

THE PARADOX OF CHOICE

Thriving in an industry with too many possibilities

WHO AM I



Azeria (@Fox0x01 on Twitter)

Creator of Azeria-Labs

Independent Security Researcher & Penetration Tester

Trainer: Reverse Engineering and ARM Exploit Development

blackhat® Trainings & Briefings Review Board

Crew Member of BlackHoodie Reverse Engineering Bootcamp

Interested in:

Reverse Engineering, Assembly, Binary Exploitation,
Mitigation Bypasses, Graphic Design for lulz, Psychology



WHAT THIS KEYNOTE IS NOT ABOUT



BORING

OMG!
SAME SECURITY
ISSUES WE HAD
TEN YEARS AGO
!!!

0-DAY IN
RANDOM
WEB APP

BRAG *BRAG*
RANT
RANT

WHAT THIS KEYNOTE IS ABOUT



Vulnerability Management
Embedded Systems

Vulnerability Research

Mobile Security
Bug Hunting
Threat Intelligence
Medical Device Security
Malware Analysis Android iOS OSINT
ICS/SCADA Forensics

Reverse Engineering Penetration Testing

Cryptography Incident Response
Social Engineering Bug Bounty Threat Modelling
 Internet of Things
Application Security
Hardware Hacking
Exploit Development
Car Hacking





Reverse Engineering

Penetration Testing

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OUTLINE

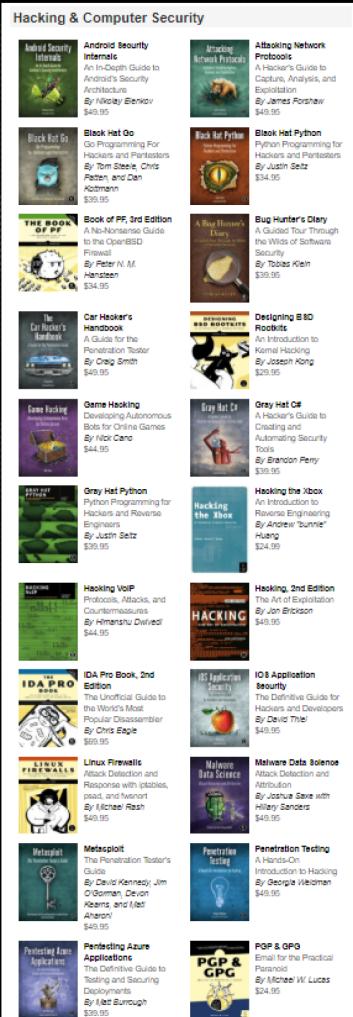
- Dealing with choice overload
- How to structure decision making
- How to master a skill and become an efficient learner
- How to embrace Deep Work
- Deep Work habits
- Apps

PARADOX OF CHOICE

“Learning to choose is hard.
Learning to choose well is harder.
And learning to choose well in a world of unlimited possibilities is harder still,
perhaps too hard.” – Robert Greene.



Lesson 1: The more options you have, the harder it gets to decide, and to decide well.



Awesome Hacking !	
Repository	Description
Android Security	Collection of Android security related resources
AppSec	Resources for learning about application security
Bug Bounty	List of Bug Bounty Programs and write-ups from the Bug Bounty hunters
CTF	List of CTF frameworks, libraries, resources and softwares
Cyber Skills	Curated list of hacking environments where you can train your cyber skills legally and safely
DevSecOps	List of awesome DevSecOps tools with the help from community experiments and contributions
Exploit Development	Resources for learning about Exploit Development
Fuzzing	List of fuzzing resources for learning Fuzzing and initial phases of Exploit Development like root cause analysis
Hacking	List of awesome Hacking tutorials, tools and resources
Hacking Resources	Collection of hacking / penetration testing resources to make you better!
Honeypots	List of honeypot resources
Incident Response	List of tools for incident response
Industrial Control System Security	List of resources related to Industrial Control System (ICS) security
InfoSec	List of awesome Infosec courses and training resources
IoT Hacks	Collection of Hacks in IoT Space
Malware Analysis	List of awesome malware analysis tools and resources
OSINT	List of amazingly awesome Open Source Intelligence (OSINT) tools and resources
OSX and iOS Security	OSX and iOS related security tools
Pcaptools	Collection of tools developed by researchers in the Computer Science area to process network traces
Pentest	List of awesome penetration testing resources, tools and other shiny things
PHP Security	Libraries for generating secure random numbers, encrypting data and scanning for vulnerabilities
Red Teaming	List of Awesome Red Team / Red Teaming Resources
Reversing	List of awesome reverse engineering resources
Sec Talks	List of awesome security talks
SecLists	Collection of multiple types of lists used during security assessments
Security	Collection of awesome software, libraries, documents, books, resources and cool stuffs about security
Social Engineering	List of awesome social engineering resources
Static Analysis	List of static analysis tools, linters and code quality checkers for various programming languages
Threat Intelligence	List of Awesome Threat Intelligence resources
Vehicle Security	List of resources for learning about vehicle security and car hacking
Vulnerability Research	List of resources about Vulnerability Research
Web Hacking	List of web application security
Windows Exploitation	List of awesome Windows Exploitation resources and shiny things
WiFi Arsenal	Pack of various useful/useless tools for 802.11 hacking
YARA	List of awesome YARA rules, tools, and people



Lesson 2: The more options you have, the less happy you will be with your choice, no matter what you decide on.

MAXIMIZERS ...

- ... don't just want their needs satisfied
- ... need to look at all options
- ... want to make the **best choice** possible
..... with the **best outcome** possible
- ... overload themselves with options



MAXIMIZERS ...

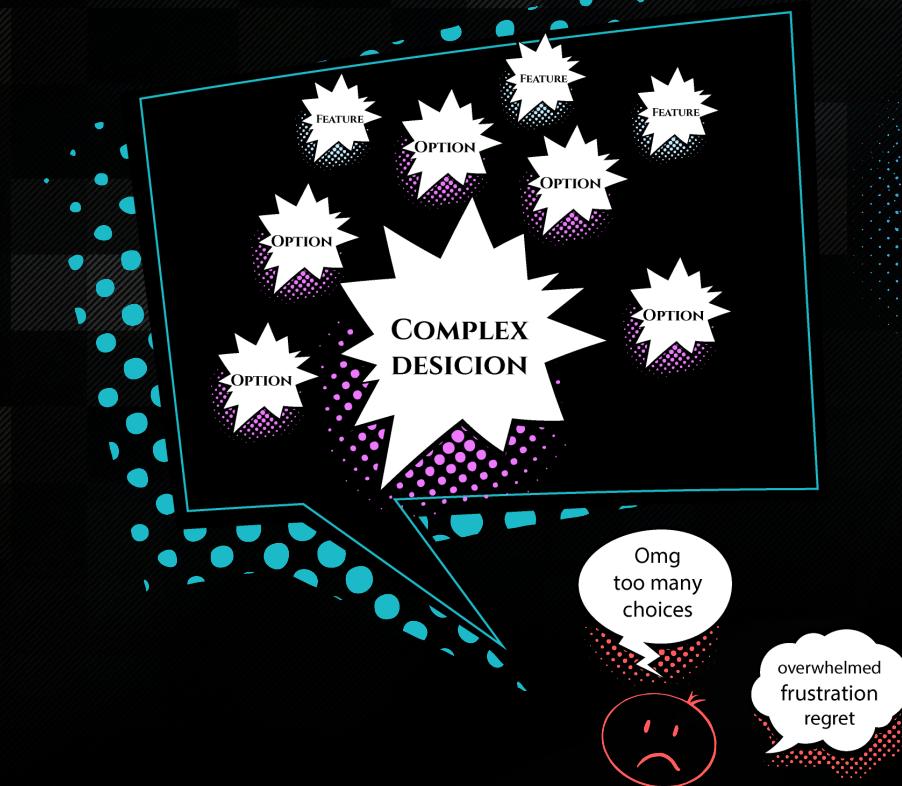
- ... end up **frustrated** by the complexity
- ... end up **not choosing** at all
- ... or **regret** their choices and think about opportunity costs



