

# CONNECT YOUR PC TO A TV



## WIRELESSLY

by Francis Chao

fchao2@yahoo.com



GREATER SOUTH BAY PC USERS GROUP

Web location for this  
presentation:

<http://aztcs.org>

Click on “Meeting Notes”

# SUMMARY

You can use your TV set as either the primary or secondary monitor for your "Windows.." computer.

Here are the wireless ways for you to perform this wizardry.

# TOPICS

- Terminology for wireless connections between a computer and a TV or a monitor

# TOPICS (continued)

- Time Line of Wireless Computer-to-TV Technology
- Comparison of Wireless Computer-to-TV Technologies:

# TOPICS (continued)

- "Wireless HDMI"
- "WiDi"
- "EZCast 5G"
- "Chromecast"
- Actiontec's "ScreenBeam"  
"Transmitter and Receiver Kit"

# TERMINOLOGY FOR WIRELESS CONNECTIONS BETWEEN A COMPUTER AND A TV OR A MONITOR

- "Streaming stick"
- "Dongle"
- "SSID"

# TERMINOLOGY FOR WIRELESS CONNECTIONS BETWEEN A COMPUTER AND A TV OR A MONITOR (continued)

- "streaming stick"  
= A device that you plug into the HDMI port of a television set or a flatscreen monitor



# TERMINOLOGY FOR WIRELESS CONNECTIONS BETWEEN A COMPUTER AND A TV OR A MONITOR (continued)

- According to <http://en.wikipedia.org/wiki/Dongle>:  
" A **dongle** is a small piece of hardware that attaches to a computer, TV, or other electronic device in order to enable additional functions.."

# TERMINOLOGY FOR WIRELESS CONNECTIONS BETWEEN A COMPUTER AND A TV OR A MONITOR (continued)

- **"SSID"** stands for "Service Set Identifier":  
A **"SSID"** is broadcast by a "Wireless Access Point" which is usually part of a "wireless router"

# TIMELINE OF WIRELESS COMPUTER-TO-TV TECHNOLOGIES

- **2007:** "wireless HDMI"
- **2010-01:** "WiDi"  
= "Intel Wireless Display"
- **2013-01:** Actiontec  
"ScreenBeam Kit"
- **2013-07:** "Chromecast"
- **2013-11:** "EZCast"
- **2015-06:** "EZCast 5G"

# COMPARISON OF THE WIRELESS COMPUTER-TO-TV TECHNOLOGIES

- Price comparison?
- Main feature comparison?
- Usable for the only monitor or the main monitor of a computer?
- Technical complexity index?

# PRICE COMPARISON OF THE WIRELESS COMPUTER-TO-TV TECHNOLOGIES

- 2007: **"wireless HDMI"** (~\$250)
  - 2010-01: **"WiDi"**  
= "Intel Wireless  
Display" (~\$200)
  - 2013-01: Actiontec **"ScreenBeam  
Kit"** (~\$80)
  - 2013-07: **"Chromecast"** (~\$40)
  - 2015-06: **"EZCast 5G"** (~\$40+,  
**no USB Power Supply**)
- 

# COMPARISON OF THE WIRELESS COMPUTER-TO-TV TECHNOLOGIES (continued)

- **Main feature  
comparison:**

- 2007: **"wireless HDMI"**  
**(simplest to install and use)**
- 2010-01: **"WiDi"**  
**(best penetration through walls)**
- 2013-01: Actiontec **"ScreenBeam Kit"**
- 2013-07: **"Chromecast"** **(easy to use in a home environment, complex to use in public Wi-Fi environment, need to bring along your own wireless router)**
- 2015-06: **"EZCast 5G"** **(easier to use in a public Wi-Fi environment)**<sup>15</sup>

# COMPARISON OF THE WIRELESS COMPUTER-TO-TV TECHNOLOGIES

(continued)

- Usable for the only monitor or the main monitor of your computer?



