



**AR CONSULTING** INC  
A Computer Consulting Firm

Best Practices for Mobile Application  
Deployment and Operations



# Best Practices

- Device
- Integration
- Design
- Security
- Implementation and Training
- Case Study



## Experience

- Design/develop/deploy mobile solutions for corporate clients
- Solutions deployed:
  - Corporate knowledge management
  - Delivery/route management
  - Field force automation
  - Remote inspection
  - Sales force automation
- Experienced with BlackBerry, J2ME, Palm, PocketPC, WAP, WML, xHTML



# Devices

- BlackBerry
- Cell phone
- Laptop with aircard
- Palm Treo
- PocketPC
- Tablet PC



# Attributes

- TTFU (Time To First Use)
- Battery life
- Connectivity
- Development
  - Tools, APIs, available talent, complexity
- Manageability
  - Remote lock, wipe, provision, corp. policies
- Security
  - Encryption in-transit/on device, passwords
- Performance
- Weight
- Cost



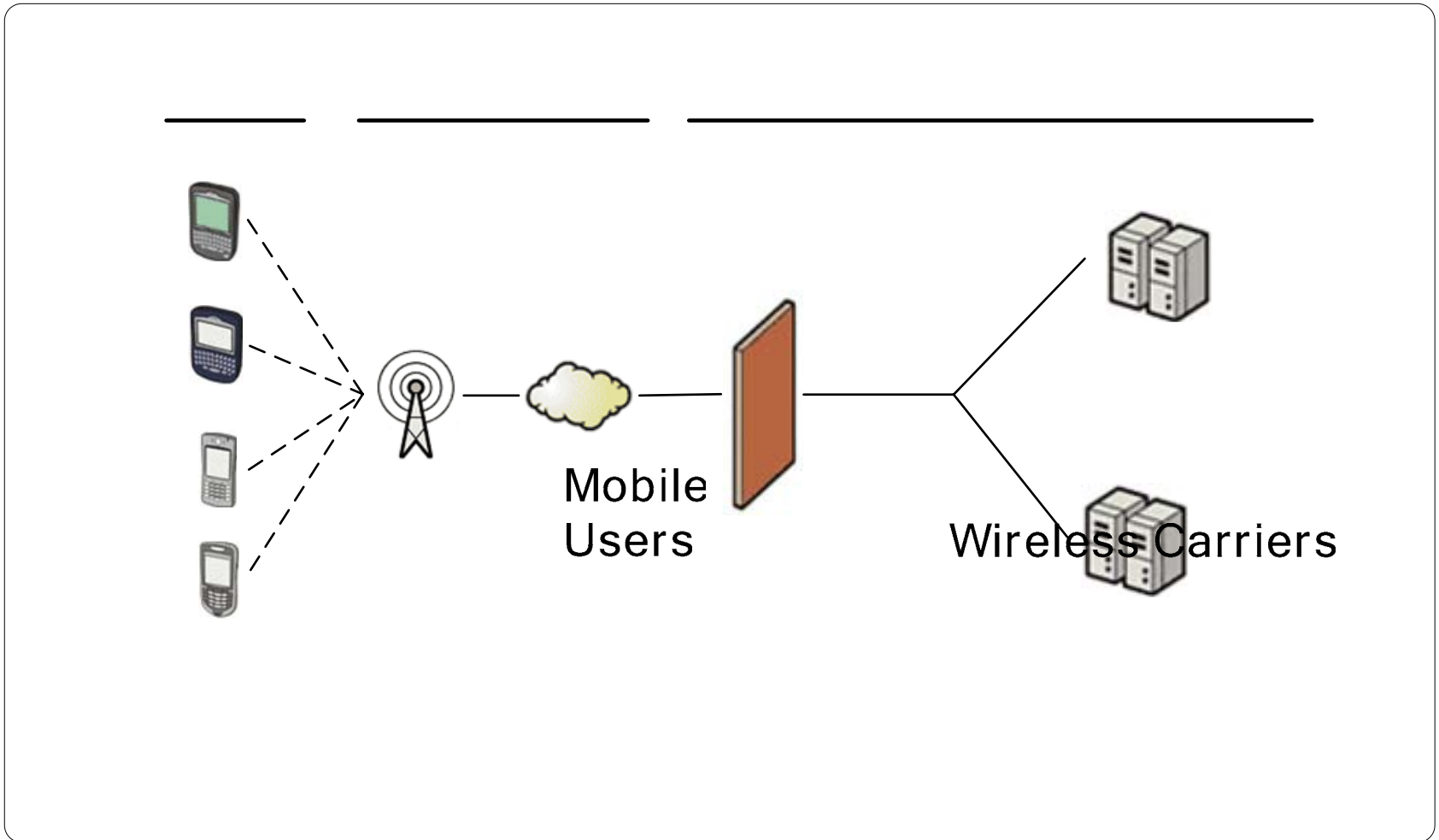
# Devices

	BB	Cell	Laptop	Palm	PPC	Tablet
TTFU	★ ★ ★	★ ★ ★	★	★ ★ ★	★ ★ ★	★ ★
Battery life	★ ★ ★	★ ★ ★	★	★ ★ ★	★ ★	★
Connectivity	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★
Development	★ ★	★	★ ★ ★	★ ★	★ ★	★ ★
Manageability	★ ★ ★	★	★	★	★	★
Security	★ ★ ★	★	★	★	★	★
Performance	★ ★	★	★ ★ ★	★ ★	★ ★	★ ★ ★
Weight	★ ★ ★	★ ★ ★	★	★ ★ ★	★ ★ ★	★ ★
Cost - Initial	★ ★ ★	★ ★ ★	★	★ ★ ★	★ ★ ★	★

