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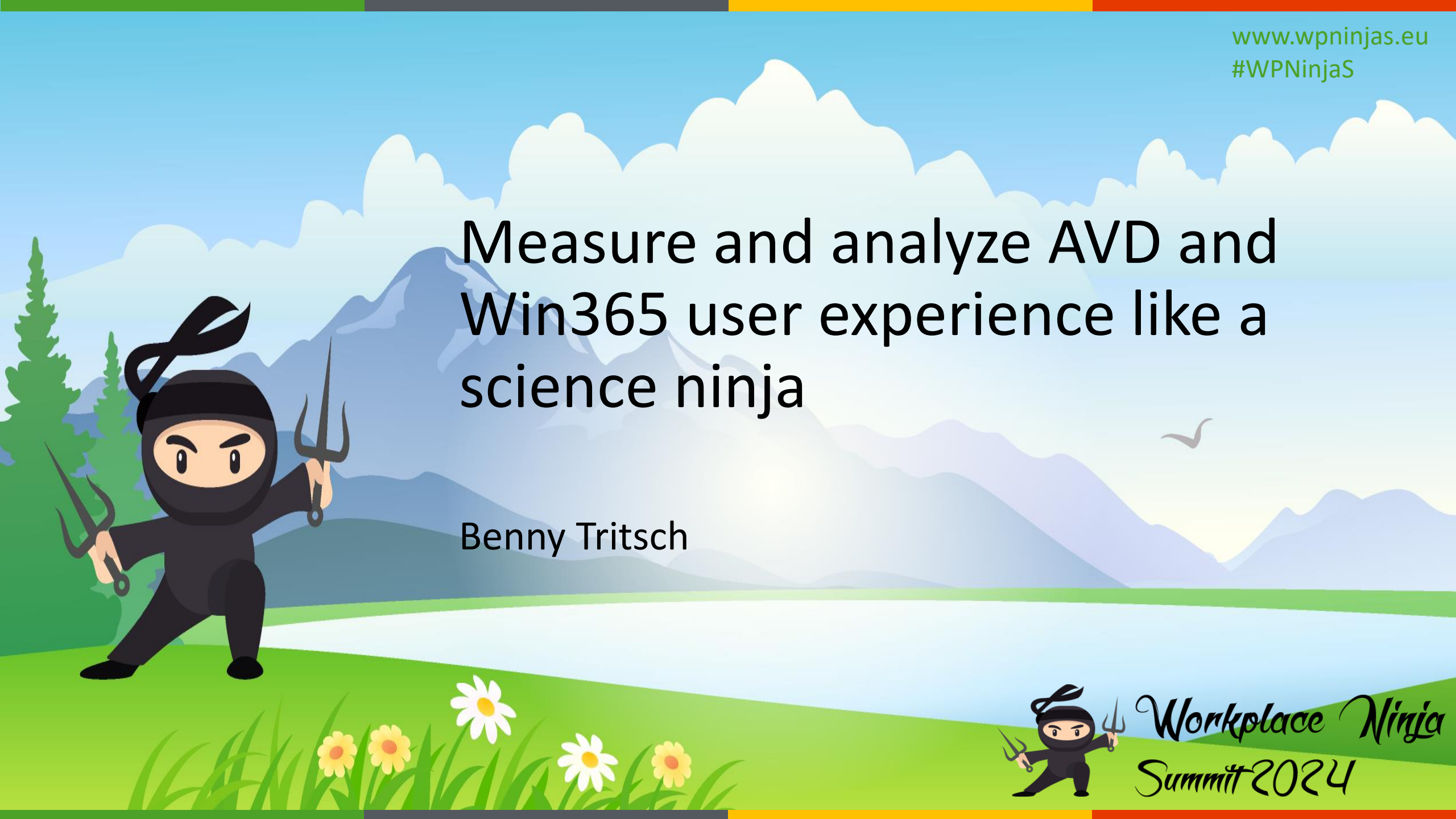
Measure and analyze AVD and Win365 user experience like a science ninja