THE PARADOX



Good mood => better thinking => better desicions



Too many choices => negative emotions => poor desicions



SATISFICER

CRITERIA / REQUIREMENTS



SATISFICER

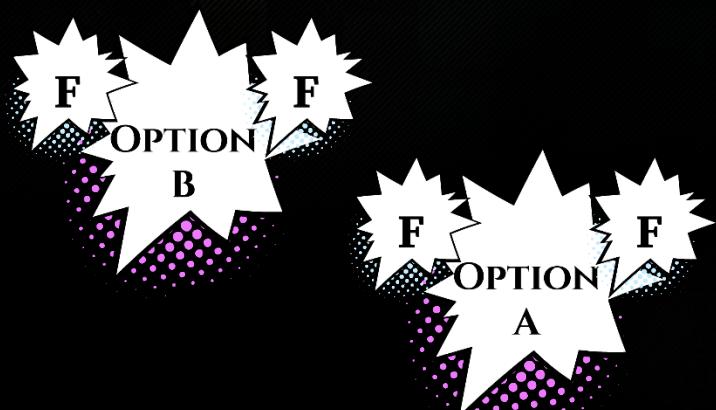
CRITERIA / REQUIREMENTS



Possibilities
connections

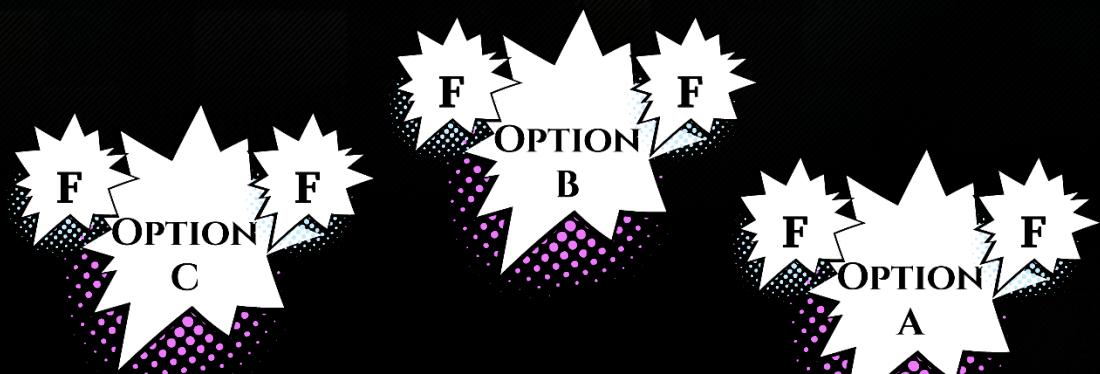
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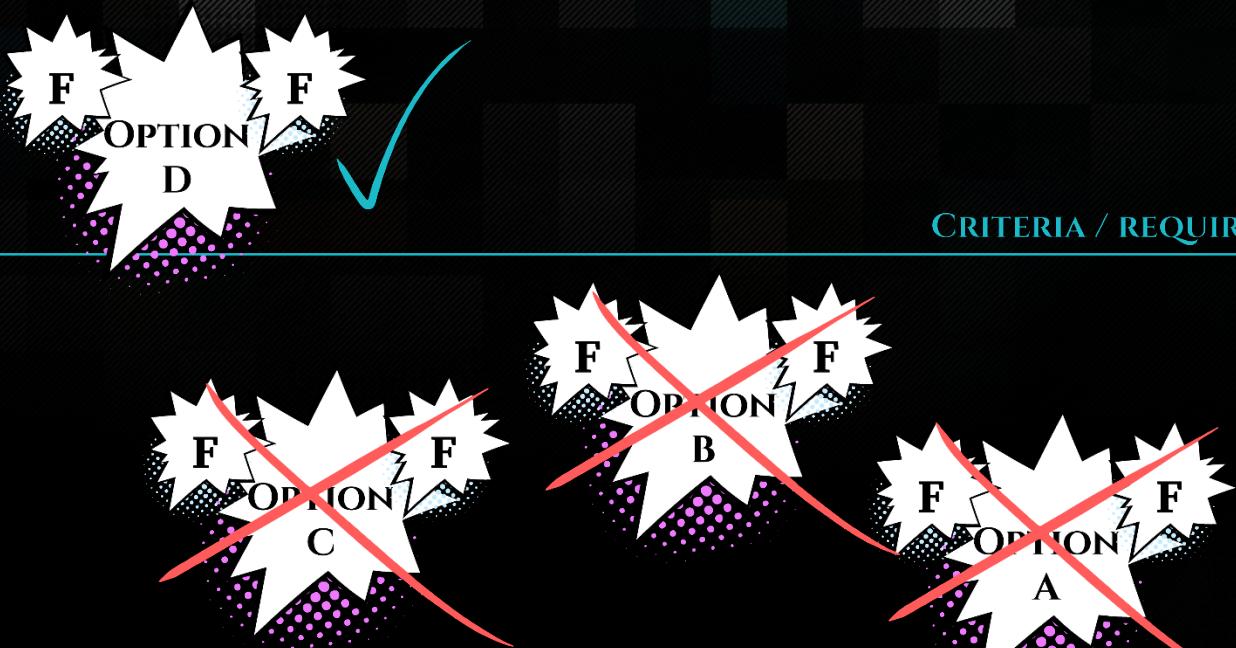
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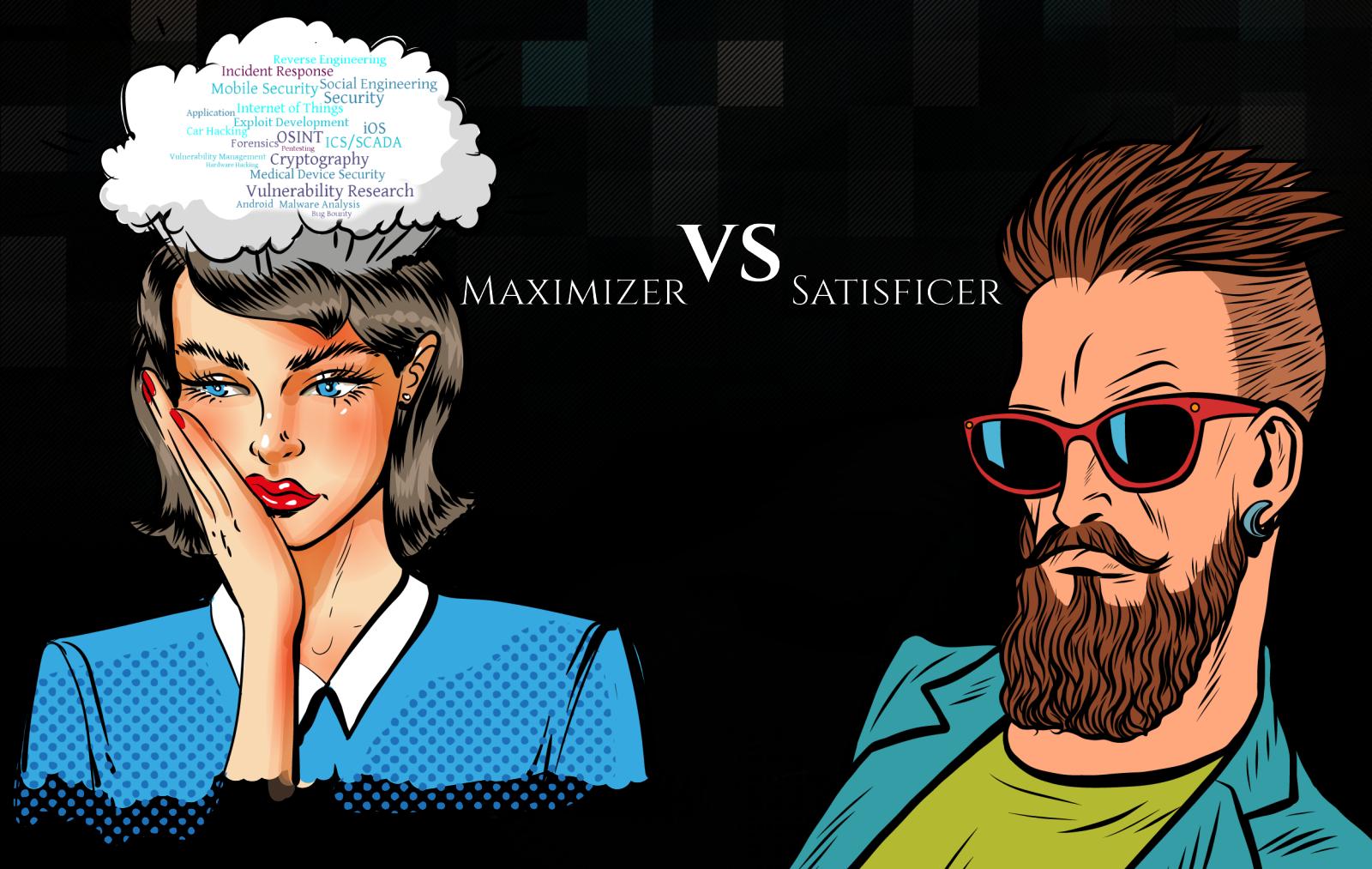
SATISFICER



GOOD
ENOUGH



MAXIMIZER OR SATISFICER?



