COVESA

ROBERT FEKETE
Volvo Cars

Embracing Open Source in an Automotive Safety Context

DISCLAIMER

Some views presented in this presentation are my personal views and do not necessarily represent the views of my employer.

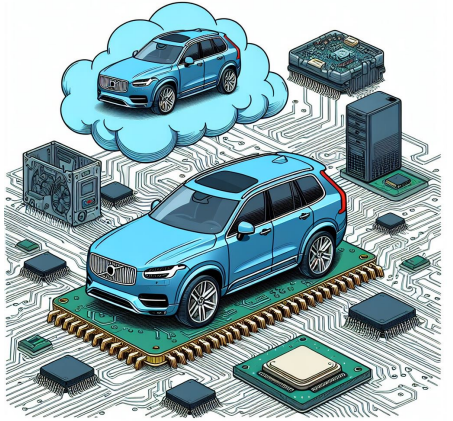
VOLVO

THREE WORLDS MERGE

Classic Autotive

High Performance Computers

Cloud & twins



With great compute powers comes great responsibility for safety and security

CULTURE & MINDSET

CHALLENGES

- Multiple Tech Domains
- Contradictions
- FEAR
- Tradition

DISRUPTIVE TIMES

We need foster an open and collaborating mindset and respect diversity and multiple perspectives more than ever during these disruptive times

Or we will risk solving the wrong problems, or even create new ones we did not have….

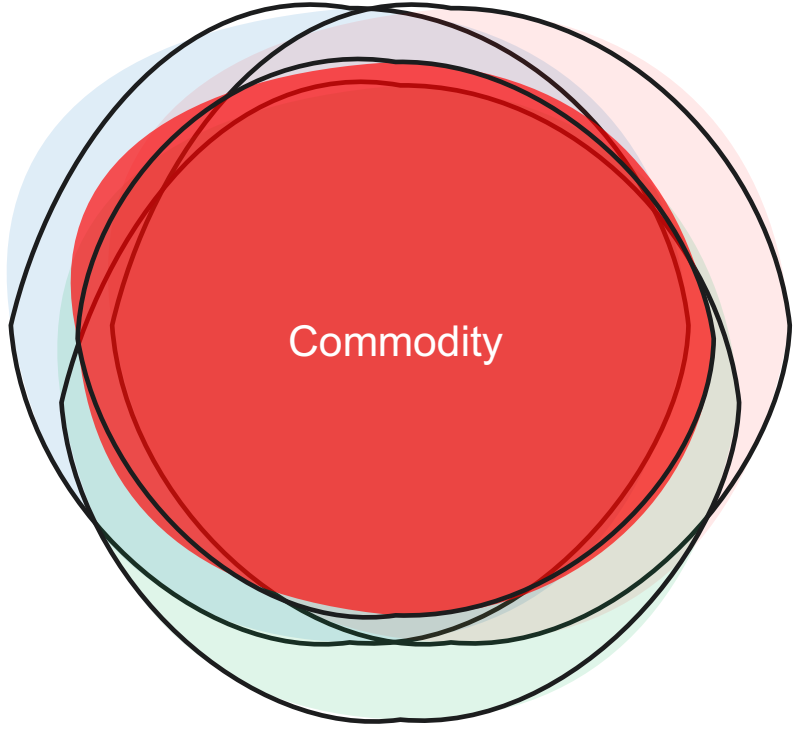
MY LESSONS LEARNED

”Corporate SUCCESS stories often begins with an Open Source Engineer being listened to.”

MY LESSONS LEARNED

”Corporate DISASTER events often begins with an Open Source Engineer being ignored.”

