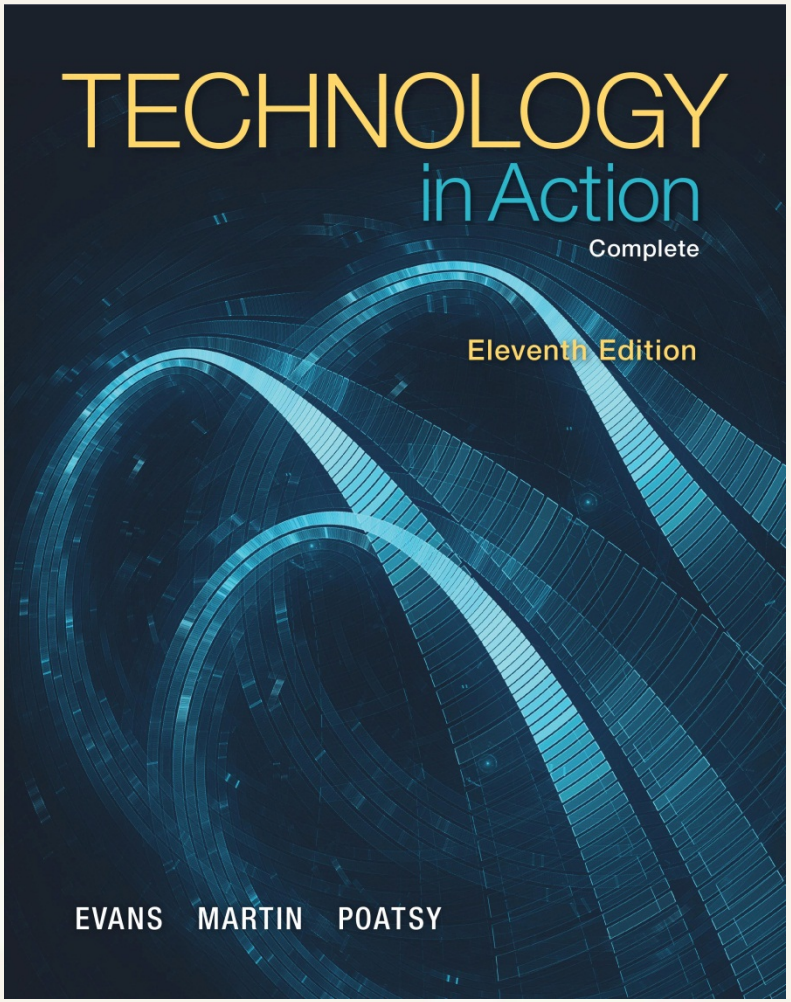

Technology in Action

Alan Evans • Kendall Martin

Mary Anne Poatsy

Eleventh Edition

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Technology in Action

Chapter 6

Digital Devices and Media: Managing a Digital Lifestyle

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Topics

- Digital Convergence
- Telephony: Smartphones and Beyond
- Tablets, Netbooks, and Ultrabooks
- Digital Defined
- Digital Media

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Mobile Devices

- Digital Convergence
- Telephony: Smartphones and Beyond
- Tablets, Netbooks and Ultrabooks

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Digital Convergence

- Single unifying device
  - Media, Internet, entertainment, and telephony needs
- Smartphones
- Electronics systems in cars
- Digital Living Network Alliance (DLNA)

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Telephony: Smartphones and Beyond

Telephony- use of equipment to provide voice communications over a distance

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Telephony: Smartphones and Beyond
Smartphone Basics

- Smartphone functions and features
- Cellular (cell) phones
  - Mobile, cellular technology
- Feature phones

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Telephony: Smartphones and Beyond
Smartphone Components

- Primary input devices
  - Microphone
  - Touch pad
- Output devices
  - Speaker
  - Liquid crystal display (LCD)
  - OLED: newer display screen

