

CLOUDS, CONTAINERS, AND YOUR SIMULATIONS & VIRTUAL PLATFORMS

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DAC 2019 - DESIGNER - ESS TRACK

A background image of a bright blue sky filled with fluffy white clouds. The clouds are scattered across the frame, with a larger, more prominent cloud in the upper left corner.

CLOUD – WHAT'S THE POINT?

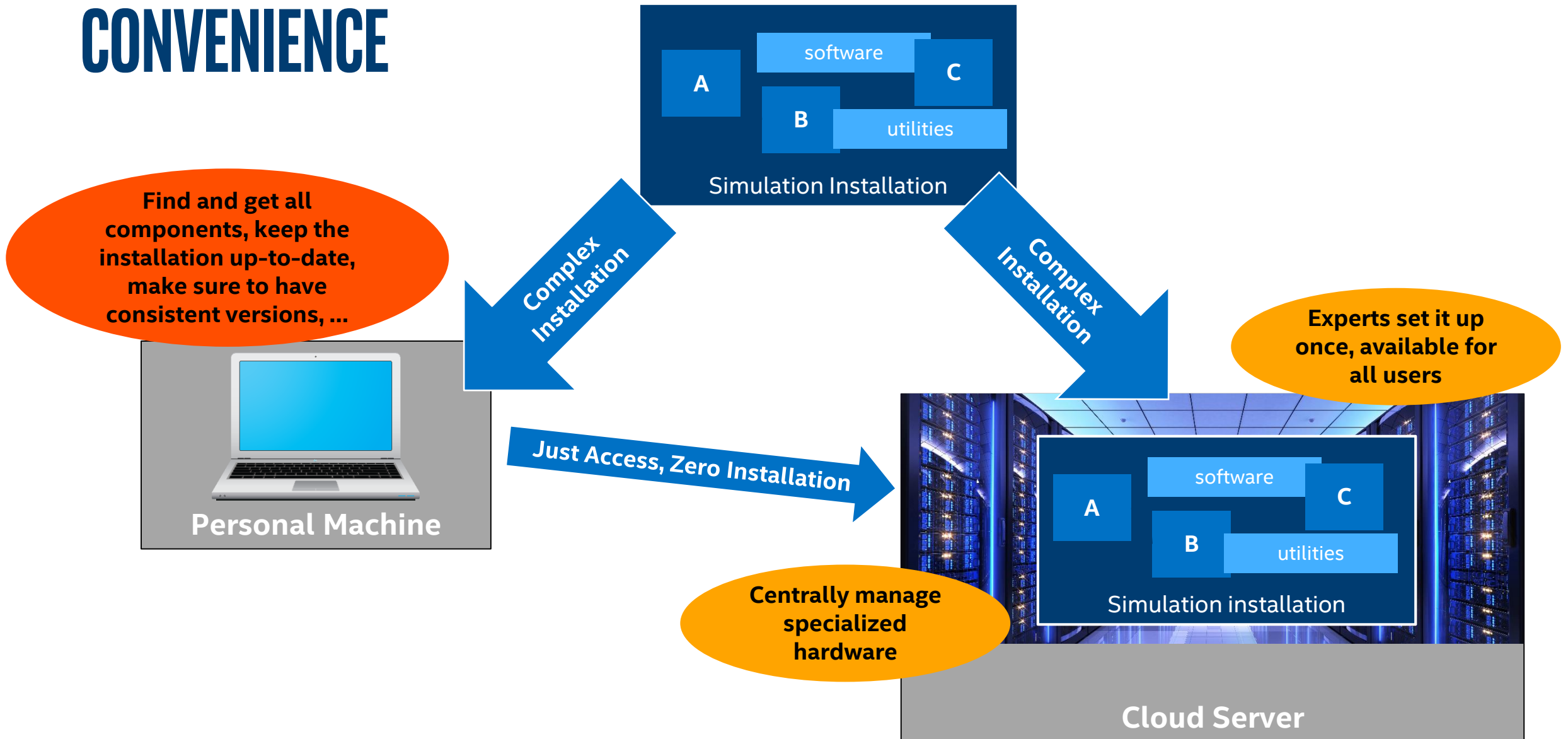
CAPACITY



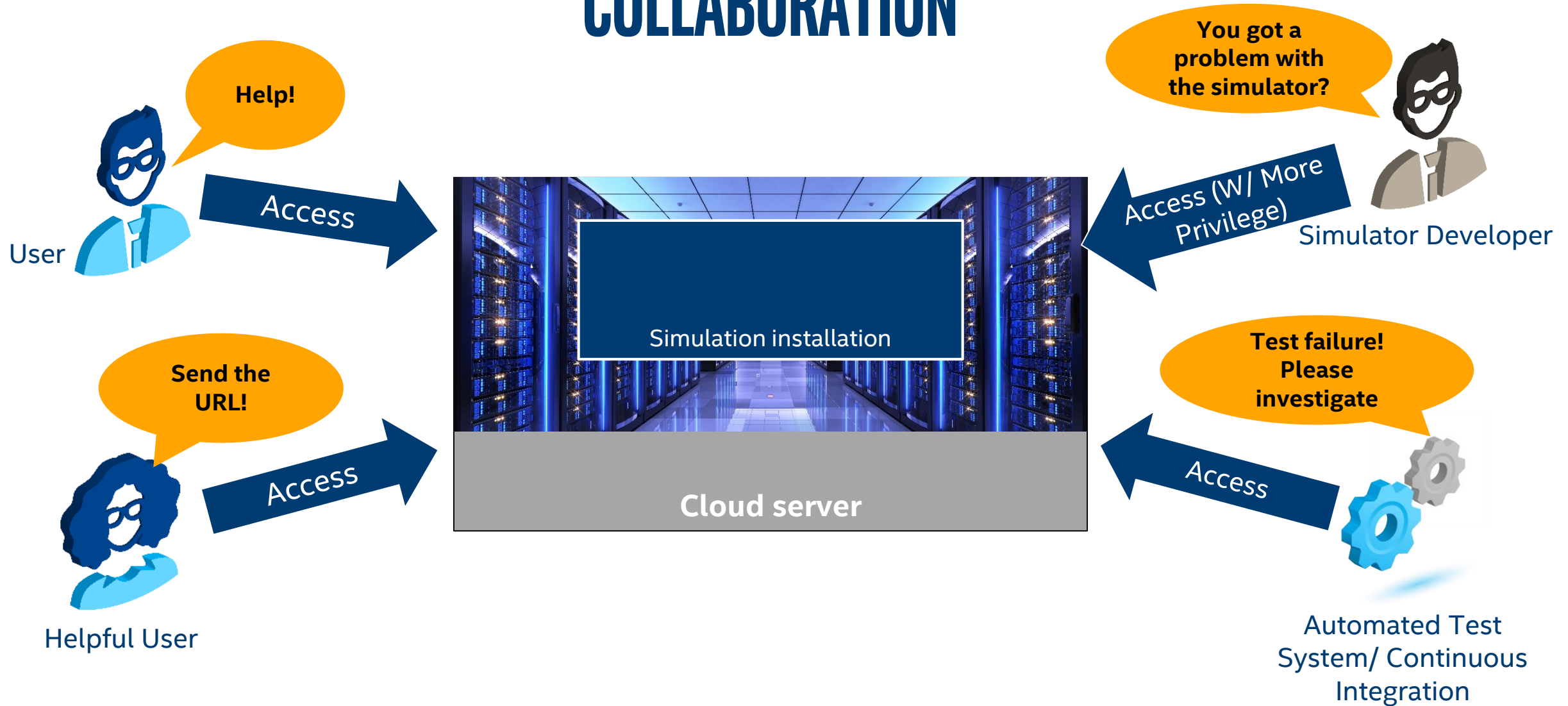
Cloud =
somebody else's
computer



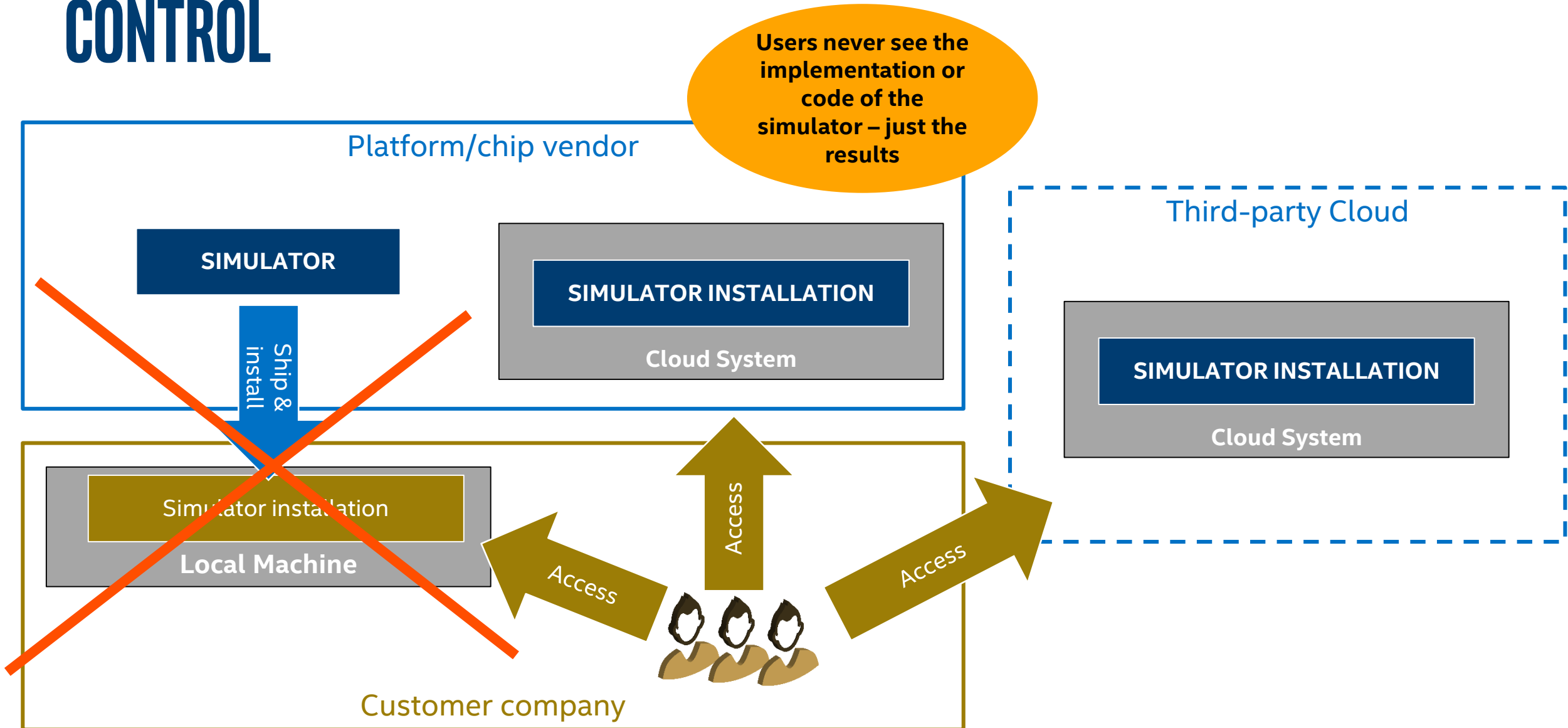
CONVENIENCE



COLLABORATION



CONTROL



The background of the image is a bright blue sky filled with soft, white, fluffy clouds. The clouds are scattered across the frame, with a larger, more prominent cloud in the upper left quadrant. The overall lighting is bright and even, suggesting a clear day.

CLOUD – HOW DO YOU DO IT?

CLOUD SERVICE == [EDA] SIMULATION?

Social media sites, search engines, question-and-answer sites, booking sites, customer relationship management, web mail, ...