OEMS UNIQUE REQUIREMENTS



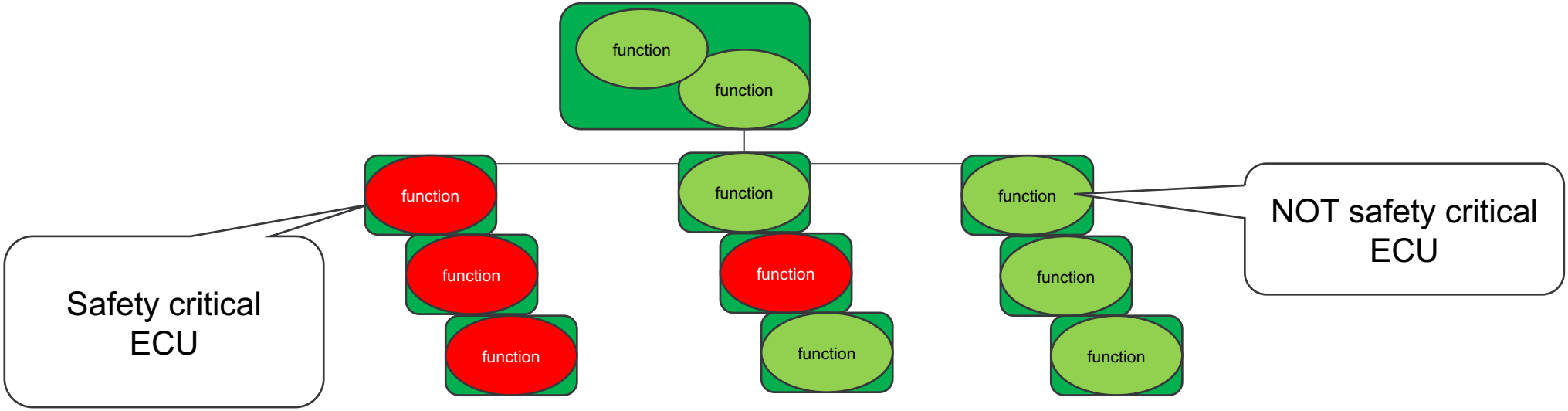
CLASSIC REALITY

CLASSIC AUTOMOTIVE FUNCTIONS

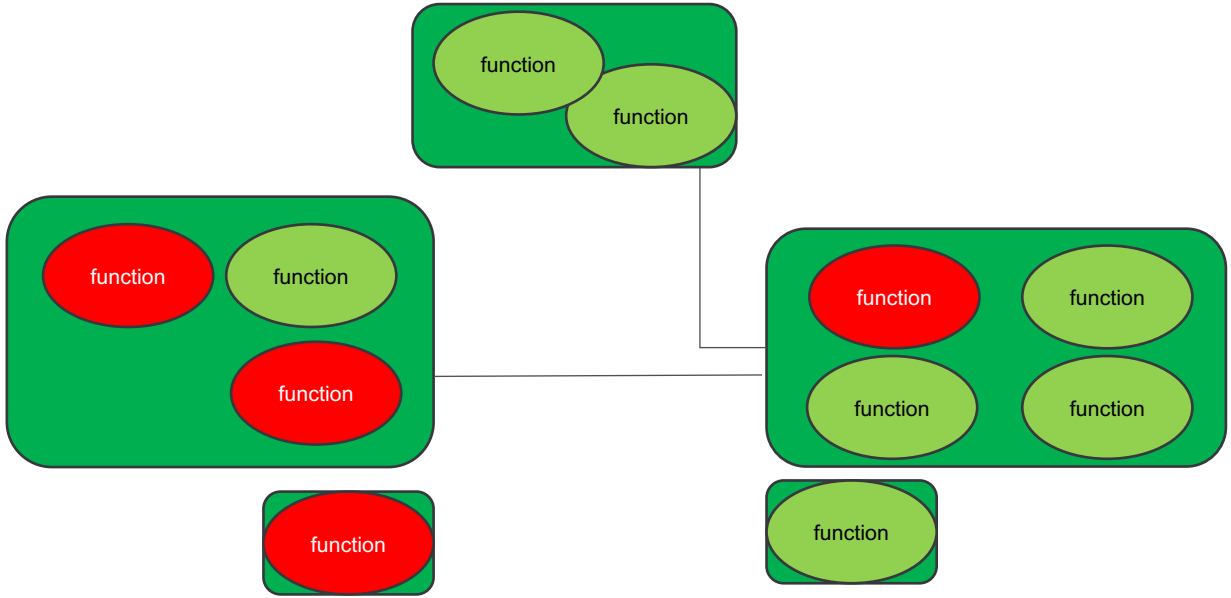
ANALOGY ….Function is a specific Movie, a VCR that **ONLY** plays **ONE** video

ECU: Electronic Control Unit

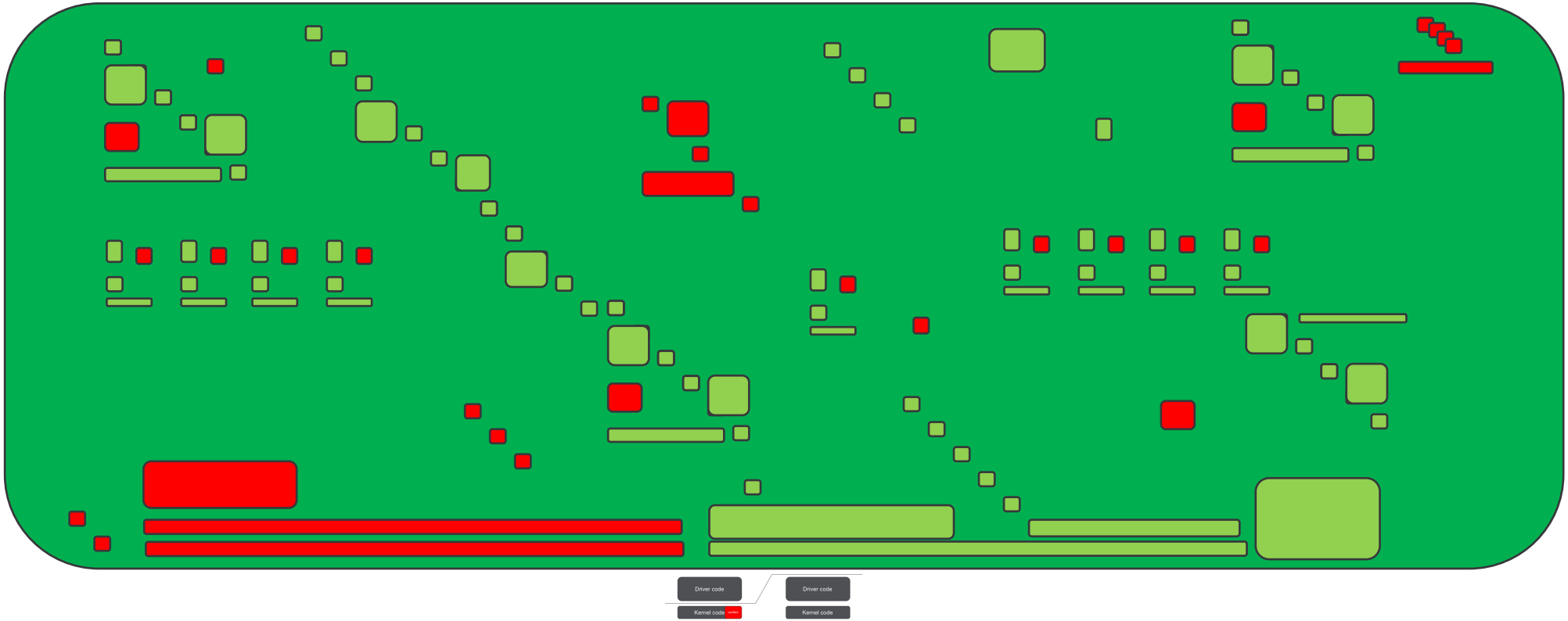
CLASSIC AUTOMOTIVE



CLASSIC AUTOMOTIVE EVOLVING



PERSPECTIVE: REALITY



DO NOT FORGET THAT....

“Reality is the actual problem, do not simplify it too much.”

