Entrepreneurship for Computer Science CS 15-390

The Lean Approach- Part I

Today…

- Last Session:
  - COCA

- Today's Session:
  - Product Development: The Lean Startup Approach- Part I

Value vs. Waste

- **Question**: Which of our efforts are value-creating and which are wasteful?

- *Lean thinking* defines value-creation as providing benefits to the customers; anything else is a waste!

- But, how can you know whether you are providing benefits (i.e., creating value) to your potential customers?
  - **Note**: True startup productivity CANNOT be measured in terms of how much you are building every day, but rather in terms of systematically figuring out *the right thing to build every day*

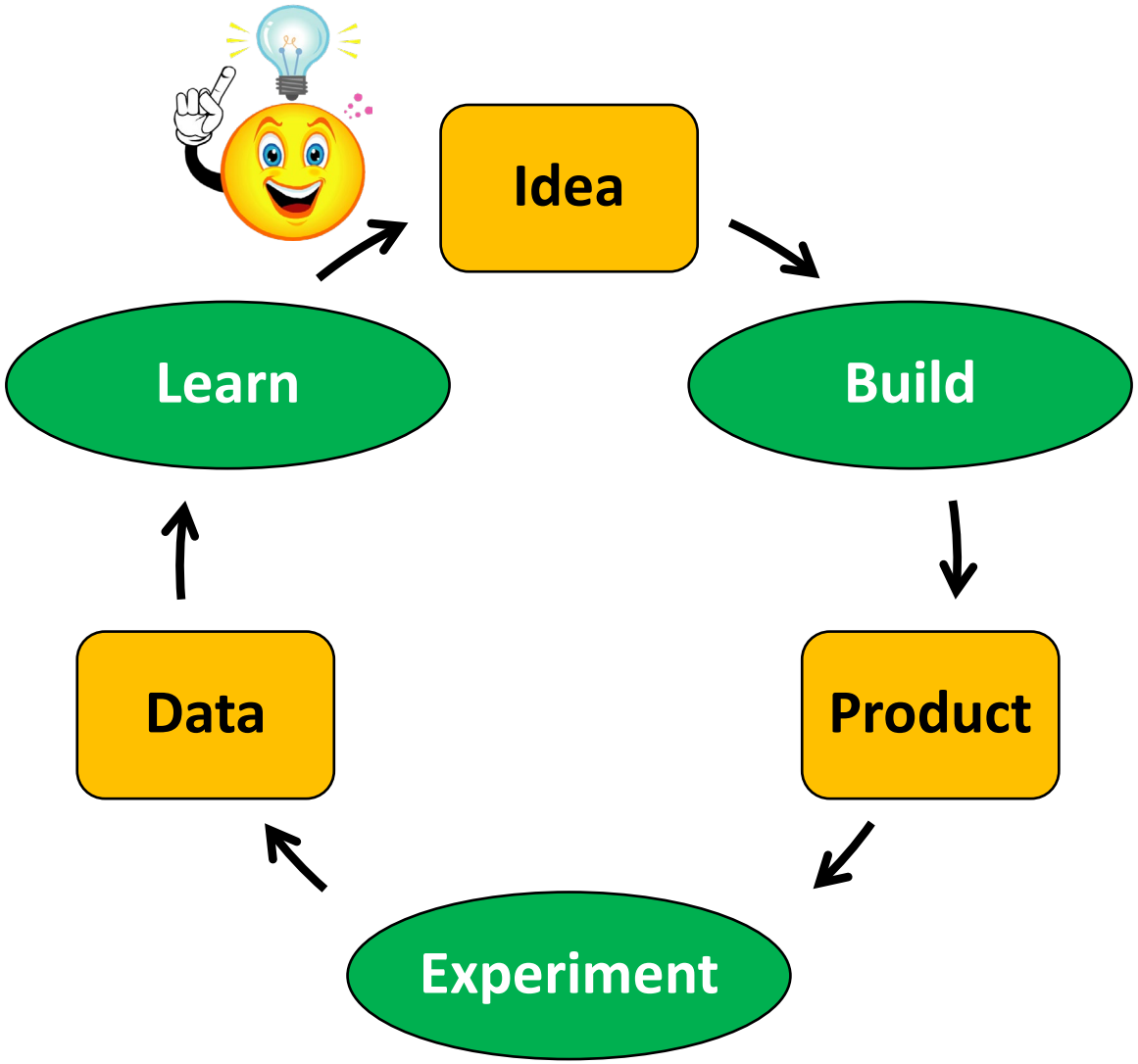
Towards Value Creation

- Success is not about delivering a product; success is about delivering a product (or a feature of a product) that customers will use