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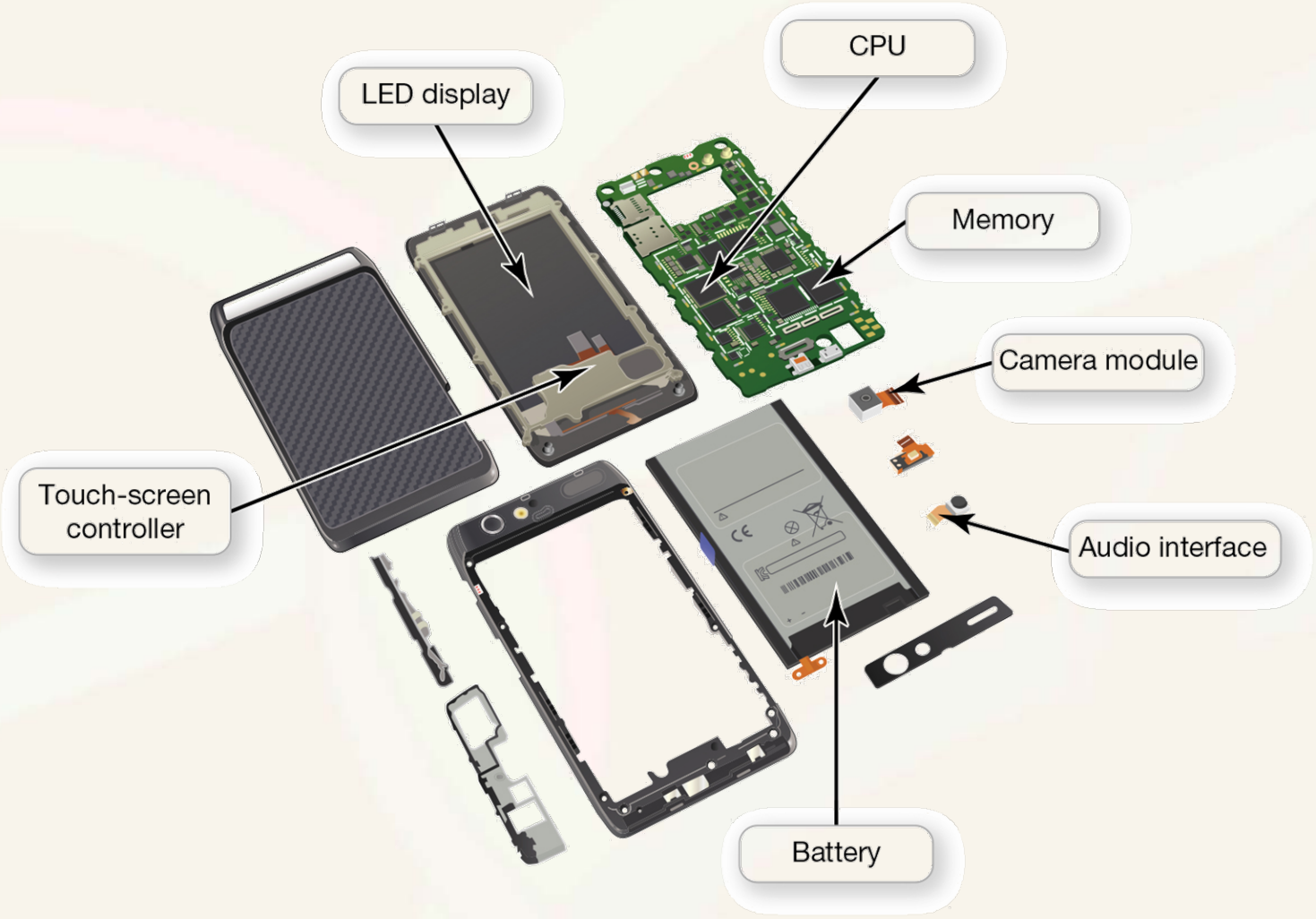
Telephony: Smartphones and Beyond

Smartphone Components



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Telephony: Smartphones and Beyond

Smartphone Components

Smartphone operating systems

- Android OS
- iOS (Apple iPhone)
- Windows 8 mobile

Mobile Operating Systems

OPERATING SYSTEM	MANUFACTURER	USER INTERFACE
iOS	Apple	
Windows Phone 8	Microsoft	
Android	Used by HTC, Samsung	

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Smartphone Components

- Memory stores information and programs
- OS—read-only memory (ROM)
- Data is stored in separate internal memory chips
- Additional memory
  - Micro SD flash cards
  - iPhones have no upgradeable memory

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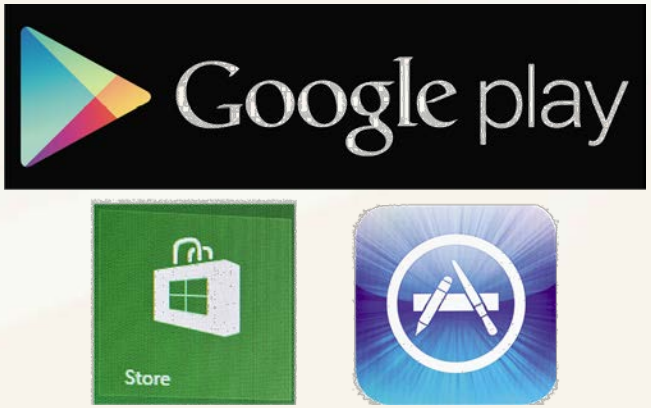
Telephony: Smartphones and Beyond
Smartphone Components

- Smartphone OS standard software
  - To-do list
  - Contact manager
  - Calendar



- Web-based software stores for software applications

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Telephony: Smartphones and Beyond
How Cell Phone Technology Works

- Cellular network
- Base transceiver station
- Mobile switching center

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Telephony: Smartphones and Beyond
How Cell Phone Technology Works

- Digital Processing
  - Sound enters microphone
  - Analog-to-digital converter chip converts voice into digital signals
  - Digital signal processor compresses the signal
  - Digital data is transmitted as a radio wave
  - Digital signal processor decompresses incoming message
  - Amplifier boosts signal

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Telephony: Smartphones and Beyond
Synchronizing

- Synchronizing (syncing)
- Two main ways to transfer information
  - Wired
  - Wireless
- Wired solutions
  - USB port
  - Insert flash card

