

Successful Entrepreneurship for Microsystems

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Course presented at UCSD CSE 190, Spring Quarter 2015

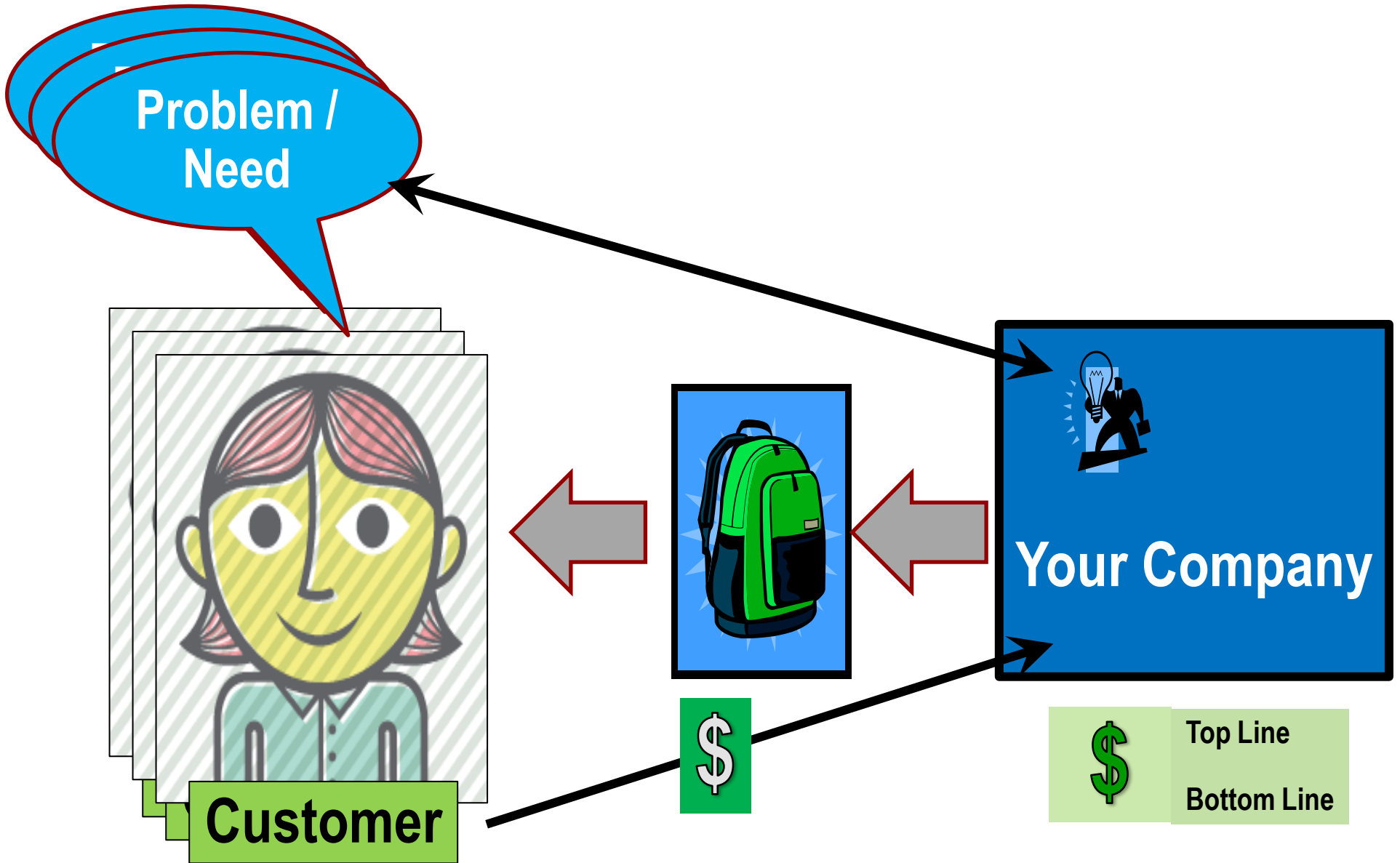
Guest Lecturer – Greg Hoover – App Market

