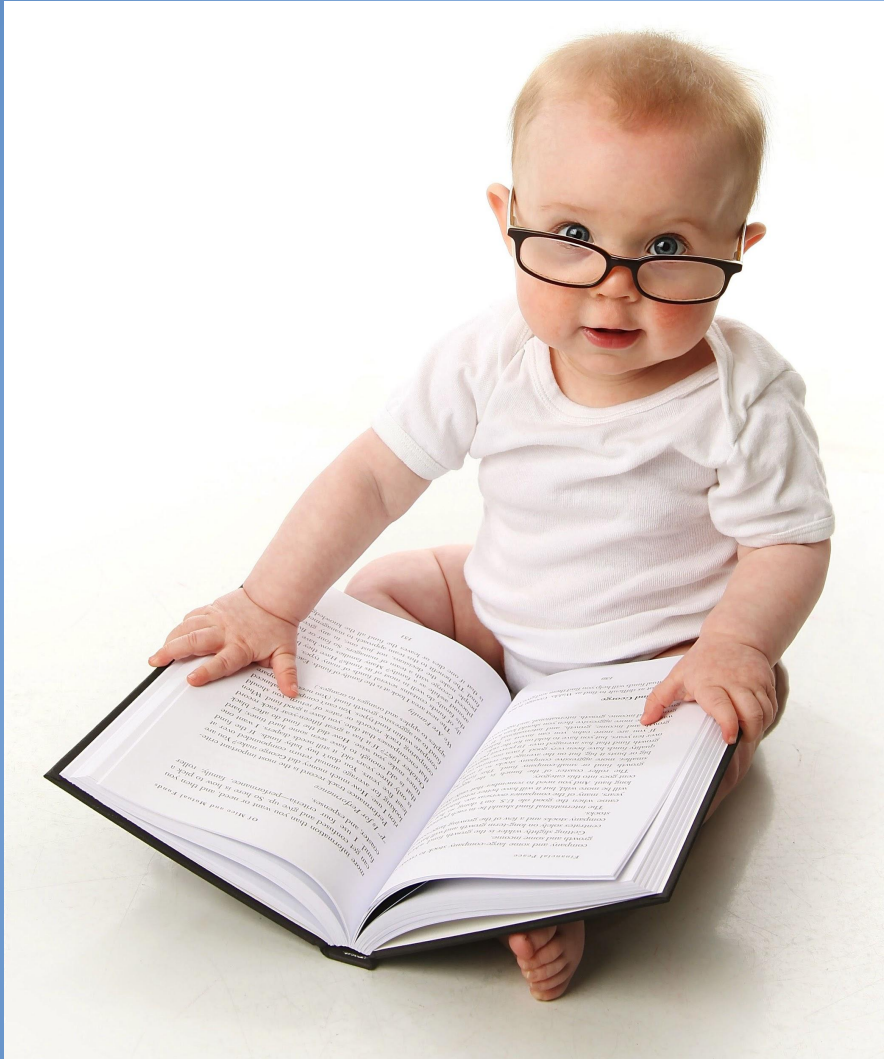


# **Building a Better Brain:** How Growth Mindset and Open Source Influence Creativity, Intelligence, and Innovation

Jenn Greenaway  
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“You never see an unmotivated baby.”  
- Carol Dweck,  
Stanford University

# Topics to be Covered:



## What is Growth Mindset?

Neuroplasticity

Intrinsic Motivation

Rewards in the Brain

“Good Programmers”

The Open Source Way

Failures in Open Source

Application to Your Life

Your intelligence and abilities are fluid, not fixed.

The brain continues to grow and change throughout the lifespan.



A red octagon with a dark red border and a light red fill. It contains text about a fixed mindset.

**Fixed Mindset**

Intelligence and  
talent are fixed  
at birth.

A green double-headed arrow with a dark green border and a light green fill. It contains text about a growth mindset.

**Growth  
Mindset**

Intelligence  
and talent can  
go up or down.

Fixed vs. Growth Mindset

# Topics to be Covered:

What is Growth Mindset?