HOW WE CHOOSE

PEAK END EFFECT by Daniel Kahneman.

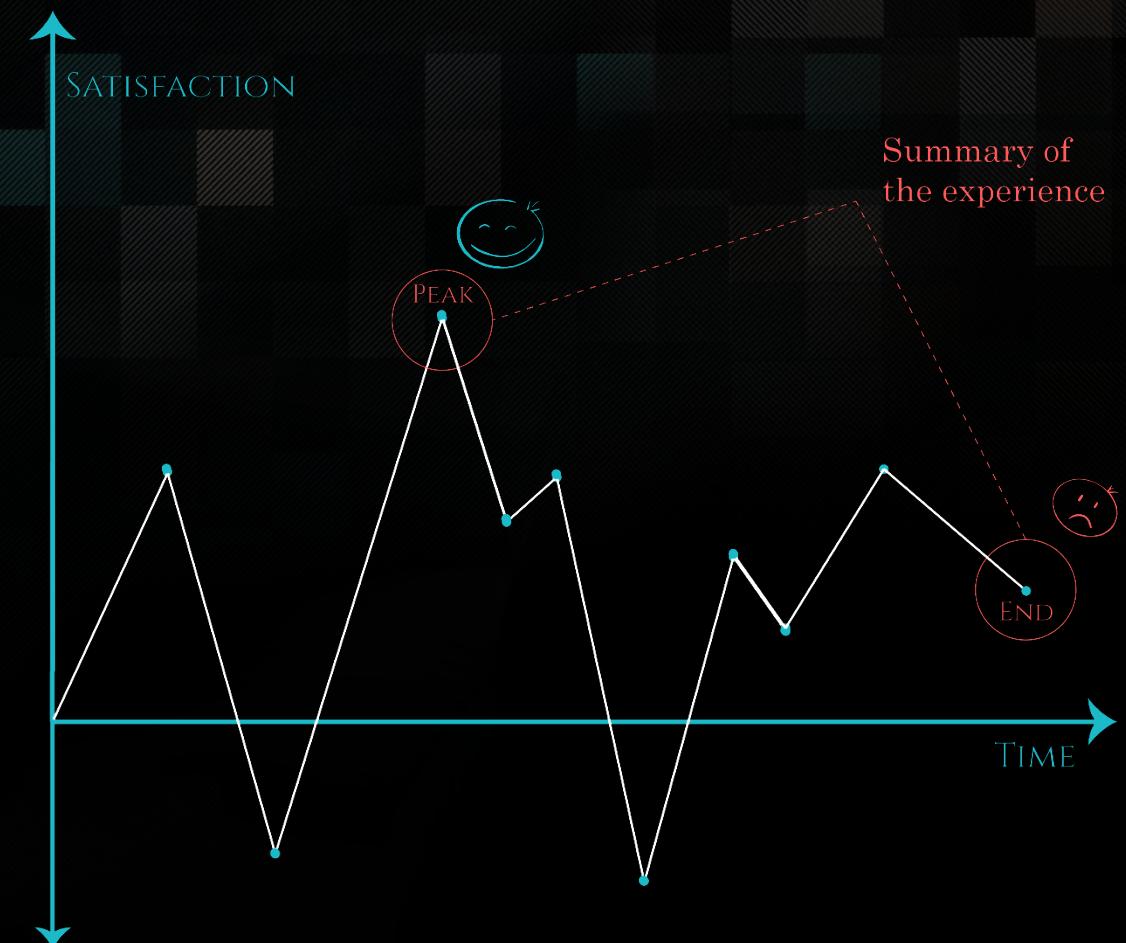
What we remember about our past experiences:

How the experience **felt** when ...
... at their **peak** (best or worse)
... it **ended**
... regardless of whether the experience is **pleasant** or **unpleasant**.

NOT based on **sum/average** of every moment of the experience.



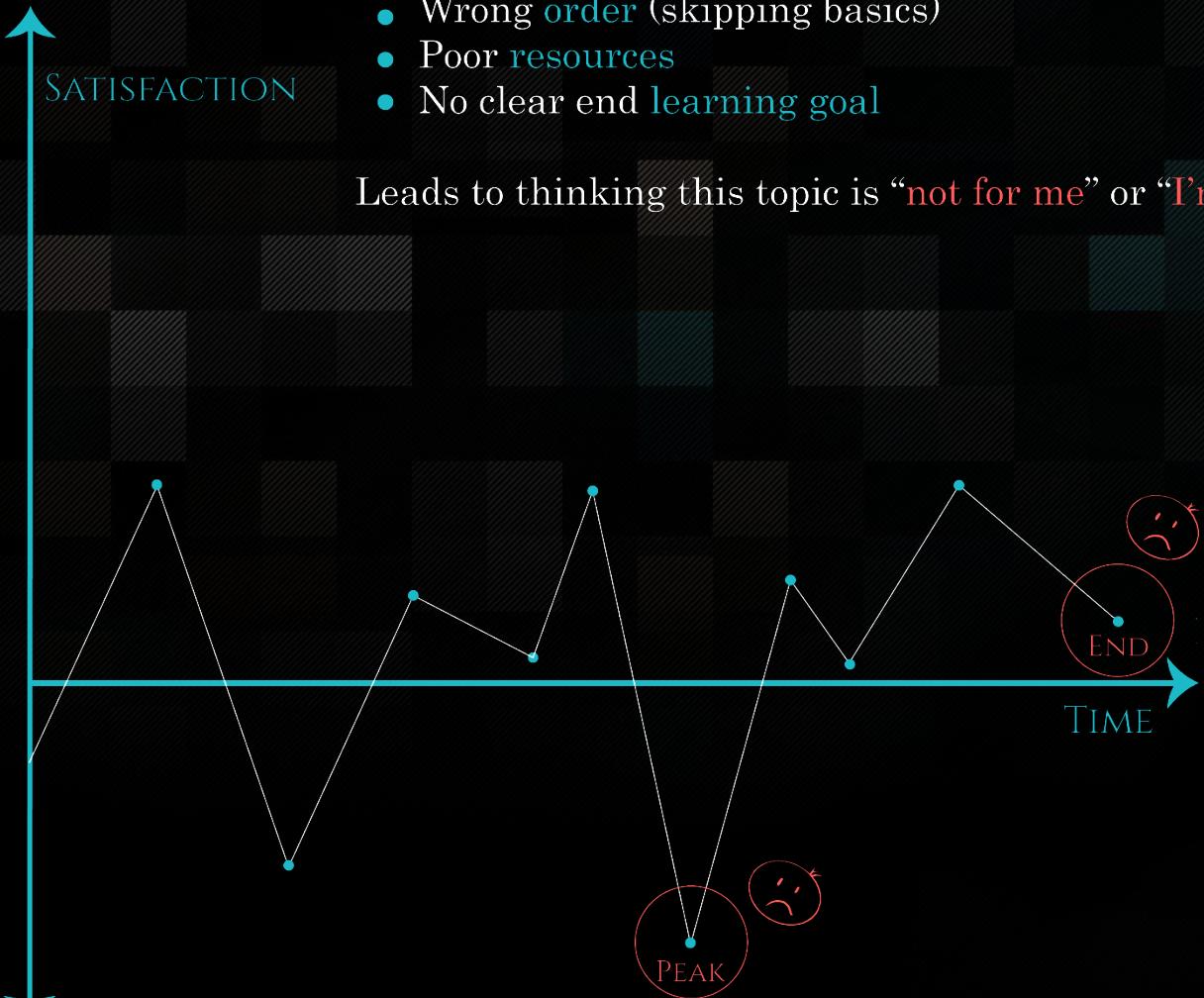
HOW WE CHOOSE



Unstructured attempt of learning something new:

- Wrong **order** (skipping basics)
- Poor **resources**
- No clear end **learning goal**

Leads to thinking this topic is “not for me” or “I’m just not smart enough for this topic”



HOW TO CHOOSE

I like  finding bugs and exploiting them



I like creating new policies and managing risk.



