Return On Investment

ECE2799 Lecture
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ROI – That 3-letter Word

• Most electrical circuits are created to do exactly one thing.
• That one thing does not depend on the specific circuitry involved.
• That one thing does not even depend on how optimal a solution the specific circuitry solves the problem.
• What is that one thing?
That “One Thing”

• Most electrical circuits, fundamentally, must sell in the marketplace.
• To be able to sell, a product must be a good tradeoff among (at least) three basic factors:
  – Quality
  – Convenience
  – Cost
Cost is a Big Deal

• So, how do you figure out the cost of a product?
• How do you figure out how much a product should sell for?
• How do you figure out when, or if, a new product should be released?
• How do you know when a product has reached “end of life”?
• How do you “make payroll”?
Different Kinds of Costs

• There are several elements to determining the costs of a product.
  – Prototyping costs
  – Overhead costs
  – Cost of goods sold (COGS)

• Costs can fall into (at least) two categories:
  – Recurring costs
  – Non-recurring (one time) costs
The Reality of Cost

• “Cost” can be a very difficult, and sometimes moving, target.

• Complicating the equation:
  – Sometimes, the “cost” of a product bears no relationship to the actual selling price.
  – Sometimes, products are intentionally sold at a loss.
A Simple View

• Let’s consider a few basic costs:
  – Overhead
    • Overhead refers to the expenses associated with maintaining property, support personnel and supplies.
  – Capital Equipment
    • Capital equipment refers to things that are purchased in support of a project.
  – Personnel
  – Project
Return on Investment

• The goal, when selling a product, is to:
  – Recover the costs associated with product development.
  – Make a profit on:
    • Sales of the product
    • Sales of consumables associated with the product.
    • Licensing and royalties associated with the product or technology.
    • Product support
A (very) Simple Example

- Assume:
  - 1st year costs of $250,000
  - Recurring costs of $50,000/yr.
Let’s Add a Product

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- Costs
- 100 units/mo
- 500 units/mo
- 1000 units/mo
Retail Sales v. COGS

• In the previous slide, we assumed that we would receive $50 for each product sold.
• But what would a customer pay for our product?
• How does that effect sales of our product?
• What options do we have to “adjust” our ROI?
Costs of Distribution and Sales

• Typically, a distributor wants to make 20-30% profit when they sell a product.
  – Given that the distributor must also make up for overhead and other costs, this means they must have a substantial markup – often 100%!

• The retail seller also wants to see 20-30% profit!

• This means that your $50 product costs the end user $200!