**Neuroplasticity**

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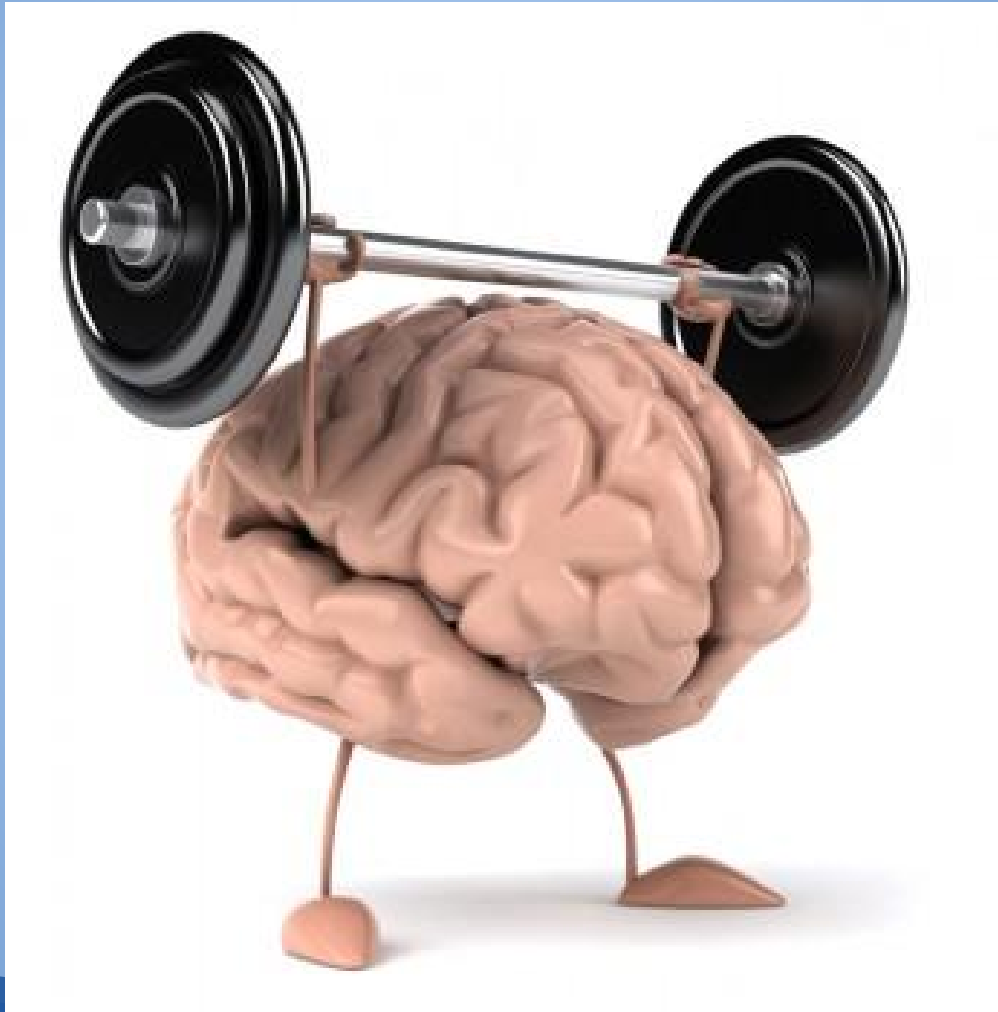
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# Neuroplasticity





# Jody Miller:

Recovered from  
Hemispherectomy at age  
four - the right side of her  
brain was removed.