I like psychology and Social Engineering



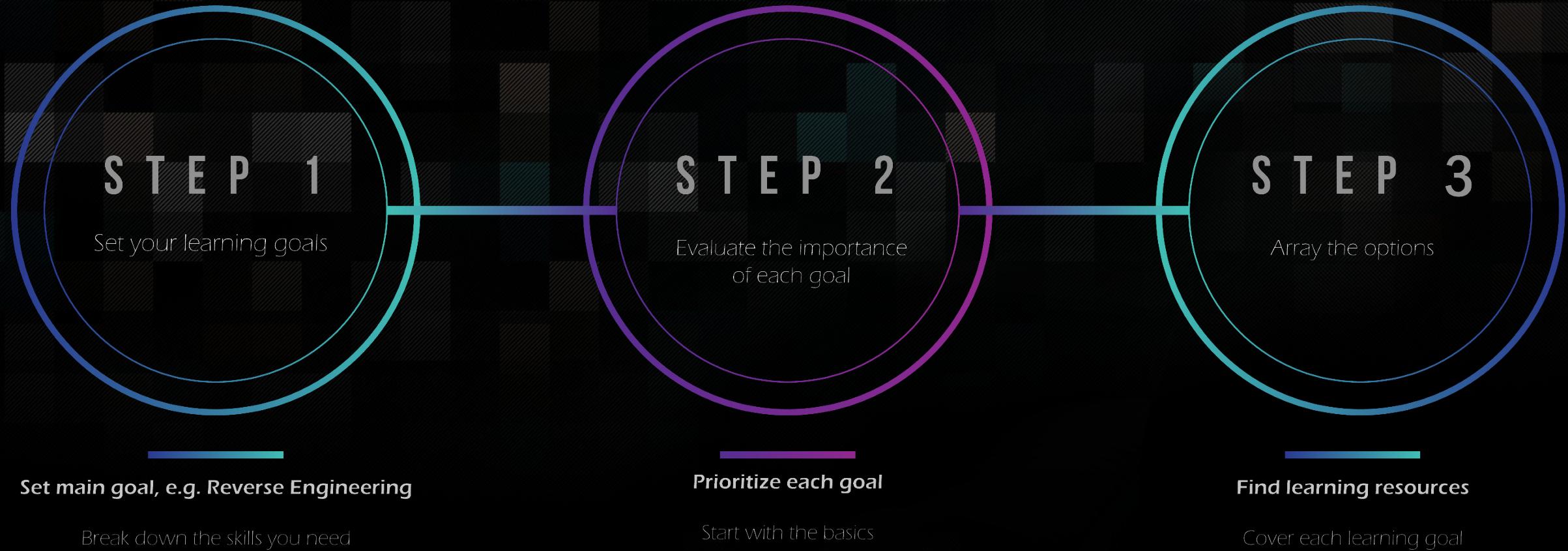
I like analysing and solving puzzles



I like building things
JAVA 



HOW TO CHOOSE



HOW TO CHOOSE

STEP 4

Evaluate Resources

Evaluate how likely each of the resources is to help you meet your learning goals

Weed out redundant resources

STEP 5

Pick the winning options

Choose the right resource for each learning goal

Piece it together if necessary



MASTERY



THE GENIUS



THE GENIUS

Researchers have long since denied that natural talent is a big factor of success.

THE EXPERT

What separates experts from everyone else is **deliberate practice**.

K. Anders Ericsson on deliberate practice:

"we deny that these differences are immutable, that is, due to innate talent. Only a few exceptions, most notably height, are genetically prescribed. Instead, we argue that the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain."

-- Paper "The Role of Deliberate Practice in the Acquisition of Expert Performance" (1993)





APPRENTICESHIP

Learn a wide range of skills that relate to your goal.
Focus on gaining proficiency on a skill-by-skill basis.

Be patient.







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CREATIVE/ACTIVE

Make additional connections, get bigger picture.
Develop your unique style, tools, techniques.
Experiment and combine your skills.





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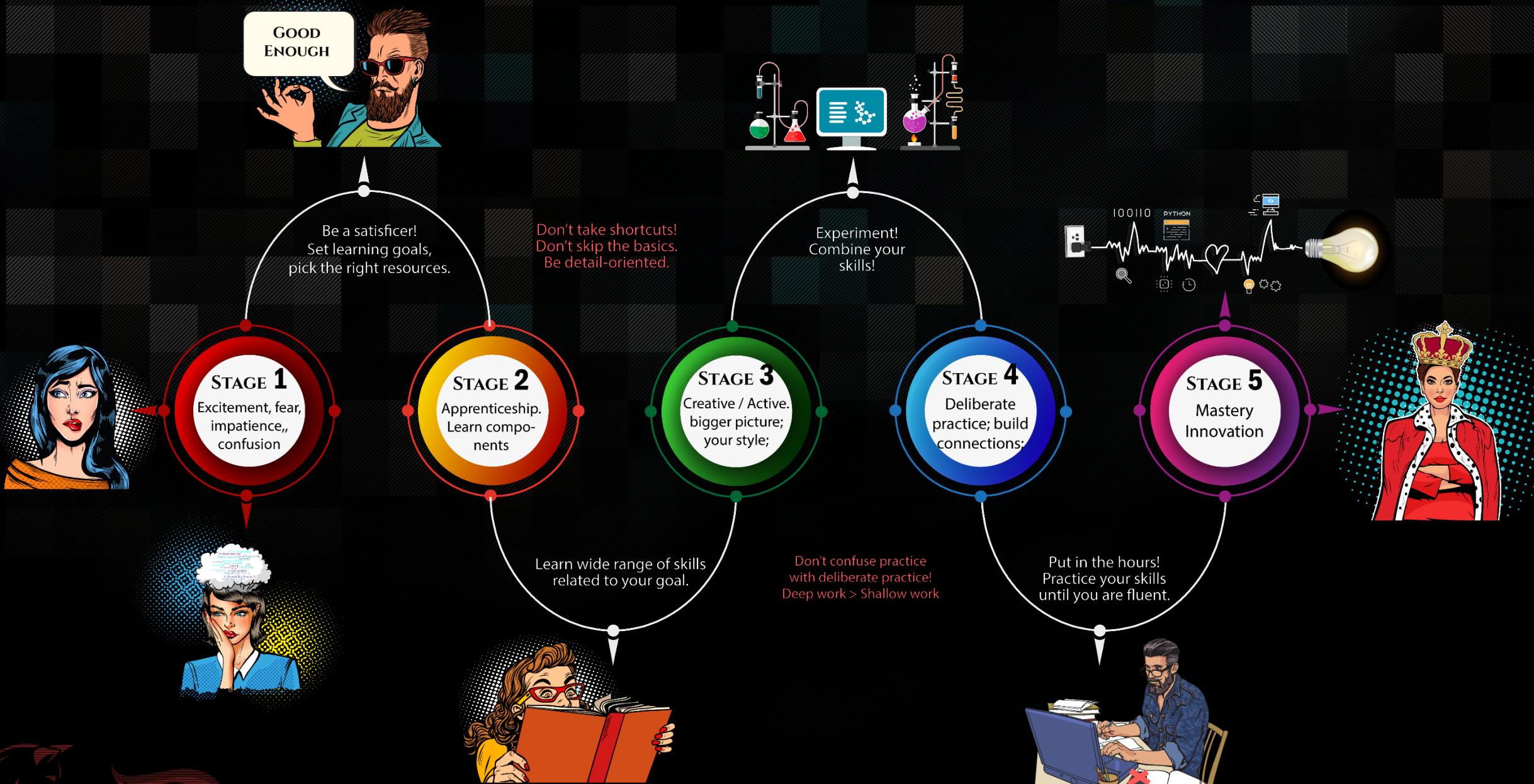
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MASTERY

