



Thinking like an Engineer



This resource has been provided courtesy of Medway UTC, Chatham, Kent and was prepared while the school was involved in the 'Thinking like an Engineer' project 2014-2016. Please acknowledge the school if you use this material.

Website: <http://www.medwayutc.co.uk/>

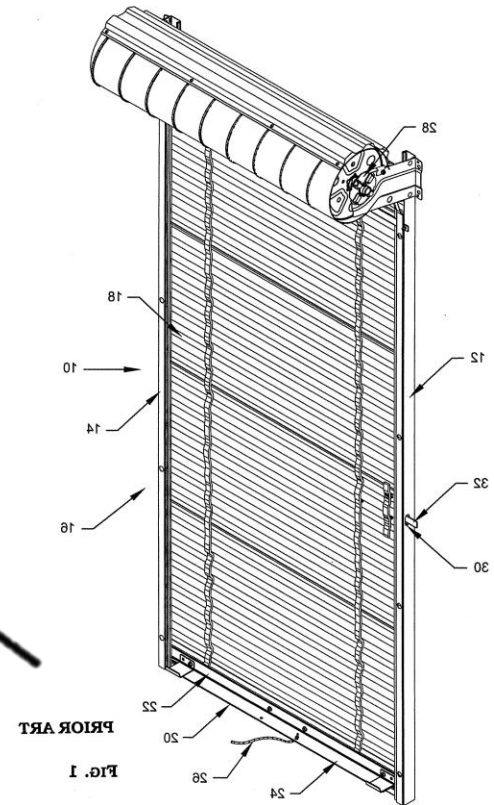
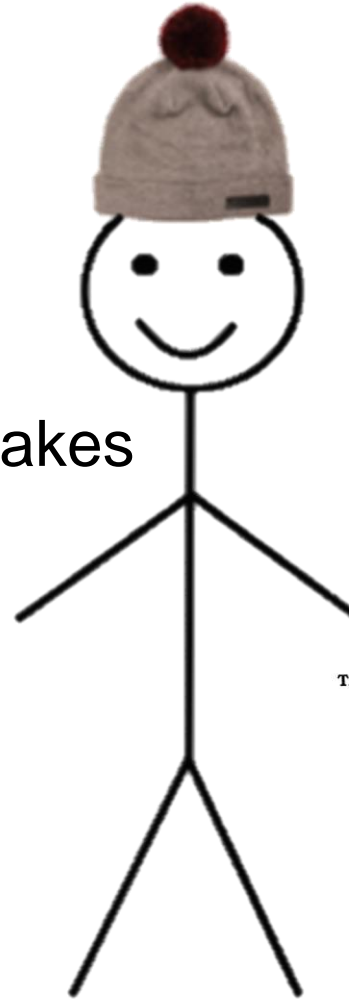
This is Bill.

Bill is an Engineer.

Bill makes things that work, and makes things work better.

Bill is a problem finder.

Be like Bill.