- 2007: **"wireless HDMI"** (can be used as the only monitor of your computer)
- 2010-01: **"WiDi"** (cannot be used as the only monitor of your computer)
- 2013-01: Actiontec **"ScreenBeam Kit"** (cannot be used as the only monitor of your computer)
- 2013-07: **"Chromecast"** (cannot be used as the only monitor of your computer)
- 2015-06: **"EZCast 5G"** (cannot be used as the only monitor of your computer)

# COMPARISON OF THE WIRELESS COMPUTER-TO-TV TECHNOLOGIES (continued)

- Effect on existing wireless Wi-Fi network bandwidth for your computer?

- 2007: **"wireless HDMI"** (no effect on wireless network bandwidth)
- 2010-01: **"WiDi"** (reduces wireless network bandwidth since it uses the existing "Intel" wireless Wi-Fi adapter of your computer)

- 2013-01: Actiontec  
**"ScreenBeam Kit" (minimum effect on wireless network bandwidth since a USB Wi-Fi transmitter dedicated to communicating with the TV or (second) monitor is provided for your computer)**

- 2013-07: "**Chromecast**" (reduces wireless network bandwidth since it uses the existing wireless Wi-Fi adapter of your computer. The existing wireless Wi-Fi adapter of your computer has to also be the same network adapter that connects your computer to the Internet or "Chromecast" software will refuse to install into your computer.)

- **2015-06: "EZCast 5G" (reduces wireless network bandwidth since it uses the existing wireless Wi-Fi adapter of your computer.)**

# WIRELESS HDMI

- At the computer end, you install a "HDMI transmitter"
- At the TV or monitor end, you install a "HDMI receiver" that is compatible with the "HDMI transmitter" that you installed at the computer end.

Computer

HDMI  
transmitter  
connected  
to a  
HDMI port

Low-  
powered  
2.4 GHz  
radio  
signals  
extend the  
HDMI  
connection



TV or  
Monitor

HDMI  
receiver  
connected  
to a  
HDMI port

The TV is a second monitor for the computer. Sound is transmitted to the TV.



## WIRELESS HDMI (continued)

- "Wireless HDMI" is the only wireless "computer-to-tv" technology that automatically works when you turn on your computer.

All other wireless "computer-to-tv" technologies require that you do something after you turn on your computer.

# WIRELESS HDMI (continued)

- For detailed information about "wireless HDMI", see [http://aztcs.org/meeting\\_notes/wi\\_nhardsig/wireless/wireless\\_HDMI.pdf](http://aztcs.org/meeting_notes/wi_nhardsig/wireless/wireless_HDMI.pdf)

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR

- **"WiDi"**
- **"EZCast"**
- **"Chromecast"**
- **"ScreenBeam Kit"**

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- At the computer end, transmit video and sound is transmitted by a Wi-Fi wireless networking adapter
- At the TV or monitor end, you have 3 types of receiver devices that you can install:

Computer



Wi-Fi  
wireless  
networking  
adapter

Wireless  
Wi-Fi  
radio  
signals



TV or Monitor



**"WiDi" /  
"Miracast"  
receiver**  
or  
**"EZCast"**  
or  
**"Chromecast"**  
or  
**"ScreenBeam  
Kit"**

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- At the TV or monitor end, all three of these types of receivers have an integral wireless router inside of them. The integral wireless router provides a real wireless access point with a real SSID for the Wi-Fi wireless networking adapter at the computer end to communicate with.

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- At the computer end, your computer needs to have a wireless Wi-Fi network adapter:

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- Three types of Wi-Fi adapters:
  - Integral Wi-Fi adapter (on the motherboard or as a daughterboard attached to the motherboard)
  - PCI or PCIe or "mini PCIe" Wi-Fi adapter
  - USB Wi-Fi adapter