# What changes the brain?

**Injury.**  
**Rehabilitation.**  
**Experiences.**  
**Learning.**  
***(Failure.)***



“The Knowledge”

“

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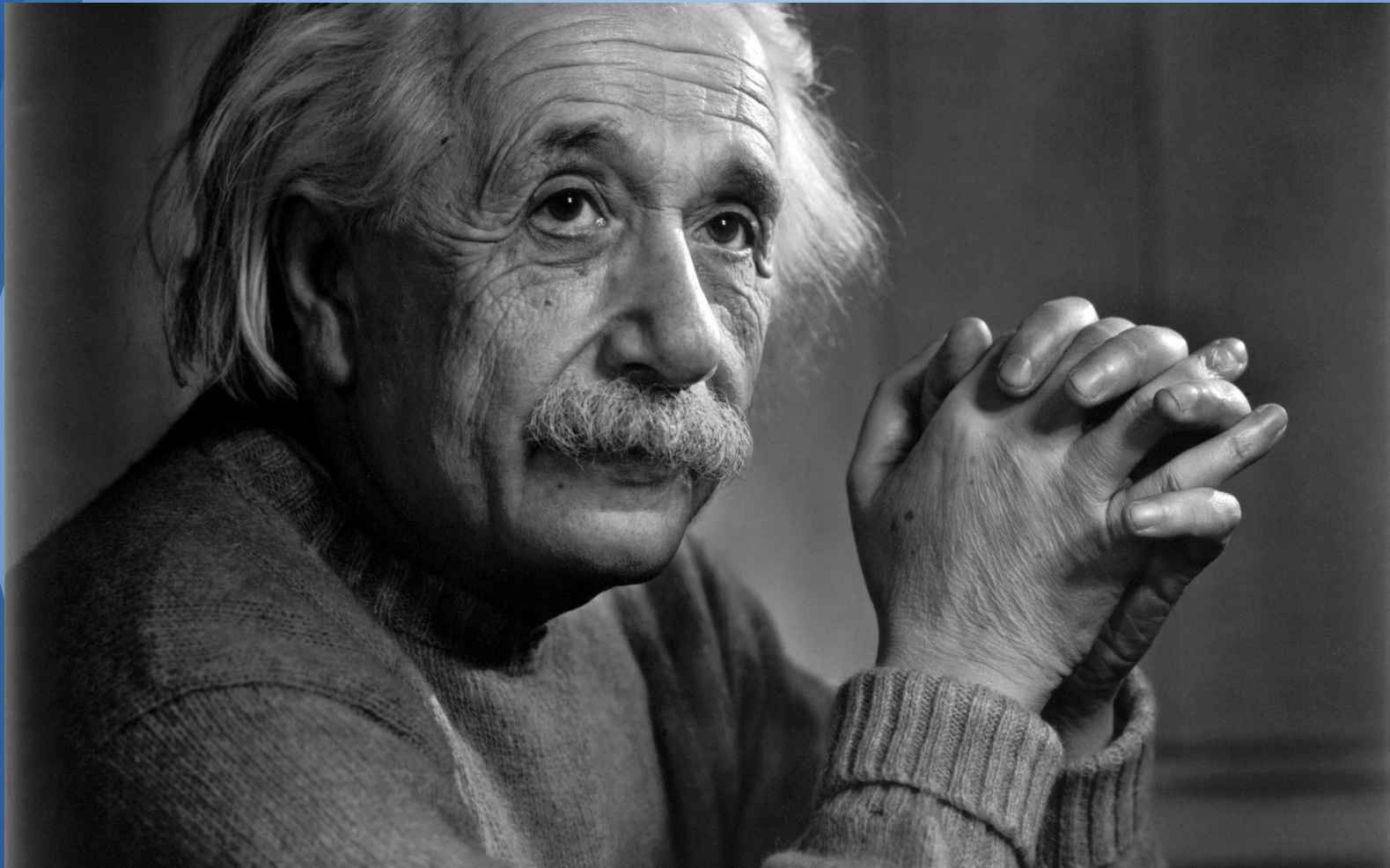
**FAILURE IS SIMPLY  
THE OPPORTUNITY  
TO BEGIN AGAIN,  
THIS TIME MORE INTELLIGENTLY.**

---

”

*-Henry Ford*

**“Anyone who has never made a mistake has never tried anything new.” - Albert Einstein**





# Angela Lee Duckworth on *Grit*

“Living life like it’s a  
marathon, not a  
sprint.”

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# I interviewed:

- A scientist.
- A banker.
- An engineer.
- A thirteen-year-old.
- A college student.



# PRIDE

“Not only do I constantly need a challenge, but I have a lot of pride and I don’t like to quit.”

