

Hacking **CCTV**

A Private Investigation

22C3

<http://www.quintessenz.at/cctv/>



quintessenz
Verein zur Wiederherstellung der
Bürgerrechte im Informationszeitalter

Overview

- Radio, Analog
 - Transmission modes
 - Frequencies
 - Receiver
 - Antennas
 - Encryption
- IP-Cameras
- Real-World Stupidity
- Self defense
 - Nondestructive Methods
 - Be invisible?
- Fun & Arts
 - Searchengines
 - “Baby” phones wardriving

Schwedenplatz

Warning Sign

(Press Version)



Minister for internal Affairs: Prokop



Schwedenplatz

Warning Sign

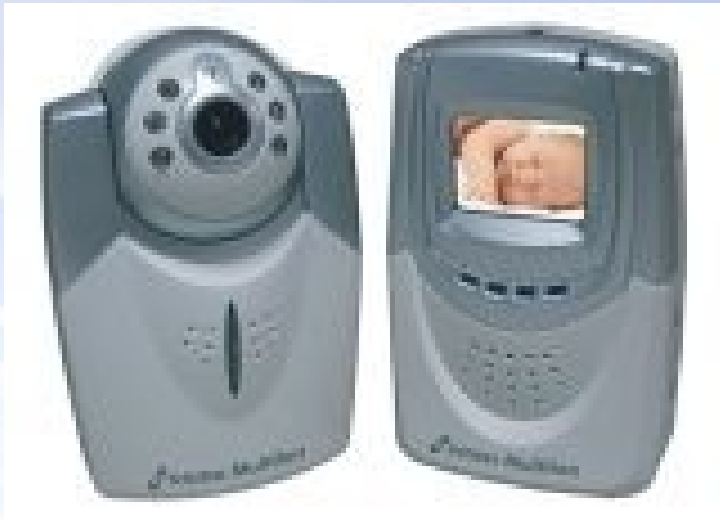


Schwedenplatz



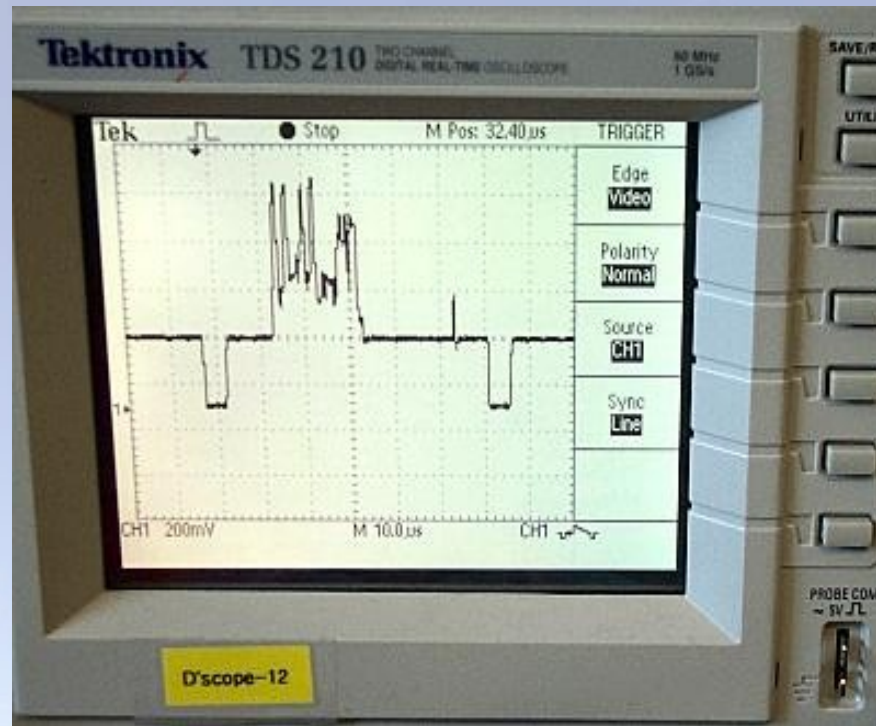
radiocameras

- Analog
- Modulation
- Encryption
- Frequent frequencies
 - 1,2-1,3 Ghz (ATV)
 - 1,4 Ghz
 - 2,3 Ghz (ATV+LEA)
 - 2,4 Ghz (ISM+ATV)
 - 5,8 Ghz