Medway UTC Engineering Habits of Mind

Visualising

Improving

Problem
Finding

Systems
Thinking

Adapting

Creative
Problem
Solving

Reflective

Resilient

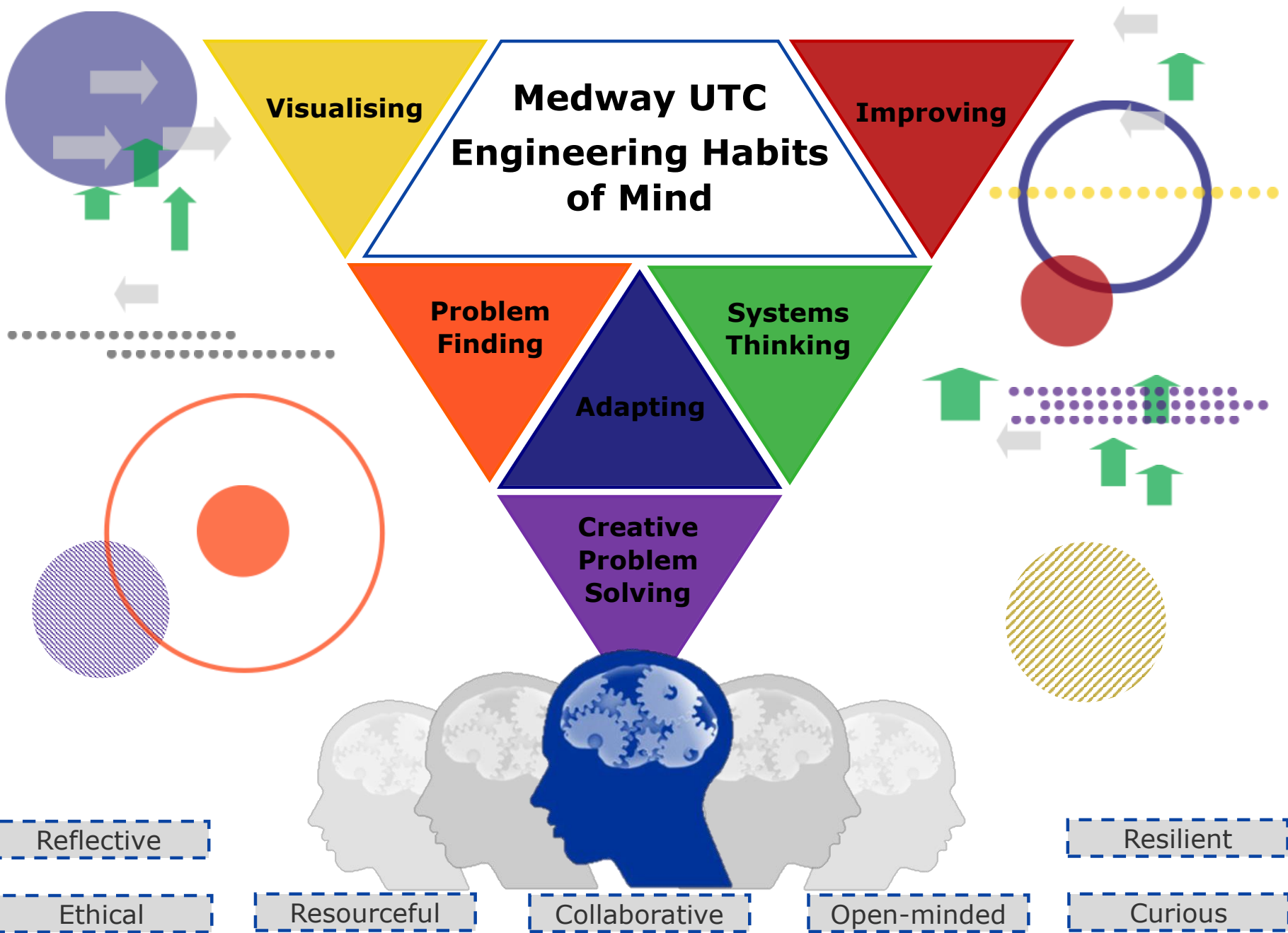
Ethical

Resourceful

Collaborative


Open-minded

Curious



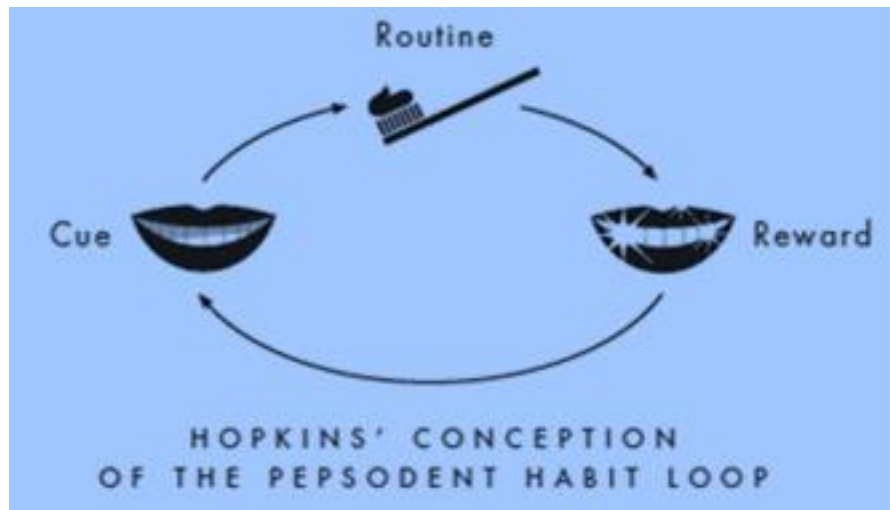
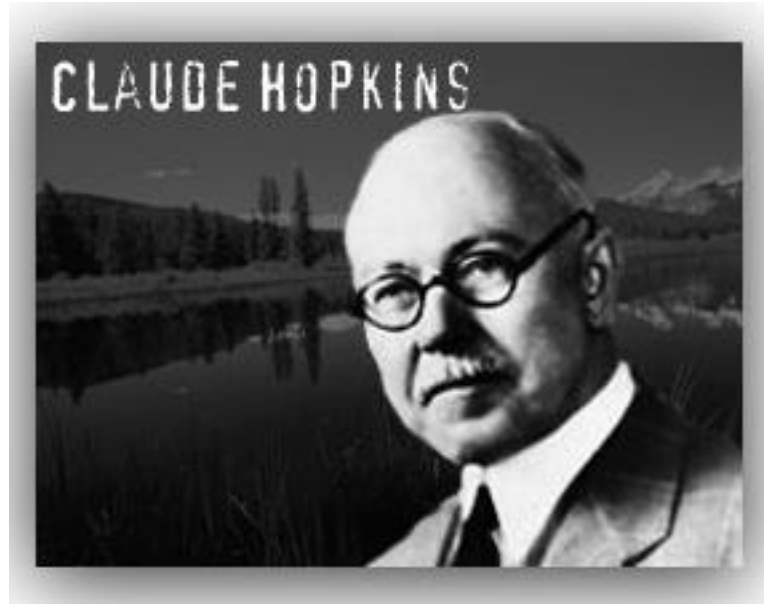
How do habits work?

THE POWER OF
HABIT



Why we do what we do and how to *change*

CHARLES DUHIGG



Punch, November 9 1949



FILM on teeth invites decay . . .

Film-sailed teeth spell DANGER. Film harbours germs that breed decay. Only Pepsodent contains Irium, which frees teeth from film.

Do you know why teeth decay? Most often because dingy film forms on them, gives shelter to destructive germs.

Run your tongue over your teeth. Feel a sticky film there? That film forms from food deposits and saliva. In it, germs produce acids that attack the enamel of your teeth. Film is continually being deposited on your teeth. *You can remove it with Pepsodent. No toothpaste except Pepsodent has Irium,*

specially made to emulsify and wash away ever-forming film.

