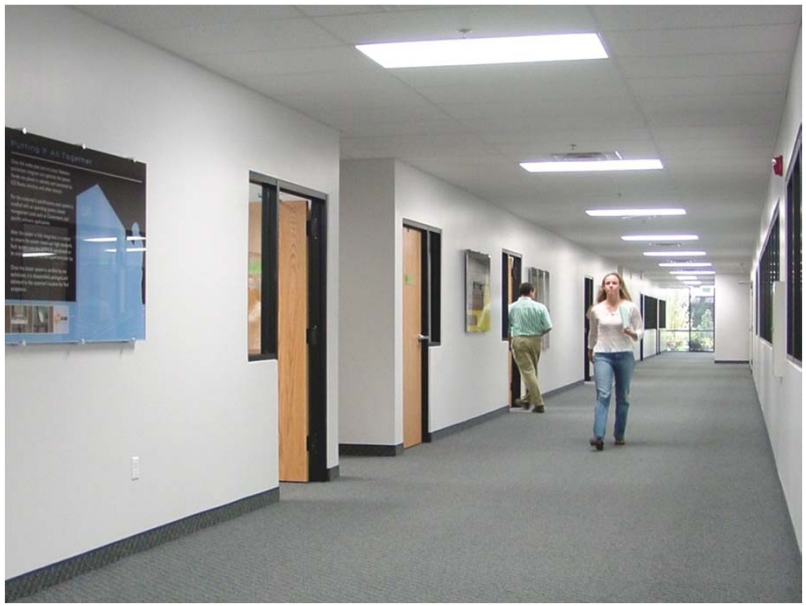
Scene analysis – area coverage

Daytime only...

...or 24 hours surveillance?

Scene analysis – indoor or outdoor

Indoor...



...or outdoor?

3 – Camera selection

Camera selection

Make the right technology choice:

> VGA, Megapixel or HDTV?

> WDR (Wide Dynamic Range)?

> Optics?

> Fixed or PTZ?

> Iris control?

> Light sensitivity?

Camera selection – VGA, megapixel or HDTV

Does VGA best solve the problem...

...or megapixel, or HDTV?

Camera selection – wide dynamic range

Do you need Wide Dynamic Range?

Camera selection – lens choice

Choosing the right lens and optics

Wide	Normal view	Telephoto
		
85°	35°	10°

4 – Camera mounting

Camera mounting

Consider how and where to mount the cameras:

> High up or at face level?

> Need to add light?

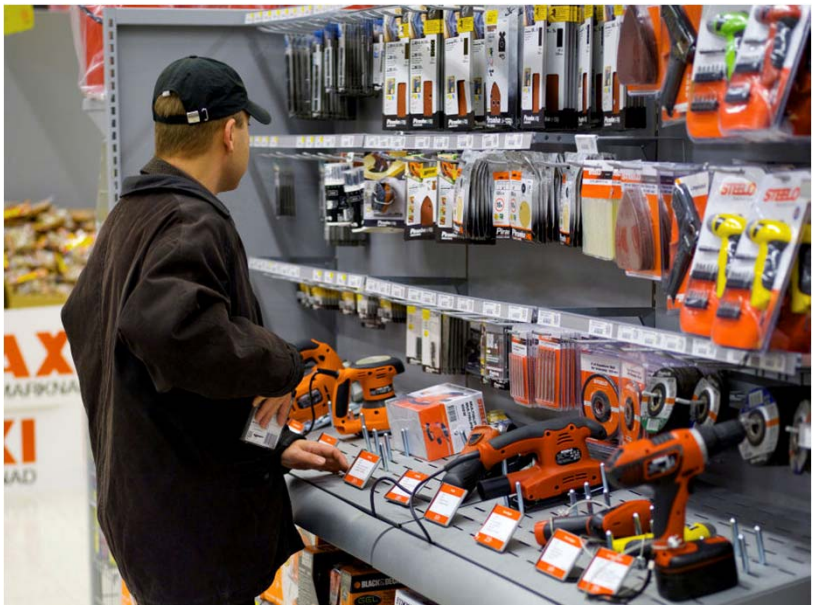
> Handle backlight and sunlight

> Legal considerations

Camera mounting – mounting height

High up...