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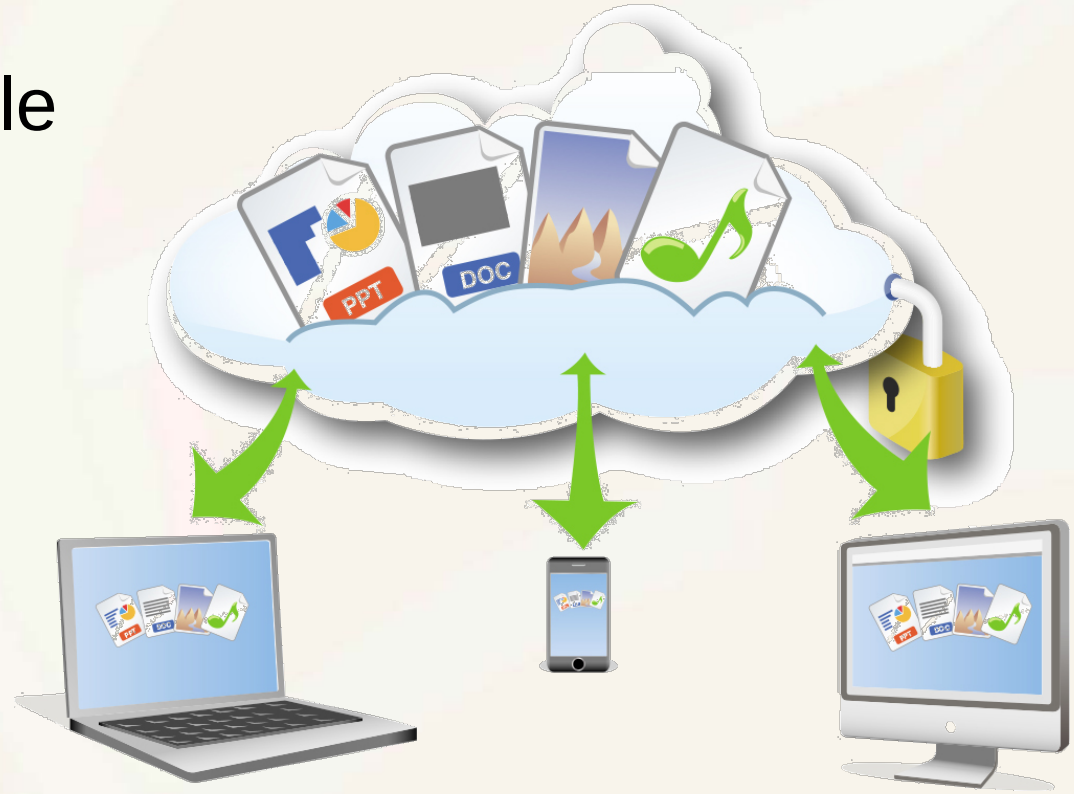
Telephony: Smartphones and Beyond
Synchronizing

- Wireless synchronization
  - Google Sync
  - Amazon Kindle



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Telephony: Smartphones and Beyond
Text Messaging

- Short message service (SMS)
  - Short text messages
  - Up to 160 characters
  - Convenient and quick
  - Uses cell phone network
- Multimedia message (MMS)

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Telephony: Smartphones and Beyond
Mobile Internet

- Two ways smartphones connect to Internet
  - WiFi (no data charges)
  - Cellular network more available

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Telephony: Smartphones and Beyond
Mobile Internet

- Internet usage
  - How much data you download and upload
- Internet connectivity plan
  - Data plan

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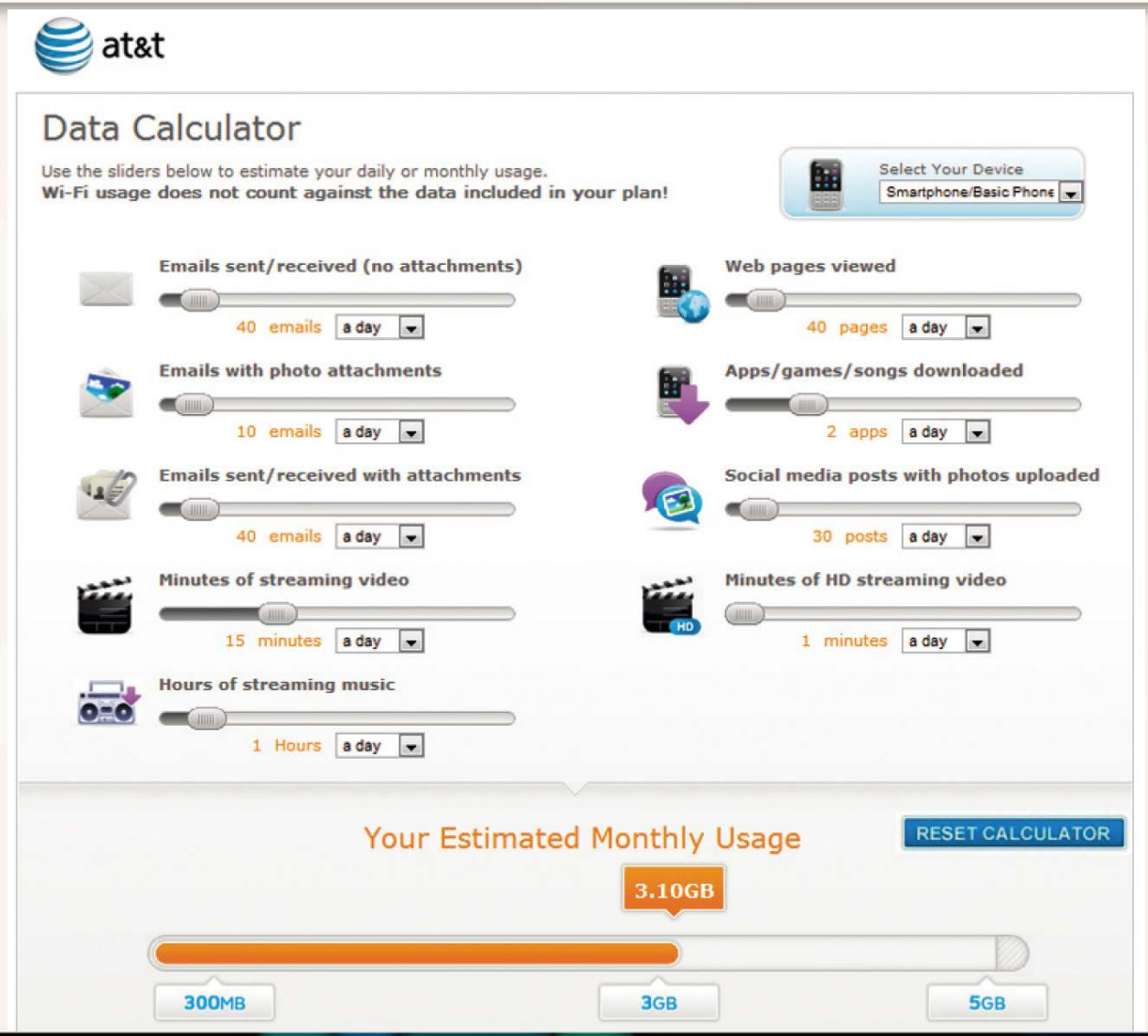
Telephony: Smartphones and Beyond