TTFU = Time To First Use

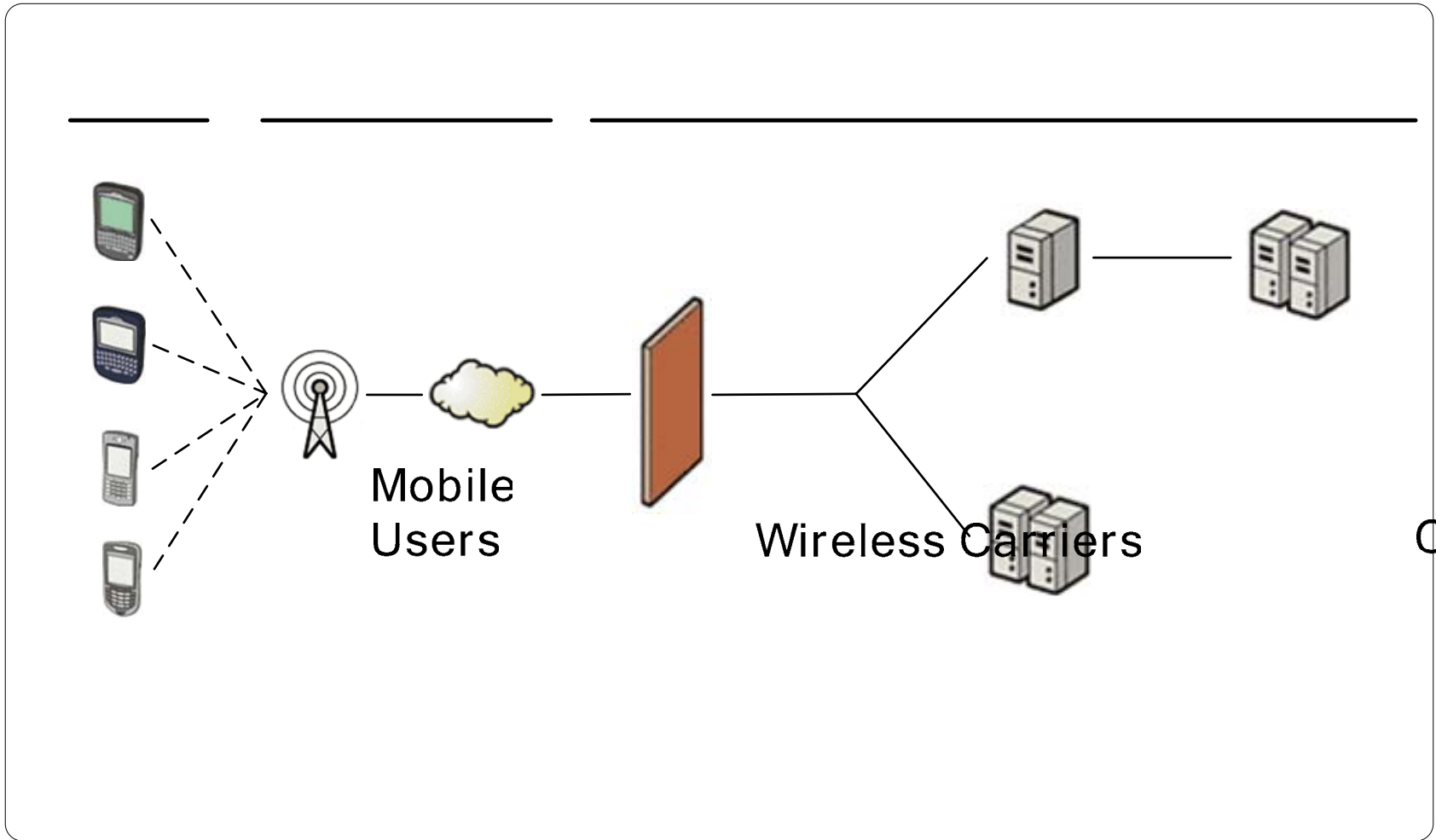


# Integration



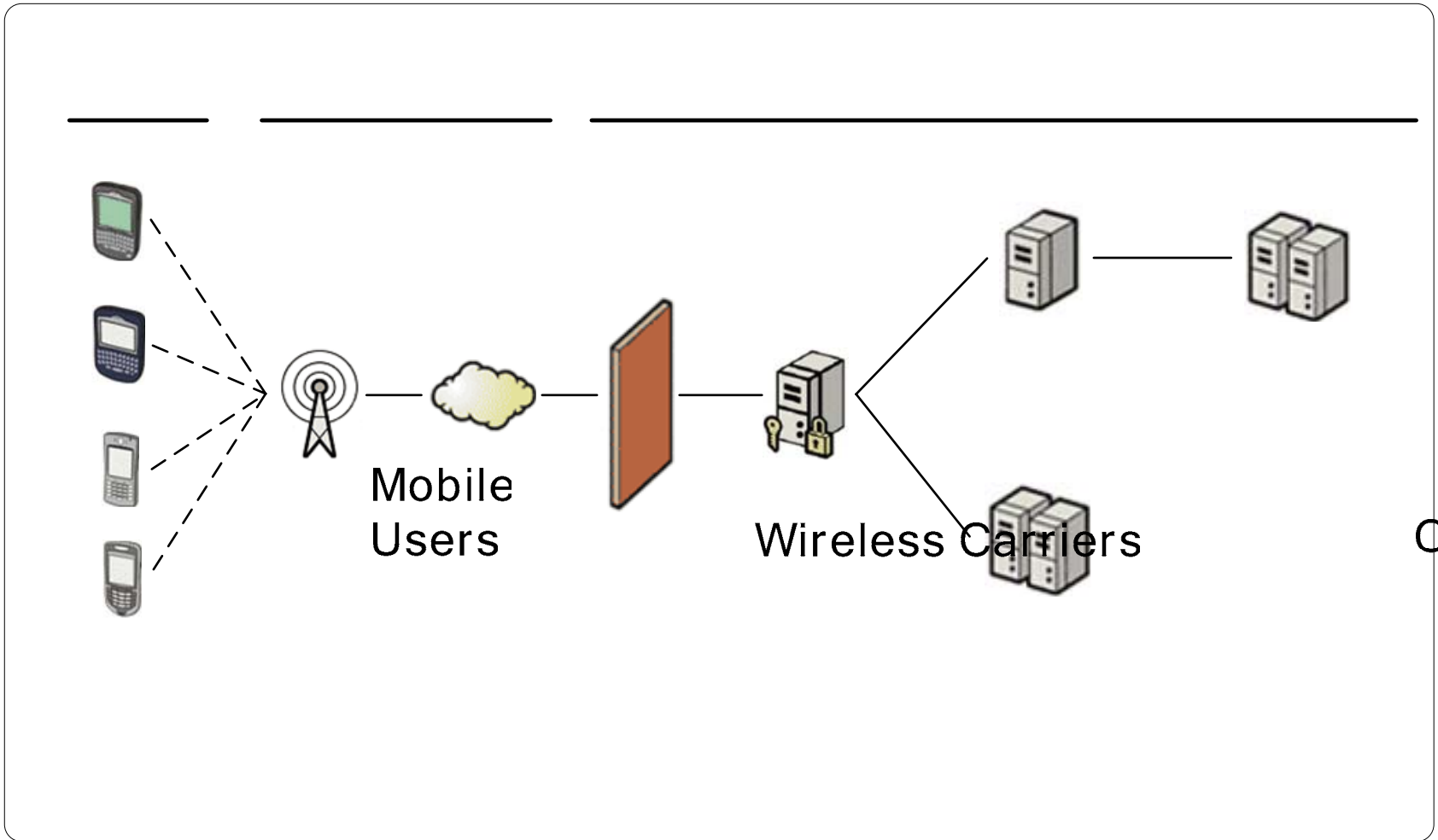


# Integration





# Integration





# Design

- Small screens
- Limited storage
- Limited bandwidth



## Design – Small Screens

- Challenges:
  - Screens =  $\frac{1}{4}$  VGA
  - One handed or stylus metaphor
- Best Practices:
  - Use TP metaphor (i.e. long, narrow pages)
  - Use sub-pages where appropriate
  - Limit the eye-candy
  - Pick the right device



## Design - Limited Storage

- Horizontal data partitioning
  - 1,000,000 orders in mainframe
  - 1,000 salespeople
- Solution
  - Orders for appropriate salesperson (1,000/device)
  - Orders for last 90 days
  - Open orders



## Design - Limited Storage

- Vertical data partitioning
  - 95 columns in production table
  - Mobile workflow for pre-production, production and QA teams
- Solution
  - Pre-production – 20 common fields + 25 pre-production fields
  - Production – 20 common fields + 25 production fields
  - QA – 20 common fields + 25 QA fields



## Design - Limited Bandwidth

- Now:
  - CDMA = 14.4 kbps
  - GPRS = 20-40 kbps
  - EDGE = 100-150 kbps. Max = 236 kbps.
  - EV-DO = 300-500 kbps. Max = 2400 kbps.
- Future:
  - UMTS = 220-320 kbps.
  - HSDPA = 400-700 kbps. Max = 10,000 kbps.