Modulation and Encryption

- AM-TV
- FM-TV
- Inverted Signal
- Modified H/VSync



Methods of Reception

- Original Equipment
- Arabsat - LNC
- ATV / 13cm / 23cm
 - http://www.darc.de/distrikte/g/T_ATV/13cm.htm



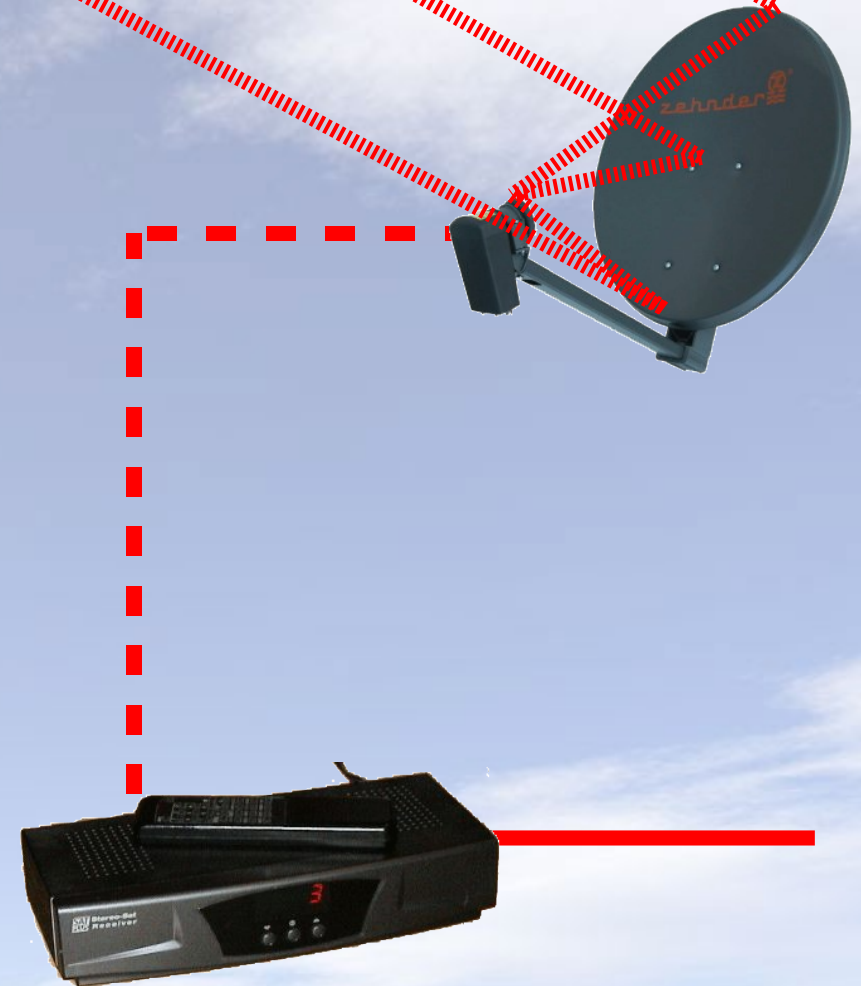
Videoscanner

- eg: Icom IC-R3
 - 0.5 to 2450 Mhz
 - 2" LCD
 - <http://www.icomamerica.com/>
 - New ~ 500€
 - PAL != NTSC



SAT Receiver !?