Mobile Internet



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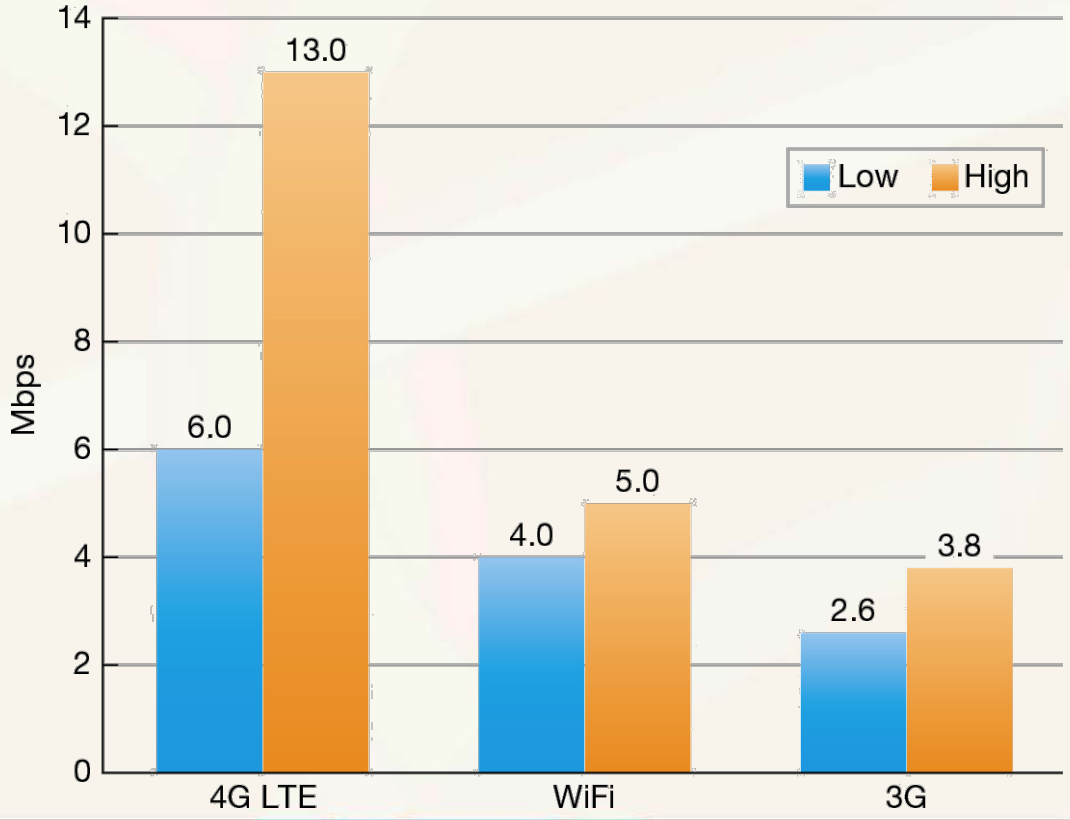
Telephony: Smartphones and Beyond
Mobile Internet

- Connection speed will depend on which technology you are using (3G, 4G LTE)



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Telephony: Smartphones and Beyond
Smartphone Security

- Viruses
- Antivirus software for mobile devices
  - Kaspersky
  - McAfee
  - F-Secure
- Virtual phone number

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Telephony: Smartphones and Beyond
VoIP

- Digital phone service
- Technology similar to e-mail
- Skype
- Vonage

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Telephony: Smartphones and Beyond

VoIP

- Calls can be placed anywhere you have Internet access
- Android or iOS phone or tablet
- Free or low-cost long-distance calling
- Portability

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Telephony: Smartphones and Beyond
VoIP