Computer



Wi-Fi wireless  
networking adapter



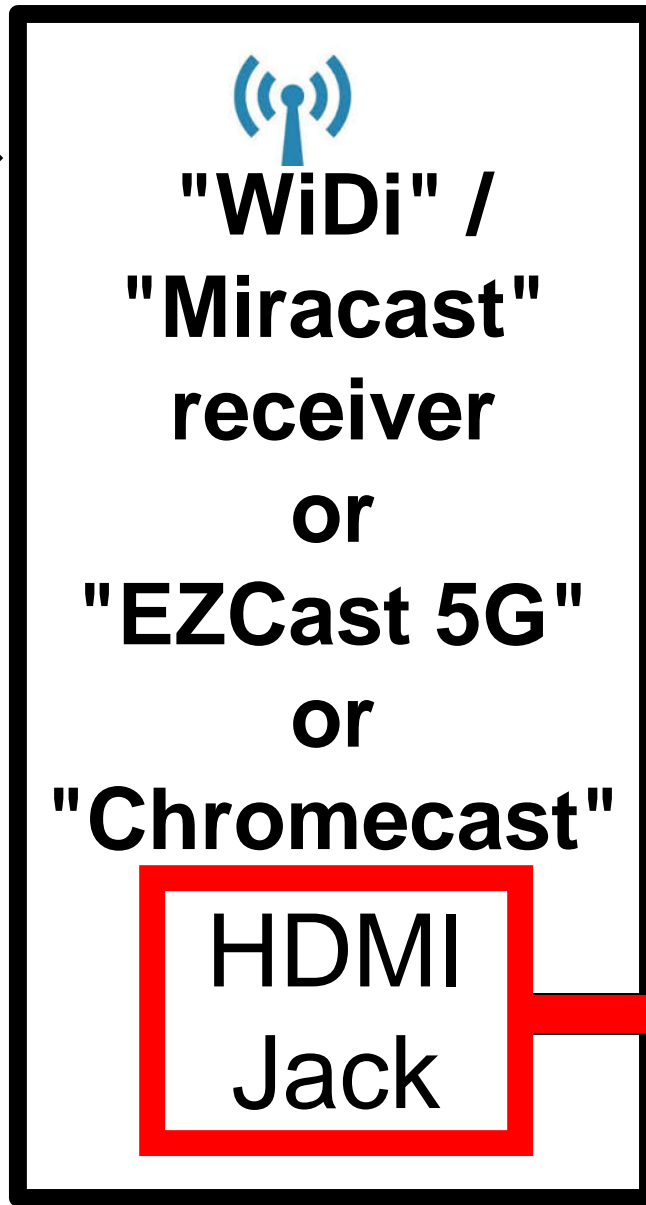
Wireless  
Wi-Fi  
radio  
signals  
to the TV  
or the  
monitor

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

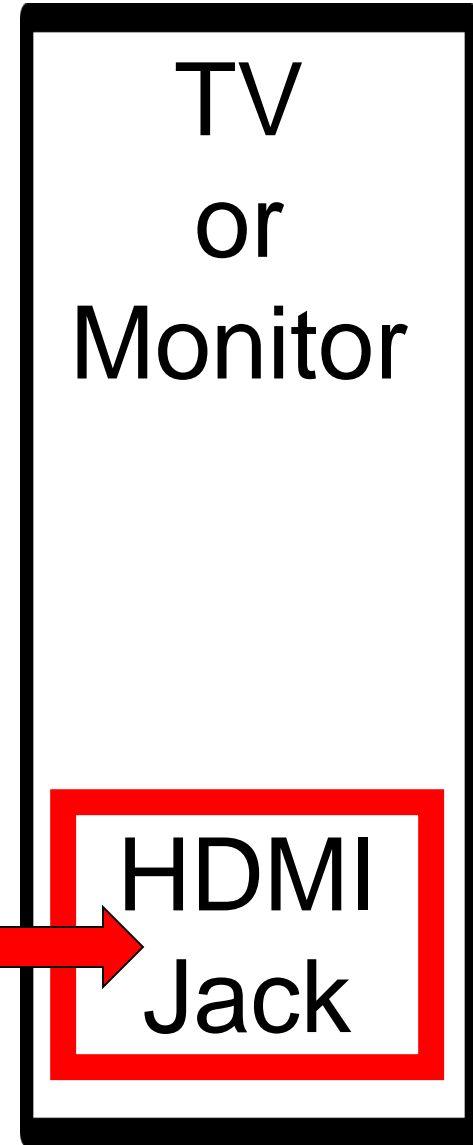
- At the TV or monitor end, the wireless receiver can be connected to the TV or monitor with a short HDMI cable:



Wireless  
Wi-Fi  
radio  
signals  
from the  
computer



HDMI  
cable



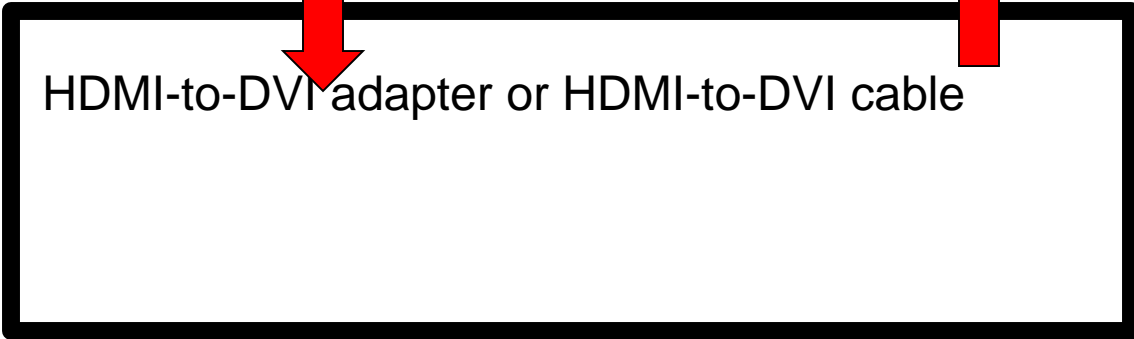
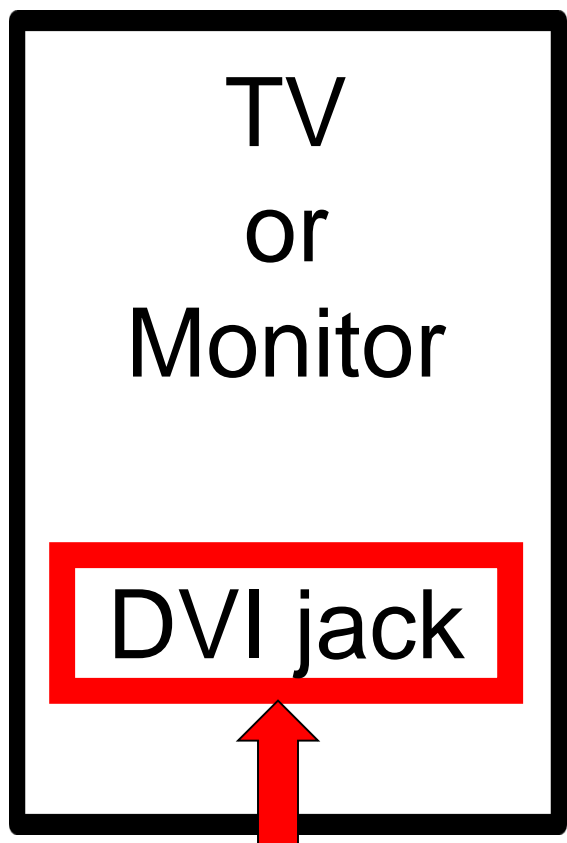
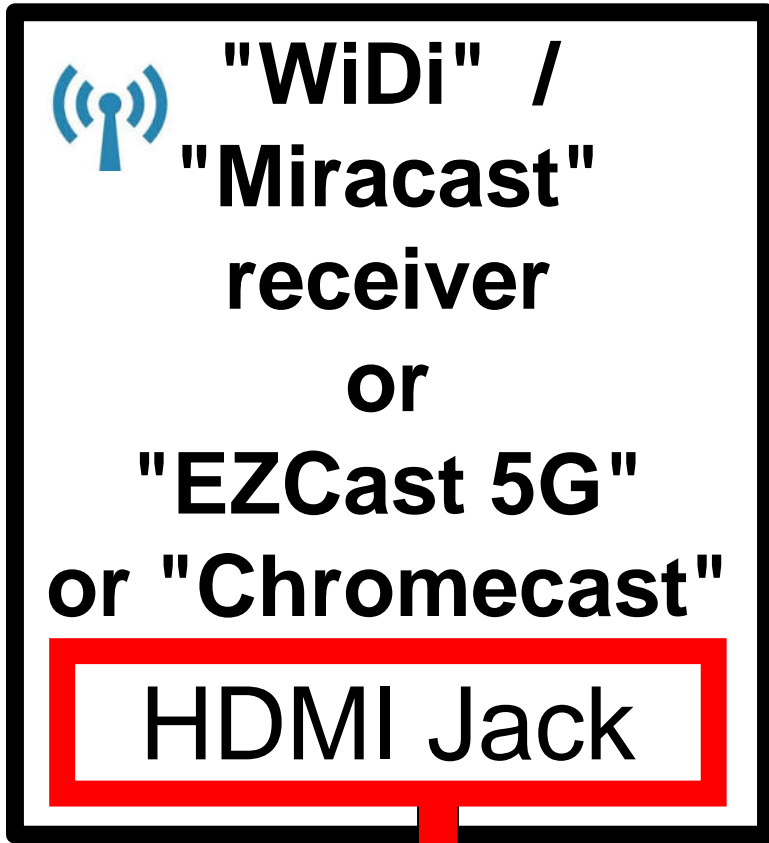
Audio is transmitted from the PC  
to the TV or Monitor