- ~11 Ghz Downlink-Frequency
- LNC converts to 1-2 Ghz
- $Zf = f_{\text{SAT}} - f_{\text{LNC}}$
- SAT-Receiver:
~ 950-2150 Mhz



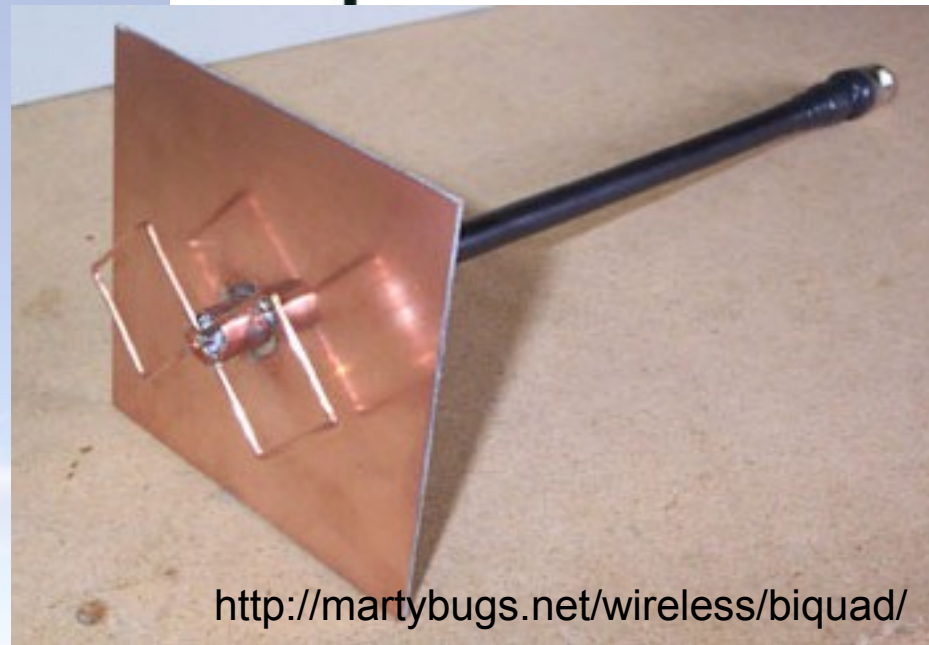
Up to **2742** Mhz

- Telestar/Technisat SatPlus SP2
- 700 - 2742 Mhz
- EBay ~ 15 €

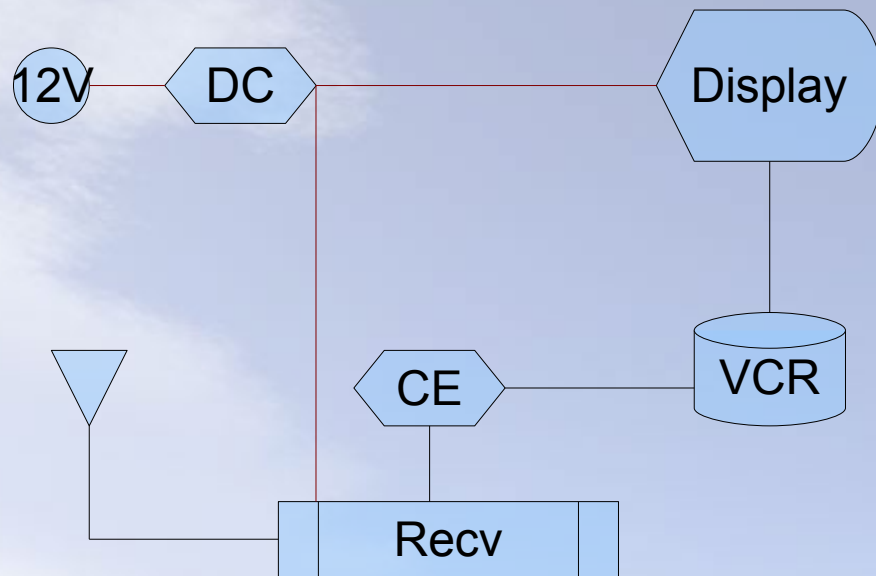


Antennas

- Microwave !?
- WLAN nearby!
- Buy one
 - or –
- Do it yourself



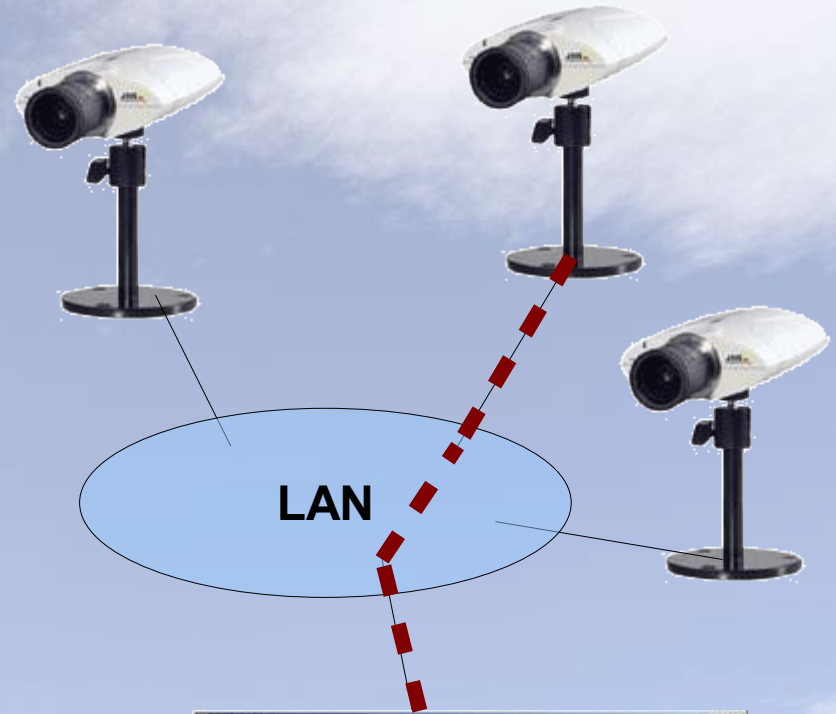
A possible Car Setup



- 12V-230V DC-Converter
- Screen
- VCR
- Copy-"Enhancer"
- Receiver
- Antenna

IP Cameras

- HTTP JPEG-Push Streams or MPEG
- Connected
 - Dedicated (V)LAN
 - shared LAN (!!!)
 - Internet (!!!!!!!!!!!!!!!)



IP Cameras

- ARP & Mac spoofing
- ethercap plugin ?
- Replace images in the stream
- Like in hollywood movies



IP Cameras @ Internet

- Searchengine-Hack

- Axis, Panasonic, ...

Liveapplet

inurl:"axis-cgi/mjpg"

inurl:"ViewerFrame?Mode="

inurl:"view/index.shtml"

inurl:"MultiCameraFrame?Mode="

intitle:"Biromsoft WebCam" -4.0 -serial -ask -crack -software
-a -the -build -download -v4 -3.01 -numrange:1-10000



The screenshot shows a Google search interface. At the top, the Google logo is on the left, and navigation links for 'Web', 'Images', 'Groups', 'News', 'Froogle', 'Local', and 'more »' are on the right. Below the logo is a search input field containing the query 'inurl:"axis-cgi/mjpg"', a 'Search' button, and links for 'Advanced Search' and 'Preferences'. The search results section is titled 'Web' and shows 'Results 1 - 10 of about 13,600 for inurl:"axis-cgi/mjpg". (0.04 seconds)'. The number '13,600' is circled in red. The first result is a blue link: '63.243.46.98:8081/axis-cgi/mjpg/video.cgi'. Below it, the text reads 'File Format: Unrecognized - View as HTML' and 'Similar pages'. The second result is another blue link: '128.196.12.29/axis-cgi/mjpg/video.cgi?&showlen...'. Below it, the text reads 'Similar pages'.

Self defense – Real World Stupidity

- CCTV is an invisible superhero ?



