

*i2Chip makes the difference!*

# TCP/IP Chip



## i2Chip Application Modules

Sep, 2001  
WIZnet Inc.



# Application Modules

- Application modules can be used with EVBs
  - WebCam : Internet camera applications
  - IP Phone : Internet phone and voice applications
  - Remote Controller : Home & factory automation and controlling applications
- Current available application modules

EVb	WebCam	IP Phone	Internet Audio	VoIP	Remote controller
8051(Atmel, Dallas)	O	O	N/A	O	O
i386	O	N/A	N/A	N/A	O
SH-3	O	N/A	O	N/A	O
PIC	N/A	N/A	N/A	N/A	O



# WebCam Module

## ■ What's WebCam Module

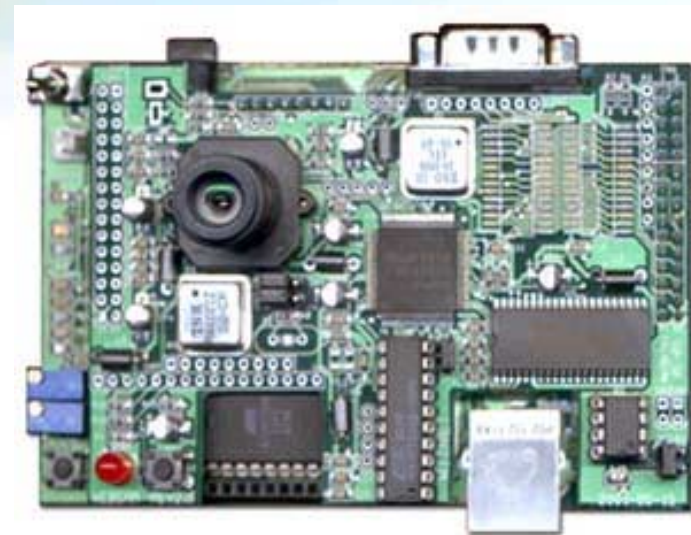
- Total package allowing i2Chip W3100 users to develop their own Internet Camera applications in a fast and easy way

## ■ Functions

- Web Server, Remote monitoring, Remote control
- Video transmission, Motion detection

## ■ Package Included

- i386 EVB and WebCam Board
- All accessories including cable & adaptor
- All source codes and schematics
- Quick start guide and user's manual
- Identification for online technical support
- 8051 EVB and source codes(Optional)