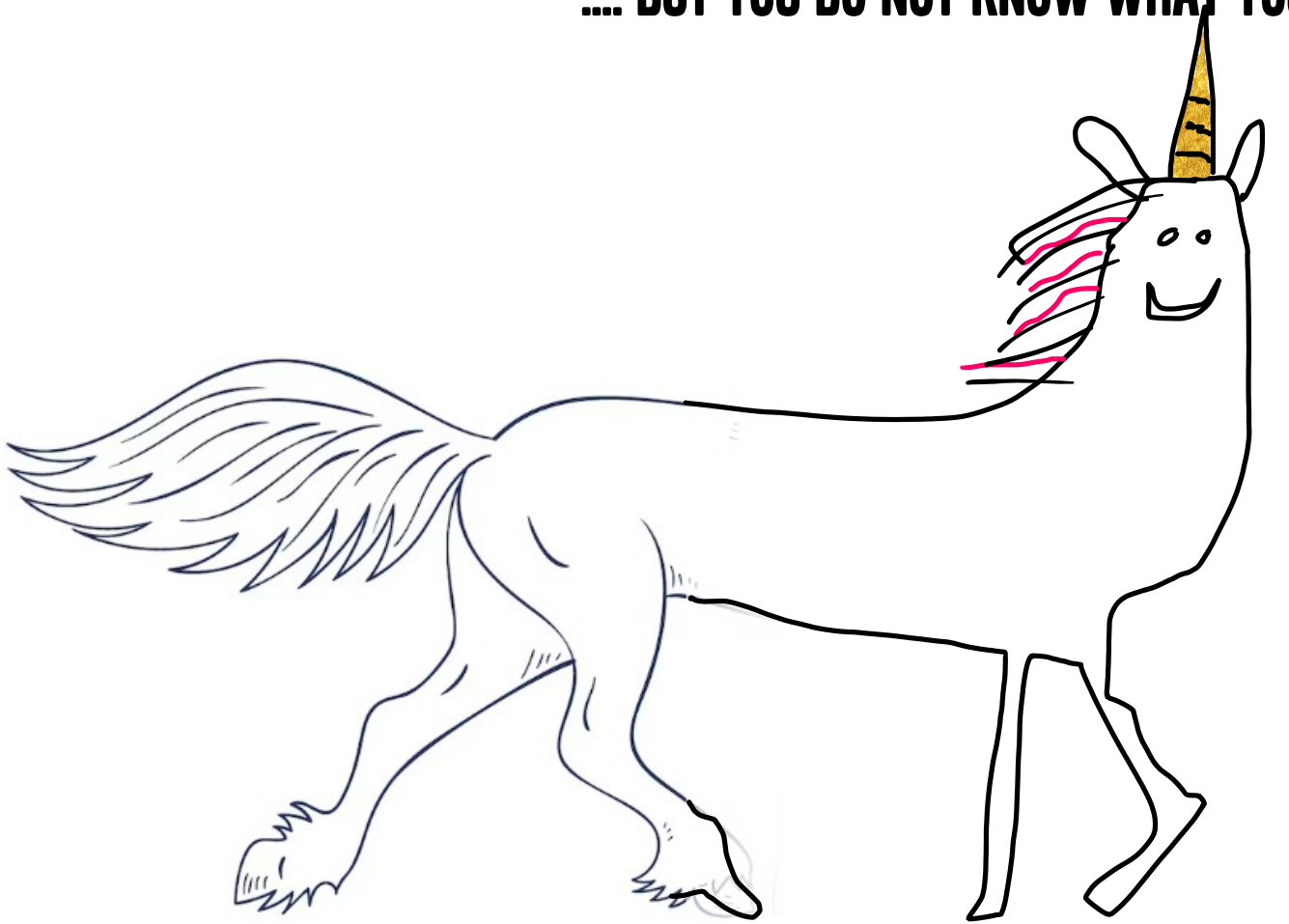
Mike Acton have a really good presentation explaining how one need to address DATA
** Quote from Mike Acton in: https://www.youtube.com/watch?v=rX0ItVEVjHc ,CPPcon2014*

THE STORY ABOUT THE MYTHICAL TOP DOWN AND BOTTOM UP HORSEPOWER

BOTTOM UP IS WHEN YOU KNOW HOW IT WORKS ...

?

.... BUT YOU DO NOT KNOW WHAT YOU WANT



TOP DOWN IS WHEN YOU KNOW WHAT YOU WANT ...