VIDEO CAMERAS
PROVIDE
ROUND THE CLOCK
PROTECTION
AGAINST CRIME
IN THIS AREA



Self defense

- Non Destructive
 - Airballoons
 - Plastic Bags
 - Tape
 - (Paintball)



Laser Zapping

- See <http://www.naimark.net/projects/zap/howto.html>

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Laser Zapping

- Laser Rifle
- 100m



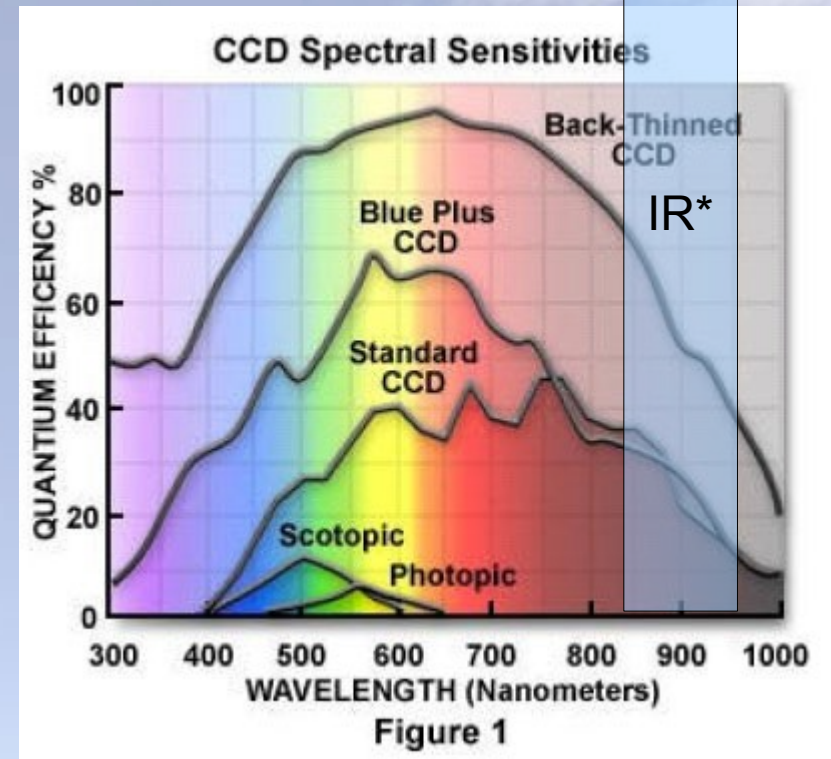
Laser Zapping

- Laser is a monochromatic light source
- Green & Blue Channel affected less



Infrared reception

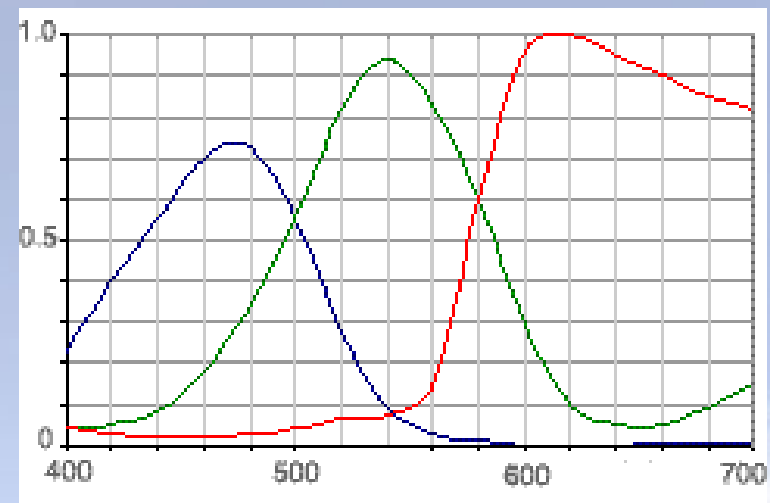
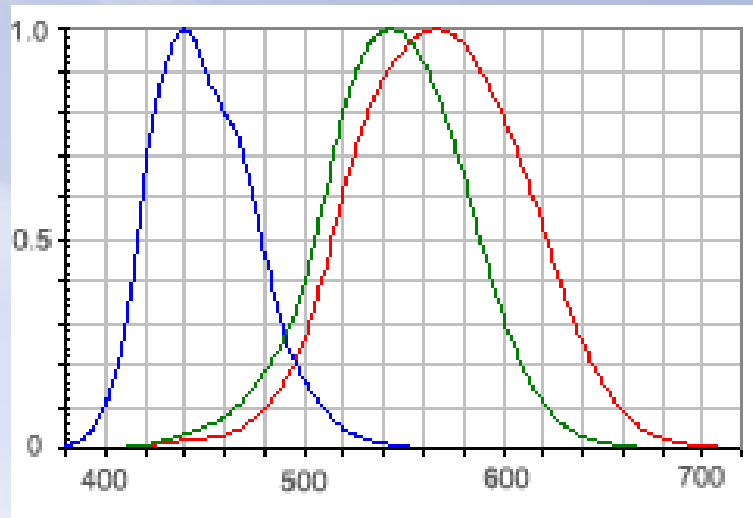
- CCDs and CMOS cover a larger spectrum
- IR-Filter used for color correction
- CCTV and B/W Cameras usually response good to IR
- IR-Diodes*:
850-950nm