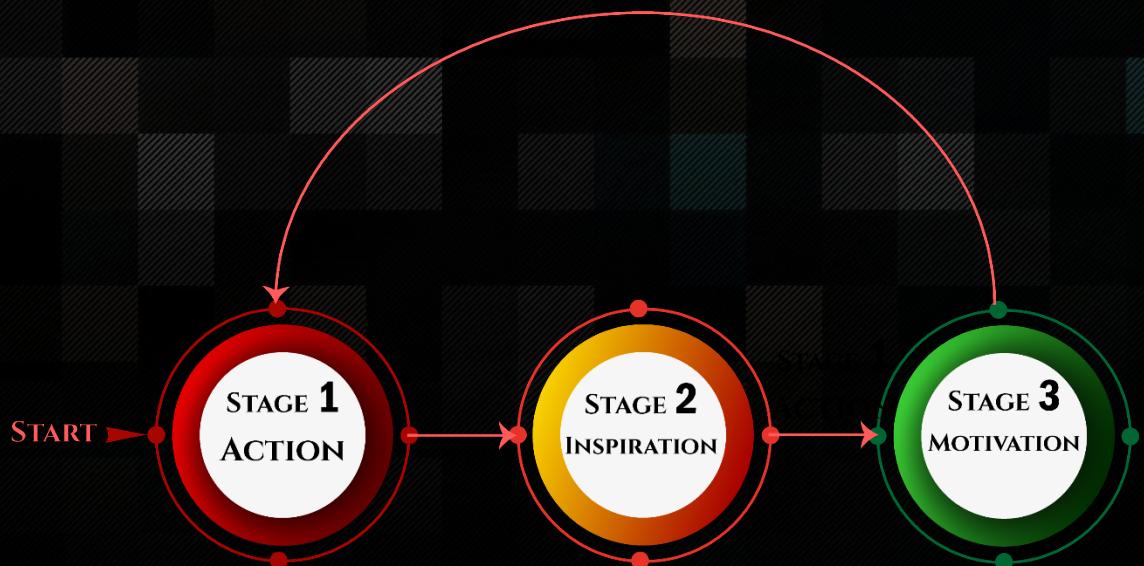
Practice your craft!
... put in many hours of
... deliberate practice.