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- At the TV or monitor end, if your TV or monitor only has a DVI jack, the wireless receiver can be connected to the TV or monitor with a short HDMI-to-DVI adapter or a HDMI-to-DVI cable.

However the adapter causes sound to be lost:

→  
Wireless  
Wi-Fi  
radio  
signals  
from the  
computer



No audio is transmitted from the PC  
to the TV or Monitor

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- **"WiDi"** stands for "Intel Wireless Display"
- You can use "WiDi" to wirelessly connect a "Windows.." computer directly to a TV set or to a (second) monitor.  
This wirelessly-connected monitor or TV becomes an additional monitor for your computer.

# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- You can use **"EZCast 5G"** to wirelessly stream either the entire monitor screen or specific Web pages or specific online media players or specific local media files from a "Windows.." computer or a Mac to a TV or to a (second) monitor.

# FOUR WI-FI-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- You can use "**Chromecast**" to wirelessly stream either the entire monitor screen or specific Web pages or specific online media players or specific local media files from a "Windows.." computer or a Mac to a TV or to a (second) monitor.



# FOUR Wi-Fi-BASED TECHNOLOGIES FOR CONNECTING A COMPUTER TO A TV OR A MONITOR (continued)

- **Warning:**  
All of these wireless technologies have too much latency and unpredictability for serious gaming.  
(You must use wired HDMI or DVI cables for serious gaming.)

# "WiDi" DETAILS

- For our detailed information and advice on "WiDi", please see [http://aztcs.org/meeting\\_notes/winhardsig/wireless/WiDi.pdf](http://aztcs.org/meeting_notes/winhardsig/wireless/WiDi.pdf)

# "EZCAST 5G" DETAILS

- For our detailed information and advice on "EZCast 5G", please see [http://aztcs.org/meeting\\_notes/winhardsig/wireless/EZCast.pdf](http://aztcs.org/meeting_notes/winhardsig/wireless/EZCast.pdf)

# "CHROMECAST" DETAILS

- For our detailed information and advice on "Chromecast" please see [http://aztcs.org/meeting\\_notes/winhardsig/wireless/Chromecast.pdf](http://aztcs.org/meeting_notes/winhardsig/wireless/Chromecast.pdf)

# ACTIONTEC "SCREENBEAM" KIT

- For our detailed information and advice on the Actiontec "ScreenBeam Kit", please see [http://aztcs.org/meeting\\_notes/winhardsig/wireless/Actiontec\\_ScreenBeam.pdf](http://aztcs.org/meeting_notes/winhardsig/wireless/Actiontec_ScreenBeam.pdf)