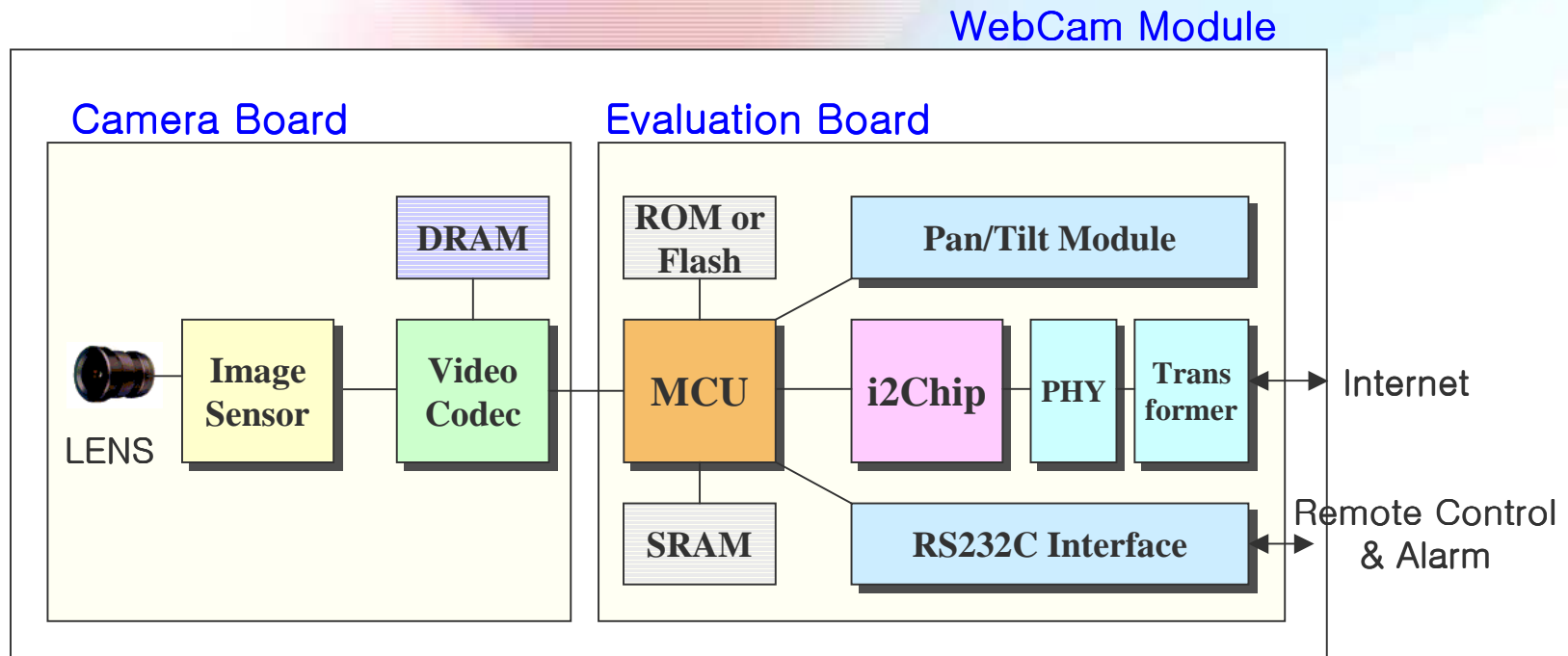


**WebCam Board**



# Block Diagram

- WebCam Module has 2 sub-boards
  - Camera Board : Image sensing and MJPEG video encoding
  - Evaluation Board : i2Chip Evaluation Board (i386 or 8051)



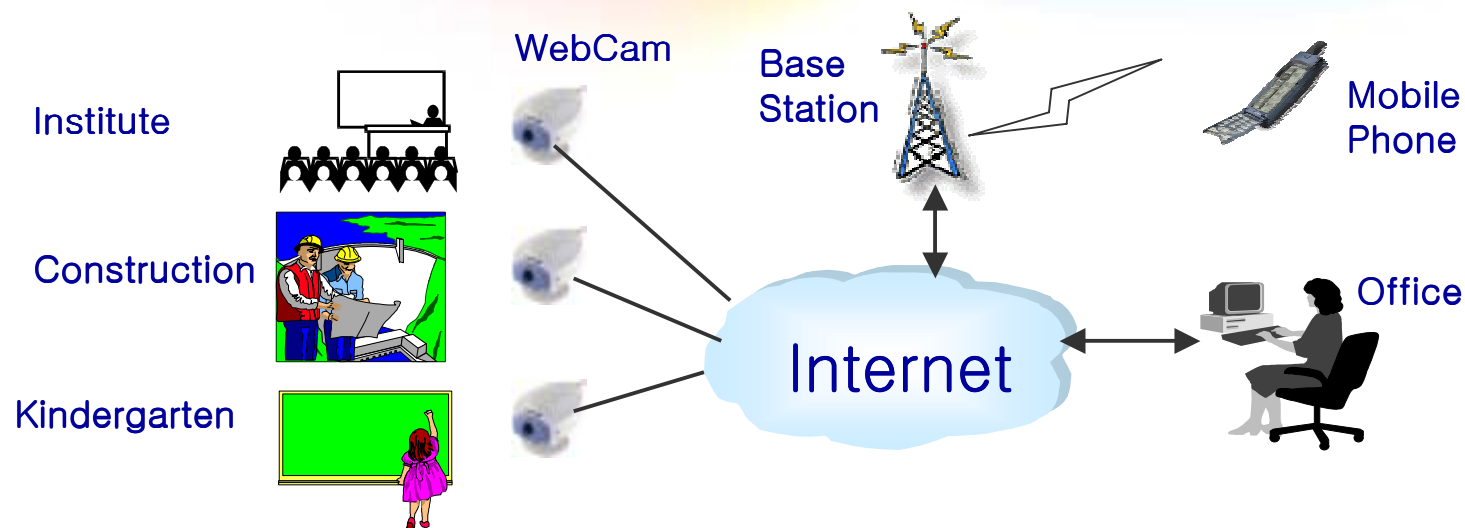


# Application Example

## ■ Application Market

- Education : Remote lecture, Distance learning, Kindergarten monitoring
- Home Security : Door & entrance camera, Home control & monitoring
- Intelligent building : Building & bank surveillance
- Commerce : e-Commerce, Department store, Storehouse
- Industry : Construction monitoring, Traffic monitoring