...or face level?



Camera mounting – light

Natural light...

...or added light?

5 – Camera configuration

Camera configuration

Properly adjust all camera settings:

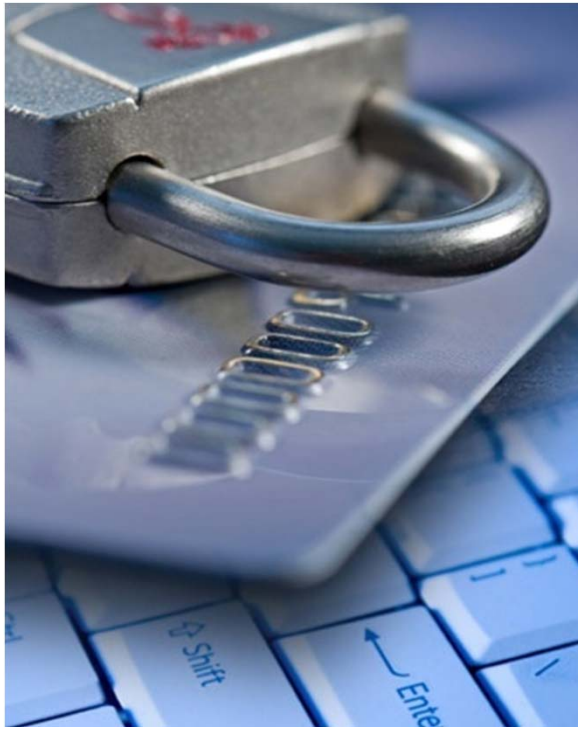
> Compression

> White balance

> Field of view and focus

> Image exposure

> Frame rate



Camera configuration – compression

Low image compression...

...or high image compression?

Camera configuration – compression

But can you see the difference in these images?

Low image compression...

...or high image compression?

Camera configuration – field of view and focus

Manual effort on most cameras.

Can be done from the computer on some Axis cameras:

> Remote Zoom

> Remote Focus

> Pixel Counter

6 – Screen calibration

Screen calibration

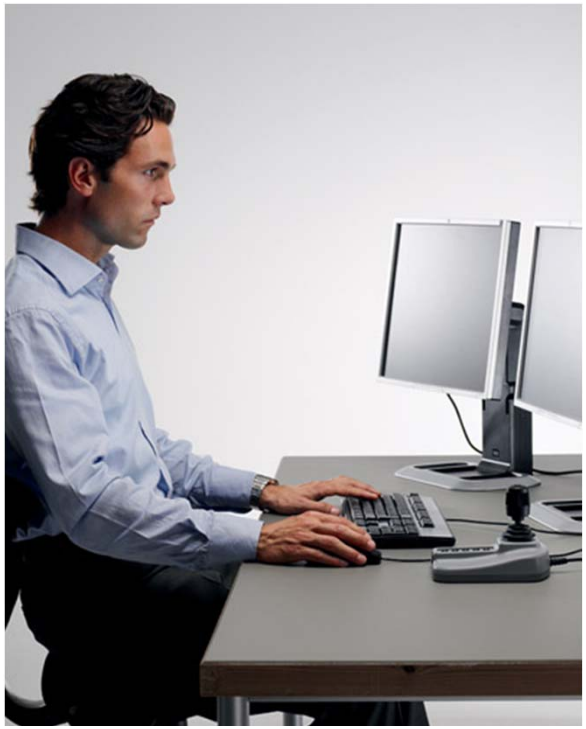
Making sure you're seeing things the right way:

> Adjust brightness

> Adjust contrast

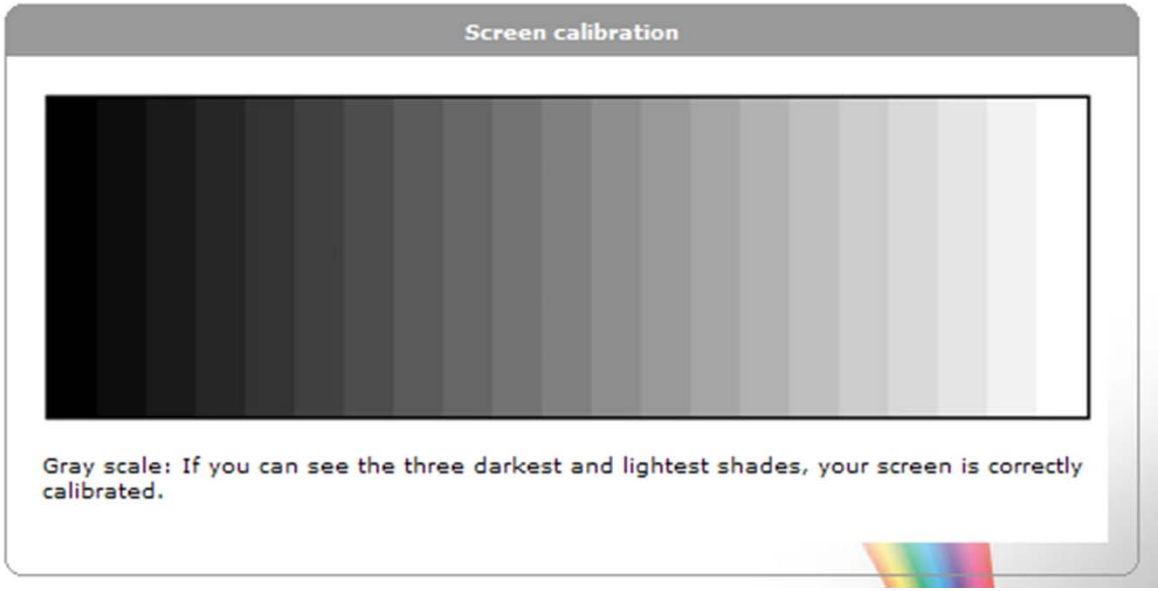
> Adjust gamma

> Adjust sharpness



Screen calibration – optimize your viewing

From Axis Screen Calibration tool:



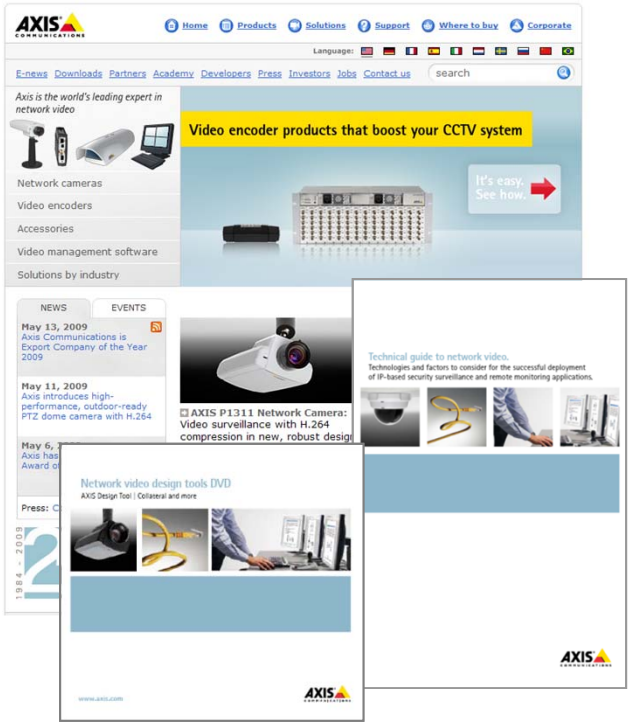
More information – Summary of Axis tools and tutorials

