History of Cellular Phones

• The basic concept of cellular phones began in 1947, when researchers looked at crude mobile (car) phones and realized that by using small cells (range of service area) with frequency reuse they could increase the traffic capacity of mobile phones substantially.

• However at that time, the technology to do so was nonexistent.
Different innovations....
Cellular: defined

- A type of wireless communication that is most familiar to mobile phones users. It's called 'cellular' because the system uses many base stations to divide a service area into multiple 'cells'.
- Cellular calls are transferred from base station to base station as a user travels from cell to cell.
Digital Cellular

- The 1990s marked the arrival of two digital networks: CDMA, popular in the United States and a few other countries; and GSM, the dominant technology overseas.
- These second-generation (2G) networks spread voice calls across several wireless spectrums, making for more reliable connections that are much harder—though not impossible—for hackers to intercept.
- More importantly, CDMA and GSM networks are also capable of sending a sliver of data along with voice signals, making possible for such features as text messaging (SMS), caller ID, and conference calling.
GSM

- The digital nature of GSM allows data, both synchronous and asynchronous data
- In 1989, GSM responsibility was transferred to the European Telecommunication Standards Institute (ETSI), and phase I of the GSM specifications were published in 1990. Commercial service was started in mid-1991
- Allows SIM Card for easy transfers

CDMA

- Code Division Multiple Access (CDMA) is a digital air interface standard, claiming eight to fifteen times the capacity of traditional analog cellular systems. It employs a commercial adaptation of a military spread-spectrum technology. Based on spread spectrum theory, it gives essentially the same services and qualities as wire line service
- Better technology, they claim
Which is better?

- In a fast growing market,
- GSM/3GSM (red) grows faster than the market and is gaining market share,
- the CDMA family (blue) grows at about the same rate as the market,
- while other technologies (grey) are being phased out.

Trends
GSM Providers

- T-Mobile
- AT&T

CDMA Providers

- Verizon
### 3G Evolution

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Analog voice only</td>
<td>AMPS</td>
<td>CDMA</td>
<td>GSM</td>
<td>GPRS</td>
<td>EDGE</td>
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<tr>
<td>Digital voice and limited data (less than 20Kbps)</td>
<td>1xRTT</td>
<td>1xRTT</td>
<td>1xRTT</td>
<td>1xRTT</td>
<td>1xRTT</td>
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<tr>
<td>2G</td>
<td>Data at dial-up speeds (30Kbps to 90Kbps)</td>
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<td>1xRTT</td>
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<tr>
<td>3G</td>
<td>DSL speeds (144Kbps to 3Mbps)</td>
<td>UMTS</td>
<td>1xEV-DO</td>
<td>HSDPA</td>
<td></td>
</tr>
</tbody>
</table>
The device we all need

TIRED OF LISTENING TO OTHER PEOPLE'S CELLPHONE CONVERSATIONS?

THE CELLPHONE JAMMER
...IS FOR YOU!

"THE JAMMER" JAMS ALL CELLPHONE CONVERSATIONS WITHIN A 10 YARD RADIUS.

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phone: (216) 371-8560 e-mail: TFM@funnytimes.com

What is a Smartphone?
• Is a Mobile phone offering advanced capabilities beyond a typical mobile phone, often with PC-like functionality.
• There is no accepted definition of a Smartphone.
• a Smartphone is a phone that runs complete operating system software providing a standardized interface and platform for application developers.
• a Smartphone is simply a phone with advanced features like e-mail and Internet capabilities, and/or a full keyboard. In other words, it is a miniature computer that has phone capability.
OS Choice

• Symbian OS, Nokia
• iPhone, Apple
• Blackberry, RIM
• Windows Mobile, Microsoft
• Android, Google and 40 others
• Palm OS, going away

T-mobile handsets
Verizon handsets

Sprint handsets
ATT handsets

The “OTHER” ATT handsets
University Cell phones

- [http://www.it.utah.edu/services/phones/cellular.php?token=3e05a2a575e84c6e9c683e84b5769e15a272e30&status=employee](http://www.it.utah.edu/services/phones/cellular.php?token=3e05a2a575e84c6e9c683e84b5769e15a272e30&status=employee)

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### Verizon Pricing

<table>
<thead>
<tr>
<th>Monthly Anytime Voice Minutes</th>
<th>Basic Plan</th>
<th>Select Plan</th>
<th>Premium Plan</th>
<th>Per-Minute Rate after Allowance</th>
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<tbody>
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<td>$163.99</td>
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</tr>
</tbody>
</table>

- Basic Voice Mail with Message Waiting Indicator, Caller ID, Call Waiting, 3-Way Calling, Call Forwarding.
- No Answer/Busy Transfer, 411 Connect®, International Roaming/Calling

*Included Features* (May require digital service and specific equipment.)
T-Mobile

- Price  Minutes  weekend  nights  tmo-tmo
- $29.99  300  unlimited  N/A  N/A  Individual Prime
- $39.99  1000  N/A  N/A  N/A  Individual Value
- $39.99  600  unlimited  unlimited  N/A  Individual Plus
- $49.99  1000  unlimited  unlimited  N/A  Individual Max
- $59.99  1500  unlimited  unlimited  N/A  FamilyTime Basic
- $59.99  700  unlimited  unlimited  unlimited  FamilyTime
- $69.99  1000  unlimited  unlimited  unlimited  Individual Unlimited
- $99.99  2000  unlimited  unlimited  unlimited  FamilyTime Ultra
- $129.99  3000  unlimited  unlimited  unlimited
## ATT Pricing voice

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<td>Nation 2000 w/Rollover</td>
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<td>Nation Unlimited $99.99</td>
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<td>Nation 4000 w/Rollover</td>
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<tr>
<td>Nation 6000 w/Rollover</td>
<td>169.99</td>
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</tr>
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</table>

## ATT Data plans

- **PDA Enterprise** $38.25 N/A
- **PDA Enterprise with Cellular Video** $46.75
- **PDA Enterprise for BlackBerry Connect 4MB** $33.99
- **4 MB**
- **PDA Enterprise for BlackBerry Connect** $42.50
- unlimited
- N/A
- $0.015
- N/A
Sprint Pricing

- Everything $99 a month
- Data only 450 $59.49 45¢/min
- Data only 900 $76.49 40¢/min