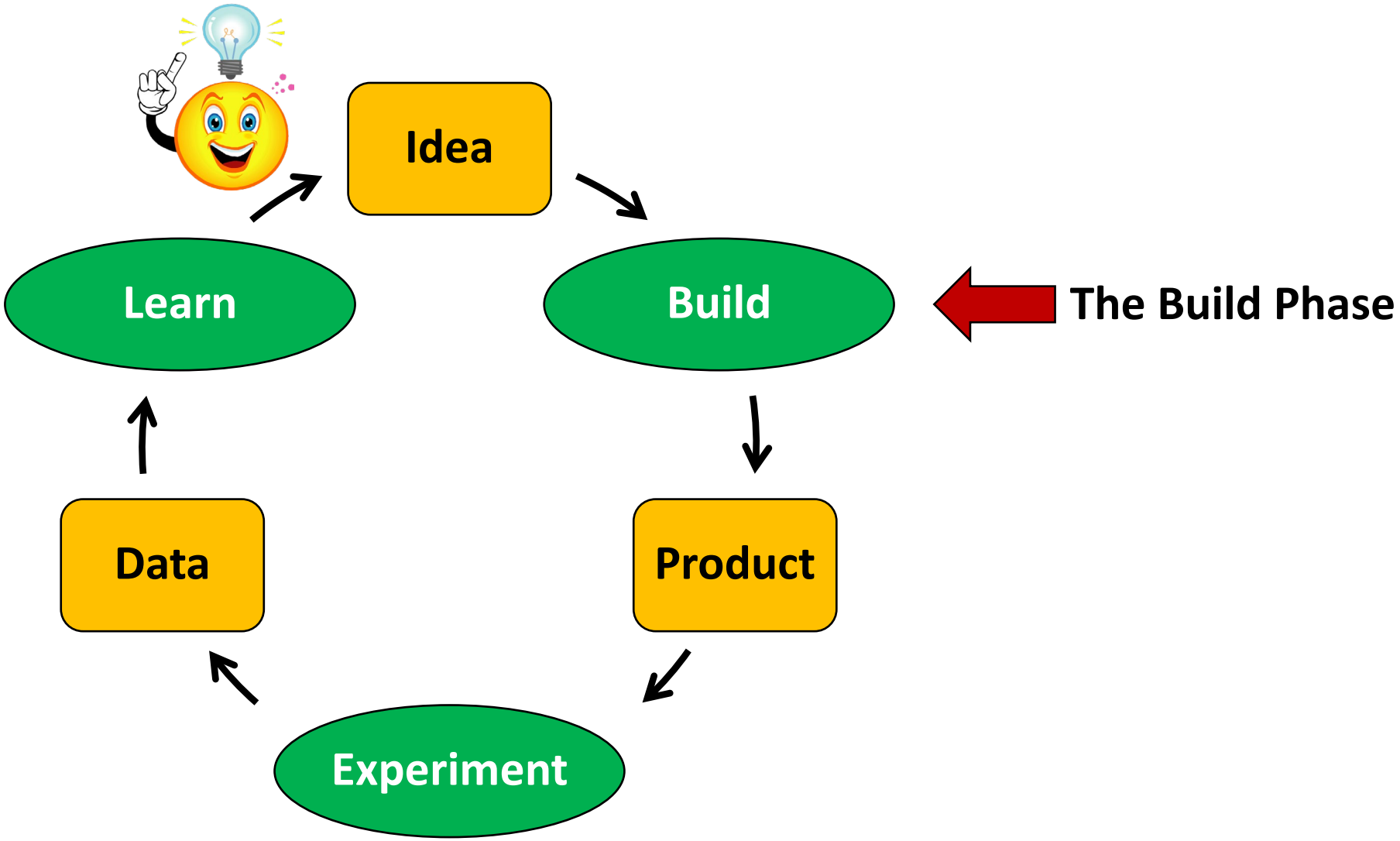
- The way to do this is to continuously align your efforts with your customers' *real* needs
  - **Note**: This is not about asking your customers what they need because customers typically do not know what they need