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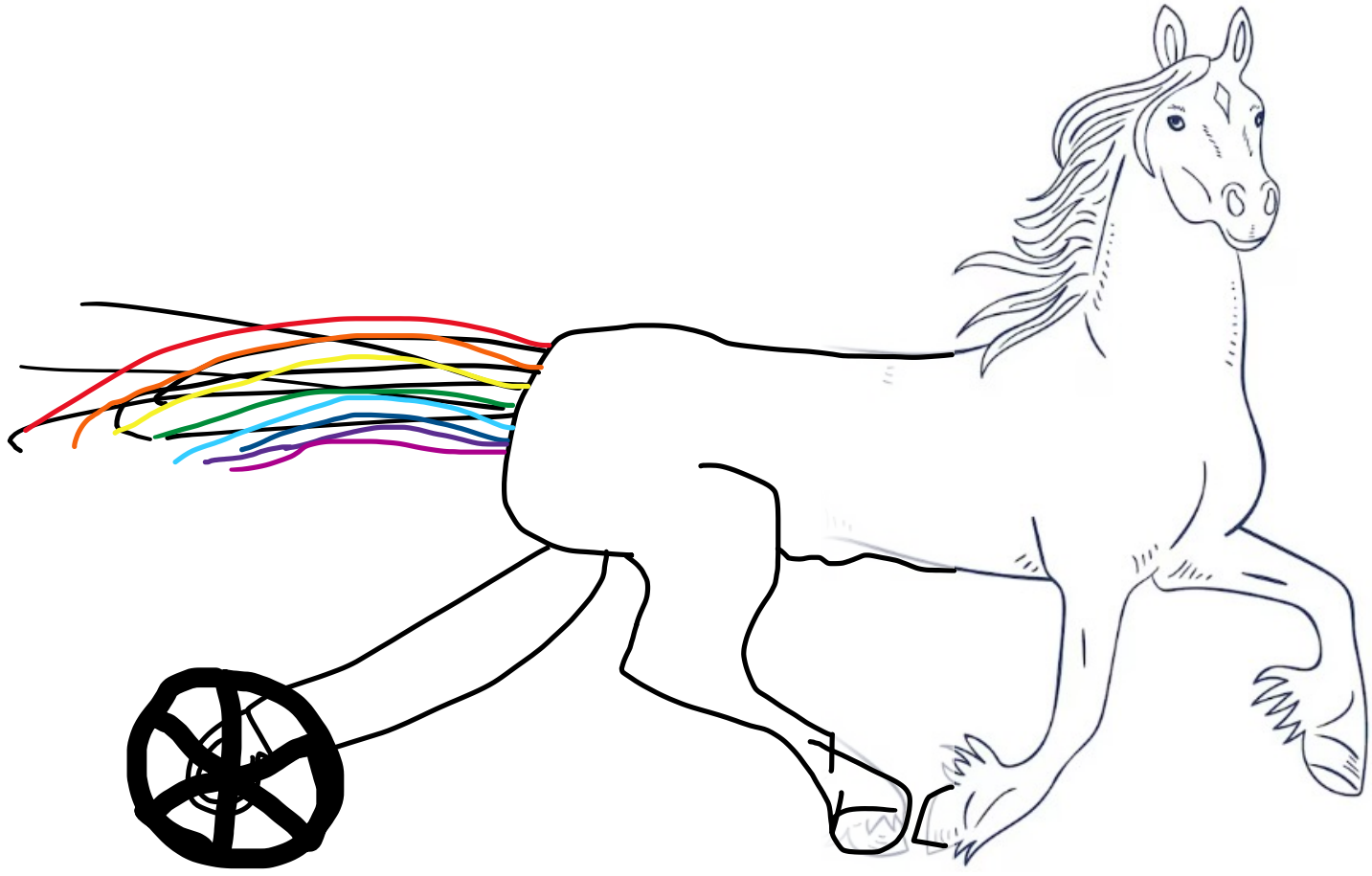
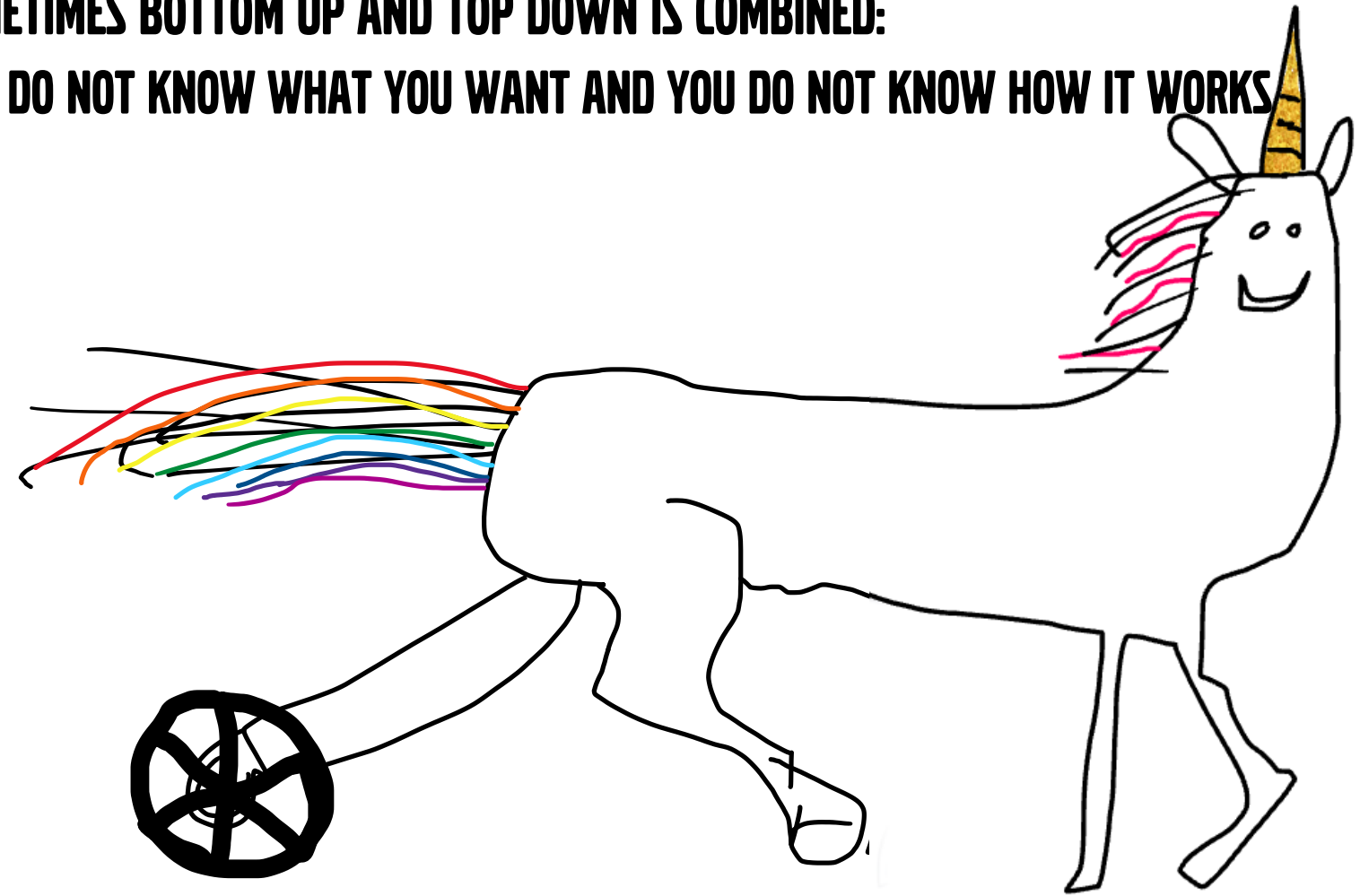