## ■ System Architecture





# WebCam Advantages

- Comparison with software-embedded WebCam

Items	i2Chip WebCam	Software-embedded WebCam
Cost	\$ 28.5	\$49.5 + OS license fee
Development Time	5 months	10 months (Additional OS, Network development)
# of Engineers	4 engineers	8 engineers
Quality	Fixed QoS (by Hardware Processing)	Variable QoS (by Software Processing)



# Competitiveness of WebCam

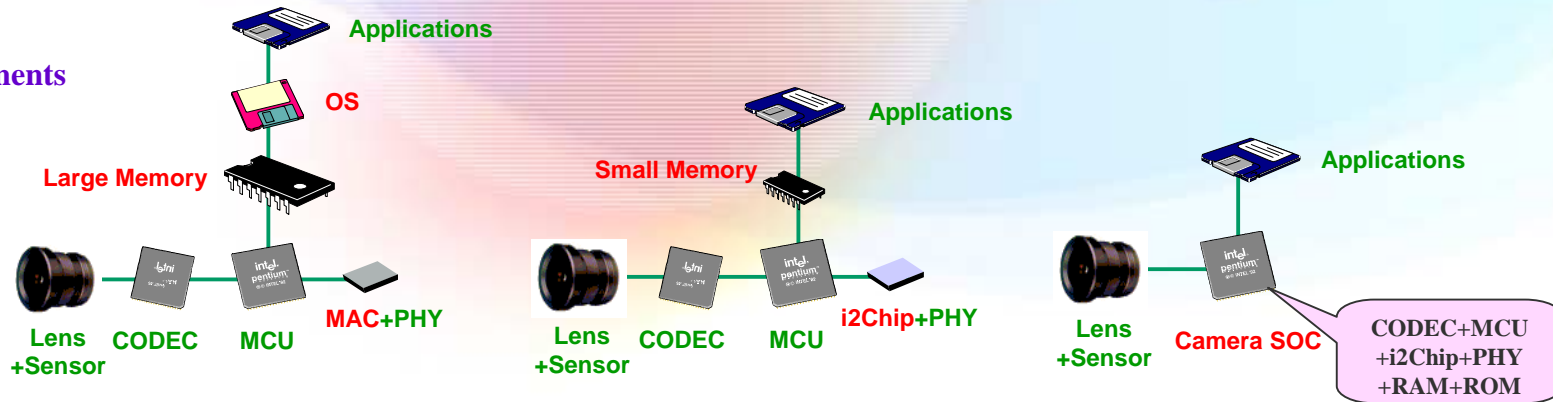
■ MCU+Software TCP

■ i2Chip ASIC

■ i2Chip IP (SOC)

(To be developed)

## System Components



## Comparison in Development Cost

Hi Performance MCU + RTOS + S/W TCP/IP

- # of R&D engineers required : 8
- Development period required :10 months
- Cost : \$49.5 + License Fee \$150,000
- Additional time needed for OS,Network development

i2Chip + Low-end MCU

- # of R&D engineers required : 4
- Development period required : 5 months
- Cost : \$28.5

i2Chip-embedded SoC for Web camera

- # of R&D engineers required : 3
- Development period required : 4 months
- Cost : \$15 (est.)



# Specification

Items	Sub-items	Specification
CPU Types	i386	<ul style="list-style-type: none"><li>• Max Frame Rate : 30 FPS (CIF)</li><li>• SRAM : 256 Kbyte</li><li>• Flash : 256 Kbyte (used for Web-server)</li><li>• ROM : 256 Kbyte</li></ul>
	8051	<ul style="list-style-type: none"><li>• Max Frame Rate : 5 FPS (CIF)</li><li>• SRAM : 128 Kbyte</li><li>• ROM : 32 Kbyte (Internal)</li></ul>
Networking	i2Chip	<ul style="list-style-type: none"><li>• High speed Hardware TCP/IP (TCP, UDP, IP, ARP, ICMP)</li><li>• 4 Concurrent Channel Support</li><li>• Ethernet DLC and MAC integrated</li></ul>
Image Compression	Algorithm	Motion JPEG
	Quality Factor	Over 60~100
	Video RAM	2Mbyte EDO DRAM
Video Mode	VGA	640*480
	CIF	352*288
	QCIF	176*144