Benny Tritsch



Workplace Ninja Summit 2024

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IT Security & Defense

About Benny Tritsch

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Focus

EUC Evangelist and Chief Scientist
Parallels RAS Product Manager

From

Dr. Tritsch IT Consulting, Germany

My Blog

https://drtritsch.com
https://eucscore.com

Certifications

Microsoft MVP, Omnissa Tech Insider,
Citrix CTP , NVIDIA NGCA

Hobbies

DEX benchmarking and building the
EUC Score toolset for the community

Contact

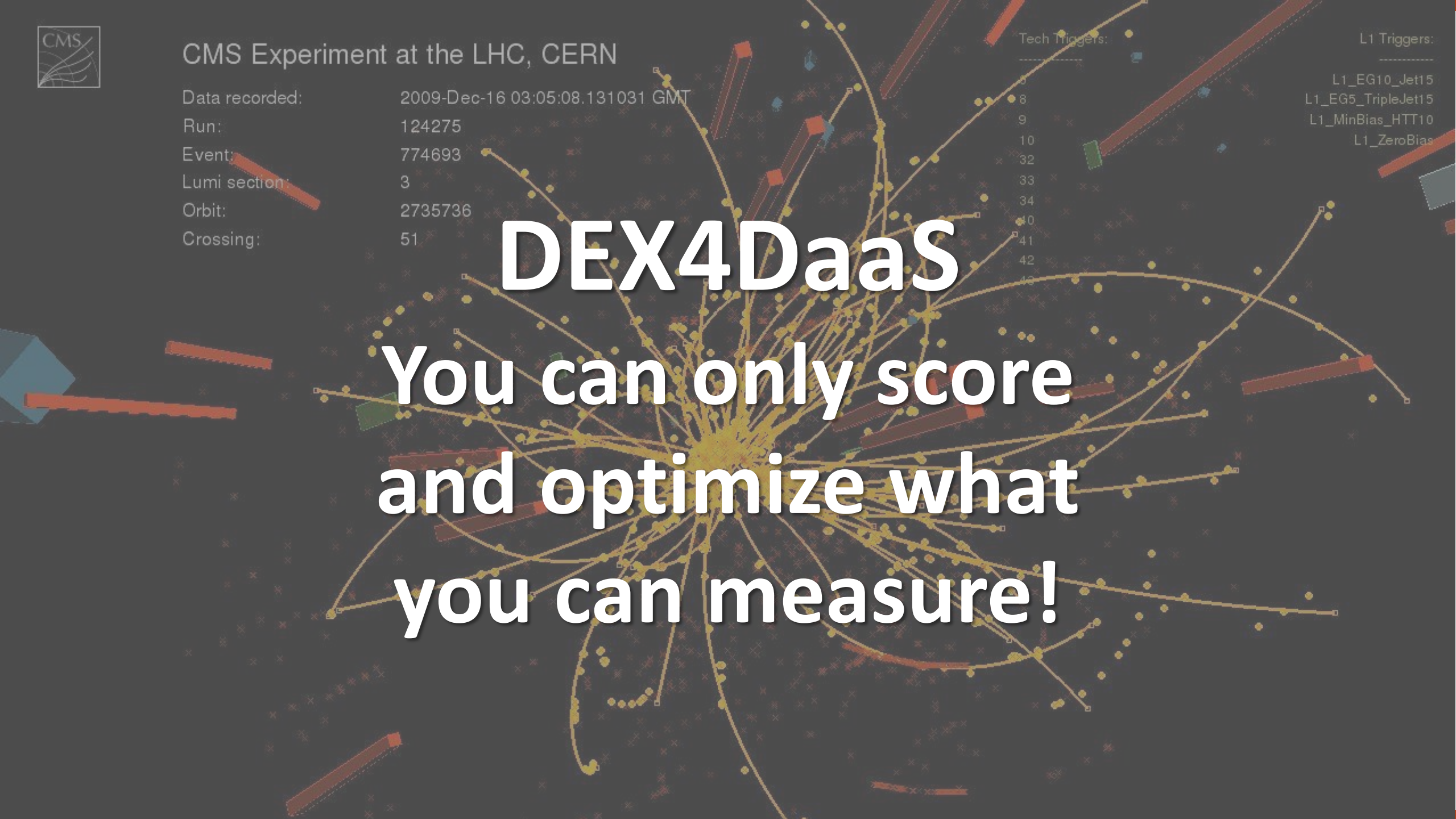
info@eucscore.com

Agenda

- The science of Digital Workplace benchmarking and why it's needed
- Measuring perceived user experience and defining quality criteria
- How to build your own user experience test lab
- Testing and comparing physical machines, AVD VMs and Windows 365
- Analyzing and interpreting test results

Key takeaways:

- Scientific methods used for Digital Workplace benchmarking
- Real AVD and Windows 365 benchmarking results
- How to run your own benchmarking tests



DEX4DaaS

You can only score and optimize what you can measure!