Three key sources

> Visit www.axis.com for comprehensive tools, tutorials and information

> Axis Technical Guide to Network Video

> AXIS Network Video Design Tools DVD



All online tools in one place

www.axis.com/tools

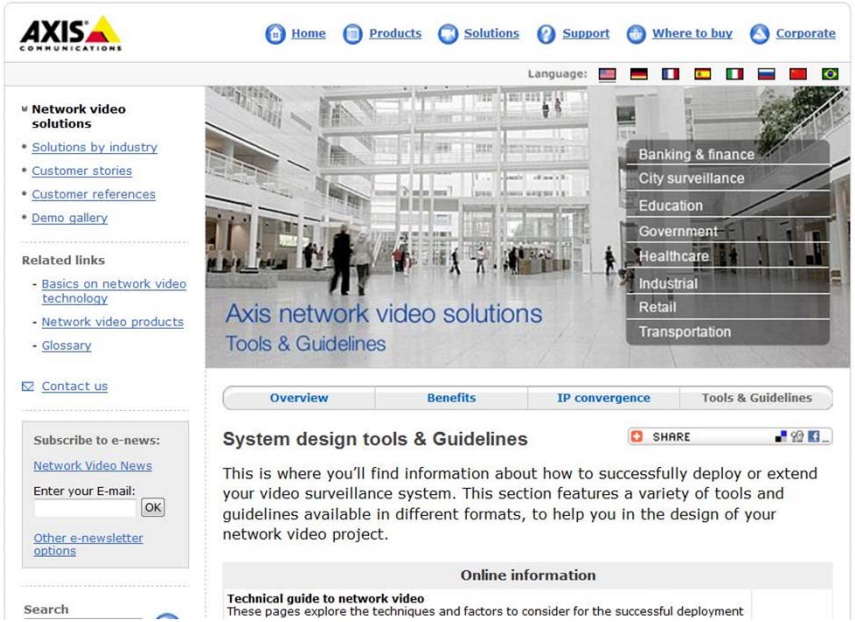
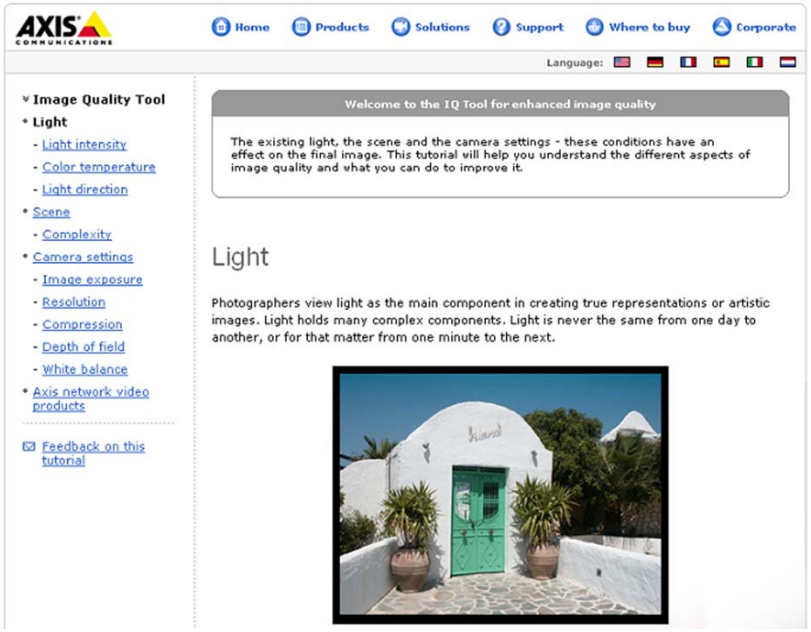


