Commercialization 1.0

Macomb-Oakland INCubator

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Definitions

- **Commercialize...**
  - *To make use of mainly for profit*

- **Commercialization...**
  - *Develop an idea from inception and introduce into commerce for a profit*

Grow a company from nothing to profitability
As start-ups, you may not know how to or have never...

- Managed a product program of any size and duration
- Analyzed a market and developed a marketing strategy
- Demonstrated any project management skills
- Set up a scalable production line
- Managed “big money” with P&L responsibility
- Established protocols for compliance to standards and regulations
- Set up a supply chain and qualified vendors
To start, I need money...
- To get money I need a business plan
- To develop a business plan I need a product
- To develop a product I need a business model
- To develop a business model I need a target customer
- To identify a target customer I need a market analysis
- To do a market analysis I need Resources
- To have resources I need money!!!

How do I start this journey?
Starting the Journey

Need Four Things

- **Compass**
  - Provides a sense of direction
  - Typically called a **Vision**

- **Map**
  - Identifies the pathway to move forward
  - Typically called a **Business Plan**

- **Blueprint**
  - Illustration for communication with others
  - Typically called a **Business Model**

- **Key Message**
  - Crisp description of who you are and what you do
  - Typically called an **Elevator Speech**
Irrespective of my choice, I need to fully understand four things: My Customers, My Company, My Product, and My Resources
My Customers

- What are the expectations of the customer?
- Why would the customer buy from you?
- Understand my Customer(s)
  - What customers like or dislike about your current product offerings?
  - What features do your customers – or not-yet-customers – wish your products included? Which features are less desirable?
  - Under what circumstances do your products succeed or fail?
  - How do your products stack up relative to your competitors’ offerings?
My Company

❑ Value Proposition
  ▪ How I create value for my customer

❑ Channels
  ▪ How to reach the customer – direct or indirect

❑ Revenue & Cost Structure
  ▪ How will the customer pay for my product/service

❑ Key Activities & Partnerships
  ▪ Things I must do to be successful
  ▪ Resources to strengthen my company

❑ Management Team
  ▪ Customer Development Team
  ▪ CEO, COO, CFO, CTO, etc.
Find a solution that meets or exceeds **ALL** the requirements

Customer expectations drive product design and functionality

- Translate customer comments into technical requirements
- Physical requirements drive manufacturing processes

Design, Develop, and Validate via models or physical prototypes

Prepare for product launch then market launch
Important assets required to make the company work
- Intellectual
- Physical
- Human
- Financial

Can be internal (core competencies) or external (acquired from partners)
**Intellectual Property**

### Trademarks, Copyrights, Trade Secrets, Contracts, Patents

- **Trade marks**
  - Protects brands and marks, prevents others from using similar marks

- **Copyrights**
  - Protects creative works such as songs, pictures from use by others without permission

- **Trade Secrets**
  - A secret with economic value, KFC recipe

- **Contracts/NDA**
  - Binding legal agreement between parties

- **Patents**
  - Government granted monopoly on your idea preventing use by others

### Common Errors/Mistakes

- Did not make a clean break with previous employer
- Unable to demonstrate clear ownership
- Delays and discontinuities on the patent process after initial filing that result in forfeiture
- Dilution of rights during licensing or allocation of market space to others

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**These are assets...**

...Manage them accordingly
Once I have all this, I can now create a...

- **Business Model**...description of how your company creates, delivers, and captures value
- **Business Plan**...document written to describe and launch products and services

The Business Model

- *Used to communicate and manage within the company*

The Business Plan

- *Used to communicate and manage the external community*

Action Plan

- *Develop the model, complete the plan, seek funding, and launch my business*
# Business Model Canvas

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activities</th>
<th>Value Propositions</th>
<th>Customer Relationships</th>
<th>Customer Segments</th>
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<tr>
<th>Key Resources</th>
<th>Channels</th>
<th>Revenue Streams</th>
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## Business Model

- **Key Partners**
- **Key Activities**
- **Value Propositions**
- **Customer Relationships**
- **Customer Segments**
- **Key Resources**
- **Channels**
- **Cost Structure**
- **Revenue Streams**
Action Plan - Assembling the puzzle

- How/Where do I start?
  - Find a Start-up/Commercialization Process
    - Need to adapt/adopt a process that matches your product lifecycle
      - Computer Chip vs. New Airliner
  - Only process can assure that all requirements are met on time and within budget given available resources
There are all kinds of process models

- Choose one you are comfortable with and start identifying your tasks
- Once the tasks are identified, link dependencies, estimate duration, identify resources, and assign costs
### Example

#### Concept Discovery
- Macro Market Analysis
- Company
- Product
- Resources
- Macro BP & Gate Review

#### Application Assessment
- Market Position
- SWOT/Differentials
- Product Viability
- Manufacturability
- Business Model
- Supply Base
- BP Update & Gate Review

#### Product Definition
- Marketing Plan
- Functional Requirements
- Design frozen
- Manufacturing validation
- Costs and volumes confirmed
- BP Update & Gate Review

#### Validation and Execution
- Perform to plan
- Pilot Launch
- Full launch
- Program Assessment & Gate review

<table>
<thead>
<tr>
<th>Function</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
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<tbody>
<tr>
<td>MKT</td>
<td>High</td>
<td>Med</td>
<td>Low</td>
<td>High</td>
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<td>ENG</td>
<td>Med</td>
<td>High</td>
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<td>MFG</td>
<td>Med</td>
<td>Med</td>
<td>High</td>
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<td>PUR</td>
<td>Low</td>
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<td>HR</td>
<td>Med</td>
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<td>FIN</td>
<td>High</td>
<td>Med</td>
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The Work Breakdown Structure (WBS) is the mechanism that turns a chaotic endeavor into a managed sequence of measurable tasks.