- Meghan Champagne

**#WINNING!**

“Quite simply, I do not like to lose.”

- Peter Waterman

# CONFIDENCE

“What keeps me from giving up is knowing that I CAN do it!” - Keila Banks

***Go see Keila's Presentation!***

**It's So Easy A Kid Could Do It:  
Businesses with Open Source**

**3:00 PM**

**Marina**

# Persistence

“What keeps me from giving up is the desire to figure out the solution to a problem.”

- Gareth Greenaway



# TRIUMPH

“What keeps me wanting to keep trying is ... Well, I like when things are hard and I have to work to understand and when I do get the right answer it’s this *high*. There is nothing more exciting than getting a very hard challenge done.” - Colleen Johnston

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# Dopamine:

The Kim Kardashian of Neurotransmitters.

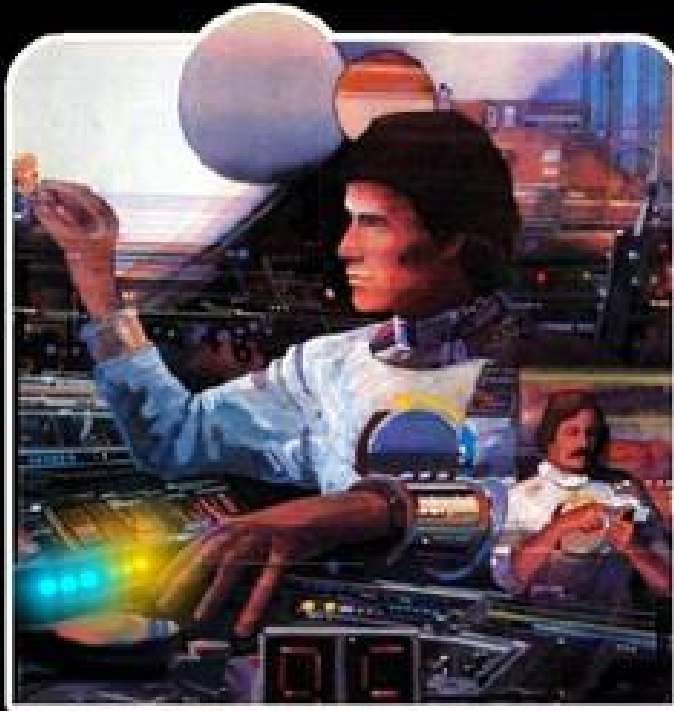


# What about open source?





# THE TWO STATES OF EVERY PROGRAMMER



**I AM A GOD.**



**I HAVE NO IDEA  
WHAT I'M DOING.**

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# “Good Programmers” ...

- Learn things because they're interesting.
- Have passion.
- Leave their egos at the door.
- Have entrepreneurial spirit.



# Two Geniuses Collide

Jerry Levin  
& Steve Case:



CEOS of Time Warner and AOL, both with  
Fixed Mindsets.

## On the other hand...

“The Growth Mindset lets people -- even those who are targets of negative labels -- use and develop their minds fully. Their heads are not filled with limiting thoughts, a fragile sense of belonging, and a belief that other people can define them.”

- Carol Dweck

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# The Open Source Way



“In real open source, you have the right to control your own destiny.”

- Linus Torvalds

## Open Exchange:

“We can learn more from each other when information is open. A free exchange of ideas is critical to creating an environment where people are allowed to learn and use existing information toward creating new ideas.”



# Participation:

“When we are free to collaborate, we create. We can solve problems that no one person may be able to solve on their own.”