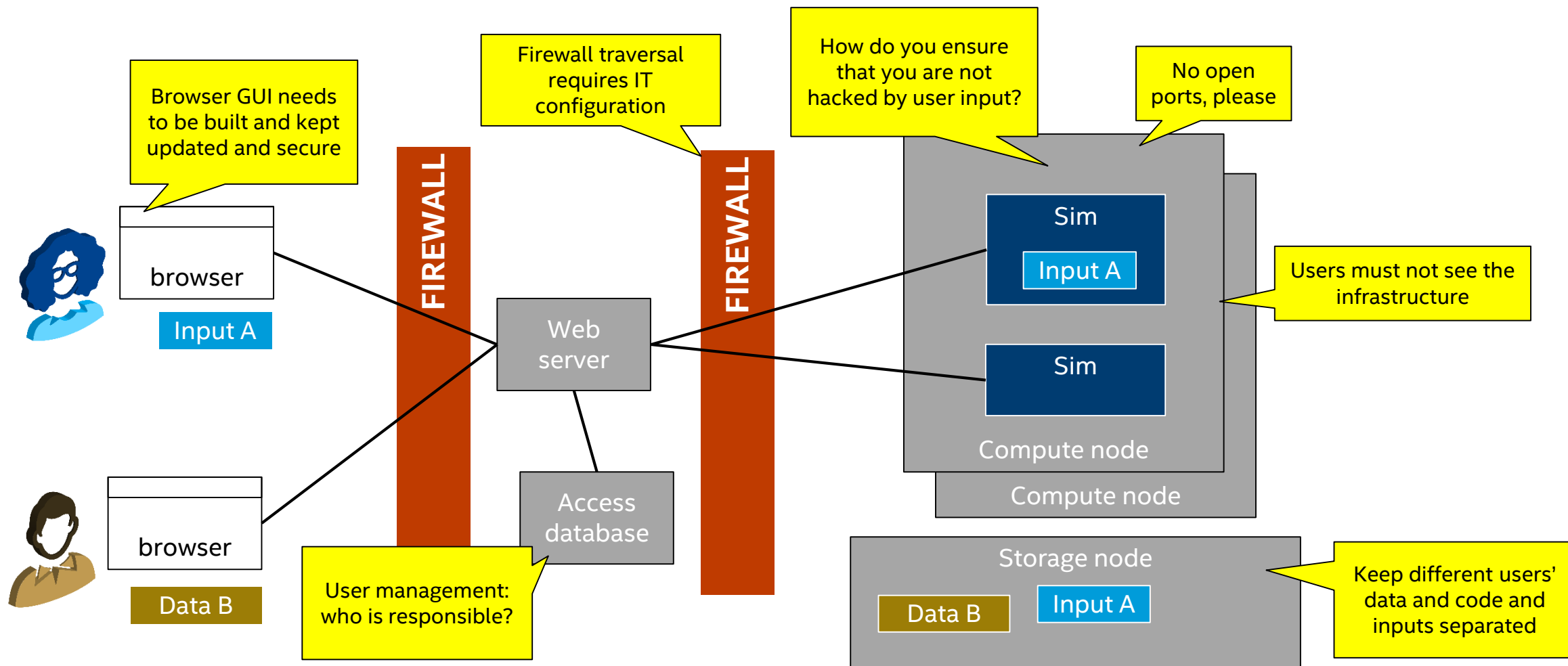
- Interactive
- Short bursts of activity
- Performance affected by interactions, networks, dependency chains between micro-services, database lookups, s...
- Homogeneous portable workloads

Simulations, virtual platforms, validation runs, ...

- Interactive – and batch mode
- Potentially very long runs
- Host compute performance often the most important performance factor
- Might require specific hardware resources like emulators, FPGAs, special I/O cards, ...

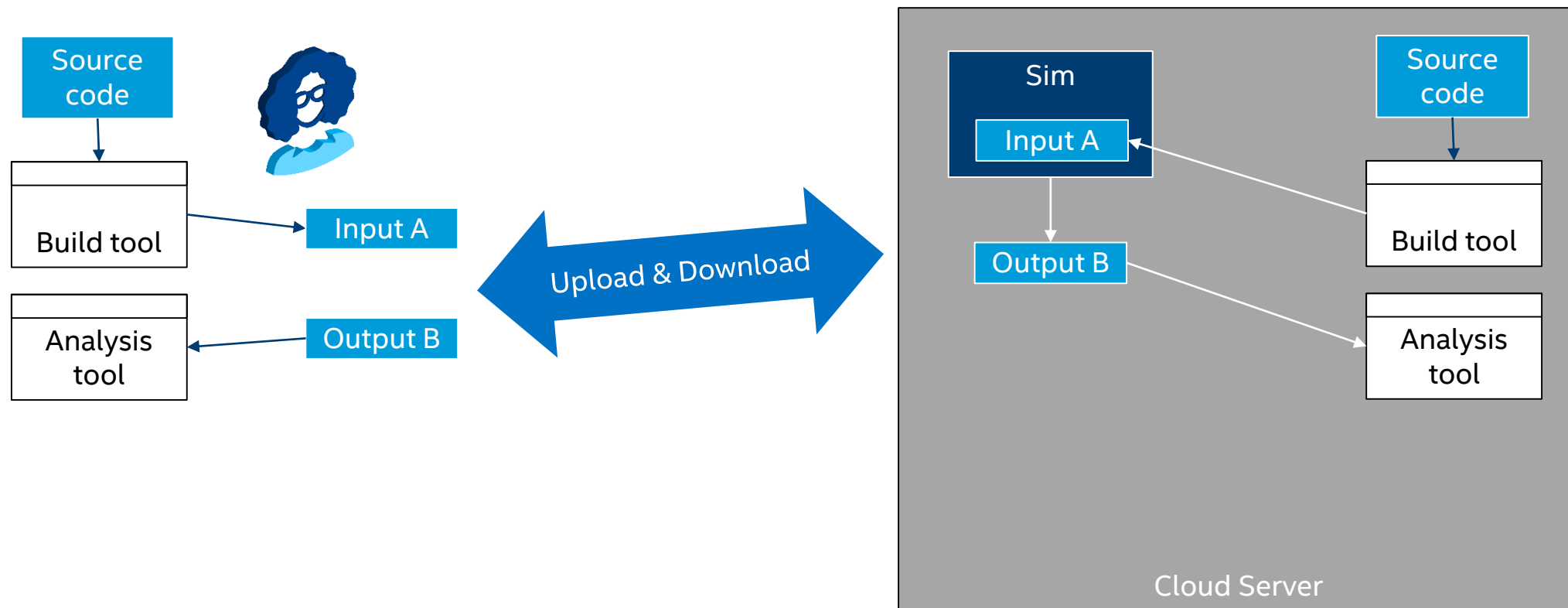
Is this a web application or dial-in to the mainframe?