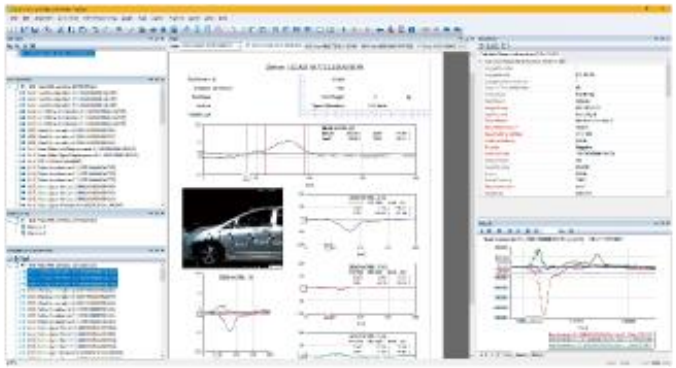

0:00.000
Official Time
60
80
40
100
20
120
5
km/h
0
140
0 m
400 kg
300 kg
200 kg
100 kg
0kg
-50 kg
1.0g
G-Force
Steering
Julian von Schleinitz/ Felix Loch 2018
-30
0
30
-60
60
-90
90
-120
120
Roll Angle

Automobile Safety Rating

- **US NHTSA** - Department of Transportation
- **US IIHS** - Insurance-industry-backed nonprofit organization
- **Euro NCAP**

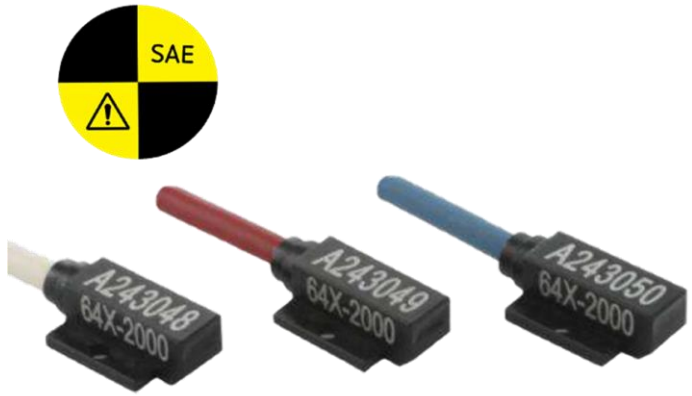
Test Scenario Examples

- Frontal crash test
- Side barrier crash test
- Side pole crash test
- Rollover resistance test