- The ***Build-Experiment-Learn feedback loop*** allows you to discover your customers' needs and methodically align with them

Build-Experiment-Learn Feedback Loop



Build-Experiment-Learn Feedback Loop



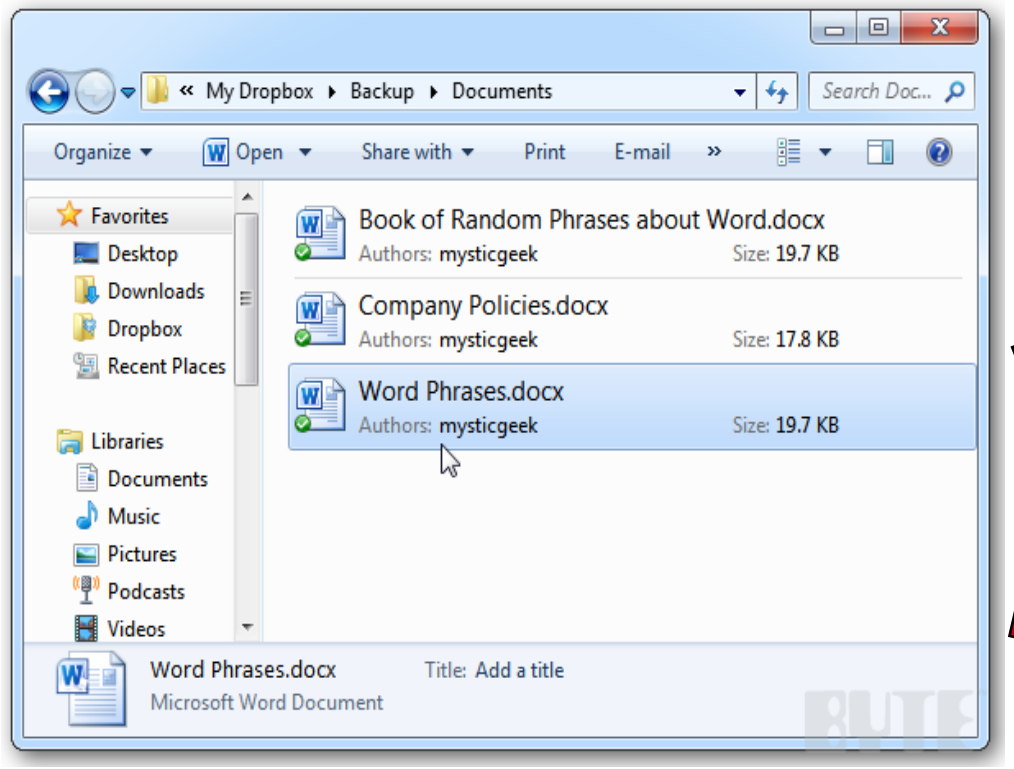
The Build Phase: MVP

- The build phase can be entered as quickly as possible with a ***Minimum Viable Product*** (MVP)

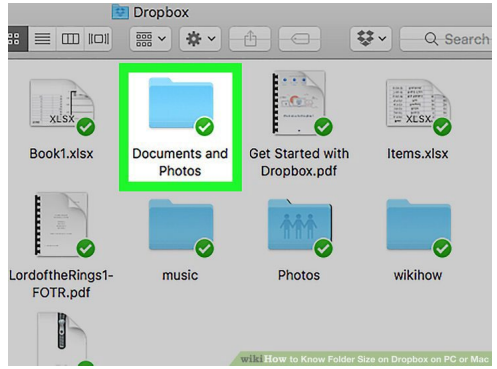
- An MVP ranges in complexity from extremely simple *smoke tests* (little more than an advertisement) to early prototypes