THE POWER OF DEEP WORK

MOTIVATION AND DISTRACTIONS

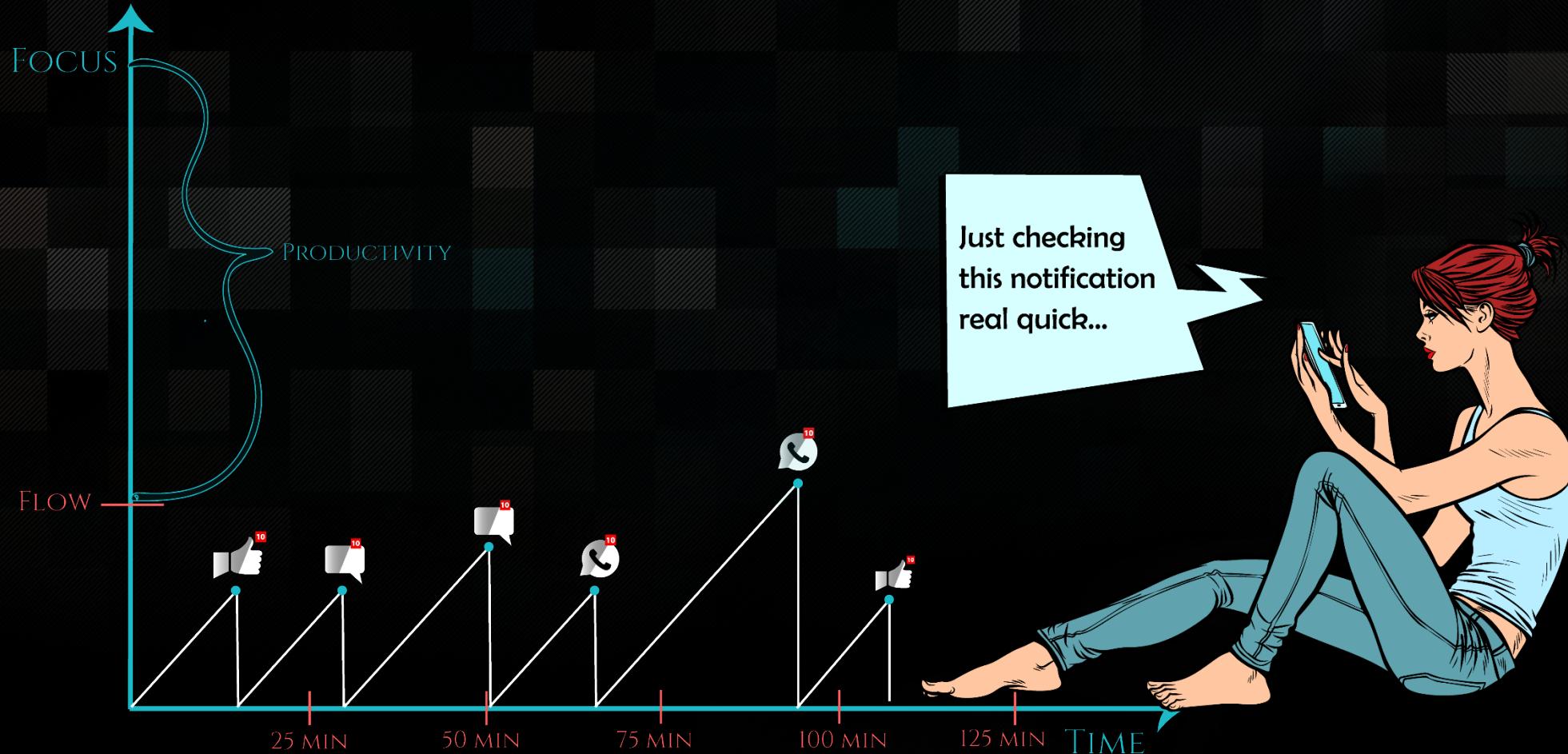


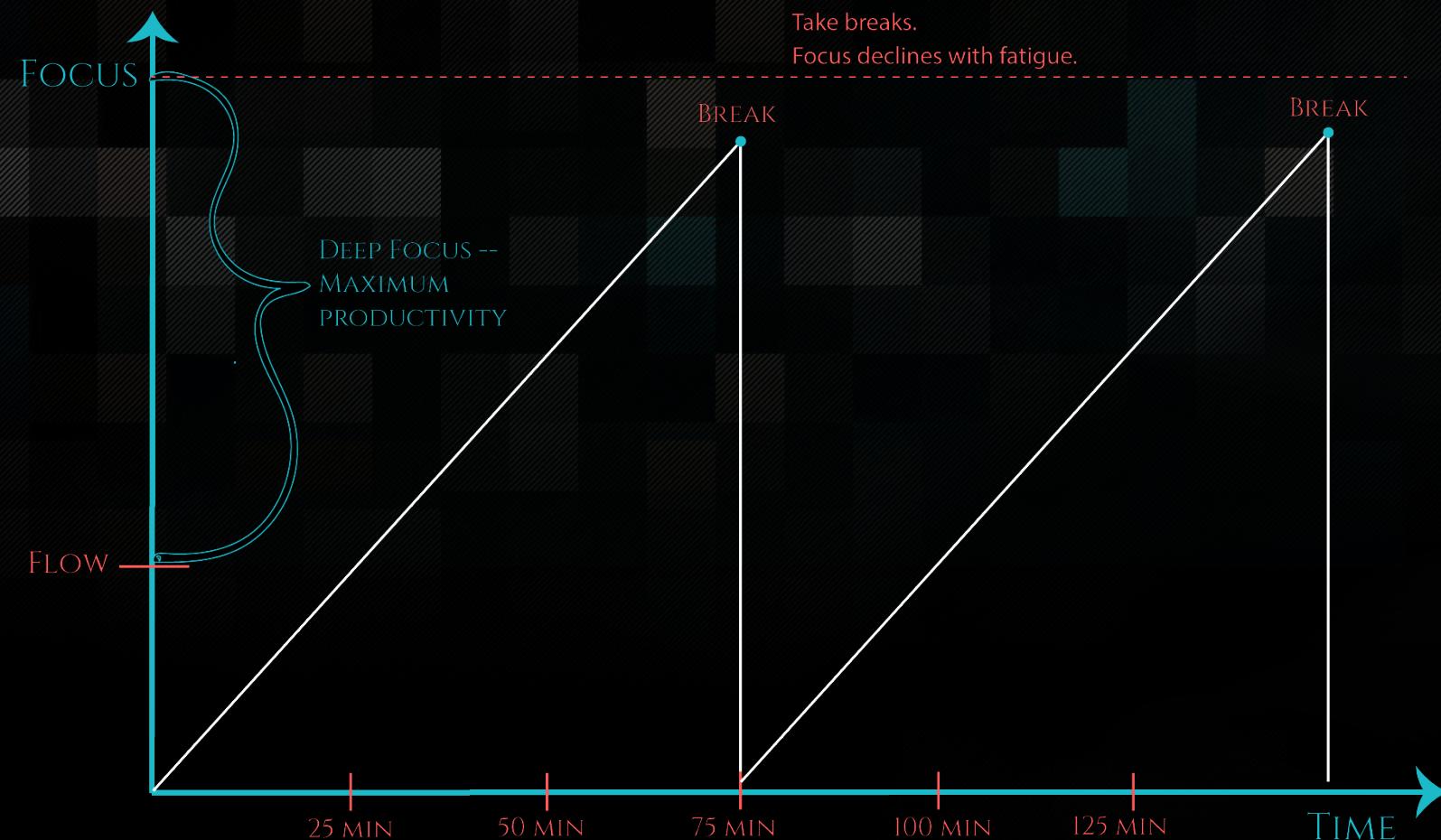
FLOW

“The best moments usually occur when a person’s body or mind is stretched limits in a voluntary effort to accomplish something difficult and worthwhile”

-- Mihaly Csikszentmihalyi

FLOW - 25 MINUTES RULE





LAW OF PRODUCTIVITY

High-Quality Work Produced =
 $(\text{Time Spent}) \times (\text{Intensity of Focus})$



SHALLOW WORK

Don't confuse productivity with busyness.

"Shallow Work: Non-cognitively demanding, logistical-style tasks, often performed while distracted.

These efforts tend not to create much new value in the world and are easy to replicate." -- Cal Newport



DEEP WORK

"Professional activities performed in a state of **distraction-free concentration** that push your cognitive ability to their limit.

These efforts create **new value**, **improve your skills**, and are **hard to replicate**.

Deep work is hard and shallow work is easier and in the absence of clear goals for your job, the **visible busyness** that surrounds **shallow work** becomes self-preserving."
-- Cal Newport



DELIBERATE PRACTICE

DELIBERATE PRACTICE

Purposeful, systematic, stretches your mind to its limits.

Requires focused attention and is performed with the goal of improving performance.

PRACTICE

Mindless repetition of the same task.

The more we repeat a task, the more mindless it becomes.

Mindless activity is the enemy of deliberate practice.



REPEAT

Pick a new project that forces you to learn new concepts and techniques.

TRY

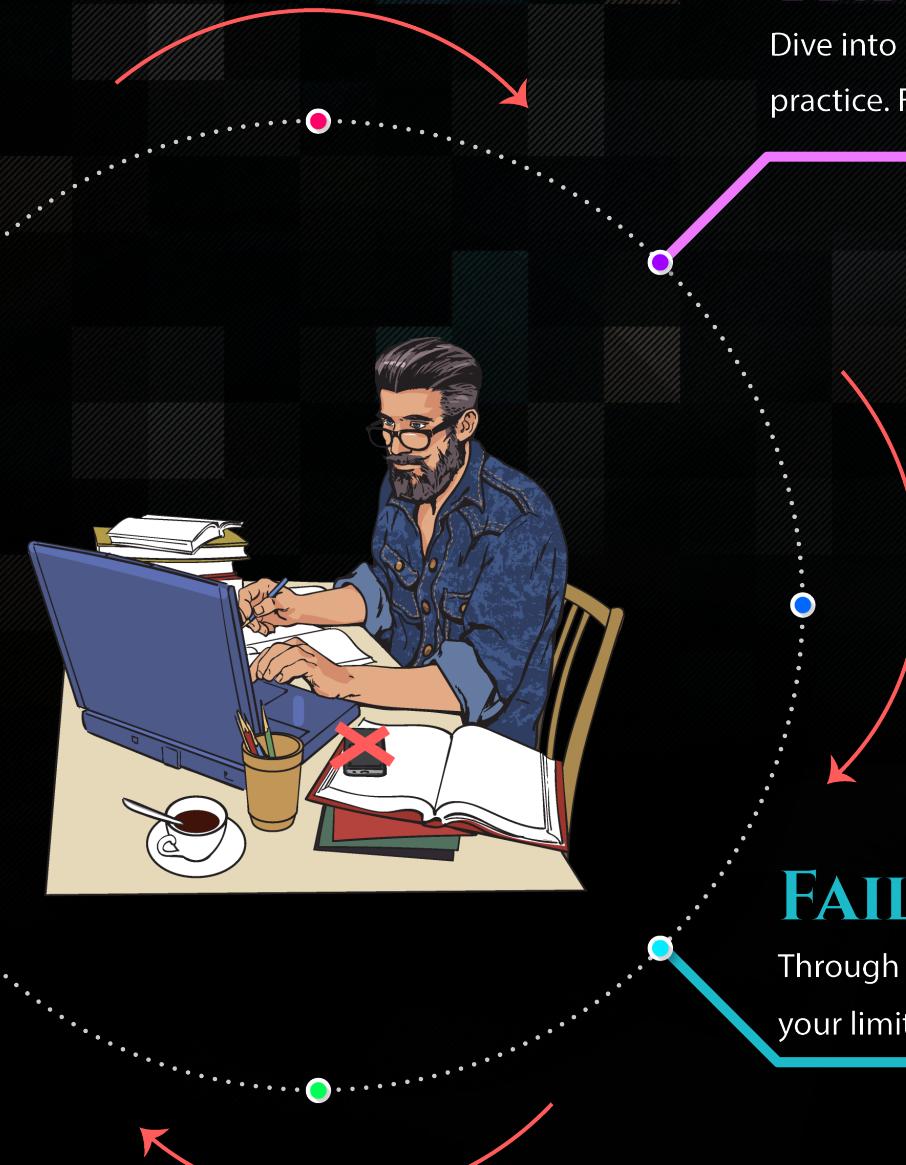
Dive into it with deep work and deliberate practice. Fully focus on your task.

LEARN

Learn from your failures. See it as a valuable learning experience.

FAIL

Through failure you know you've stretched your limits. See it as something positive.



MUSIC PLAYLISTS

- Create a playlist with music you enjoy, but don't get too excited about.
- Classical music: Spotify playlist “Peaceful Piano” or “Deep Focus”, Ludovico Einaudi
- My current favorites (electronic):
 - Sublab
 - Azaleh



THE POWER OF HABIT

MONASTIC

Maximizing deep efforts. Isolate yourself for long periods of time without distractions; no shallow work allowed.



HABIT STRATEGY

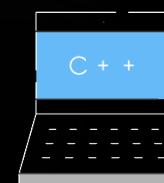


JOURNALISTIC

Fit deep work whenever you can into your schedule. Not recommended for beginners; you need to get used to deep work first.

BIMODAL

Dedicate a few days (e.g. weekends) per week for deep work only, at least one day per week.



RHYTHMIC

Create a daily habit of 3-4 hours every day to perform deep work on your project.