Key Takeaways

- Idea – how do you know you have a good one?
 - Market?
 - Are there paying Customers
 - Is there competition?
- Getting Started
 - Technology Choices
 - Cost to Build?
 - Not just the 1st Product, but a “Roadmap” of Products
 - Ongoing Costs
- Measuring ROI
 - User Acquisition cost
 - New Leads
 - User Retention
- Some success elements:
 - Be unique/different
 - User Experience – visually appealing
 - Usable
 - Create a Brand/Image
 - Don't skimp on Marketing

Towards a Successful Startup

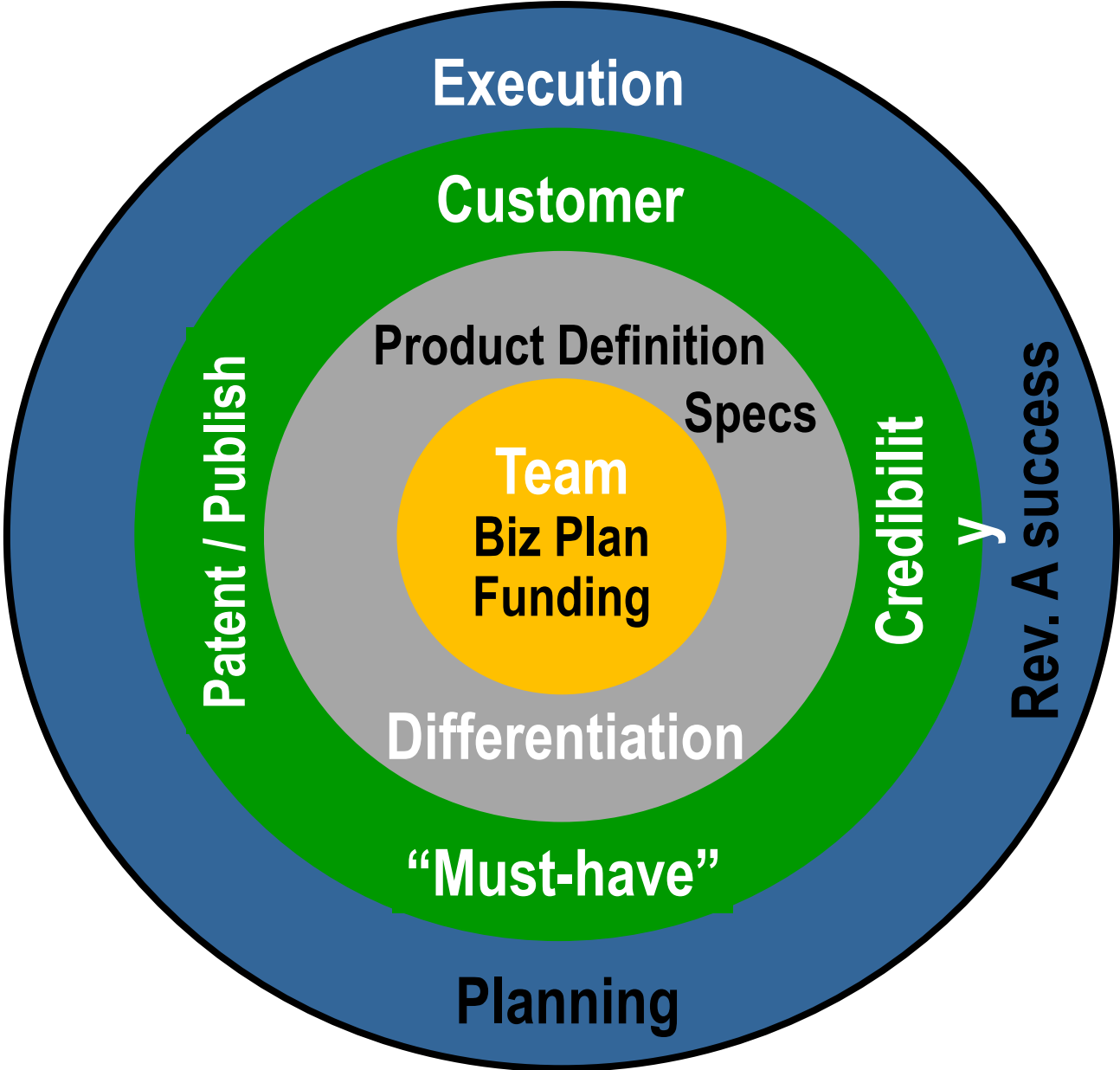
... "Plan A" – an iterative process



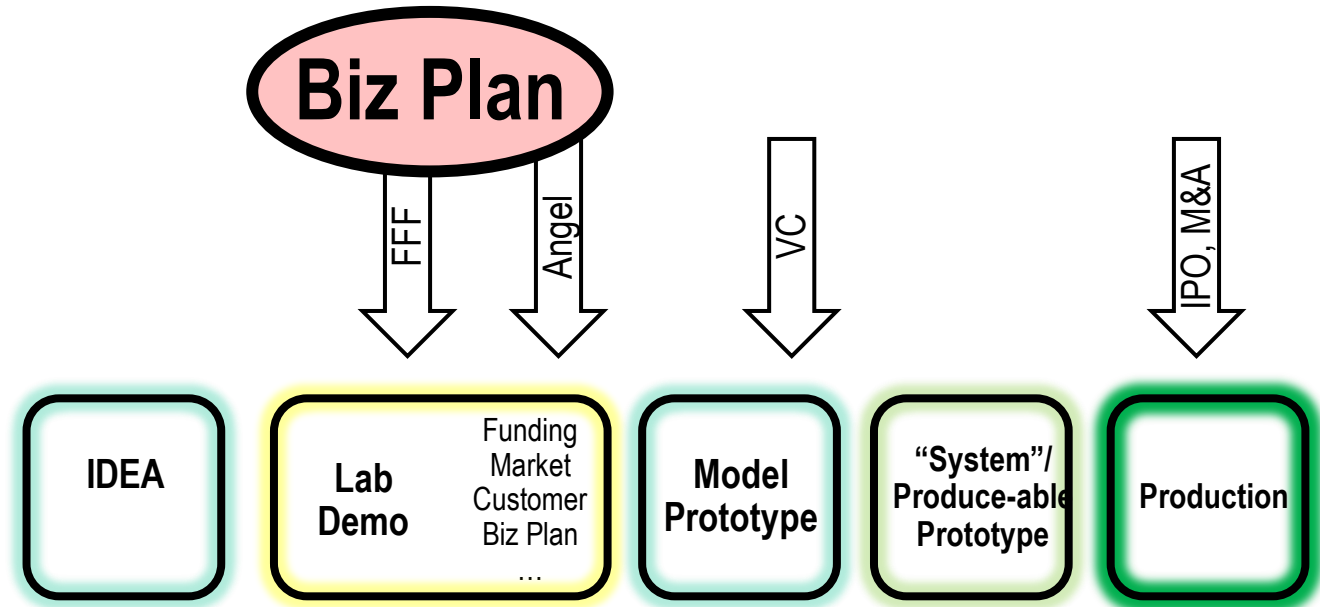