- Drawbacks
  - Sound quality and reliability
  - Loss of service at home if power is out
  - Security risks

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Telephony: Smartphones and Beyond
VoIP

- New Features
  - Telephone messages bundled as e-mails
  - Caller ID information displayed on TV
  - Students can call professor instead of using personal numbers

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Telephony: Smartphones and Beyond
Smartphone GPS

- Enhanced 911 program
  - Automatically gives precise location
- Built and operated by the U.S. Department of Defense

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Tablets, Netbooks, Ultrabooks

Tablets

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Tablets, Netbooks, Ultrabooks
Tablets

- Smartphone and tablet similarities
  - Operating systems
  - Processors
  - Touch-screen interfaces
  - Long battery life
  - Similar software applications
  - Similar Internet connectivity
  - Bluetooth

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Tablets, Netbooks, Ultrabooks

Tablets

- Cannot make cell phone calls
- Can place audio or video phone calls

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Tablets, Netbooks, Ultrabooks
Netbooks

- Netbooks
  - Traditional OS
  - Keyboard
  - Weigh 2 pounds or less
  - Inexpensive compared with tablets and ultrabooks

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Tablets, Netbooks, Ultrabooks
Ultrabooks

- Ultrabooks
  - Full-featured computers
  - Very thin, lightweight computing solution
  - Don’t have optical drives
  - Offer SSD drives
  - Weigh under 3 pounds
  - Full-size keyboards
  - 13- to 15-inch screens
  - Ex. Apple Macbook Air and Asus Zenbook

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Tablets, Netbooks, Ultrabooks

Ultrabooks

Tablets Versus Ultrabooks

FEATURE	TABLET	ULTRABOOK
Operating System	Mobile OS (iOS, Android, Windows)	Traditional OS (Windows or OS X)
Interface	Touch screen	Non-touch screen and full-size keyboard
Screen Size	7 to 10 inches	13 to 15 inches
Processing Power	Mobile processor	Full quad-core Intel i5, i7
Storage	≤ 128 GB	128 to 500 GB
Software	Specialized applications custom designed for touch interface	Standard versions of software for desktop environments (Microsoft Office, etc.)

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Tablets, Netbooks, Ultrabooks
Making a Choice

- Guidelines to determine what fits your personal needs
  - Screen size and style of keyboard
  - Weight
  - Number of devices

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The Digital Information Age

- Digital Defined
- Digital Media

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Digital Defined

Analog Versus Digital Entertainment

	ANALOG	DIGITAL
Publishing	Magazines, books	E-books, e-zines
Music	Vinyl record albums and cassette tapes	CDs, MP3 files, and streaming music stations
Photography	35-mm single-lens reflex (SLR) cameras Photos stored on film	Digital cameras, including digital SLRs Photos stored as digital files
Video	8-mm, VHS, and Hi8 camcorders Film stored on tapes	HD digital video (DV) cameras Film stored as digital files; distributed on DVD and Blu-ray discs and streamed
Radio	AM/FM radio	HD Radio, SiriusXM satellite radio
Television	Analog TV broadcast	High-definition digital television (HDTV)

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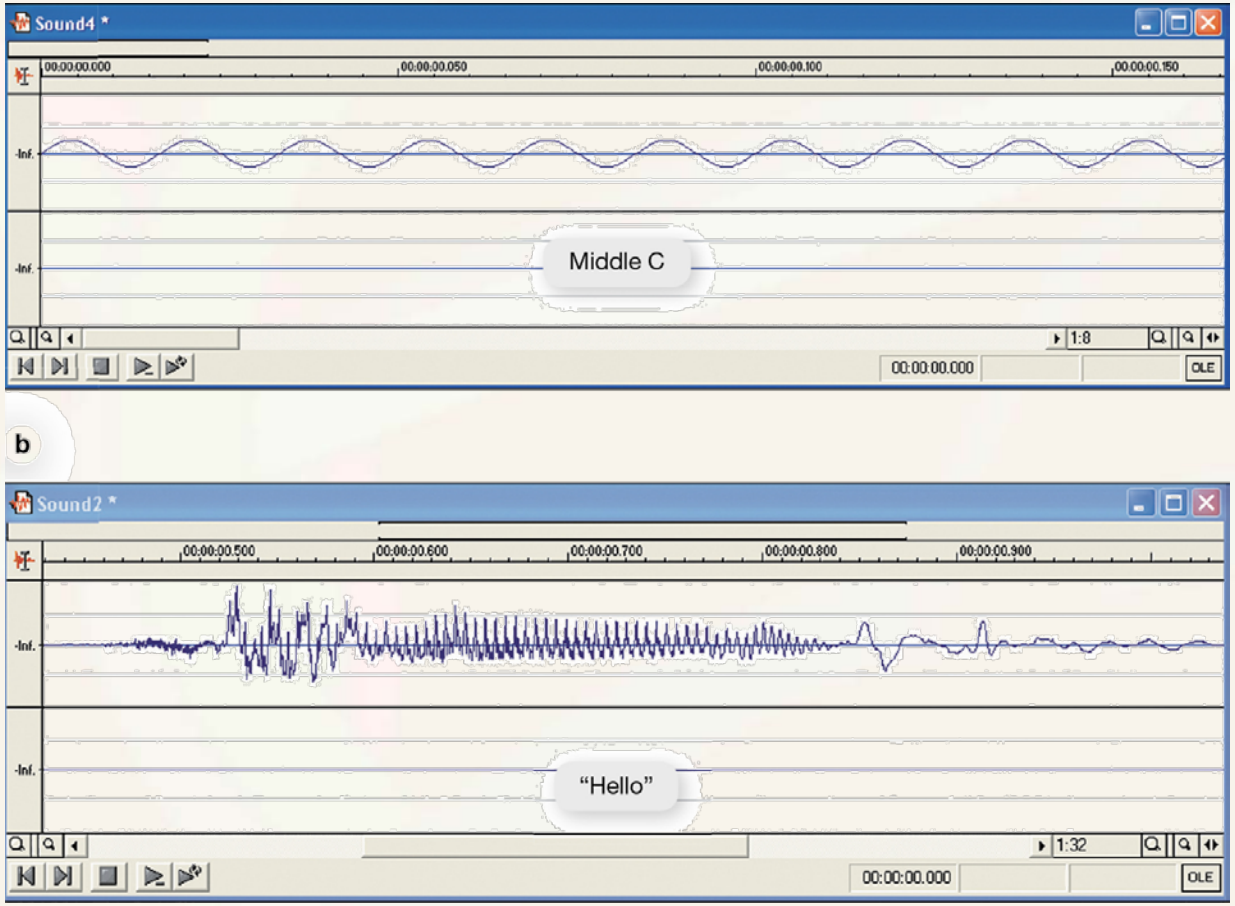
Digital Defined