Crash Test Analysis Software

High-Speed Camera

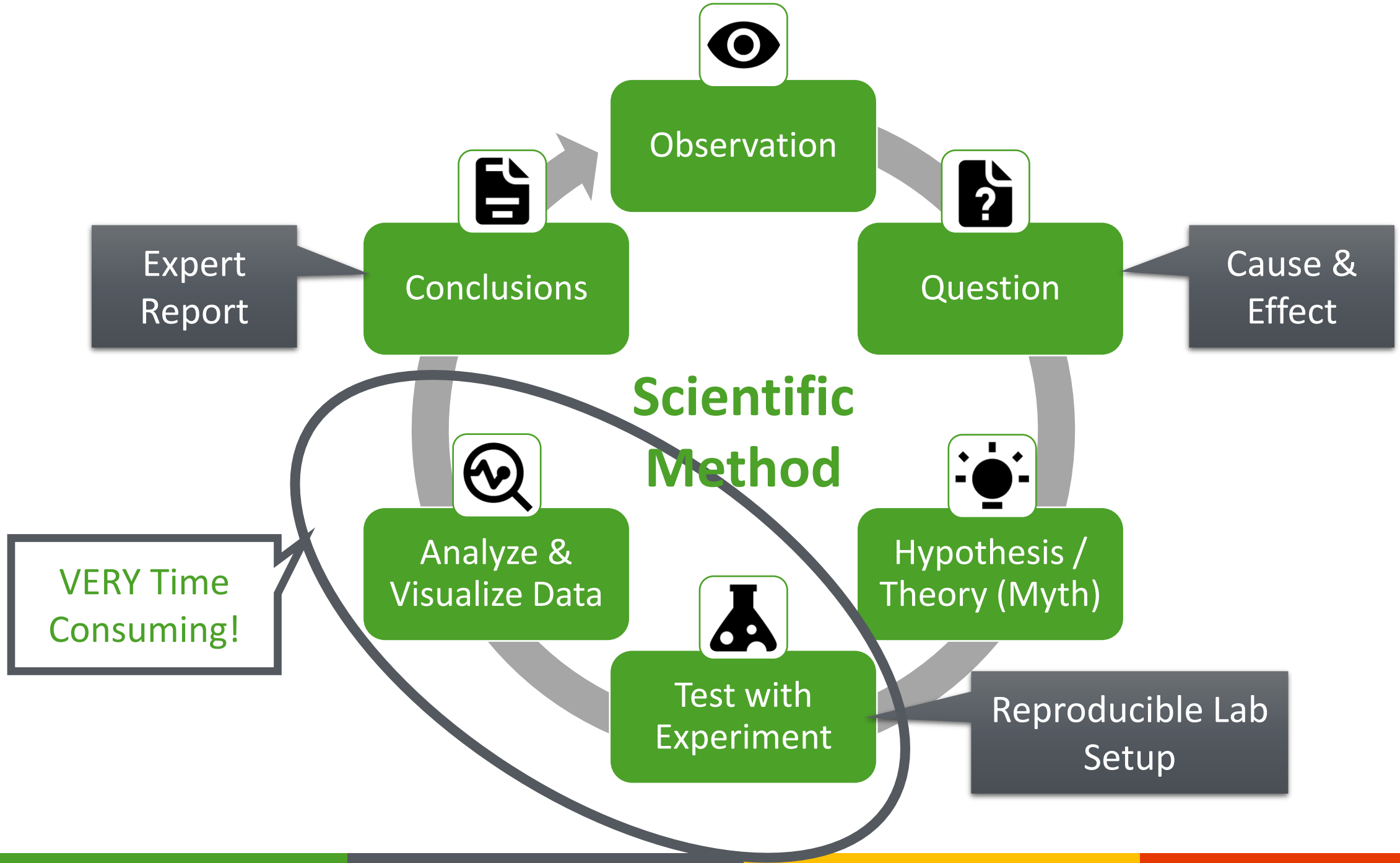


Crash Test Sensors
> 200 sensors/ATD

Anthropomorphic Test Device = ATD
"Crash Test Dummy", $200k each

Catapult – Crash Test Sled
Repeatable and reliable impact conditions


MYTHBUSTERS


Observation
Question
Cause & Effect
Hypothesis / Theory (Myth)
Test with Experiment
Reproducible Lab Setup
Analyze & Visualize Data
VERY Time Consuming!
Conclusions
Expert Report
Scientific Method

Digital Employee Experience Influencers

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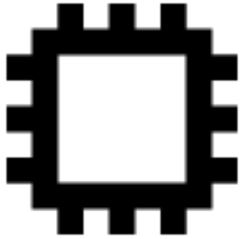
Host System
“VM Type”

Client Device
“Endpoint”