**Create product that solves a
real Customer Problem...
A “must-have” for the customer
...a Differentiated solution**

**A systematic approach to
*planning and execution***

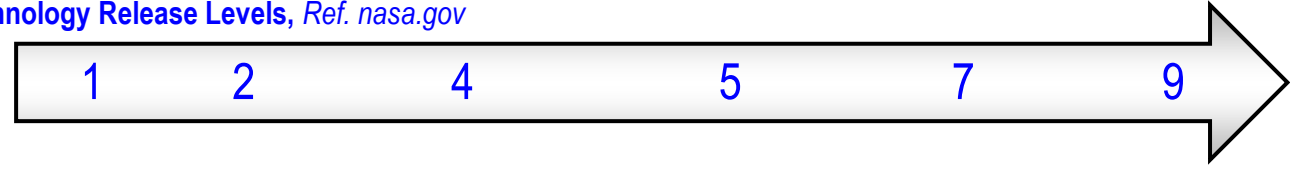
Entrepreneurial Checklist



The “Productization / Commercialization” Lifecycle *...Idea to High Volume Production*



Technology Release Levels, Ref. nasa.gov



Definition Of Technology Readiness Levels

TRL 1 Basic principles observed and reported: Transition from scientific research to applied research. Essential characteristics and behaviors of systems and architectures. Descriptive tools are mathematical formulations or algorithms.