- Any kind of information can be digitized
  - Sound



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Digital Defined

- Digital formats
  - Long strings of numbers
- Analog-to-digital conversion

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Digital Media

Digital Publishing

- Electronic text (e-text)
- E-readers

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Digital Media
Digital Publishing

- Advantages of e-readers
  - Integrated dictionaries
  - Note taking and highlighting
  - URL links or links to glossary
  - Bookmarks

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Digital Media

Digital Publishing

- Software for PC or Apple computers
  - Kindle and the NOOK
- Download texts as PDF
- Browser add-ons
  - MagicScroll

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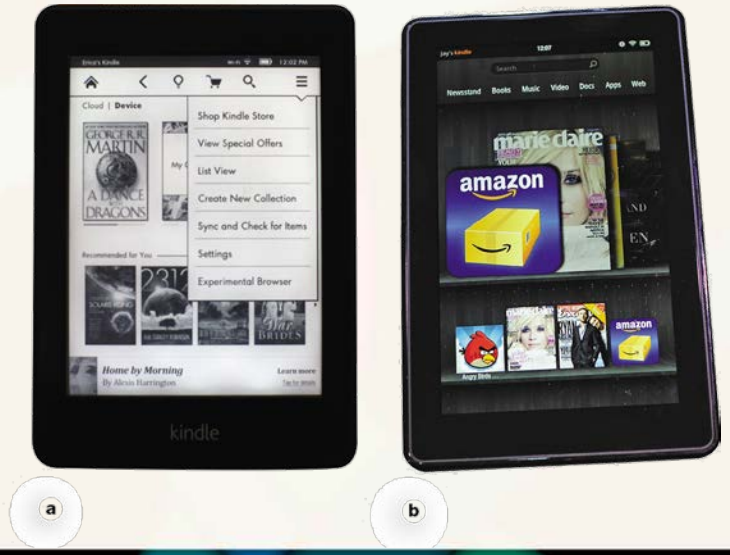
Digital Media
Digital Publishing

- Digital formats
  - Amazon uses proprietary format: .azw
  - Open format: ePub
- Vendors associated with e-reader devices



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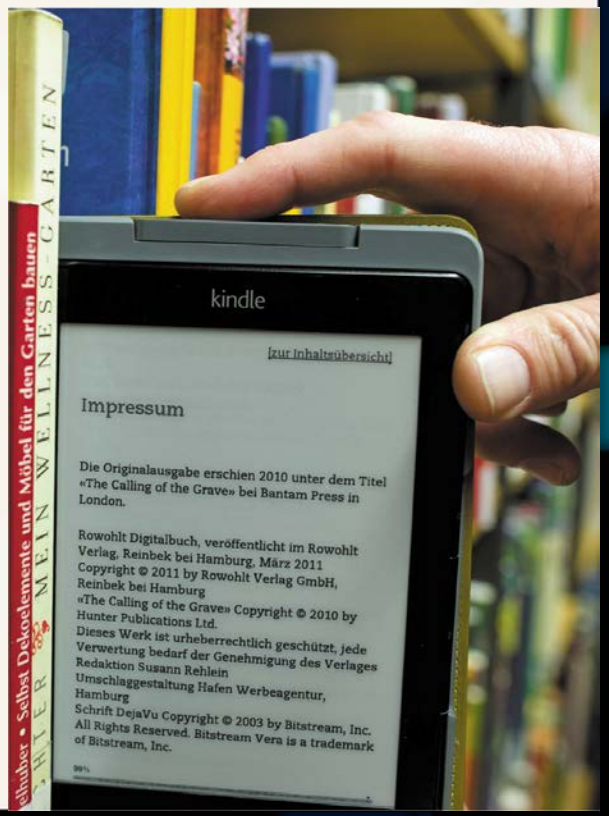
Digital Media
Digital Publishing