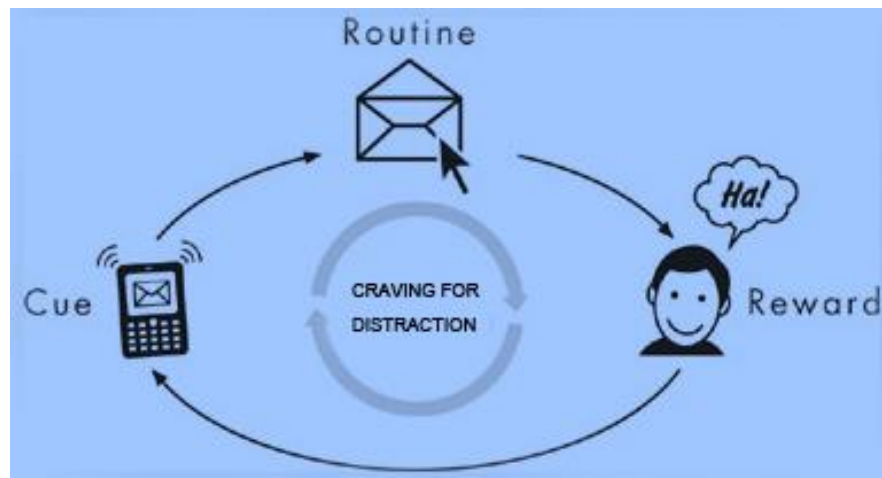
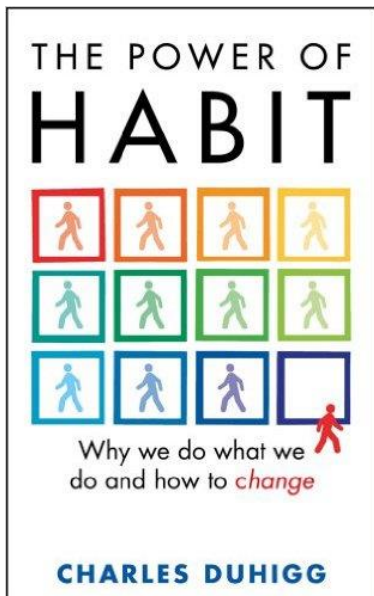
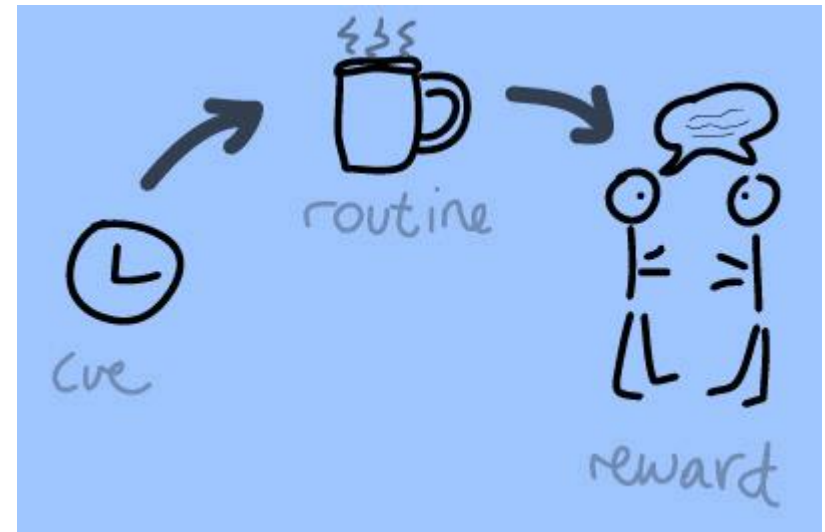
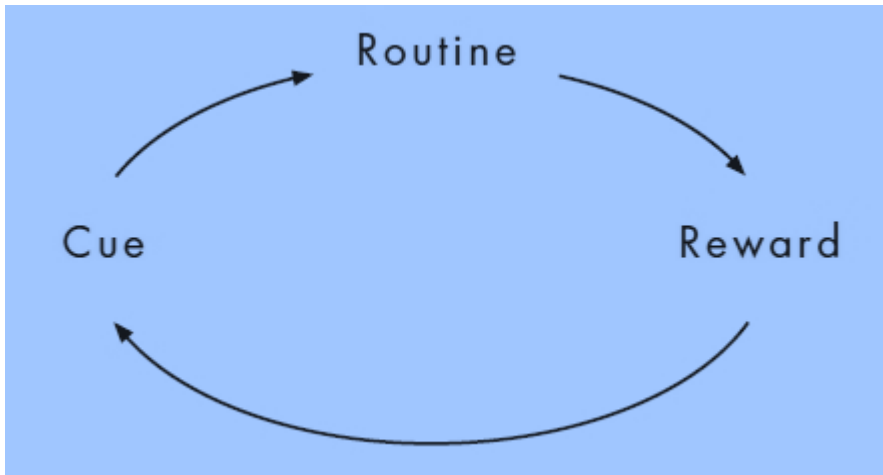
Brush teeth with Pepsodent after every meal. (Film never lets up!) Visit your dentist twice a year. *Keep your teeth white and film-free, and reduce the risk of decay.*

. . . the Irium in Pepsodent fights film

NEW PEPSODENT is extra-foamy, and Pepsodent's lovely minty taste brings freshness to your mouth.

ED137-100-05

How do habits work?



Engineering Habits of Mind

Why does that happen?
Does it have to be like that?
How could it be better?