TRL 2 Technology concept and/or application formulated: Applied research. Theory and scientific principles are focused on specific application area to define the concept. Characteristics of the application are described. Analytical tools are developed for simulation or analysis of the application.

TRL 3 Analytical and experimental critical function and/or characteristic proof-of-concept: Proof of concept validation. Active Research and Development (R&D) is initiated with analytical and laboratory studies. Demonstration of technical feasibility using breadboard or brassboard implementations that are exercised with representative data.

TRL 4 Component/subsystem validation in laboratory environment: Standalone prototyping implementation and test. Integration of technology elements. Experiments with full-scale problems or data sets.

TRL 5 System/subsystem/component validation in relevant environment: Thorough testing of prototyping in representative environment. Basic technology elements integrated with reasonably realistic supporting elements. Prototyping implementations conform to target environment and interfaces.

TRL 6 System/subsystem model or prototyping demonstration in a relevant end-to-end environment (ground or space): Prototyping implementations on full-scale realistic problems. Partially integrated with existing systems. Limited documentation available. Engineering feasibility fully demonstrated in actual system application.

TRL 7 System prototyping demonstration in an operational environment (ground or space): System prototyping demonstration in operational environment. System is at or near scale of the operational system, with most functions available for demonstration and test. Well integrated with collateral and ancillary systems. Limited documentation available.

TRL 8 Actual system completed and "mission qualified" through test and demonstration in an operational environment (ground or space): End of system development. Fully integrated with operational hardware and software systems. Most user documentation, training documentation, and maintenance documentation completed. All functionality tested in simulated and operational scenarios. Verification and Validation (V&V) completed.

TRL 9 Actual system "mission proven" through successful mission operations (ground or space): Fully integrated with operational hardware/software systems. Actual system has been thoroughly demonstrated and tested in its operational environment. All documentation completed. Successful operational experience. Sustaining engineering support in place.

NASA Technology Readiness Levels

What's Needed for a “must-have”, differentiated solution ...and a **Successful Startup Company**

An Idea
A Customer Problem
Customers...Marketing/Sales to reach them
Your Solution
No one else can offer

Revenue potential
Cost that offers Profit potential

An Operations Plan

Funds

...

A “Business Plan” or “Business Model Canvas”

Key Requirements for Business Plan & Funding

- A Biz Plan Document (usually ~20 pages)
- An Overview Presentation (usually ~10 slides)
- An “Elevator Pitch”

Business Plan – a typical Outline

➤ **Executive Summary**

- Objectives

- Mission

- Key to Success

➤ **Company Summary**

- Startup Summary

- Management Team

- Technical Team

- Company Locations and Facilities

➤ **Market Analysis**

- Industry Overview

- Market Size

- Market Opportunities

- Competitions

➤ **Product Summary**

- Product Description

- Sourcing and Technologies

- Product Development Schedules

- Competitive Analysis

- Product Advantages

- Product Roadmaps

➤ **Marketing and Sales Strategy**

- Targeted Markets

- Customers

- Strategic Alliances

- Advertising and Promotion

- Selling Tactics

➤ **Manufacturing and Operations Plan**

- Wafer Sourcing

- Backend Manufacturing Plan

➤ **Organization and Personnel Plan**

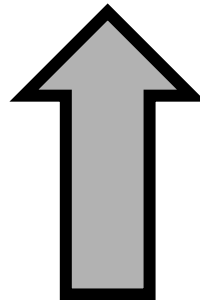
- Organization

- Personnel Plan

➤ **Financial Plan**

The New Focus

SHOULD
it be Built ?



CAN
it be Built ?