- Libraries
  - Lending e-books and audio books
- Overdrive Media Console
- Lending your own e-books



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Digital Media
Digital Publishing

- Project Gutenberg
  - 42,000 free books
  - Copyrights have expired
- Self-publishing
  - Amazon Kindle Store
  - Smashwords
  - Lulu

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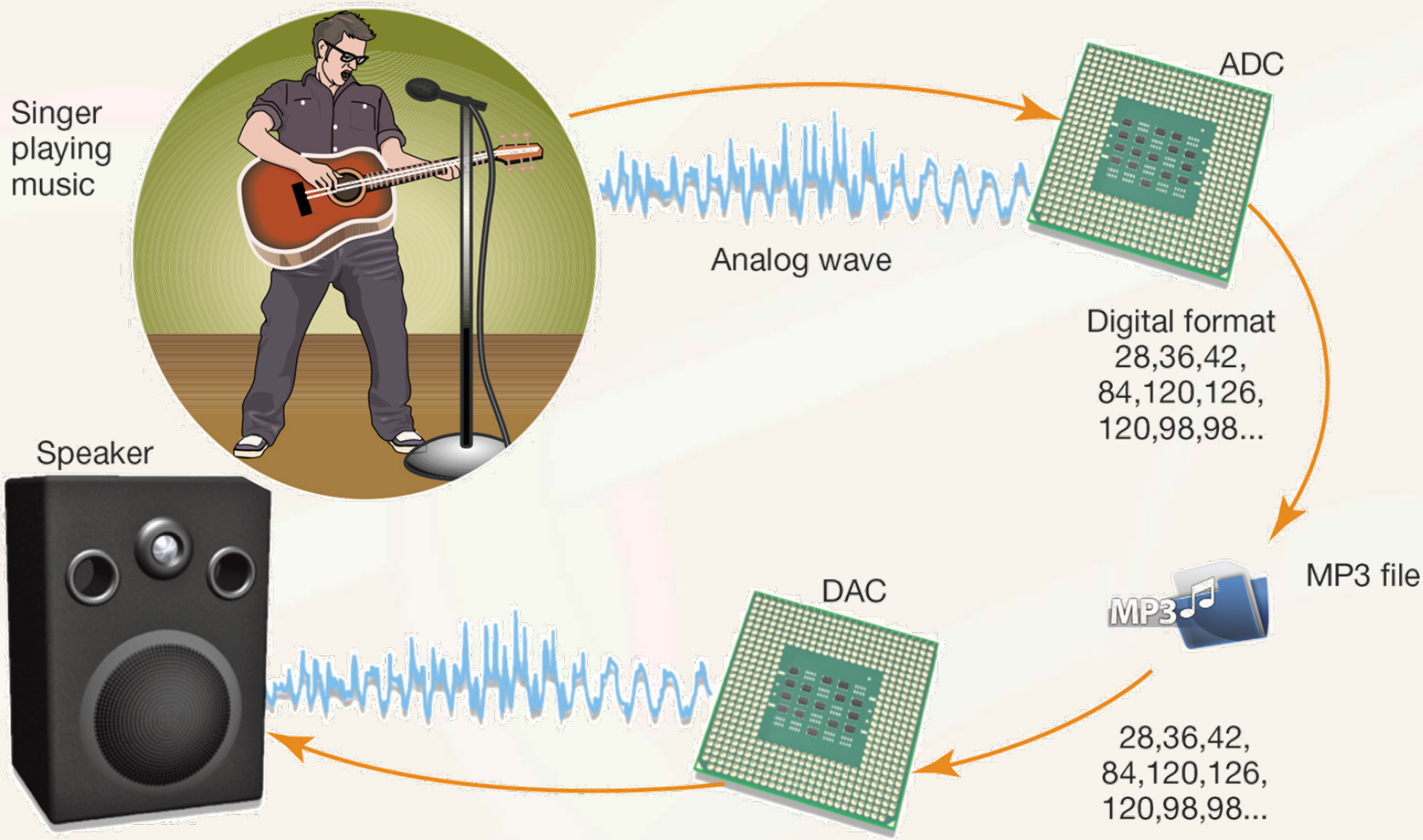
Digital Media
Digital Music



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Digital Media
Digital Music

- Cloud services/subscription plans
  - Google Play
  - Spotify
- Listening options
  - Tethered downloads
  - Pay for music and own it
  - DRM-free music

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Digital Media
Digital Photography

- Digital cameras
  - Capture images and video
  - Convert to digital data
- Point-and-shoot vs. digital SLR

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Digital Media
Digital Photography

- Factors that determine image quality
  - Quality of lenses
  - Image sensor size
  - File format and compression
  - Color management software
  - Resolution

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Digital Media

Digital Video

- Digital video
  - TV
  - Streaming video sites(Google Video, YouTube, Vimeo, Ustream)
  - On-demand streaming services (cable, iTunes, Netflix, Amazon)
  - Create your own

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Digital Media

Digital Video

- Digital video-editing software
  - Edit digital video
  - Review clips frame by frame
  - Reorder segments
  - Correct color, balance, brightness, or contrast
- Codec (compression/decompression)

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Digital Media

Digital Video

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Digital Media

Digital Video

- Special authoring software
  - Pinnacle Studio HD
  - Adobe Encore
- Webcasting
  - Broadcasting video live
  - Interactive chat

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Check Your Understanding

1. How is the trend of digital convergence seen in the market?

• Digital convergence has brought us single devices with the capabilities that used to require four or five separate tools.