# Rapid Prototyping:

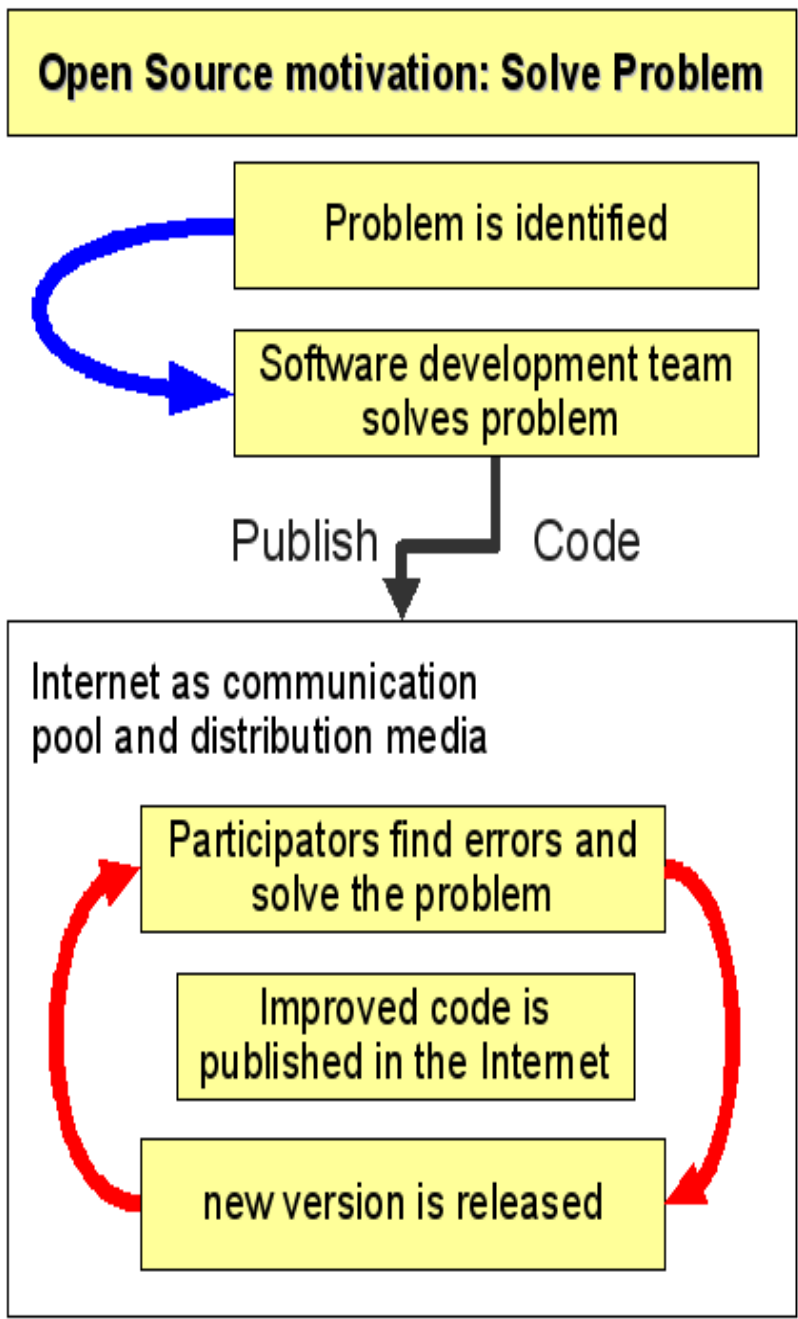
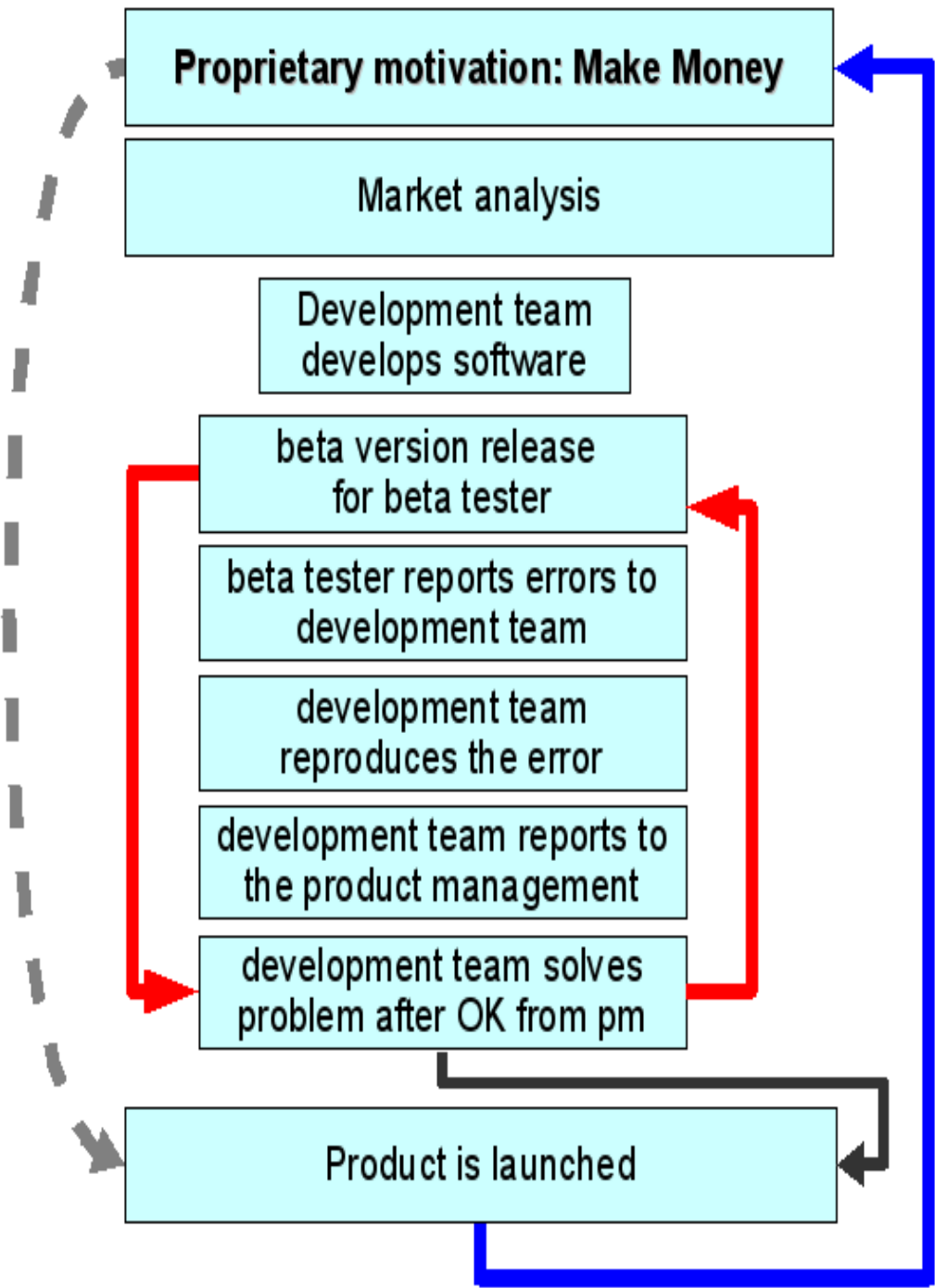
“Rapid prototypes can lead to rapid failures, but that leads to better solutions found faster. When you’re free to experiment, you can look at problems in new ways and look for answers in new places. You can learn by doing.”