Vetting Product Ideas

Hashtag: #leanstartup

ASH MAURYA
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<http://www.ashmaurya.com>

HW 4 – Vetting Product Ideas

Due on Thursday, April 30th

Please review the following video:

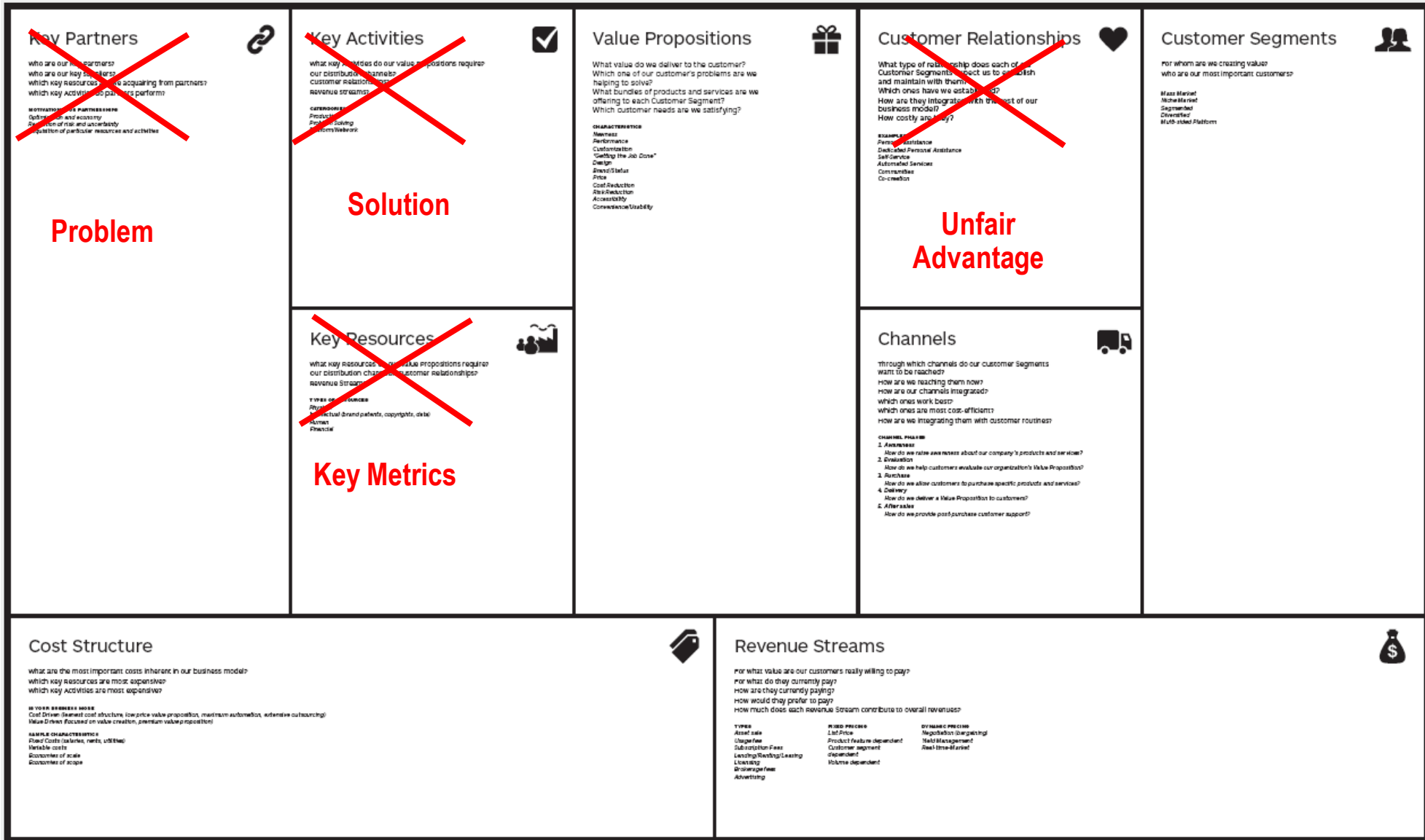
<https://www.youtube.com/watch?v=EOhzUMseaHs>

What are the top 3 learnings from Ash Maurya's Introductory video?