- **Driven by process...what needs to be done to implement the Business Model**

I now have a plan to launch my company:

- **I UNDERSTAND** what to do, how long, what resources, how much money
- **I can now CONVINCE** investors of the funding I need
Funding

- Grants
  - Local Grants
  - Leadership grants
  - Industry grants

- Debt-financing
  - Line of credit
  - Family and Friends

- Accountants and lawyers

- Equity Positions
  - Angels
  - Venture Capital
  - Equity Markets
To get funding, need to develop and explain

- Business Model
- Business Plan
- Pro Forma Financial statements
- Cash Flow Projections

Need to show

- How big the opportunity is
- Why you need the money and what you will do with it
- How it will be spent
- Time to profitability
- What is in it for the investor
Execution – The Greatest Challenge

- Now I have money, all I need to do is execute to plan
- The easy part is complete, now the real work begins
- Expect dead ends and failures,
  - the first version is never the best
  - The final product will not reflect your original expectation
- Return to the plan and modify to get back on course
- Beware of scope creep
Closing Thoughts

1. Understanding that market = customer
2. Decisions driven by data rather than emotion
3. Persistence of “right” idea vs. Not Quitting when you should
4. Too much time in meetings
5. Ineffective use of loans...preserve ownership and conserve cash
6. Poor Budgeting skills and discipline...make every expenditure meaningful
7. Business value is more than just revenue...focus on the customer value and revenue will come
8. Managing your partners...it’s a relationship!
A Quick Commercial

- Technology Highway, L3C, is a low profit, limited liability company focused on technology transfer as a catalyst for creating and retaining jobs by accelerating the commercialization of technology and IP within companies and across industries.

- Through a network of highly skilled, independent industry experts using proven processes and best practices, Technology Highway is able to rapidly develop customized solutions for your unique situation for a competitive fee.

- Our policy of no charge for the first 4 hours of service provides clients a NO RISK opportunity to experience the high quality of Technology Highway services before you sign anything.
# Technology Positioning & Commercialization (TPC) Process