Infrared

- Human Eye vs. Sony Camera

- <http://www.kweii.com/site/services/review/review.html>



Blend with **Infrared**

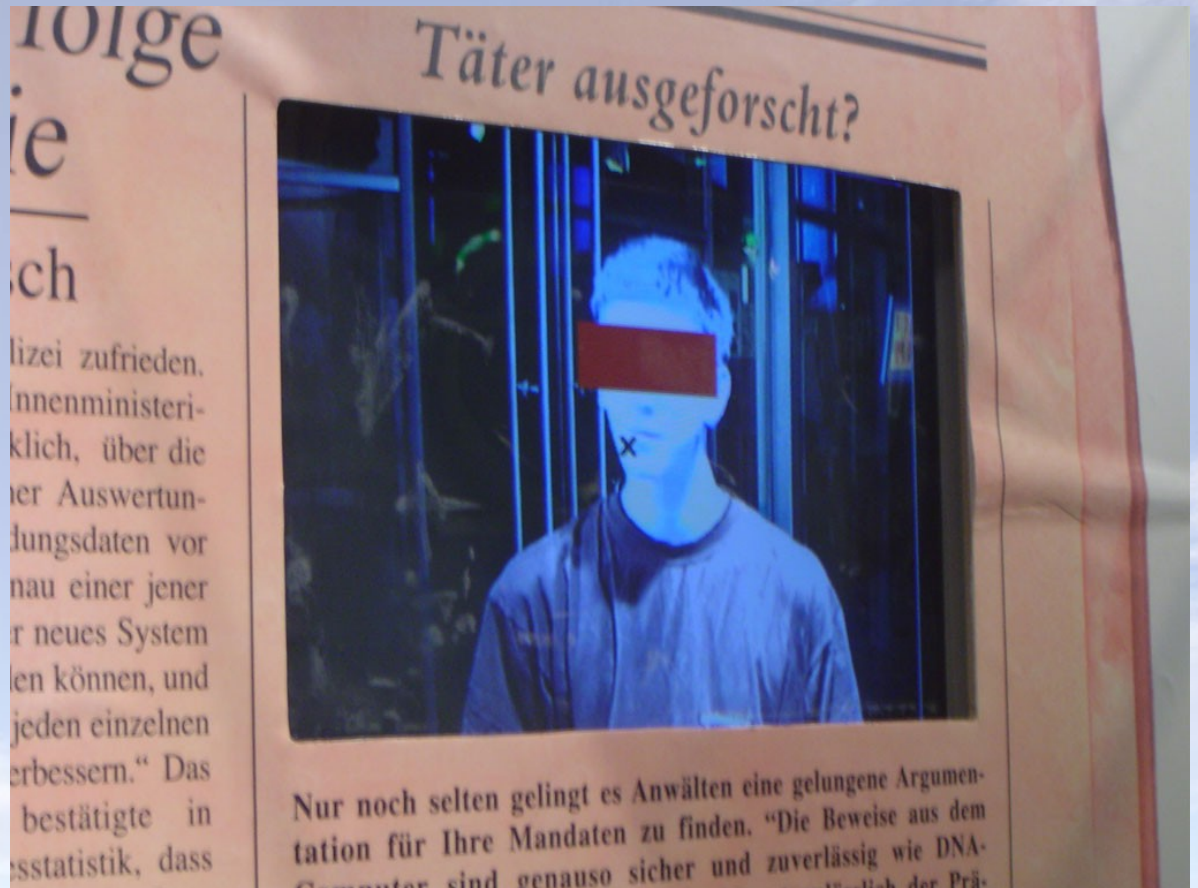


“Privacy Cap”