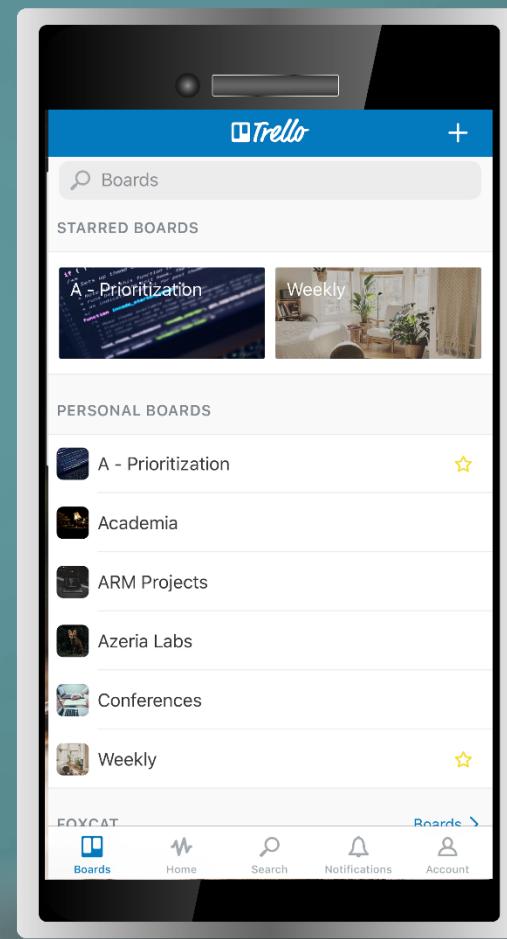




A stylized illustration of a woman with dark hair tied up in a bun, wearing a green patterned top. She is holding a white smartphone in front of her face, partially obscuring it. Her eyes are large and blue.

MY PRODUCTIVITY APPS

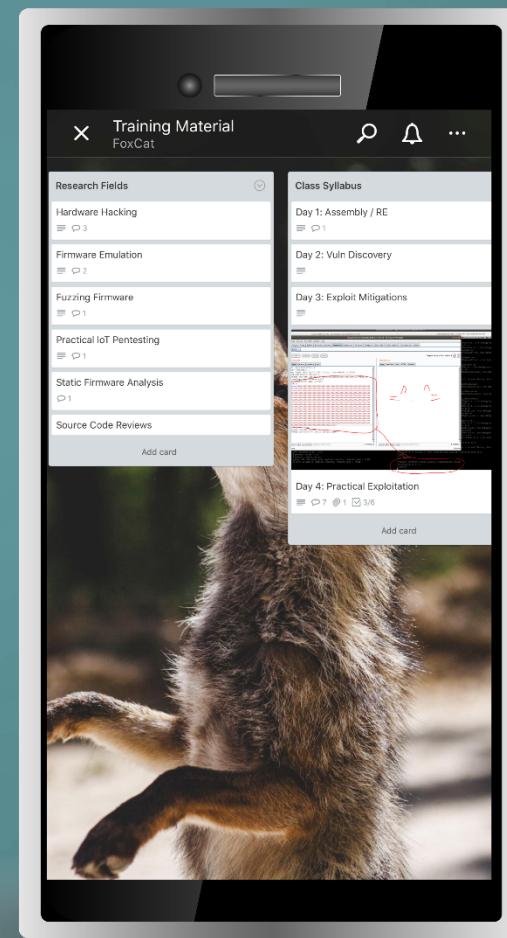
PLANNING: TRELLO



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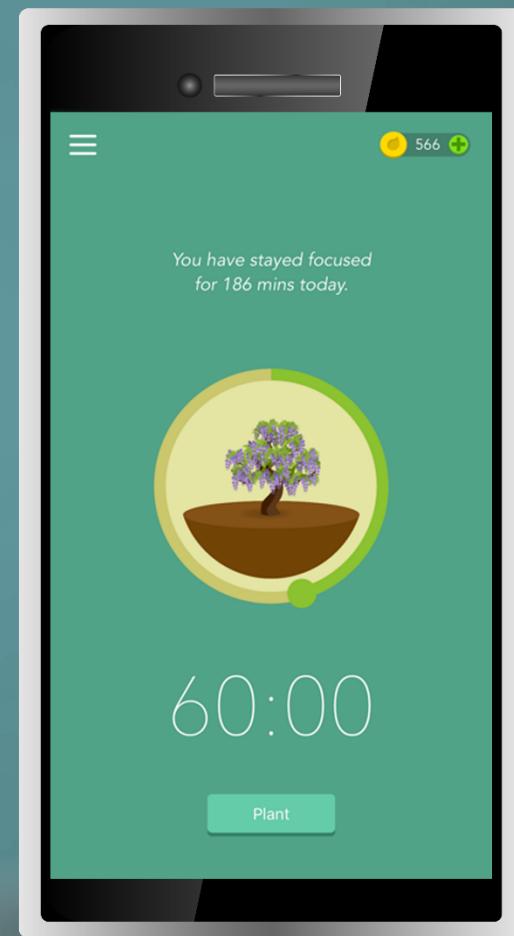
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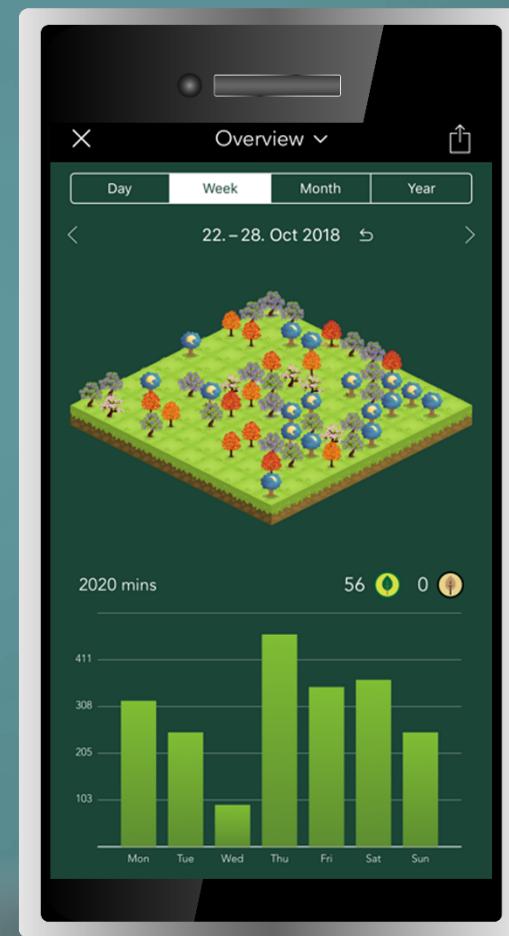
FOCUS: FOREST