CYBERSECURITY & COMPLIANCE



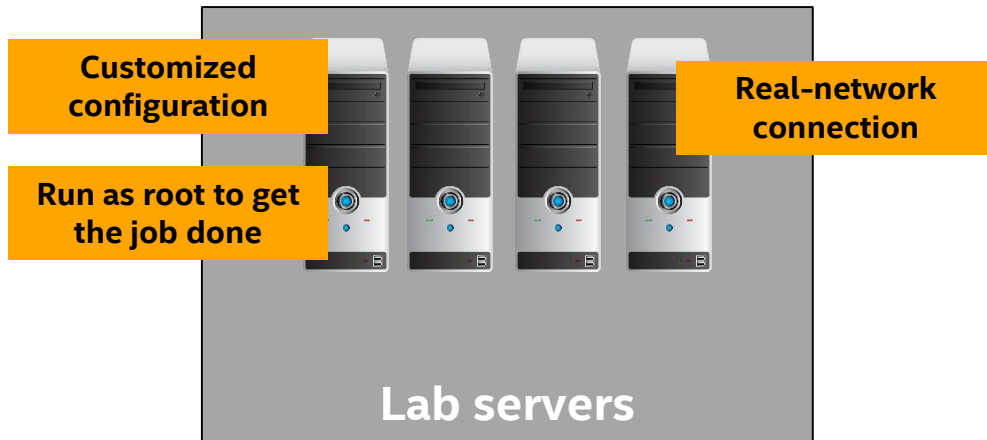
Are you sure you want to run a web application?

COMPUTATION AND DATA LOCATION



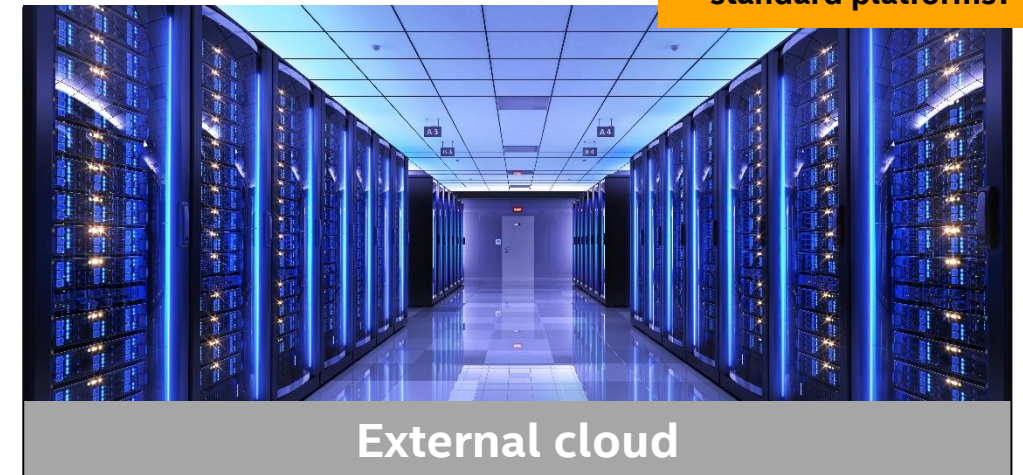
Does it make sense to upload and download gigabytes? It might kill all efficiency...

CONTROLLED BY ~~IF~~ NOT YOUR TEAM



Share custom hardware?