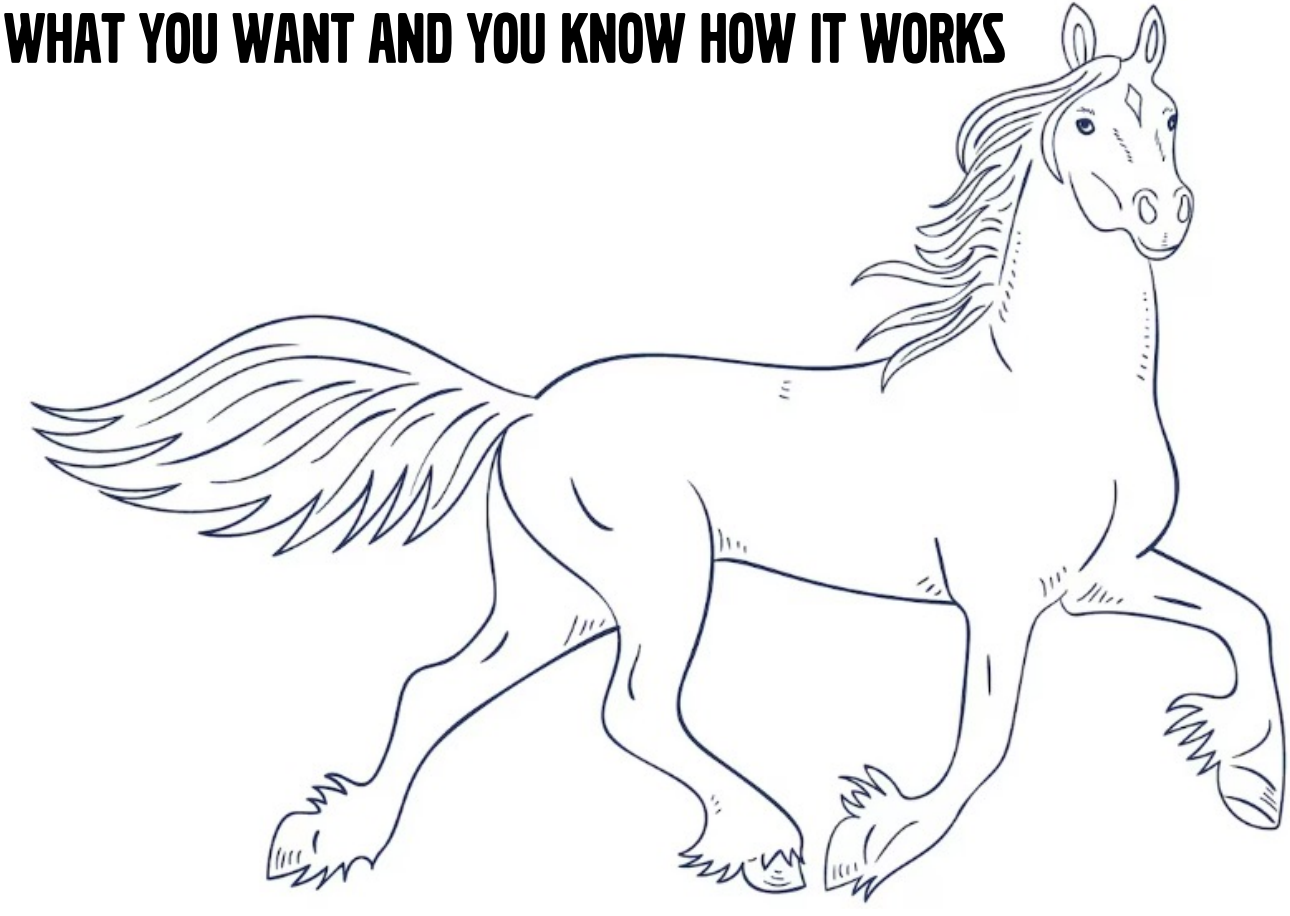
SOMETIMES BOTTOM UP AND TOP DOWN IS COMBINED:

YOU DO NOT KNOW WHAT YOU WANT AND YOU DO NOT KNOW HOW IT WORKS

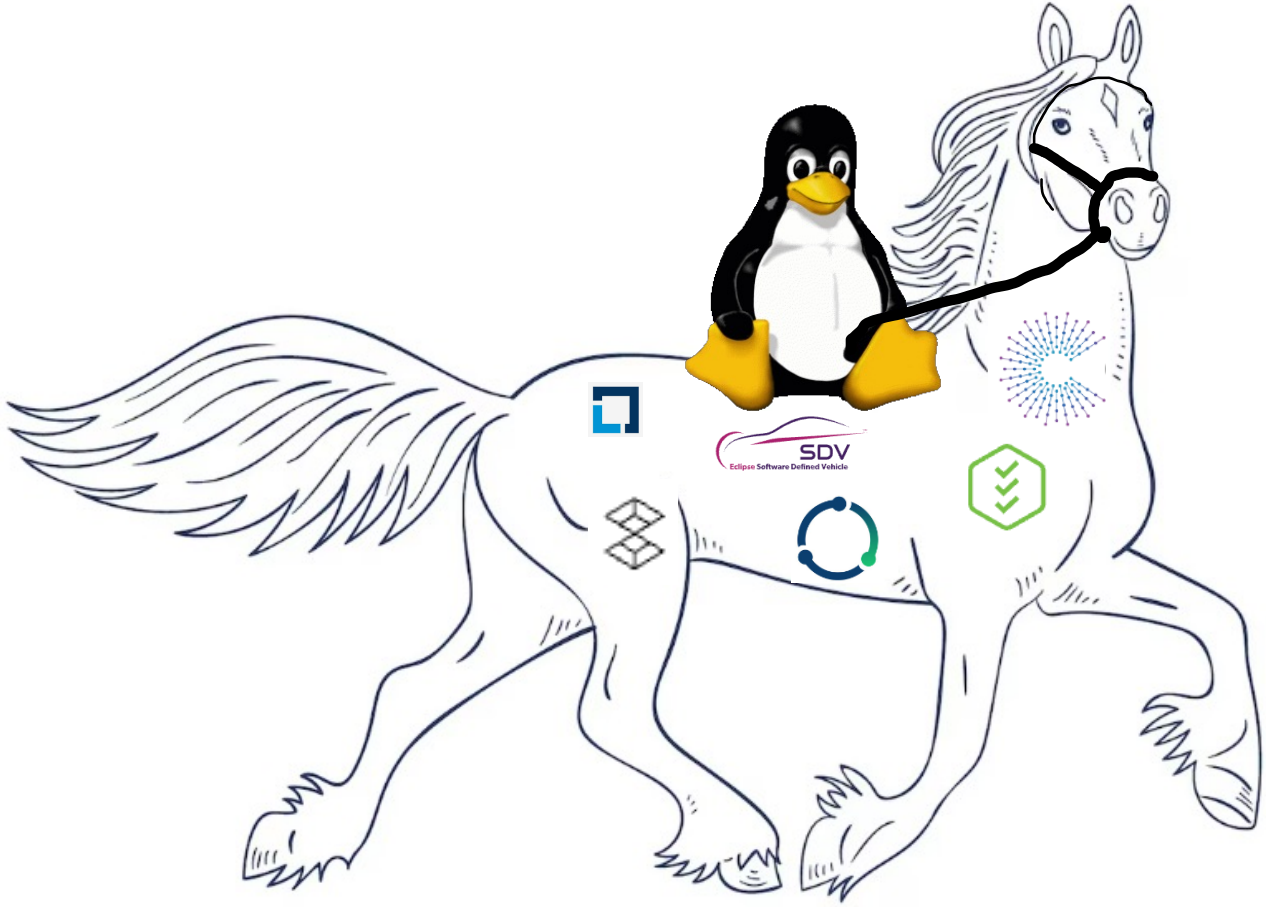


WE NEED TO MOVE TO A WANTED STATE: THE ULTIMATE HORSEPOWER

YOU KNOW WHAT YOU WANT AND YOU KNOW HOW IT WORKS



OPEN SOURCE FOUNDATIONS CAN CREATE A SAFE ARENA BETWEEN COMPANIES AND COMMUNITIES



COLLABORATION SAFE HOUSE

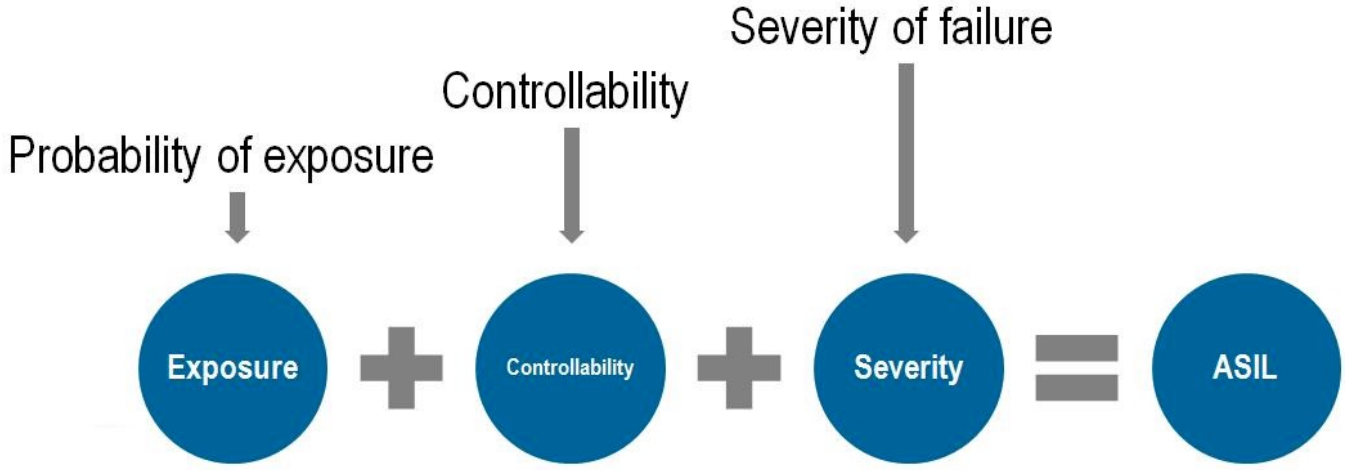
”OSS Foundations can provide a safe space for companies to collborate on shared standards and building blocks, overcoming conservative culture and risk aversion that might otherwise inhibit collaboration.”

Open source SW in Automotive industry – Vision paper from Eclipse SDV and EU

SAFETY

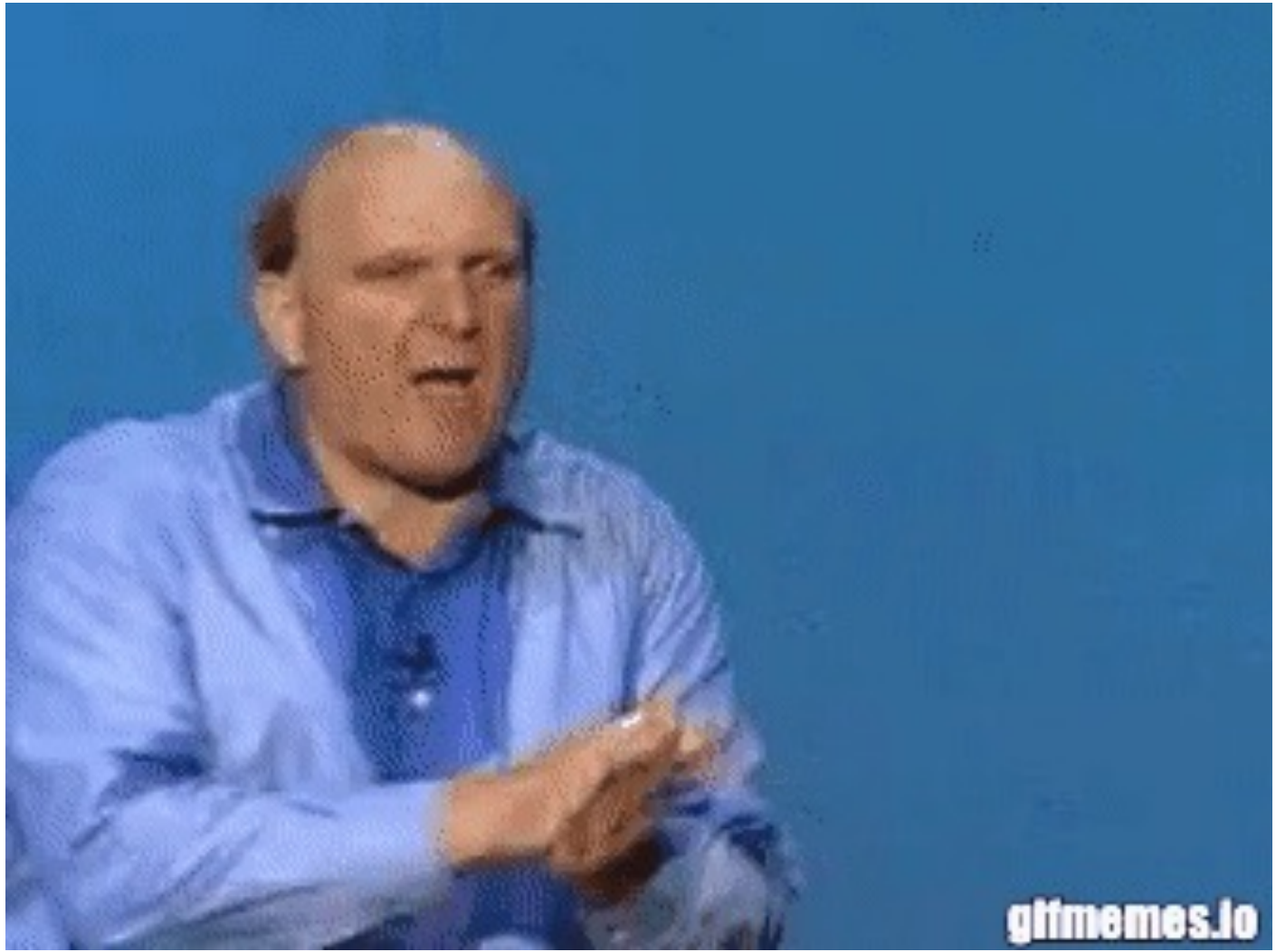
Disclaimer: I Am Not A Safety Engineer….IANASE