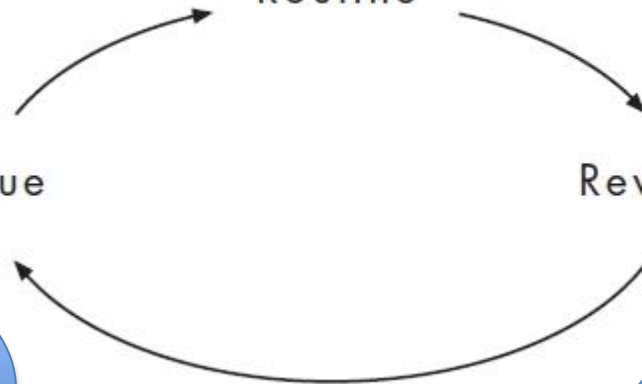
Routine

Cue

Reward

See something new
Read about an issue
Observing the world

Helping people
Money
Desire for efficiency /
performance



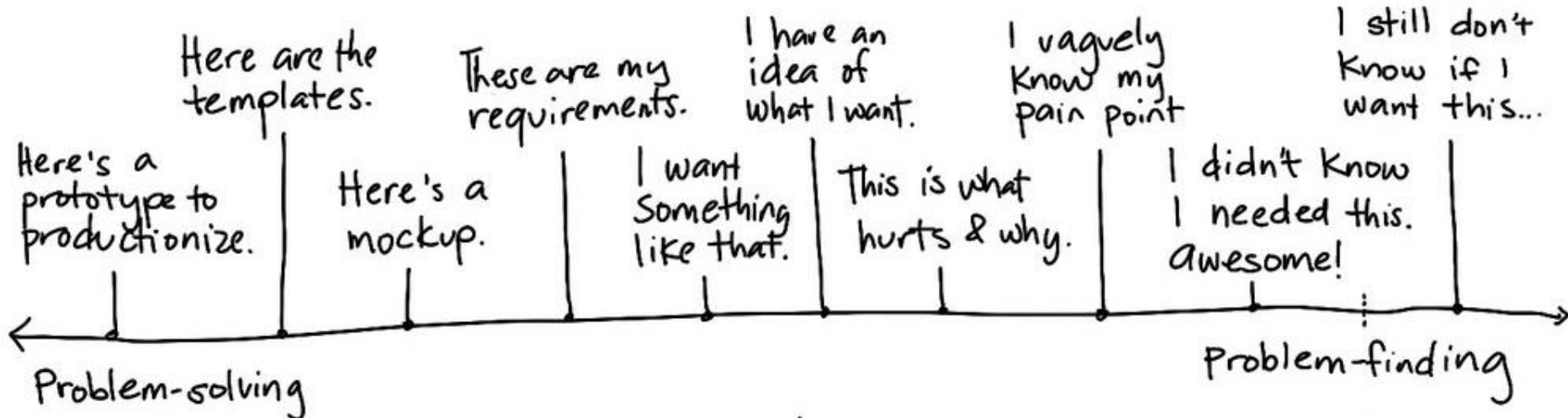
Problem Finding

"Problem-solving remains an important skill. No doubt about it. But problem-finding is becoming just as important, if not more so. If a customer knows exactly what its problem is, it can probably find the solution on its own. It doesn't need you.

But where you're enormously valuable is when the customer doesn't know what its problem is, or is wrong about its problem.

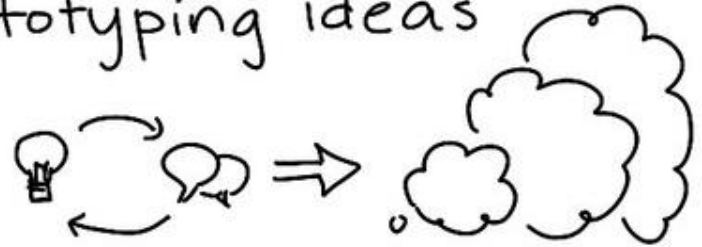
There you can make a big difference — by identifying problems the customer doesn't realize that it has, and looking down the road to anticipate problems that haven't yet arrived."

Problem Finding



Hmm. I like the
Is it possible? and the
I want to __, but I don't know what that looks like
even if sometimes **I don't know, but not that.**

Where I have the most fun prototyping ideas



To reflect on...

IT TAKES AS MUCH TIME TO SOLVE A BAD PROBLEM AS IT DOES A GOOD PROBLEM.

AND IF YOU'RE NOT WORKING ON GOOD PROBLEMS, YOU'RE REALLY WASTING YOUR TIME.

This is Bill.

Bill is an **problem finder**.

Bill questions the world around him
and verifies what is know.

Bill is an Engineer.

Be like Bill.