Use homogeneous standard platforms?

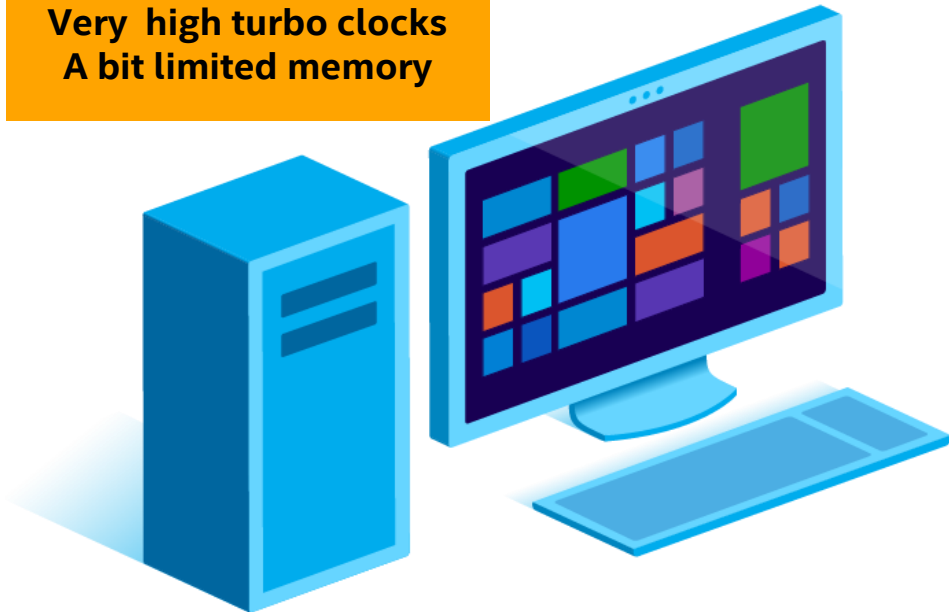


You can do what you want

Follow the policies and rules designed for ...

COMPUTE POWER?