# Meritocracy:

“In a meritocracy, the best ideas win. In a meritocracy, everyone has access to the same information. Successful work determines which projects rise and gather effort from the community.”

# Communities:

“Communities are formed around a common purpose. They bring together diverse ideas and share work. Together, a global community can create beyond the capabilities of any one individual. It multiplies effort and shares the work. Together, we can do more.”





# Topics to be Covered:

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**Failures in Open Source**

Application to Your Life

Most open source projects  
are NOT successful.

A red stamp with the word "FAILED" in a bold, sans-serif font, enclosed in a rectangular border. The stamp is tilted slightly upwards to the right. The background of the stamp is white, and the text and border are a vibrant red color.

# Schweik & English's Study

145,475 projects were assessed.

- 17% were successful
- 46% were abandoned in initiation stage
- 37% were abandoned after initial release

# Common Characteristics of Successful Projects:

- Vision.
- Communication.
- Clearly defined set of users/needs.
- Well-articulated goals.
- Modular architecture.

# Vision & Goals

Vision is the “big picture.”

Goals are the small steps you will take to get there, giving yourself hits of Dopamine along the way.





## Keila's Advice:

“My advice is to take baby steps because some things are actually hard to learn. I mean, I don't think I'll just learn how to be an engineer by the time I graduate. So I recommend just take your little baby steps until you're running a marathon.”

# Communication

Sharing Vision & Goals

Explaining roles

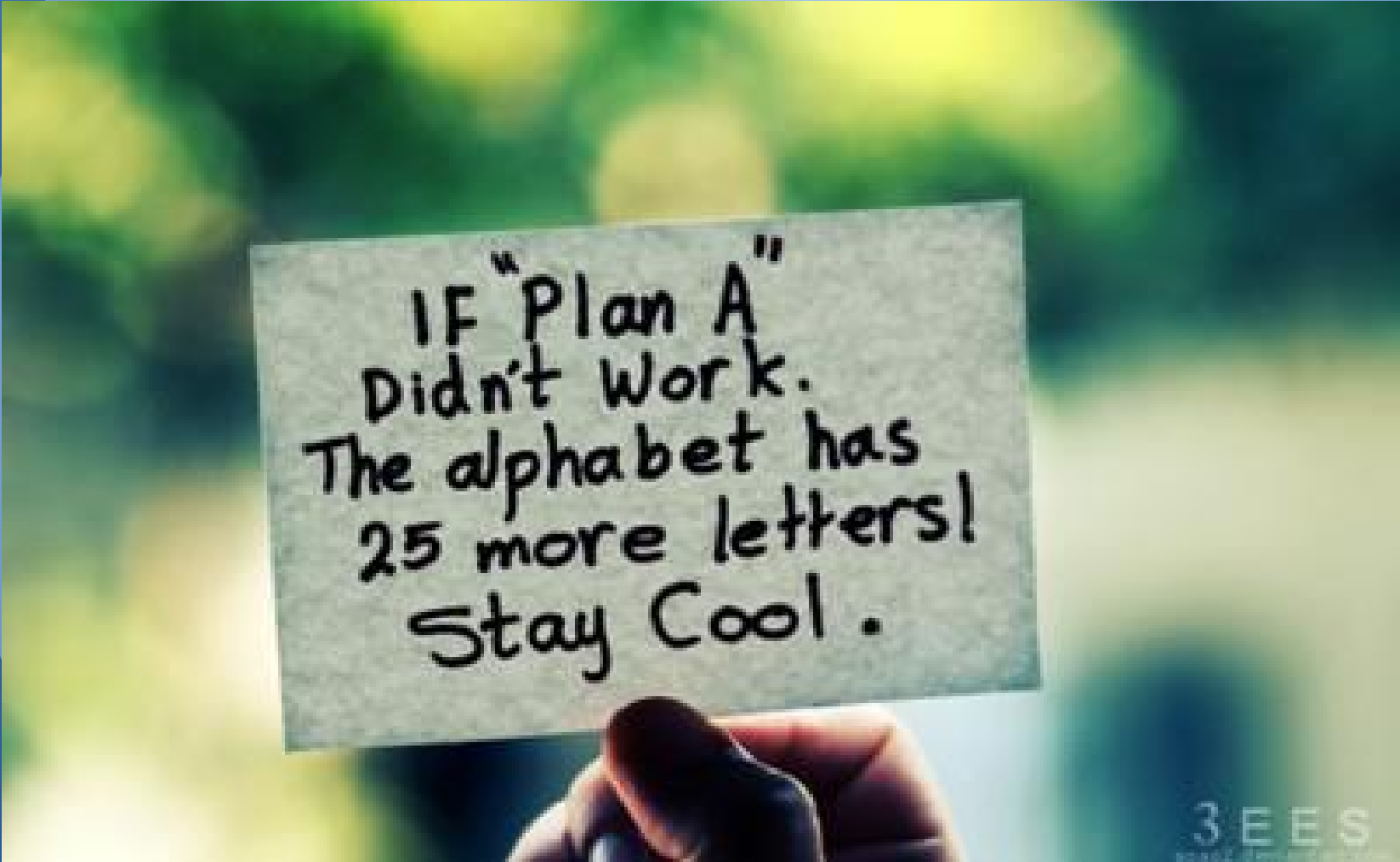
Documentation

Feedback!