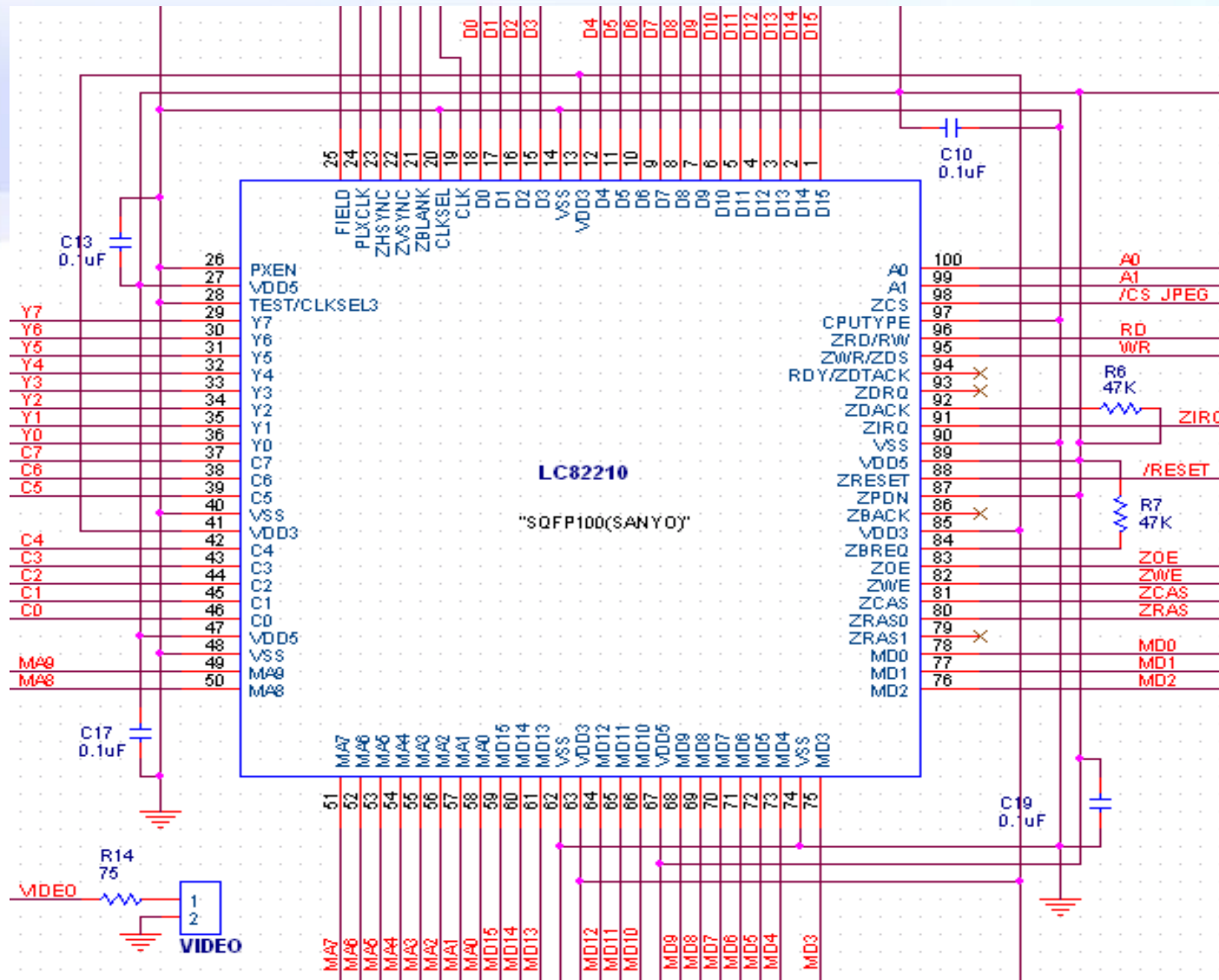


# Specification - continued

Items	Sub-items	Specification
CMOS Sensor	Lens	1/3" Color CMOS
	Pixel	326,688 pixels
	Video Timing	525 line, 30 fps
	Read Out	Progressive / Interlace
	Data Format	YCrCb 4:2:2, GRB 4:2:2, RGB Raw Data
	Video Data	8/16bit CCIR601, CCIR656
	illumination	2.5 Lux (f1.4)
	Power	DC 5V, 120mW
CCD Sensor	Lens	1/3" Color CCD
	Pixel	0.41 Mega Pixel
	Read Out	2:1 Interlace
	Data Format	NTSC, YCrCb 4:2:2 (Decoder used)
	illumination	1.0 Lux (f1.0)
	Power	DC 12V, 4.5W
Lens	Variable	C/CS
Security	Login	Password Protection
	Alarm	Automatic E-mail sending



# Schematic – Video Codec





# Schematic – i2Chip