**Few cores
High base clocks
Very high turbo clocks
A bit limited memory**



Optimal for latency

**Many cores
Lower base clocks
Lots of memory
Lots of disk**

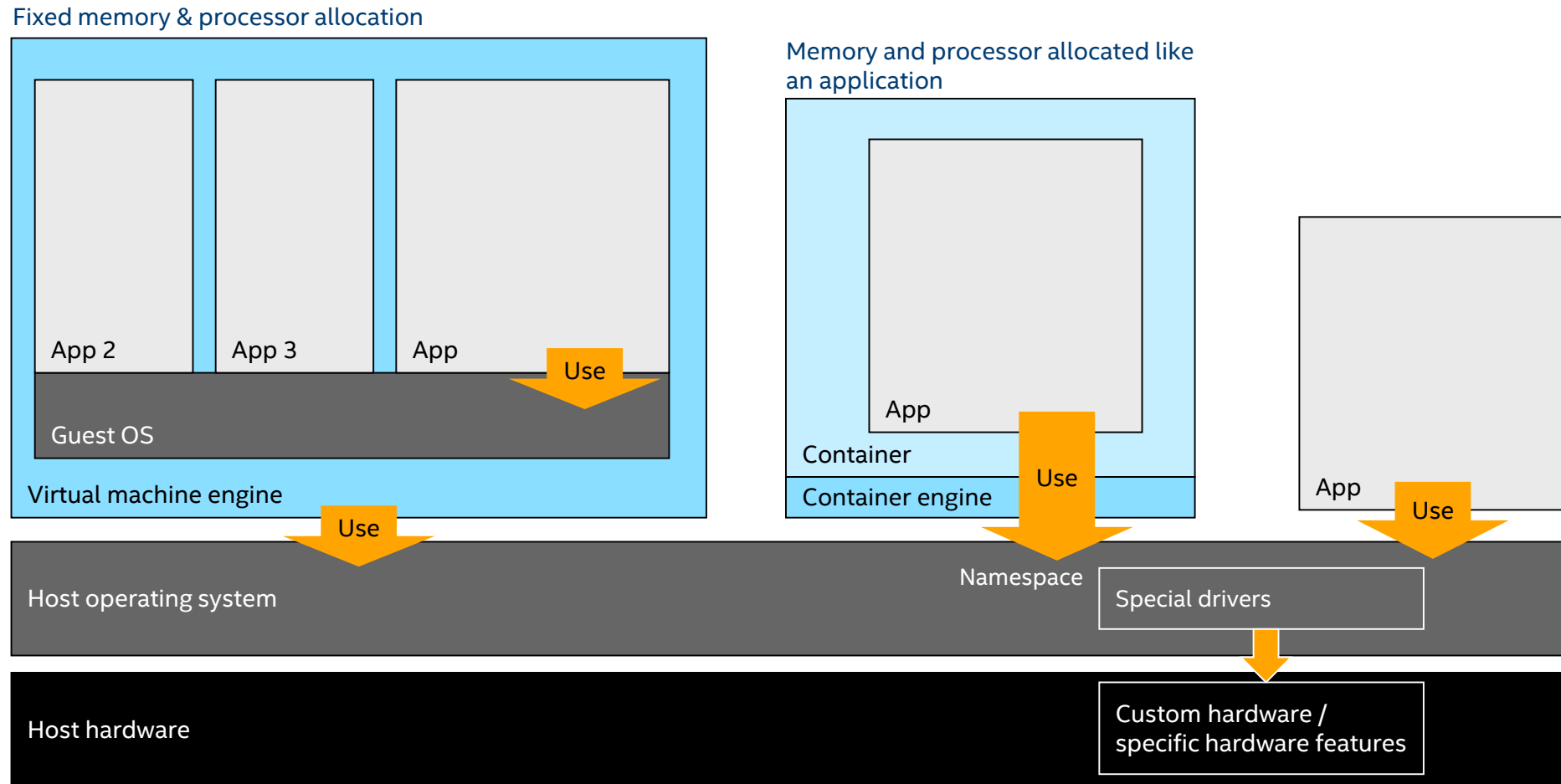


Optimal for throughput

A large orange shipping container is suspended in the air by several black cables, likely from a crane. The container is positioned in the upper center of the frame. Below it, there are stacks of other shipping containers in various colors including blue, red, yellow, and green. The background is a clear blue sky with some light clouds. The word "CONTAINERS" is written in large, white, bold, sans-serif capital letters across the middle of the image, partially overlapping the orange container and the stacks below.

