Abstract

This document explains how simple financial estimates can be made by system architects. These simplistic estimates are useful for an architect to perform sanity checks on proposals and to obtain understanding of the financial impact of proposals. Note that architects will never have full fledged financial controller know how and skills. These estimates are zero order models, but real business decisions will have to be founded on more substantial financial proposals.
Product Margin = Sales Price - Cost

Margin per product. The margin over the sales volume, must cover the fixed costs, and generate profit transportation, insurance, royalties per product, ...

Cost per product, excluding fixed costs
purchase price of components may cover development cost of supplier
Profit as function of sales volume

- Sales volume in units
- Income
- Expenses
- Break even point
- Profit
- Expected sales volume
- Fixed costs
- Variable costs

Simplistic Financial Computations for System Architects.

version: 1.3
August 21, 2020
SFCprofitAndSalesVolume
## Investments, more than R&D

### Strategic Choices
- **NRE (Non-Research & Development):**
  - Outsourcing
  - Royalties
- **Marketing, Sales**
- **Training sales & service**
- **R&D Investment**

### Financial Computations
- Often a standard staffing rate is used that covers most costs above:
  \[
  \text{R&D investment} = \text{Effort} \times \text{rate}
  \]

### Business Considerations
- **Sales Cost >> R&D Cost**

### Strategic Choice
- **NRE or per product**

### Including Costs
- **Staff, training, tools, housing**
- **Materials, prototypes, overhead, certification**

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SFCinvestments
Income, more than product sales only

- **other recurring income**
  - services
    - \( \sum_{	ext{services}} \text{income}_{	ext{service}} \)
  - options, accessories
    - \( \sum_{	ext{options}} \text{sales price}_{	ext{option}} \times \text{volume}_{	ext{option}} \)
  - products
    - \( \text{sales price}_{	ext{product}} \times \text{volume}_{	ext{product}} \)

- license fees
- pay per movie
- content, portal updates
- maintenance

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SFCincome
The Time Dimension

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<th>Q2</th>
<th>Q3</th>
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<tbody>
<tr>
<td>investments</td>
<td>100k$</td>
<td>400k$</td>
<td>500k$</td>
<td>100k$</td>
<td>100k$</td>
<td>60k$</td>
<td>20k$</td>
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<tr>
<td>sales volume (units)</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>30</td>
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<tr>
<td>material &amp; labour costs</td>
<td>-</td>
<td>-</td>
<td>40k$</td>
<td>200k$</td>
<td>400k$</td>
<td>600k$</td>
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<tr>
<td>income</td>
<td>-</td>
<td>-</td>
<td>100k$</td>
<td>500k$</td>
<td>1000k$</td>
<td>1500k$</td>
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<tr>
<td>quarter profit (loss)</td>
<td>(100k$)</td>
<td>(400k$)</td>
<td>(440k$)</td>
<td>200k$</td>
<td>500k$</td>
<td>840k$</td>
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<td>cumulative profit</td>
<td>(100k$)</td>
<td>(500k$)</td>
<td>(940k$)</td>
<td>(740k$)</td>
<td>(240k$)</td>
<td>600k$</td>
<td>1480k$</td>
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</tbody>
</table>

- **cost price / unit = 20k$**
- **sales price / unit = 50k$**
- variable cost = sales volume * cost price / unit
- income = sales volume * sales price / unit
- quarter profit = income - (investments + variable costs)
The “Hockey” Stick

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What if ...?

- early more expensive product + follow-on
- delay of 3 months
- original model
Stacking Multiple Developments

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SFCmultipleDevelopments
Fashionable financial yardsticks

Return On Investments (ROI)

Net Present Value

Return On Net Assets (RONA)  leasing reduces assets, improves RONA

turnover / fte  outsourcing reduces headcount, improves this ratio

market ranking (share, growth)  "only numbers 1, 2 and 3 will be profitable"

R&D investment / sales  in high tech segments 10% or more

cash-flow  fast growing companies combine profits with negative cash-flow, risk of bankruptcy