SYSTEM SAFETY IN AUTOMOTIVE (ISO 26262 AND MORE)

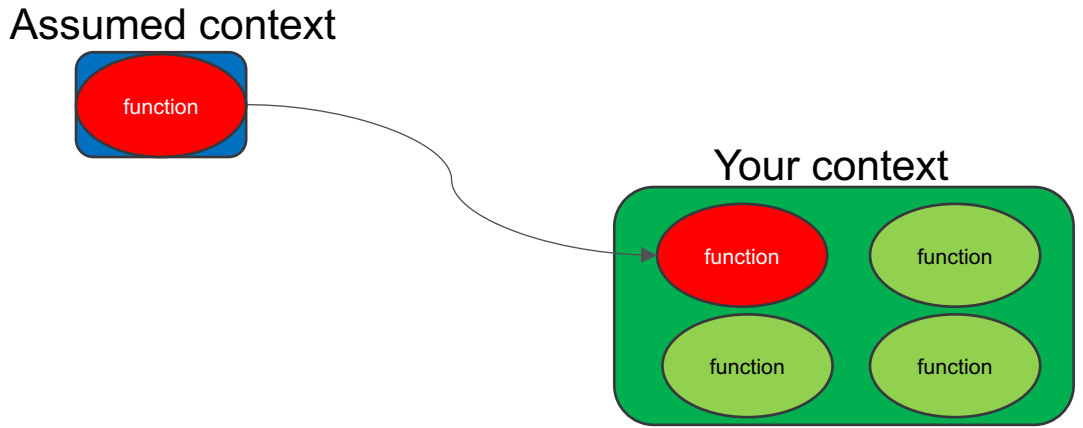


ISO26262 is NOT a prescriptive Standard…

Know what you are doing!


gifmemes.io

CHALLENGE : SAFETY ELEMENT OUT OF CONTEXT (SEOOC) BEST PRACTICES



"Safety Element is a HW, SW or System Element that is Safety relevant. When we say "Safety relevant", it means that it is in some way contributing to achieving or violating the Safety goal."

https://www.functionalsafetyfirst.com/2020/10/what-is-safety-element.html

Bottom Up

https://www.functionalsafetyfirst.com/2020/10/seooc-for-dummies.html

SAFETY ELEMENT OUT OF CONTEXT (SEOOC)

Just because it is tested OUT OF YOUR context does not necessarily make it safe IN YOUR context.

THIS IS NOT THE. **SYSTEM SAFETY MANUEL** WE ARE LOOKING FOR.....

THE SYSTEM SAFETY MANUAL

- States the Safety Goal and intended functionality
- Describes Howto integrate a SEooC correctly in a safe way.
- Check if assumptions in the Safety manual match your system's requirements.

Best practices:

- **Assign qualified Safety professionals**
- **Treat Assumptions as requirements**
- **Deeply understand each assumption**
- **Read all supporting tech docs**
- **Start Early**