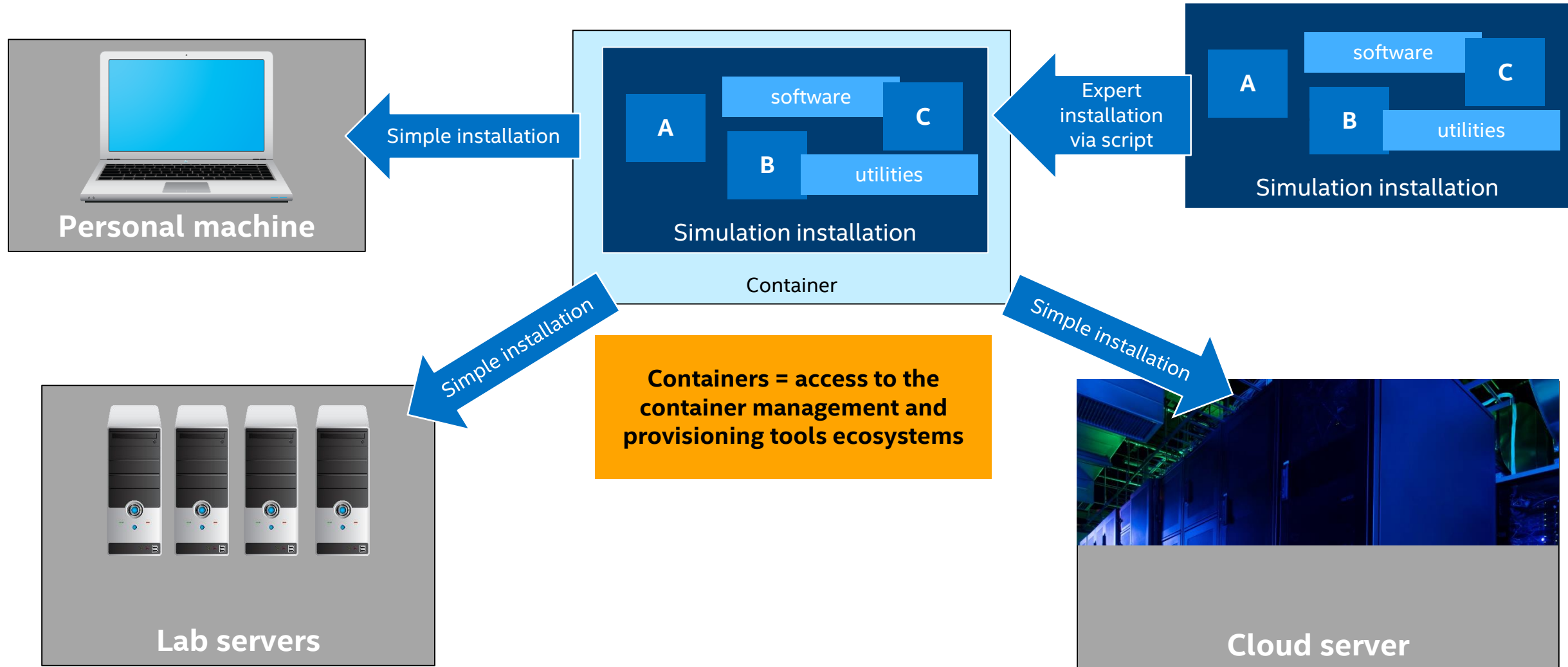
CONTAINERS

CONTAINER CONCEPT

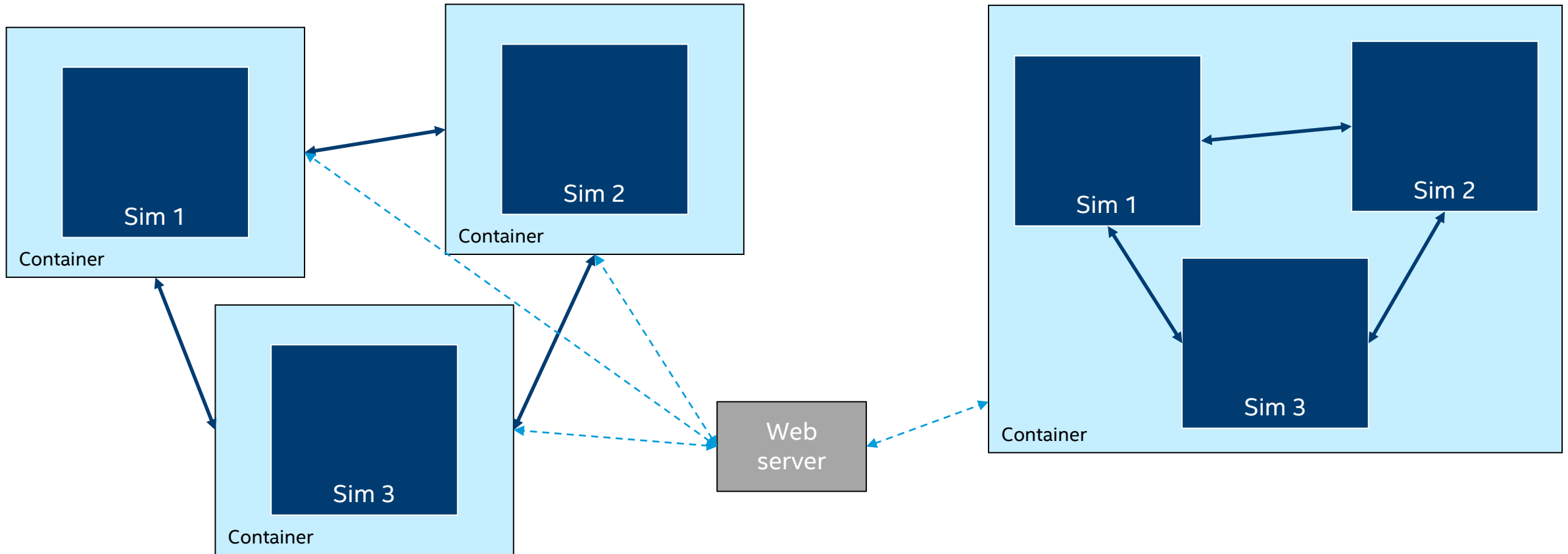


Containers offer a nice compromise between containment and efficiency

CONTAINER – INSTALLATION AND SHARING SIMPLIFIED



CONTAINER - PACKAGING SIMULATION SETUPS



“Microservices”

“Bundled”

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CONCLUDING REMARKS

CONCLOUDING REMARKS

Cloud makes sense for many EDA applications

Scale **capacity**, provide **convenient** access, **control** access, facilitate **collaboration**

Huge ecosystem of tools and libraries and flows available for reuse

Cloud is not magic – it is just running stuff on somebody else's computer...

Running a service is not the same as shipping packaged software – web software is a whole new world

