

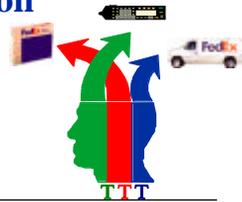
March 1998

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“Wearables” Standards

*Presentation to
IEEE 802 Standards Committee
March 9, 1998*

**Dick Braley, Senior Staff Advisor
Wireless Systems Development
Federal Express Corporation**



Submission

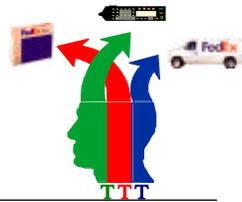
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The “Wearables” World of FedEx

- 1. Introduction/Definition of “Wearables”**
- 2. FedEx Courier Tools**
- 3. FedEx Requirements**
- 4. FedEx Support of “Wearables Activities**
- 5. FedEx Development Activities**
- 6. FedEx Support of Standards Development**
- 7. Closing Remarks**
- 8. Questions ?**



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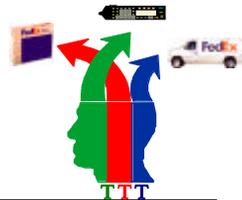
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“Wearables” Standards

- **Purpose of Presentation:** To encourage development of standards for “Wearables”, and solicit IEEE 802 support to develop the standards. (Form SG).
- **“Wearables”:** Computing devices, networking devices, software and peripherals - worn or carried by individuals - that will enhance their ability to perform productive work. (Unobtrusive).

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History of “Wearables” Standards

- **June, 1997 :** Request to IEEE for consideration of Wearables Standards development. Permission to proceed as Ad Hoc Committee within PASC.
- **Three meetings held since then :** July, December and January. About 35 companies and academic institutions participated.
- **Defined potential areas for standardization**
- **IEEE 802 most appropriate for PAN**



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War of the Cyborgs?



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Courier Technology

DADS
Digitally Assisted
Dispatch
System



SuperTracker
Hand Held Computer

ASTRA
Courier Printer



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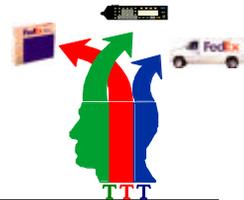
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The “Wearables” Market

Service Organizations	DARPA/U.S. Military
Medical Applications	Manufacturing
Maintenance & Repair	Car Rental Agencies
Operations Coordination	Inventory
Bar Code Reading/Printing	Training



Submission

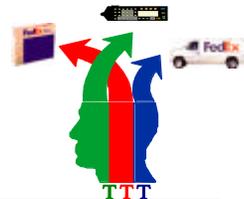
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FedEx Requirements

- **Communications Between Courier Tools**
(Cost effective systems, tools, and connectivity)
- **Communications Back to Base Station/Dispatch**
(i.e., nomadicity in a limited sense)



Submission

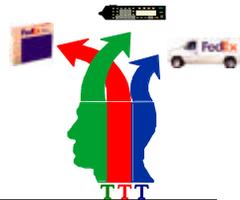
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FedEx Support of “Wearables” Activities

- “Wearables” Conference, 1997
- Member of MIT Media Lab “Things That Think” Consortium
- Initiated the “Wearables” Standards Activity with IEEE last June
- Invited Speaking Engagements (XIWT, IEEE, VRAIS, State of MA)



Submission

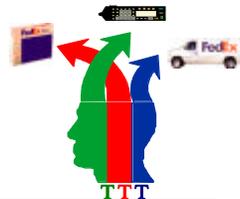
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*Participants in Standards Activities
(Partial List)*

- | | | |
|------------------|-----------------|--------------|
| FedEx | Motorola | DARPA |
| Symbol | Boeing | BBN |
| Norand | M/A-COM | MIT |
| ViA, Inc. | Xetron | DEC |
| CMU | H.P. | GTE |

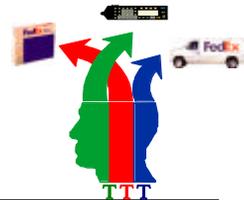


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“Wearables” Standards : Potential Areas for Standardization

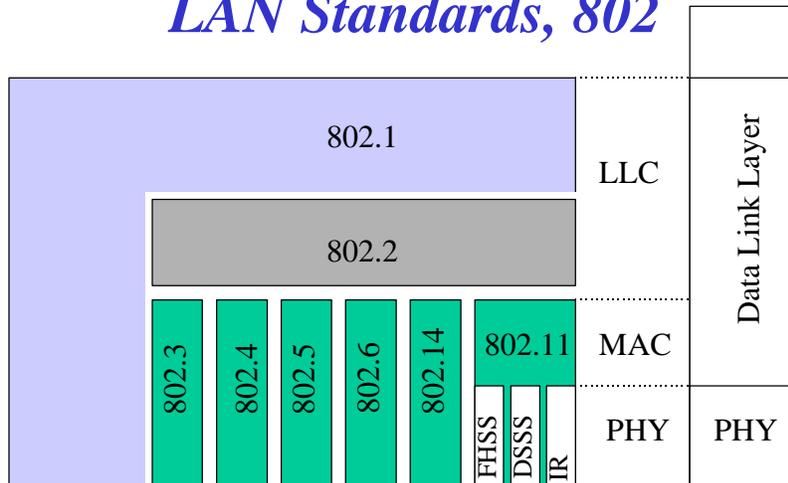
- Personal Area Networks
- “Wearable Computing” and Interfaces
- “Wearables” System Architectures
- Nomadcity
- Humionics



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LAN Standards, 802



OSI RM Model

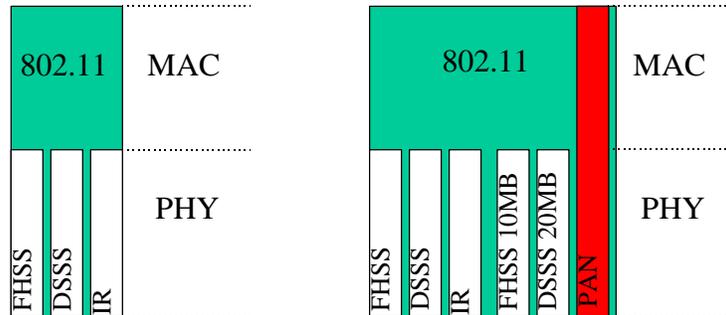
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We want to form a Study Group in IEEE to review your PHYs & MAC against PAN requirements



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Functional Requirements

- **Mobility: 0-10mph**
- **Power Management: Very Low current consumption**
- **Range: 0-10 meters**
- **Speed: 19.2 - 100Kbps (actual)**
- **Small Size e.g., ~.5 cubic inches no antenna**
- **Low Cost: i.e., relative to target device**
- **Should allow overlap of multiple networks in the same area**
- **Networking support for a minimum of sixteen devices**

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