# Learning from others.



# Flexibility

A hand is holding a small, rectangular piece of paper with handwritten text. The background is a blurred green and yellow, suggesting an outdoor setting. The text on the paper is written in a casual, cursive style.

IF "Plan A"  
Didn't Work.  
The alphabet has  
25 more letters!  
Stay Cool.

# Topics to be Covered:

What is Growth Mindset?

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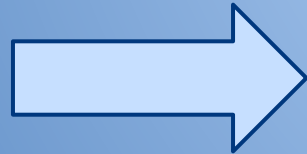
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**Application to Your Life**



# Mentoring

- Apprenticeships
- Workshops
- Coaching sessions

People must be independent thinkers  
\*and\* team players.

**You CAN build a better brain!**

you can do it!



motivational penguin

# Foster Your Growth Mindset

- Challenge yourself to learn new things. Start with learning about brain plasticity!
- Create a vision and set goals.
- Build your support network.
- Continue to remind yourself that failure is not final.

# WHAT CAN I SAY TO MYSELF?

## INSTEAD OF...

- I'M NOT GOOD AT THIS
- I'M AWESOME AT THIS
- I GIVE UP!
- THIS IS TOO HARD
- I CAN'T MAKE THIS ANY BETTER
- I CAN'T DO MATH
- I MADE A MISTAKE
- I'LL NEVER BE AS SMART AS HER
- IT'S GOOD ENOUGH

## TRY THINKING.....

- WHAT AM I MISSING?
- I'M ON THE RIGHT TRACK
- I'LL USE SOME OF THE STRATEGIES I'VE LEARNED
- THIS MAY TAKE SOME TIME AND EFFORT
- I CAN ALWAYS IMPROVE; I'LL KEEP TRYING
- I'M GOING TO TRAIN MY BRAIN IN MATH
- MISTAKES HELP ME IMPROVE
- I'M GOING TO FIGURE OUT WHAT SHE DOES AND TRY IT
- IS THIS REALLY MY BEST WORK?



# Technology and Growth Mindset

- Pinterest
- YouTube
- Google
- Hangouts
- Twitter



# Resources:

Carol Dweck, Mindset

<http://mindsetonline.com/>

Jody Miller's Story:

<https://www.youtube.com/watch?v=VaDlLD97CLM>

Angela Lee Duckworth on Grit:

[http://www.ted.com/talks/angela\\_lee\\_duckworth\\_the\\_key\\_to\\_succe](http://www.ted.com/talks/angela_lee_duckworth_the_key_to_success_grit?language=en)

[ss\\_grit?language=en](http://www.ted.com/talks/angela_lee_duckworth_the_key_to_succe)

Traits of Effective Programmers:

[http://www.techrepublic.com/blog/software-](http://www.techrepublic.com/blog/software-engineer/seven-traits-of-effective-programmers/)

[engineer/seven-traits-of-effective-programmers/](http://www.techrepublic.com/blog/software-engineer/seven-traits-of-effective-programmers/)

# Resources:

Linus Torvalds interview:

[http://seattletimes.com/html/business/technology/2002059632\\_linus11.html](http://seattletimes.com/html/business/technology/2002059632_linus11.html)

“Open Source Way”

<http://opensource.com/open-source-way>

“How to Hire a Growth Hacker”

<http://www.aginnt.com/post/64205739421/how-to-hire-a-growth-hacker#.VKhK4lWJOuY>

Open Source Business Model:

[http://arnulf.us/Open\\_Source\\_Business\\_Models](http://arnulf.us/Open_Source_Business_Models)

# Resources:

Internet Success: A Study of Open-Source Software  
Commons by Shweik & English

<http://mitpress.mit.edu/books/internet-success/>

Maria Popova, Brain Pickings:

<http://www.brainpickings.org/2014/01/29/carol-dweck-mindset/>

## Special Thanks to:

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... for talking about Mindset with me!

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Come and talk to me here at SCALE!