Check Your Understanding

2. What hardware and software comprise a typical smartphone?

- A smartphone has a
  *central processor,
  *memory, and
  *an operating system.

Check Your Understanding

3. How do I synchronize information and how do mobile Internet data plans work?

• Information can be synched between devices using either wired or wireless solutions.
• A wired synch requires either a micro SD card or a USB cable to connect the device directly to the computer.
• A wireless synch can be done using Bluetooth or WiFi or by connecting to a cloud service.
• Mobile data plans allow your device to have access at almost any location.
• Data transfers occur at either 3G or 4G speeds, depending on your device and provider. Fees are tiedto the amount of data you transfer each month.

Check Your Understanding

4. What do I need to keep my smartphone secure?

   • Viruses can infect smartphones, so using an antivirus software package is important.

Check Your Understanding

5. How does digital telephony support VoIP services?

- VoIP allows inexpensive communication using a computer or a WiFi-enabled phone.
- Because it's based on a digital format for information, it can support services like automatic delivery of phone messages to an e-mail account or texts to a mobile device.

Check Your Understanding

6. What distinguishes the performance of tablets, netbooks, and ultrabooks?

- Mobile devices differ in terms of size and weight, input (physical keyboard, software keyboard on a touch screen), and OS (mobile OS or traditional OS).
- Netbooks and ultrabooks can run traditional software packages like Microsoft Office, whereas tablets run new versions of productivity software made to take advantage of the features of the tablet.

Check Your Understanding

7. What advantage do digital formats have over analog signals?

- Digital media is based on a series of **numeric** data, number values that were measured from the original analog waveform.

- As a string of numbers, a digital photo or video file can be easily processed by modern computers.

Check Your Understanding

8. How is the digital format changing the way media is created and distributed?

- The increased use of digital information has led to a period of greater creativity and control of our data.
- Digital publishing is allowing a variety of new distribution methods into the industry.
- Digital music is created by combining pure digital sounds with samples of analog sounds.

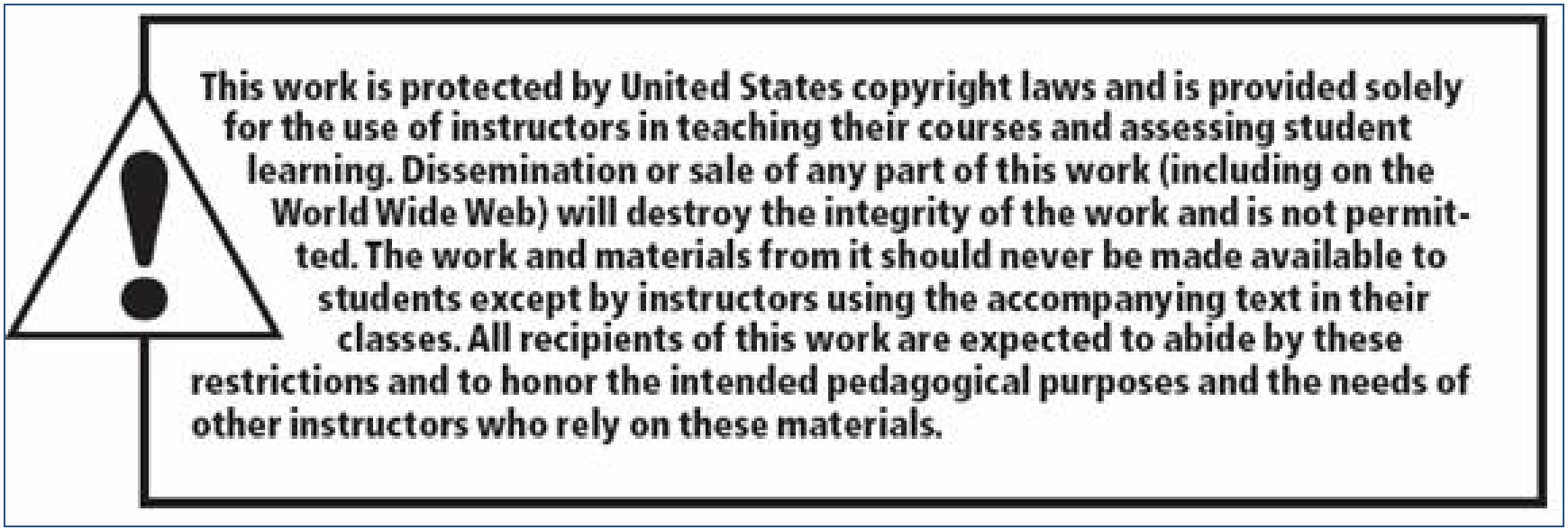
Check Your Understanding

9. How do I work with digital images and video?

- Digital cameras allow you to instantly capture and transfer images to your devices, computers, and cloud storage sites.

- Using software for **video production**, you can create polished videos with titles, transitions, a sound track, and special effects and distribute them on DVDs

- You can also use a webcam to **stream live** video to sites that will “broadcast” it over the Internet.



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