TITLE:	Recycling Electronics (Alternatives: *The* Recycling *of* Electronics / Electronics Recycling/ Recycle Electronics)
AUDIENCE:	Electrical Engineers designing computers and other electronic devices
RELEVANCE	It is the important that you (i.e., designers) understand the recycling process in order to create products that can be more easily disassembled and reclaimed.
GENERAL PURPOSE:	To update listeners' knowledge of the issues concerning the recycling of electronics
SPECIFIC PURPOSE:	From the engineering viewpoint, creating circuitry that fulfil the WEEE Directive requires knowledge of the the *regulations*, recycling *process*, and the *chemical hazards* involved.
PATTERN	Problem-solution + Topical.

INTRODUCTION

Capture audience's attention: *More than 10 million computers and an increasing number of LCD displays reached the end of their life cycle last year. If these were piled up in Alvarin aukio, it would even cover Dipoli, and would leave toxic wastes that would make it unhealthy to live as far away as Siuntio. How should we deal with this environmental problem? The current solution has been to put this e-waste onto container ships and send it to countries such as Bangladesh and China. Not a good solution. We as designers have a moral responsibility to act proactively.*

Establish credibility: *My name is Matti, and I'm an engineering student at the Helsinki University of technology, majoring in Environmental Engineering.*

Purpose: *Today, I'd like to make you aware of the issues that you should take into account when designing electronics that meet the requirements of the EU's WEEE Directive.*

Overview: *I've divided my talk into three areas. First, we'll look at the regulations, both international and EU. Then, we'll go through the actual recycling process to identify problems that could be avoided through proper design; and finally, we'll take a closer look at the most common hazardous substances that you could be made more easily extractable in your designs.*

BODY OF TALK

*(**Right then, let's start by looking at** the regulations regarding the recycling of electronics. **As you can see,** there are **two types** of regulations that you should consider when designing your products: the EU regulations and the US regulations.)*

I.   Regulations

*(**Let's begin by examining** the EU regulations. In the European Union, electronics should comply with the Waste Electrical and Electronic Equipment Directive, also known as WEEE Directive. The WEEE Directive requires...)*

A. EU
   a.   WEEE Directive
   b.   National legislation

*(**Okay, let's turn our attention to** the regulations applicable in the US markets....)*
B. USA
   a.   Federal
   b.   State

*(**So**, having looked at the regulations, let's now take a closer look at the recycling process itself)*

II. Recycling Process

    A. Disassembly
          a. Flat-screen monitors
          b. Computer components
              (a) Circuit boards
              (b) wiring
    B. Reclamation
          a. Leaded glass
          b. Valuable metals
          c. Plastics

*(**Okay, now** that we have seen how the recycling process works, **let's move on** to the materials and substances that require special attention)*

III. Hazardous Materials

          C. Lead (Pb)
          D. Mercury (Hg)
          E. Cadmium (Cd)
          F. Liquid crystals

*(**So, what we've learned today is** that Recycling Electronics …)*

CONCLUSION

Summarize the main points: *Although the regulations are complicated, they can be condensed into four main principles… We have also seen that the recycling process consists of X number of steps… And we are also now aware of the substances that need to be avoided….*

Return to the story, problem, or question: *So, do you remember those computers that we left in Alvarin aukio? It is through your future design efforts that we can ensure all of those people living in Siuntio and Bangladesh will be able to live a life free of toxins and wastes.*

For those of you who would like to find out more about this subject, I would suggest the following sources…

REFERENCES:

"Computer Recycling". Wikipedia, [online document] Retrieved January 15, 2008,
http://en.wikipedia.org/wiki/Computer_recycling