Standards from Product Idea to the Market

Standards for Wearable Technology & Textile Electronics
North Carolina State University
March 2016
Standards and the Product Development Cycle

### Standard Types and Notional Ranges of Application

#### Operational & Maintenance Standards
- Basic Metrology and Reference Standards
- Standard Datasets
- Product and Process Interoperability/Interface Standards
- Data Exchange-Interchange Protocol Standards
- Standard Test Methodologies
- Product Performance Standards
- Operational & Maintenance Standards
- Accreditation/Certification Standards

#### Accreditation/Certification Standards

#### Product Performance Standards

#### Technology Development
- Integration of specific elements into basic modules, components, or systems and operational requirements defined

#### Technology Demonstration
- Prototype ready for testing testing against operational requirements

#### Pre Production
- Prototyping for produce-ability and confidence in ability to meet operational and regulatory requirements

#### Production & Marketing
- Technology demonstrated to meet operational and regulatory requirements
- Marketable product in production

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### Innovation and Transition to the Market

#### Basic Research
- Basic R&D to understand the phenomenon
- Studies to develop a usable technology

#### Research to Prove Feasibility
- Lab level R&D for specific elements of the technology that may be used in a system

#### Technology Development
- Integration of specific elements into basic modules, components or systems and operational requirements defined

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### Basic Research

#### Basic R&D to understand the phenomenon
- Basic Research

#### Studies to develop a usable technology
- Innovation

#### Lab level R&D for specific elements of the technology that may be used in a system
- Transition to the Market

#### Integration of specific elements into basic modules, components or systems and operational requirements defined

#### Prototype ready for testing testing against operational requirements

#### Prototyping for produce-ability and confidence in ability to meet operational and regulatory requirements

#### Technology demonstrated to meet operational and regulatory requirements

#### Marketable product in production

Market Access vs. Market Acceptance

• **Market Access**
  - Product Meets the Legal Requirements

• **Market Acceptance**
  - Product Meets Non-Regulatory Market Expectations
Example – Power Supply
### Example - Notebook Computer

#### Sample of 3 of 221 Countries

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<th>United States</th>
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Where is it going?

The task of getting and staying compliant is increasingly complex.

Compliance is becoming more costly and labor-intensive.

It’s becoming more difficult to manage compliance accurately – Greater risk of failures.
Attribute Example - Environmental Compliance

Compliance is Now Prerequisite for Market Access
Standards from Product Idea to the Market

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