Q/Gate

- anonymized video surveillance
- Since 2003
- Realtime Biometric Face Detection
- openCV



Museumsquartier

- Protect “q/spot” - anonymous Hotspot

quintessenz - Überwachung im MQ Wien - Mozilla Firefox

http://www.quintessenz.at/cgi-bin/index?id=000100003311

Getting Started Latest Headlines Sierpinski Fractals Elementary Cellular A... The Sierpinski Variati... Sierpinski Sieve -- Fr... robotikhardware.de -... CSD-ELECTRONICS


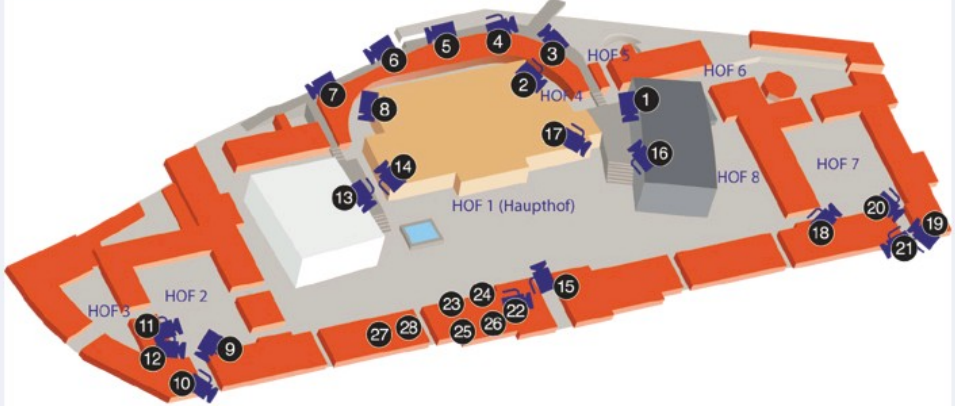
Disable CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options

RSS-Feed Depeschen

RSS-Feed Kampagnen

powered by LivingXML

Videüberwachung seit dem Beginn gegen soziale Randgruppen wie Obdachlose, Graffiti-Sprayer und Minderheiten mit anderer Hautfarbe.



1. Kamera #1
2. Kamera #2
3. Kamera #3
4. Kamera #4
5. Kamera #5
6. Kamera #6
7. Kamera #7
8. Kamera #8
9. Kamera #9
10. Kamera #10
11. Kamera #11
12. Kamera #12
13. Kamera #13
14. Kamera #14

15. Kamera #15
16. Kamera #16
17. Kamera #17
18. Kamera #18
19. Kamera #19
20. Kamera #20
21. Kamera #21
22. Kamera #22
23. Kamera #23
24. Kamera #24
25. Kamera #25
26. Kamera #26
27. Kamera #27
28. Kamera #28

proxy servers for the single reason of controlling their customers.

!WATCH OUT!
Überwachung im MQ Wien

Dokumentationen und Videos mit Schwenkbereichen der Kameras machen die Überwachung im MQ Besuchern, Künstlern und Mietern in vollem Umfang zugänglich. Damit auch Big Brother CCTV im Schwenkbereich der eigenen Wahrnehmung erlebt werden kann.

http://www.quintessenz.at/mqcams/

Other Fun

- ARS-Electronica, Linz
 - Michelle Teran, CA
 - Babyphones
- Video Voyeurism



Sources & Links

- <http://www.quintessent.at/cctv/>
- <http://www.quintessenz.at/qgate>
- <http://www.rtmark.com/cctv/>
- <http://www.naimark.net/projects/zap/howto.html>
- <http://www.kweii.com/site/services/review/review.html>
- <http://www.vtq.de/SecurityLink-DE.htm>
- <http://www.ubermatic.org/life/>
- <http://www.vam.com>

Questions ?