Example of MVP: Dropbox

- Dropbox is an easy-to-use file sharing (or *synchronization*) tool, which uses a *push-based* caching (or *full replication*) technique



Push immediately to Dropbox service & all sharing devices



Example of MVP: Dropbox

- Dropbox requires integration with a variety of computer platforms and OSs: Windows, Macintosh, iPhone, Android, and so on
- It also necessitates deep understanding and expertise of distributed systems (caching, replication, consistency, reliability, availability, etc.)
- To avoid the risk of waking up after years of development with a product that nobody wanted, Drew Houston (founder & CEO of Dropbox) did something unexpectedly easy
  - He made a video!

Example of MVP: Dropbox

- The video was a 3-minute demonstration of the technology as it is meant to work
  - It was narrated by Drew himself (*it was really banal!*)
  - It targeted ***early adopters***, who do not need a perfect solution to get intrigued

- Drew recounted: "It drove hundreds of thousands of people to the website. Our beta waiting list went from 5000 people to 75000 people literally overnight. It totally blew us away."

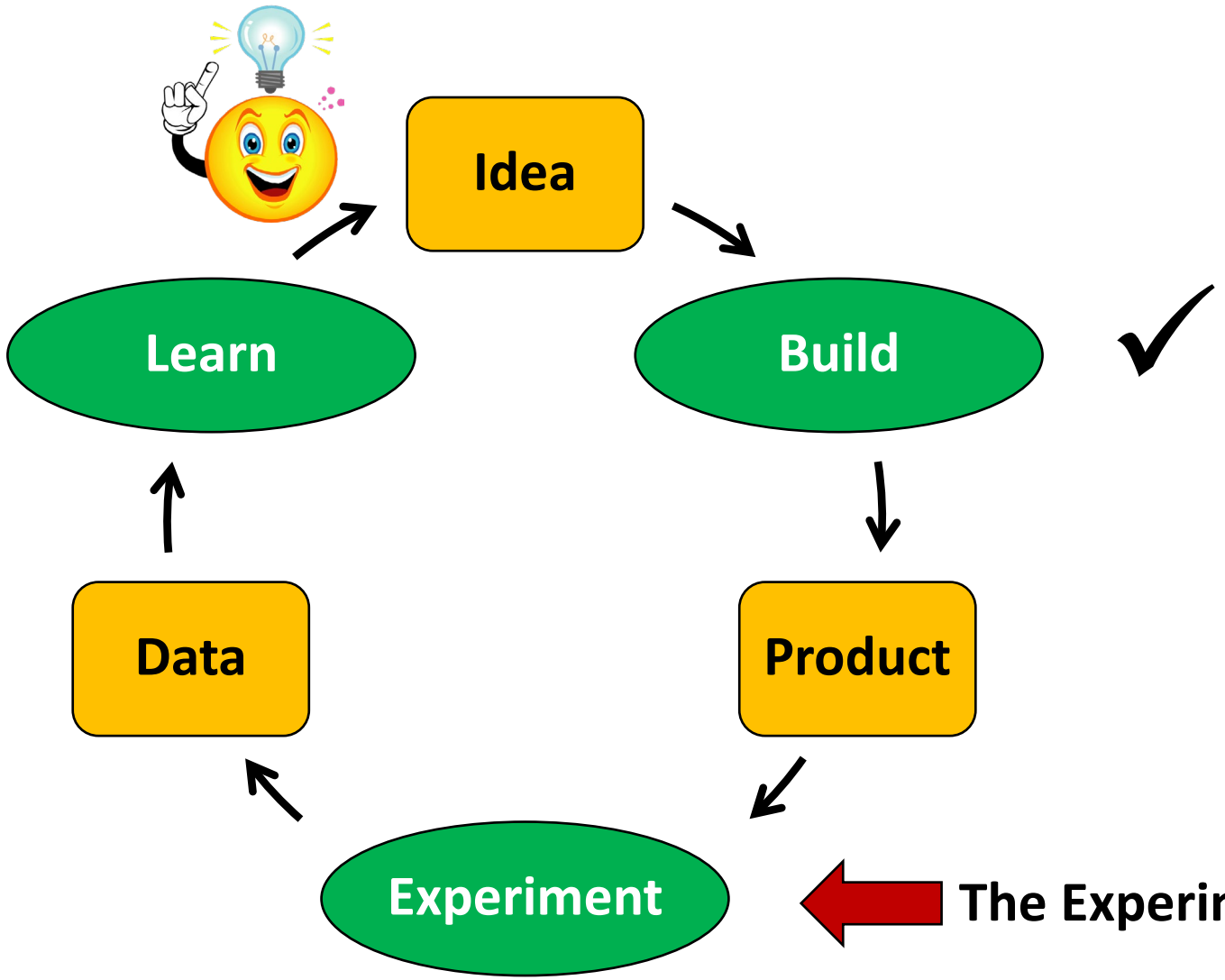
- Today, Dropbox is worth more than $10 billion
  - **Lesson**: *Think big but start small!*