## Design - Limited Bandwidth

- Wireless modem is typically the biggest drain on the battery
- XML is very expensive in wireless. Don't use it unless you have to.
- Be granular. Use small packets (2-3k)
- Modem use may block voice (or DirectConnect)
- Send changes only
- Strip extraneous characters (i.e. dashes in account #s, dollar signs in sales figures, etc.)
- If possible, allow maintenance data to be loaded via the LAN

- Challenges:
  - Lost/stolen devices
  - Data stealing trojans
  - Lack of static IP addresses
- Best Practices:
  - Passwords
  - Bluetooth off (at least turn off discoverable)
  - Remote lock and wipe
  - Encryption in transit
  - Encryption on device
  - Firewall security



## Implementation/Training

- Voice/Data or data-only?
- Migrate voice #s
- Plan on multiple carriers
- First, give out devices w/o app. Then layer on your application.
- Train in person or via WebEx
- Give device emulator to your documentation and support team
- Auditing is a must
- DR plan



# Implementation/Training

## Deployment:

- OTA pull
- OTA push
- Server push
- Desktop install



## Case Study - FFA

### Challenges:

- Paper-based work orders lead to errors and delays
- No way for technicians to receive up-to-date information
- Technicians don't complete paperwork in a uniform fashion
- No way to tie time reporting with work orders
- Technicians cannot quickly determine parts availability



## Case Study - FFA

### Device side features:

- View and annotate work orders
- Generate field work orders
- Log parts used
- Record hours (project, travel and overhead)
- Print receipts

### Middleware features:

- Manages data delivery
- Via connectors handles integration with other systems
- No required changes to host system
- Complete audit trail



# Case Study - FFA





# Case Study – Remote Inspection

## Challenges:

- WAP-based application required network coverage
- High latency
- No persistence
- Possibility of “phoning-in” results



# Case Study – Remote Inspection

## Log in:

- Network coverage required
- Download facilities, last readings, etc.

## Operations:

- Fast UI response
- GPS coordinates
- If no coverage, data is queued



# Case Study – Remote Inspection





## Build the ROI

- Quicker billing cycle
- Increased capture of billable time
- Increased capture of parts used
- Better visibility and utilization of mobile user
- Higher productivity (less re-keying of data)
- Faster response to customer
- Real-time status



## Contact Info

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