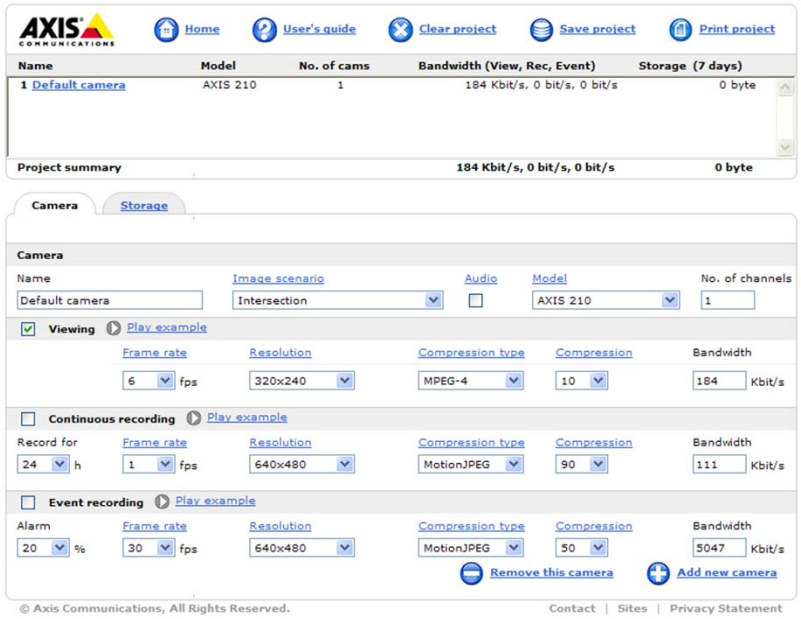
Image Quality Tool

www.axis.com/edu



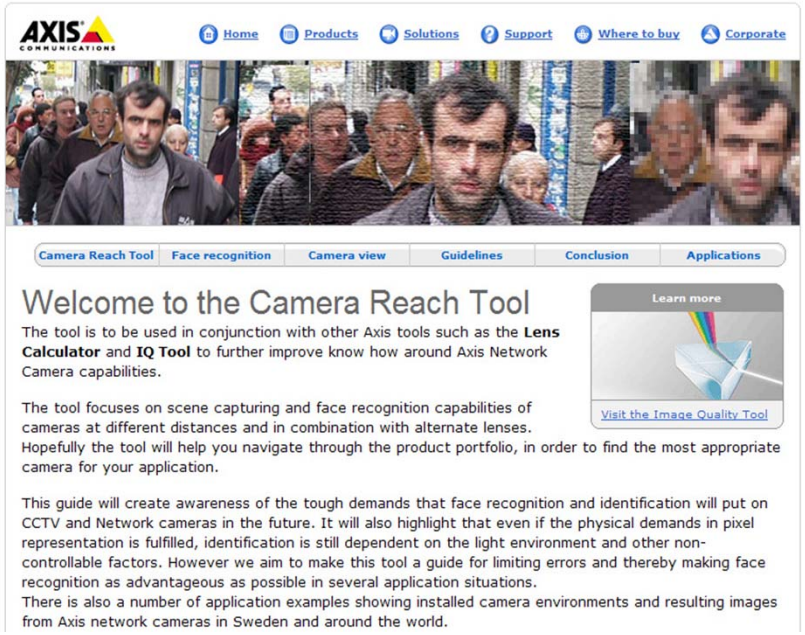
AXIS Design Tool

www.axis.com/products/video/design_tool/calculator.htm



Camera Reach Tool

www.axis.com/tools



Other available tools

- Product comparison guide found at www.axis.com
- Axis housing configurator
  - www.axis.com/products/video/accessories/configurator/
- Magic spreadsheet for license plate-, face-, and corridor view
  - www.axis.com/edu/cam_reach/appendix_a.htm
- AXIS Lens Calculator
  - Used to calculate the distance, coverage (width and height) or focal length
  - www.axis.com/techsup/cam_servers/lens_calculators/

Axis Trainings

Get the Axis picture. Stay one step ahead.