https://www.functionalsafetyfirst.com/2020/11/what-is-safety-manual.html

SEOOC INTEGRATION CHALLENGE ANALOGY

- Medicine

SEOOC INTEGRATION CHALLENGE ANALOGY

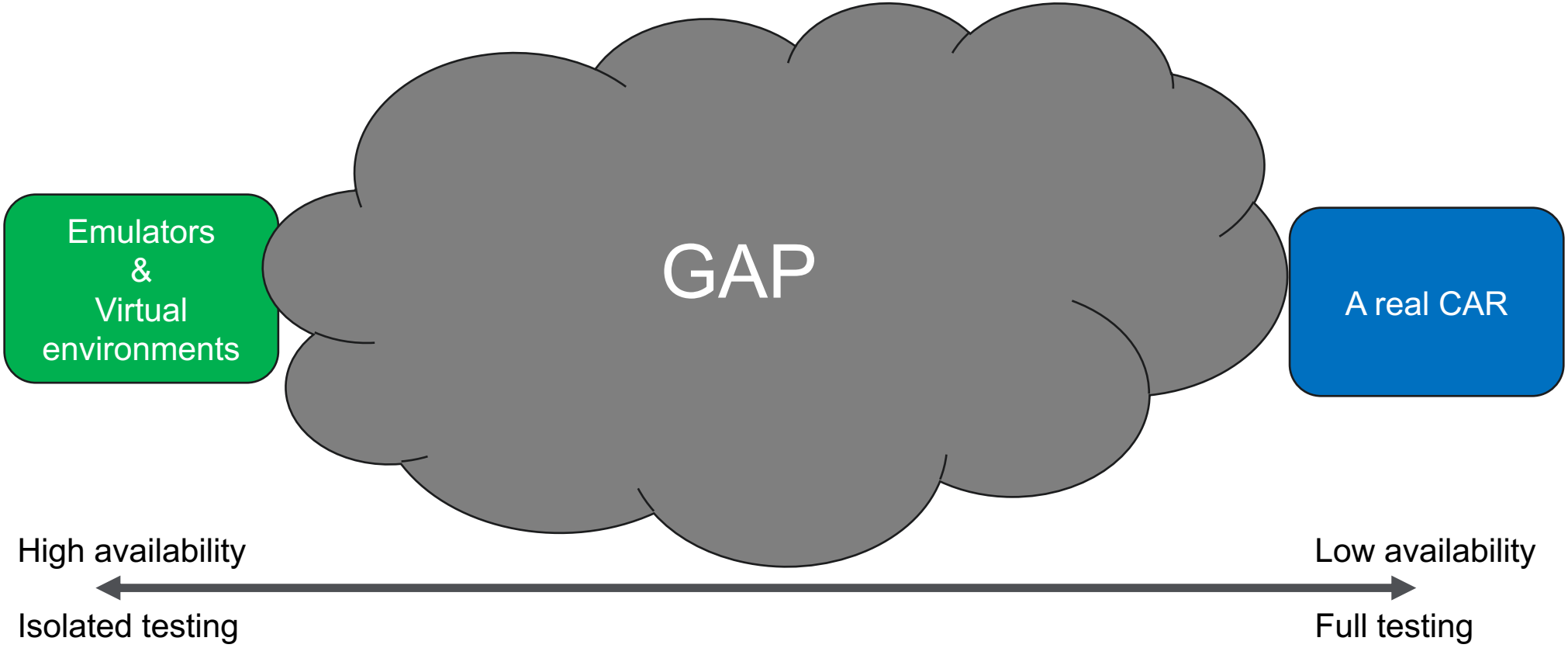
- Medicine

“Reality is the actual problem, do not simplify it too much.”

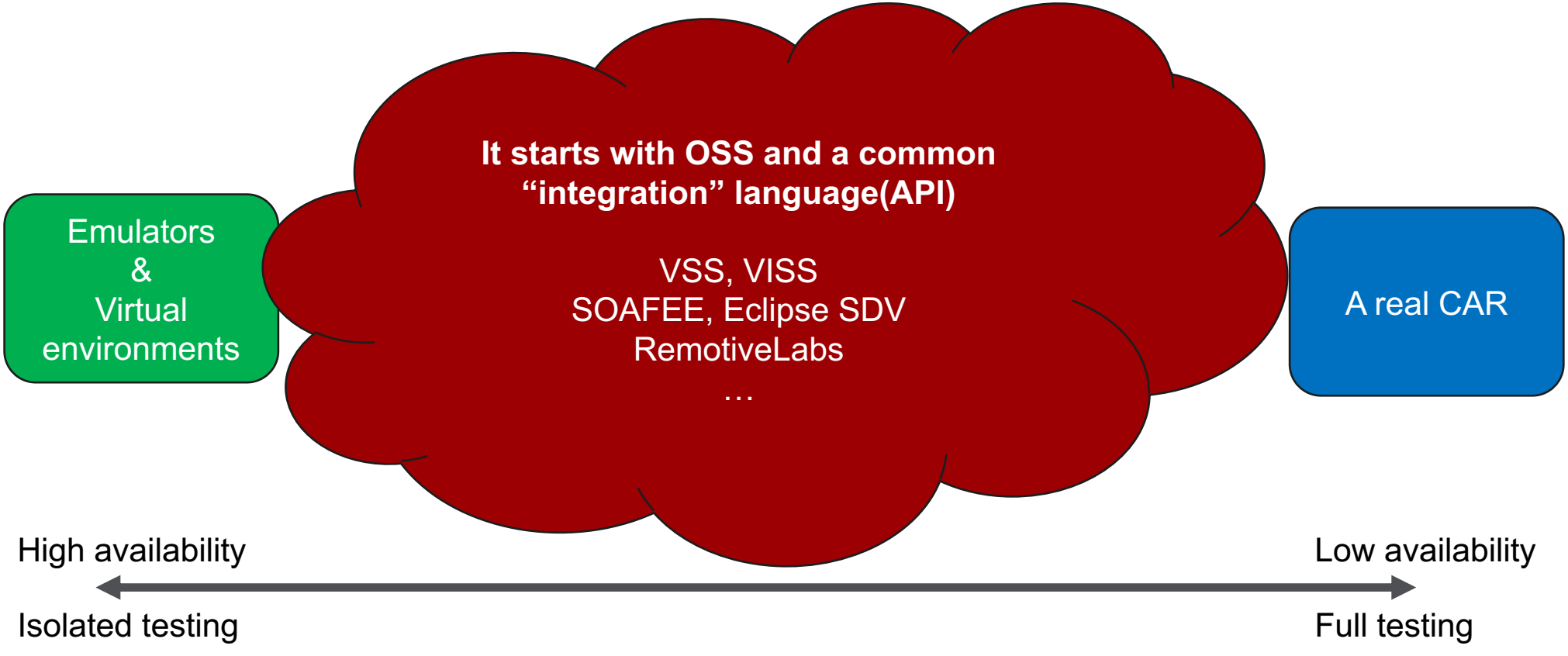
...

Integration is a huge challenge

FIND PROOF OF SAFETY



PROOF OF SAFETY



THE SDV SAFETY CHALLENGE

It is a great effort to achieve a certification once, maintaining it is magnitudes harder

SO...

How can we make sure everyone is safe in traffic?

SO...

How can we make sure everyone is safe in traffic?

In 1959, Nils Bohlin at Volvo Cars invented the V-type three-point safety belt and It proved to be a real lifesaver and Volvo Cars took the brave decision to “Open Source” the patent to **ensure that everyone could be safer in traffic.**

THE DIGITAL SAFETY BELT

1010011

100100

THE DIGITAL SAFETY BELT

A COLLABORATIVE culture and an OPEN SOURCE MINDSET will be the new DIGITAL SAFETY BELT assuring the highest level of SW quality. More Openness and collaboration in order to solve the huge complexity we put ourselves into and try to keep it as simple as possible. Keep assumed context and real context closer.

MY TAKE ON THE DIGITAL SAFETY BELT

We do not find any pleasure in others being worse when it comes to public safety.

We all share the same roads

THE DIGITAL SAFETY BELT

Stay Safe

END