The Build Phase: MVP

- Deciding how complex an MVP cannot be done formulaically
  - It requires judgment!
  - When in doubt, simplify
  - Avoid overbuilding and overpromising
    - Any additional work beyond what needs to get you starting the loop might be a waste

- An MVP does not only speak to product design and technical questions, but also *serves in testing fundamental business hypotheses*
  - Thus, it serves in providing a needed dose of reality

Build-Experiment-Learn Feedback Loop



Dilemma: The Audacity of Zero

- It is often easier to raise money when you have:
  - *zero revenue*
  - *zero customers*
  - *zero traction*
  - than when you have a small amount of each!

- Zero invites imagination, but small numbers invite questions about whether large numbers will ever materialize

- This phenomenon (called ***the audacity of zero***) creates a brutal incentive:
  - Postpone getting any version of a product out until you are certain of success

Dilemma: The Audacity of Zero

- If you postpone experimenting with your MVP, some unfortunate results will emerge like:
  - The amount of wasted work may increase
  - Essential feedback will be missed
  - The risk that your startup will build something nobody wants may increase

- But fund is important (*a dilemma!*), so what is the way out?
  - Tradeoffs:
    - Would you prefer to attract venture capital and potentially squander it?
    - Or, would you prefer to attract venture capital and wisely use it?
  - Use an MVP to *experiment* (initially, *silently*) with early adopters within your beachhead market
  - Verify your concept via testing ALL its elements, *starting with the riskiest ones*
  - Scale out on a *solid slate*– *fund will come naturally!*

Leap-of-Faith Assumptions

- The riskiest elements of a startup's plan/concept (i.e., the parts on which everything depends) are called *leap-of-faith assumptions*

- E.g., What was the main leap-of-faith assumption of Dropbox?
  - File synchronization is a problem

- **Note**: Most people do not know about a certain solution (or even a problem); but once they experience the solution, they cannot imagine how they ever lived without it!

Leap-of-Faith Assumptions

- The two most important leap-of-faith assumptions of any startup are the *value hypothesis* and the *growth hypothesis*

- The value hypothesis:
  - It tests whether the product is really delivering value to customers *after* they start using it
  - A testing metric: ***retention rate***

- The growth hypothesis:
  - It tests how new customers will discover the product
  - A testing metric: ***referral rate or Net Promoter Score (NPS)***

Example: Facebook

- In 2004, Facebook had 150,000 registered users with very little revenue

- Yet, that summer they raised their first $500,000 in venture capital
- Less than a year later, they raised an additional $12.7 million
- How Facebook was able to raise so much money when its actual usage was small?

Example: Facebook

- To answer this question, it suffices to look at Facebook's value and growth hypotheses:
  - *Validated* value hypothesis:
    - More than half of the users came back to the site every single day
  - *Validated* growth hypothesis:
    - Facebook launched on Feb 4, 2004, and by the end of that month, almost ¾ of Harvard's undergraduates were using it (*without spending a dollar on marketing or advertising!*)

Next Class

- Product development: the lean approach- Part II