<table>
<thead>
<tr>
<th>Process</th>
<th>Phase 1 Discovery</th>
<th>Phase 2 Analysis</th>
<th>Phase 3 Execution</th>
<th>Phase 4 Validation</th>
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</thead>
<tbody>
<tr>
<td>Phase Name</td>
<td>Technology Discovery</td>
<td>Application Assessment</td>
<td>Product Definition</td>
<td>Product Validation</td>
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<tr>
<td>Key Tasks to be completed</td>
<td>• Define SWOT • Complete Product Discovery</td>
<td>• Market / VOC &amp; Benchmarking • Technical • Manufacturing • Resources • Financial • Marketing Plan • Supply Chain</td>
<td>• Define Technology Concept • Define Design • Define Development • Define Adv Development</td>
<td>• Execute Product Marketing &amp; Sales Plan • Execute Manufacturing Plan • Develop Supply Chain Management Plan • Execute Supplier Quality Engineering Plan • Execute Financial Funding Plan</td>
</tr>
<tr>
<td>Key Deliverables</td>
<td>• Market Dynamics • Perspectives • Functional Gaps</td>
<td>• Market Position • Product Viability • Process Selection • HR Requirements • Business Case • Segmentation • Supply Base</td>
<td>• Performance Requirements • Design &amp; Math • Mfg &amp; Product Validation • Cost &amp; Volumes • Marketing Plan</td>
<td>• Marketing &amp; Sales Plan • Manufacturing Plan • Supply Chain Plan • Supplier Quality Plan • Financial Funding Plan</td>
</tr>
<tr>
<td>Exit Criteria</td>
<td>• Sound Engineering Principles • Benchmarked Positive Position in Industry • Addresses Customer Need in Market</td>
<td>• Leading Market Position • Demonstrated Product Viability • Feasible Mfg Process • Positive Business Case • Defined Supply Base and Logistics</td>
<td>• Performance Requirements Met • Design &amp; Math Completed • Mfg &amp; Product Validation Completed • Cost Targets Met</td>
<td>• Marketing &amp; Sales Plan Executed • Manufacturing Plan Executed • Supply Chain Plan Executed • Supplier Quality Plan Executed • Financial Funding Plan Executed</td>
</tr>
<tr>
<td>Tools, Practices</td>
<td>• Marketing Tools • Process Management</td>
<td>• Market Tools • Consulting Expertise • Financial Analysis • Supply Chain Management</td>
<td>• QFD/Sys Engr • Engr Tools • Mfg Analyses • Cost Models • Marketing Analyses</td>
<td>• Marketing Methodology • Agile Manufacturing, Synchronous Principles • Supply Chain Strategies • APQP, PPAP • Financial, Investment Banking, Venture Capitalist Processes</td>
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<tr>
<td>ID</td>
<td>WBS</td>
<td>Task Name</td>
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<td>Phase 0 - Sales &amp; Project Planning</td>
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<td>2</td>
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<td>Define Project</td>
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<td>3</td>
<td>1.1.1</td>
<td>Collect relevant project information, data and documentation to support client's technology needs</td>
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<tr>
<td>4</td>
<td>1.1.2</td>
<td>Perform SAE ARI internal review of collected material to support Define Project Category and objectives</td>
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<td>5</td>
<td>1.1.3</td>
<td>Define project objective, client expectations and explain project criteria task</td>
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<td>6</td>
<td>1.1.4</td>
<td>Estimate potential project budget and resources commitments for both client and SAE ARI</td>
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<td>1.1.5</td>
<td>Conduct project review with client</td>
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<td>8</td>
<td>1.1.6</td>
<td>Communicate proposal approval tasks and possible SAE ARI/LCB, ARI consultants and stakeholders</td>
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<td>9</td>
<td>1.2</td>
<td>Define Project Category (RTD, IIMD, NPD)</td>
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<td>1.3</td>
<td>Define Project Criteria (Qualifying for ARI Project) (Stage I Assessment)</td>
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<td>1.4</td>
<td>Obtain Client Proposal Approval</td>
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<td>32</td>
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<td>Phase 1 Discovery: Technology Discovery</td>
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<td>2.1</td>
<td>Define Product Discovery</td>
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<td>Technology Review Board (TRB) Assessment/Endorsement</td>
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<td>Phase 2 - Analysis: Technology Assessment</td>
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<tr>
<td>54</td>
<td>3.1</td>
<td>Determine Market Opportunity &amp; VOC &amp; Benchmarking</td>
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<tr>
<td>60</td>
<td>3.2</td>
<td>Establish Technical Viability of Technology Concept</td>
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<tr>
<td>73</td>
<td>3.3</td>
<td>Perform Manufacturing Assessment</td>
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<tr>
<td>88</td>
<td>3.4</td>
<td>Conduct Initial Supply Chain / Joint Venture Management Assessment</td>
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<tr>
<td>95</td>
<td>3.5</td>
<td>Initiate Supply Chain Quality &amp; Requirements Assessment</td>
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<tr>
<td>103</td>
<td>3.6</td>
<td>Determine Resource Assessment</td>
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<td>106</td>
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<td>Develop Financial Assessment</td>
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<td>111</td>
<td>3.8</td>
<td>Define Product Marketing Plan</td>
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<td>119</td>
<td>3.9</td>
<td>Phase 2 Exit</td>
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<tr>
<td>126</td>
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<td>Phase 3 - Execution: Technology Definition</td>
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<tr>
<td>127</td>
<td>4.1</td>
<td>Define Concept (Technology) Stages</td>
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# Commercialization – The Big Picture

## Technology Highway Positioning & Commercialization Process

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<th>Discovery</th>
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## Process Deliverables

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<thead>
<tr>
<th>Market Dynamics</th>
<th>Market Position</th>
<th>Performance Requirements</th>
<th>Marketing &amp; Sales Plan</th>
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<tbody>
<tr>
<td>Perspectives</td>
<td>Product Viability</td>
<td>Design &amp; Math Data</td>
<td>Manufacturing Plan</td>
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<tr>
<td>Functional Gaps</td>
<td>Process Selection</td>
<td>Manufacture &amp; Prod validation</td>
<td>Supply Chain Plan</td>
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<td>HR Requirements</td>
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<td>Financial Funding Plan</td>
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<td>Segmentation</td>
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<td>Supply Base</td>
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## Funding Sources

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<thead>
<tr>
<th>Founder</th>
<th>Seed Funding</th>
<th>Grants</th>
<th>Venture Capital</th>
<th>Equity Markets &amp; Banks</th>
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<tbody>
<tr>
<td>Family</td>
<td>Angels</td>
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<td>21st Century Development Fund</td>
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## Technology Highway Services

<table>
<thead>
<tr>
<th>System Engineering, Lean Principles, Materials, &amp; Program Management</th>
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<tr>
<td>Product Technology Assessment</td>
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<tr>
<td>New Product Development &amp; Product Launch Support</td>
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<tr>
<td>Manufacturing Process &amp; Equipment</td>
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<tr>
<td>Market Research, Analysis &amp; Business Intelligence</td>
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<tr>
<td>Licensing &amp; Contracting</td>
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<tr>
<td>Standards &amp; Regulatory Compliance</td>
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<tr>
<td>Supply Chain Management, Procurement, Logistics, &amp; Supplier Quality (APQP/PPAP)</td>
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</tbody>
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DISCUSSION

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953 Plum Tree Lane
Fenton, MI 48430

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E-mail: th@tech-hwy.com

A response is guaranteed within 48 hours