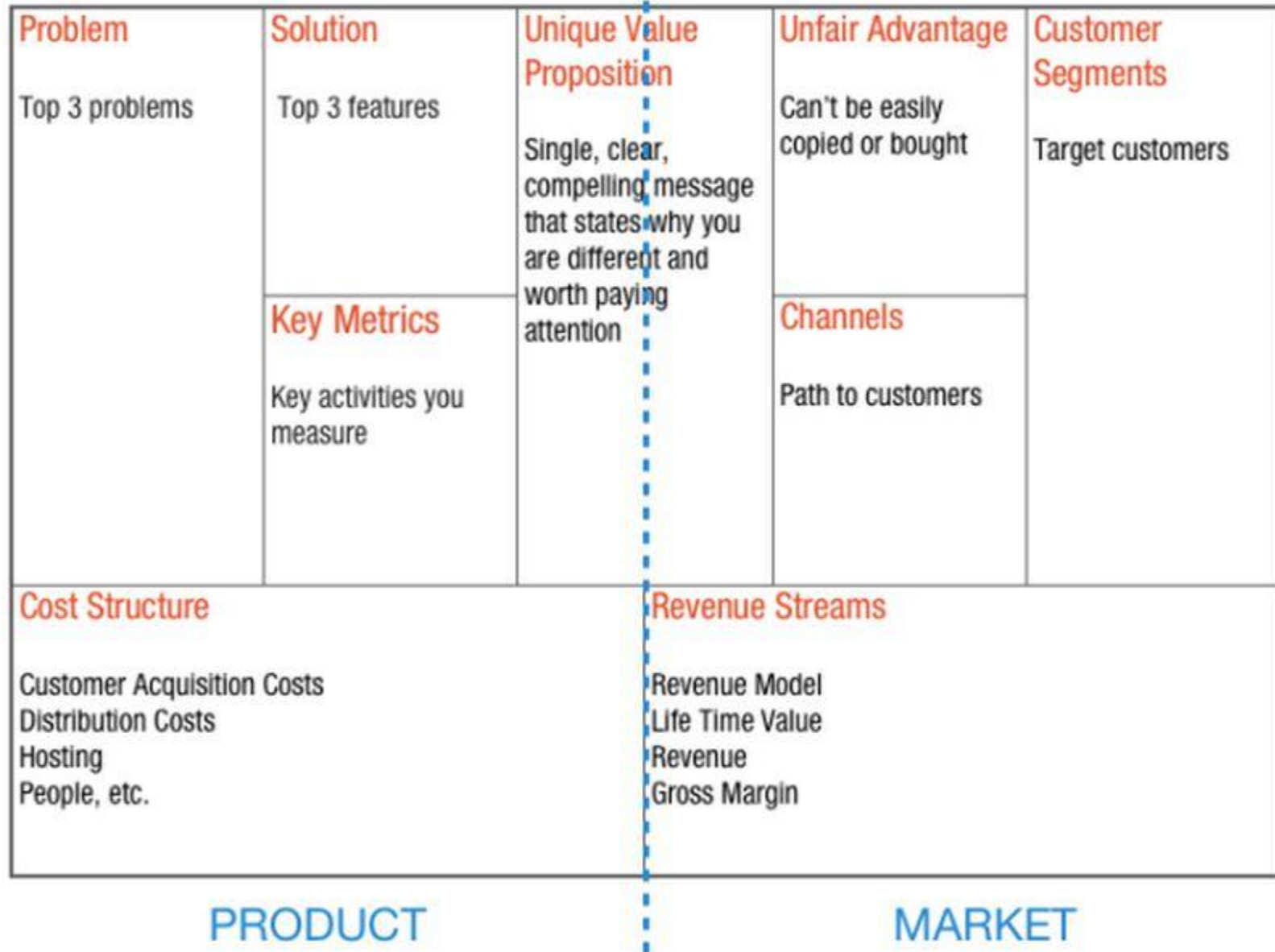
Why do you consider these important

...a 1-page summary.

Business Model Canvas



Business Model Canvas



Lean Canvas is adapted from The Business Model Canvas (<http://www.businessmodelgeneration.com>) and is licensed under the Creative Commons Attribution-Share Alike 3.0 Un-ported License.

<http://practicetrumpstheory.com/business-model/>

In-class Quiz 4-2

1. What are the three main learnings from Ash Maurya's "Running Lean"?