



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# **Breakout Session Summary**

## **ERGONOMICS**

---

**EXO-G Meeting**

**June 29, 2017**

- 1. Knowledge Sharing**
  - A. Improved communication from the end user to the technology developer**
  - B. Decision support – matching tasks to device specifications**
  - C. Device selection – worker choices**
- 2. Risk/Hazard Communication**
  - A. By the developer**
  - B. To the user**
- 3. Business Case**
  - A. Performance/productivity – Real time feedback**
  - B. Quality**
  - C. ROI**

## 1. Knowledge Sharing

- A. Improved communication from the end user to the technology developer
  - B. Decision support framework – tasks matched to device specifications
  - C. Device selection – worker choice
- 
- Academia feels that many problems have been solved; not appearing in products.
  - Best practices/success stories/“entry point” all needed.
  - Need a path to sharing knowledge/challenges/resources/ideas/data in a technology agnostic way. (e.g. shared repository/library)
  - Customization of the exoskeleton and its interaction with the work environment to the individual worker.
  - Make devices in harmony with the user through designs with physiologic feedback in control loop.

## 2. Risk/Hazard Communication

### A. By the developer

1. Must be “effective” - reduce musculoskeletal risks, reduce forces on the body, reduce onset of fatigue. Q: What metrics need to be collected?
2. Safe to use and environmentally compliant - Snag hazards, wifi, confined spaces, power limitations, weight, center of gravity, metabolic load, skin/compression, chafing, hot spots
3. Long term adverse/side effects on healthy users? e.g. Load transfer to other muscle groups, alter neuromuscular function
4. Other “transference of risk” or new hazards/challenges

### B. To the user

1. Educating/raising awareness about technologies to the workers in need
2. Potential adverse effects of increased task exposure time or other tradeoffs.

### **3. Business Case**

**A. Performance/productivity**

**B. Quality**

**C. ROI/Cost Benefit**

**1. Management buy-in**

**2. Data-driven**