Elements of a Successful Standard

Best Technology

Easy Implementation

A merger of known techniques

Pulse position modulation

Radar Systems since WWII
Morse Code telegraph

IEEE 802.11 DSSS

Direct Sequence spread spectrum well
know technique. Already part of the
IEEE 2Mbps standard.

Barker Code Position Modulation
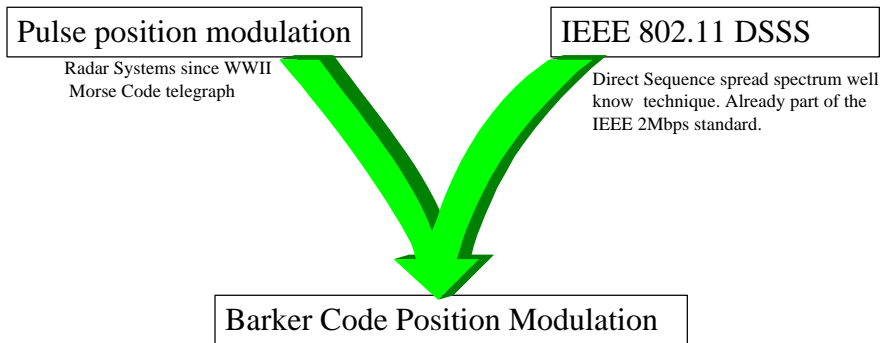
A field proven mixture of technologies that work.

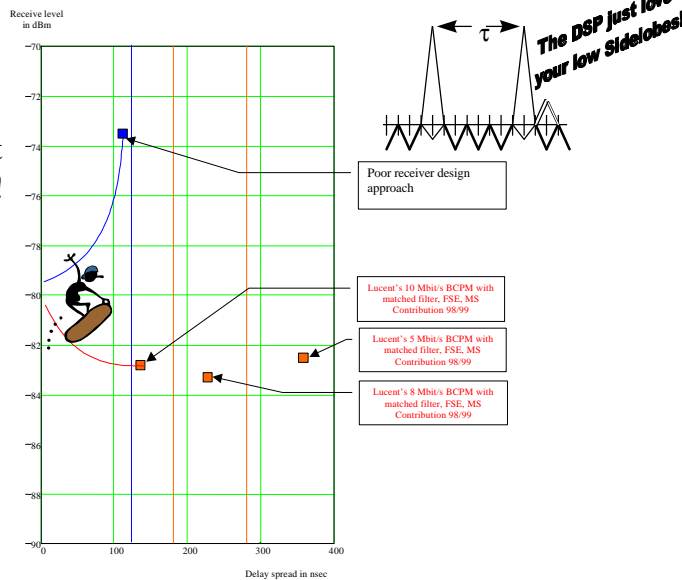# Solves Issues From the Field

Get those packets over!

TX RX

- Low Complexity Solution
  - Different decoding techniques provides "excellent performance vs gate count!
    - 25K gate, 40K gate, 60K gate
- Lower Power Consumption
  - 300mA @ 3Volts PC-Card
- Robust Design meeting 10Mpbs threshold
  - Excellent Payback for Fallback
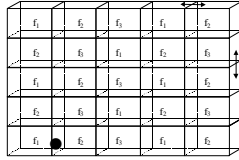 - Stable approach without the need to band-aid

Submission   Slide 3   Bruce Tuch, Lucent Technologies

-

Receive level in dBm

τ

The DSP just loves your low Sidelobes!

Surf down the right performance curve!

−70
−72
−74
−76
−78
−80
−82
−84
−86
−88
−90

0   100   200   300   400

Delay spread in nsec

Poor receiver design approach

Lucent's 10 Mbit/s BCPM with matched filter, FSE, MS Contribution 98/99

Lucent's 5 Mbit/s BCPM with matched filter, FSE, MS Contribution 98/99

Lucent's 8 Mbit/s BCPM with matched filter, FSE, MS Contribution 98/99

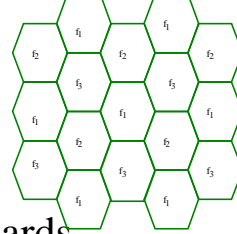Submission   Slide 4   Bruce Tuch, Lucent Technologies

Leverage

- Easy migration from existing standards
  - Three channel scheme of IEEE 802.11 DSSS
  - Can interoperate with IEEE 802.11 FH
  - Scalable Collocated Access Point Capacity
    - CAPC for system flexibility
- Translation across geographies
  - Same design conforms to all international rules

Ease of Implementation

- Technology at all levels support the standard
  - Baseband IC's (DSP and MAC) will be available on the market from Lucent Microelectronics
    - This is a separate Business Group within Lucent
- DSP technology for own implementations
    - Minimize your time-to-market with implementation assistance
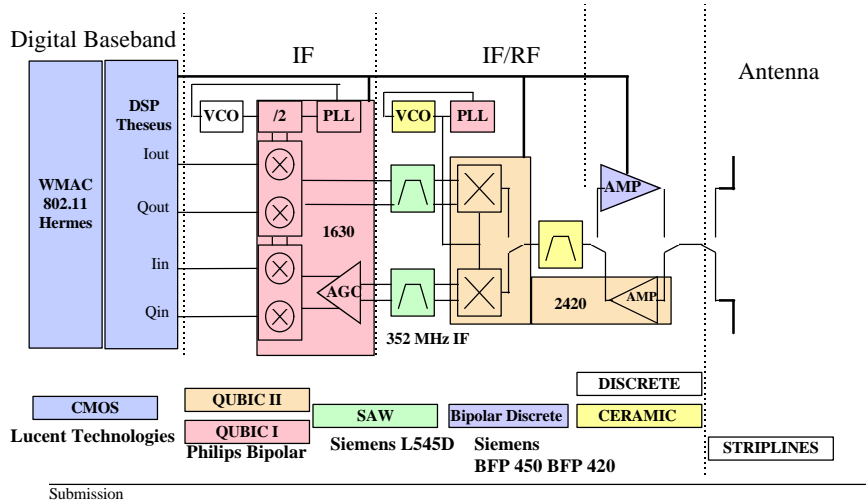- RF technology now available
-

Technology for a Total Solution

Easy of Implementation

Digital Baseband

IF   IF/RF

Antenna

DSP
Theseus

VCO | /2 | PLL   VCO | PLL

Iout

WMAC
802.11
Hermes

Qout

AMP

1630

Iin

Qin

AGC

2420   AMP

352 MHz IF

CMOS

QUBIC II

DISCRETE

QUBIC I

SAW

Bipolar Discrete

CERAMIC

Lucent Technologies

Philips Bipolar

Siemens L545D

**Siemens
BFP 450 BFP 420**

STRIPLINES
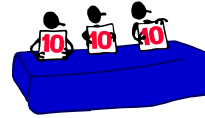

Summary

- PC-Card Form Factor ✓ Integrated unit <300mA @3.3V

- Geographical Translation ✓
   – FCC, ETSI, MPT (No "specials" in Japan) 🔴

- Robust Radio ✓
   - Not only for a small cube in an office!

- Builds upon our IEEE 802.11 Standard ✓
   – Guided by field experience
      - Holistic Approach
      - With CAPC flexibility!

- Easy technology access ✓

-

Ending

- Best Technology without conditions
- Easy Implementation

Elements of a Successful Standard