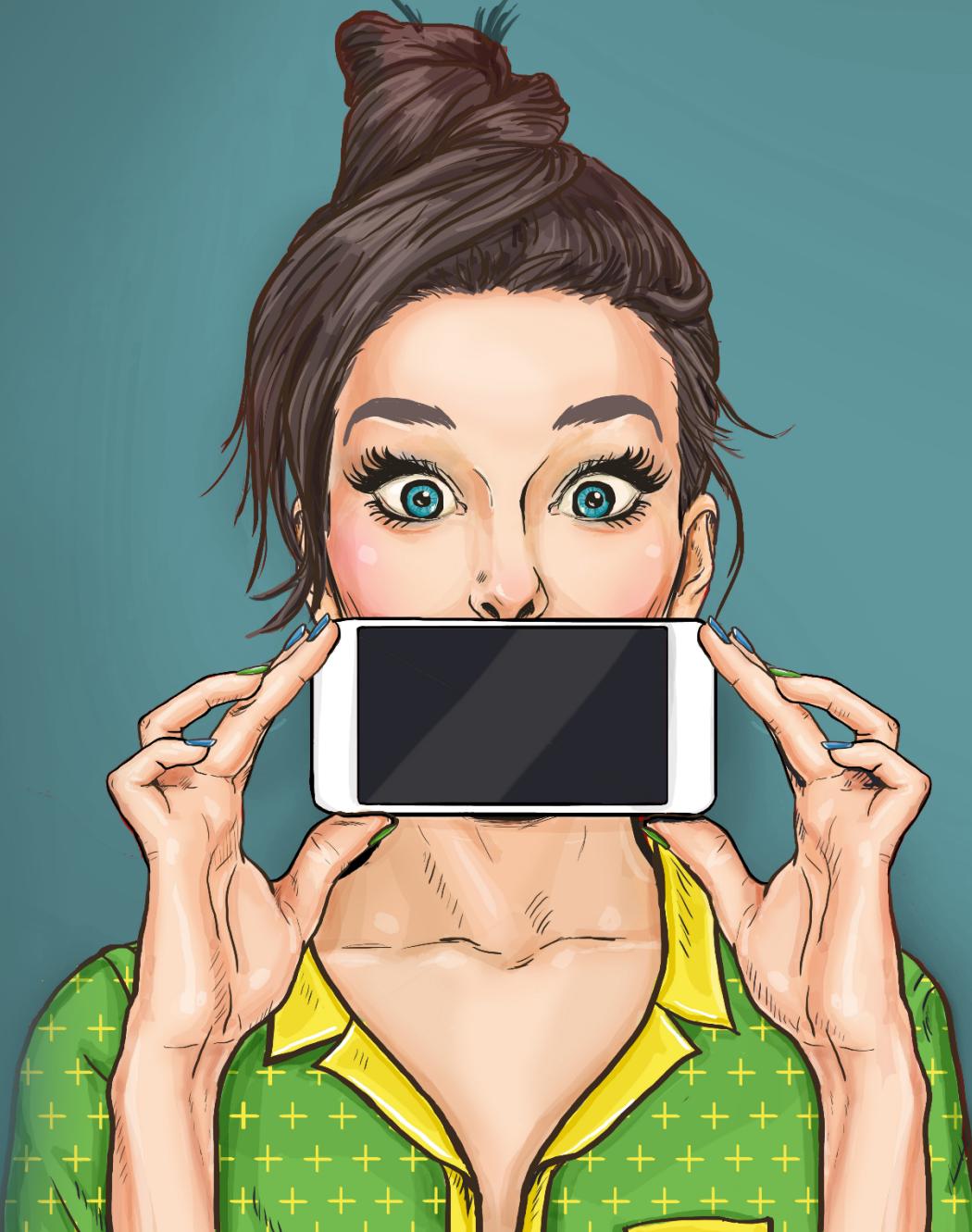


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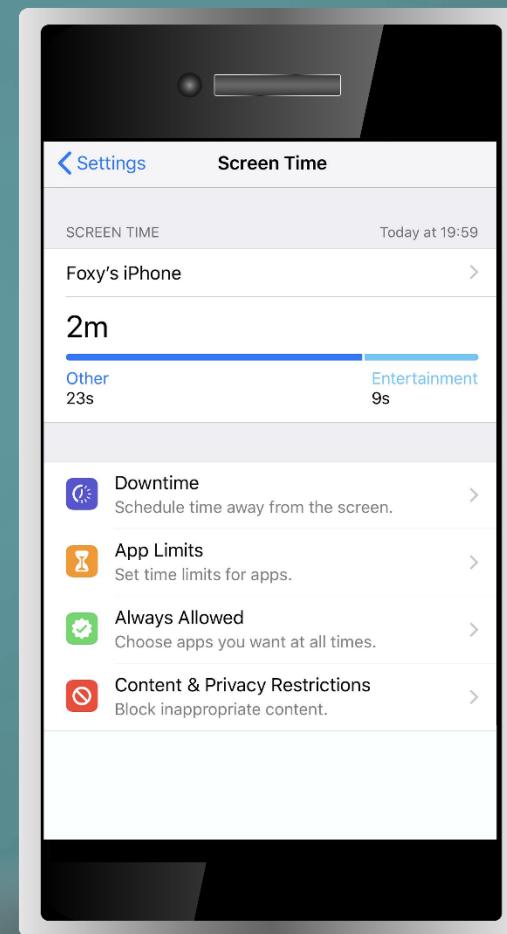
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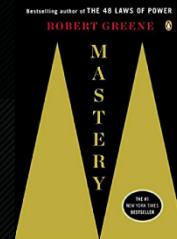
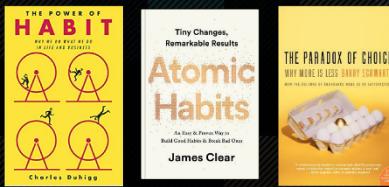
MY PRODUCTIVITY APPS

SCREEN TIME



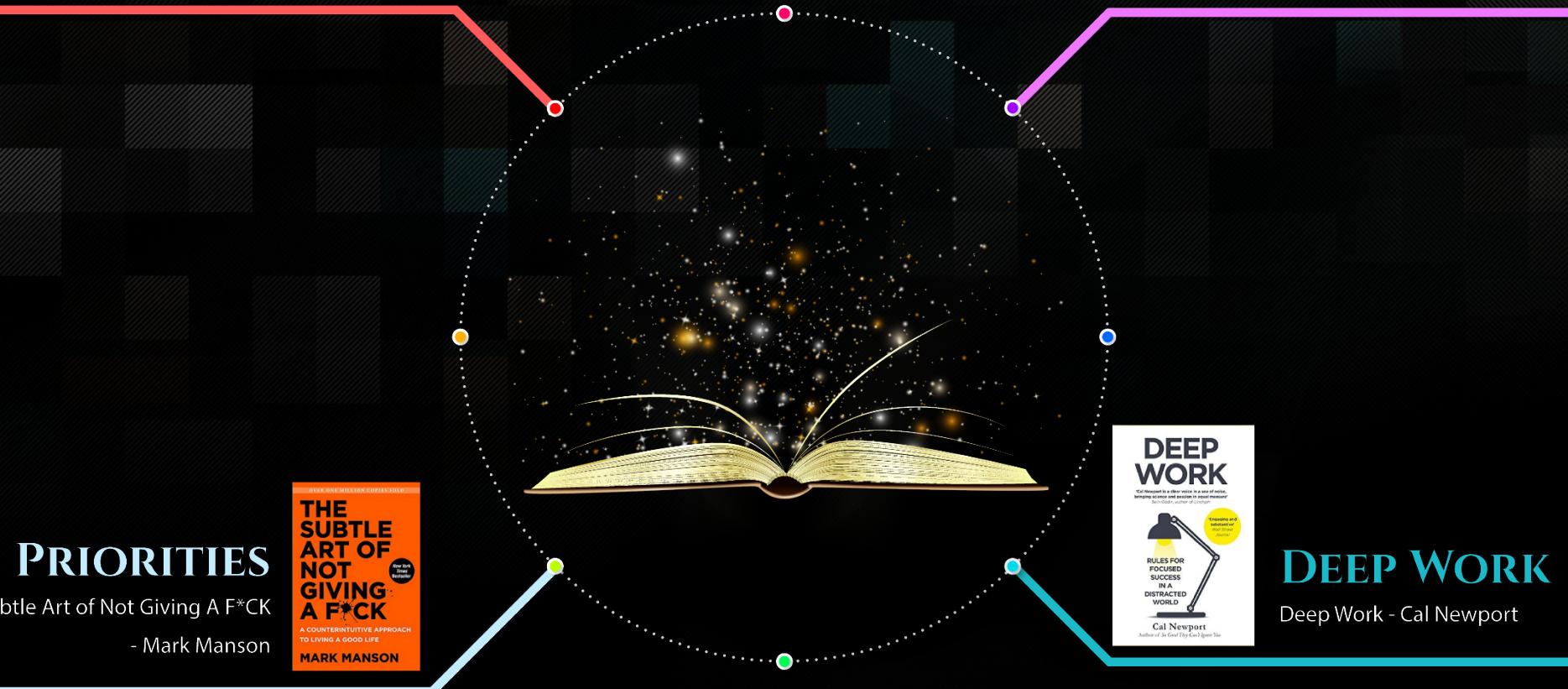
HABITS & CHOICES

The Power of Habit - Charles Duhigg
Paradox of Choice - Barry Schwartz
Atomic Habits - James Clear



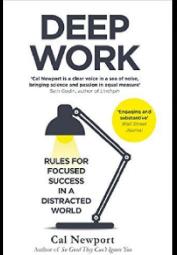
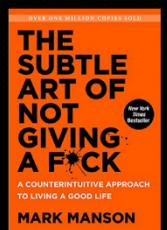
MASTERY

Mastery - Robert Greene



PRIORITIES

Subtle Art of Not Giving A F*CK
- Mark Manson



DEEP WORK

Deep Work - Cal Newport

ENJOY THE JOURNEY

If you're not happy with your life on your journey to your end goal, you're most likely not going to be happy even after you reach it.

You don't play a video game that you hate just because you think it's going to be fun once you finally beat it. **The best part of the game is the journey.**

Don't waste your time playing a game that makes you miserable just because you heared all the hype around it. There's a lot of other games out there. **Find the game that is meant for you,** and have fun playing.

That's the whole purpose of playing the game,
that's the whole purpose of this journey.

[Twitter](#): @Fox0x01

[Website](#): <https://azeria-labs.com>

[Email](#): azerialabs@gmail.com