GPUs

Network

Remoting
Protocol

Only one inadequate factor can prevent a good perceived user experience

DEX Quality Criteria

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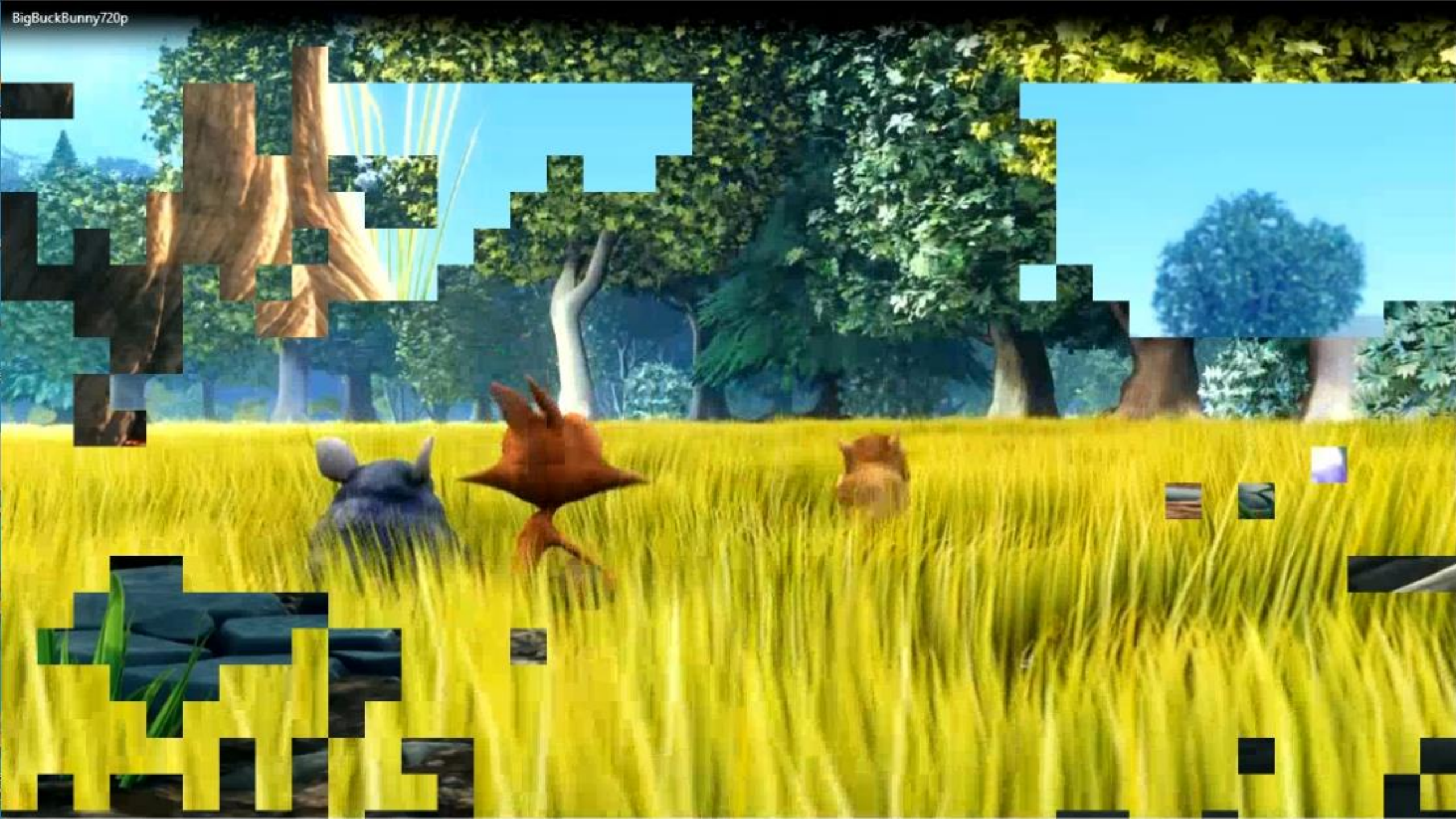
Boot and logon duration	Measure boot time + logon time + user session load time until it is ready for user interaction. Includes identity management and authentication methods.
Application and content load time	Measure time from user starting an application until the content appears and the application is ready for user input, including access to the storage system.
User input delay (“Lag”)	Measures responsiveness of graphical elements after user-initiated triggers = “time from mouse click to screen update” (lag, latency, system response time).
Graphics APIs supported	Detect incompatibilities when running graphics applications using the DirectX, OpenGL, Vulkan and WebGL APIs.
Media formats supported	Detect incompatibilities when opening and playing media files, such as MP4, MPEG, MOV, WMV or AVI.
Distortion of media	Measure media and screen output quality. Detect image, animation, and audio/video compression and decompression artifacts and anomalies.
Screen refresh rate	Measure the number of times per second that the desktop or application can draw consecutive images on the screen and in the host frame buffer (frames per sec = fps).
Endpoint specs and quality	Determine the screens’ number of pixels, density, and visual dimensions – frame buffer requirements grow with resolution and screen number. Detect periphery incompatibilities.
Application reliability and stability	Detect application hangs, freezes, crashes or unhandled exceptions. Measure consistency, dependability and robustness of applications.
Session consistency and resilience	Check if user state is preserved across subsequent sessions. Measure session disruptions, hangs, disconnects/reconnects, availability, timeouts and redundancy.


BigBuckBunny720p


Microsoft Edge
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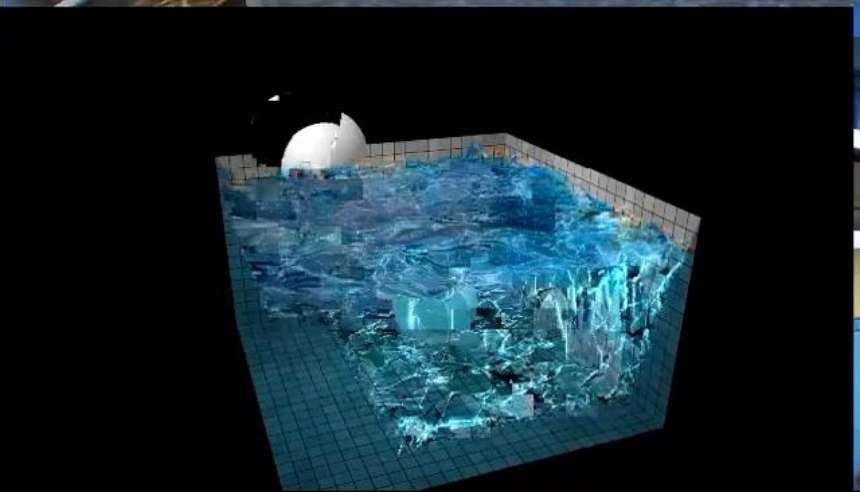
-GL
SOUNDS
ON
ABOUT

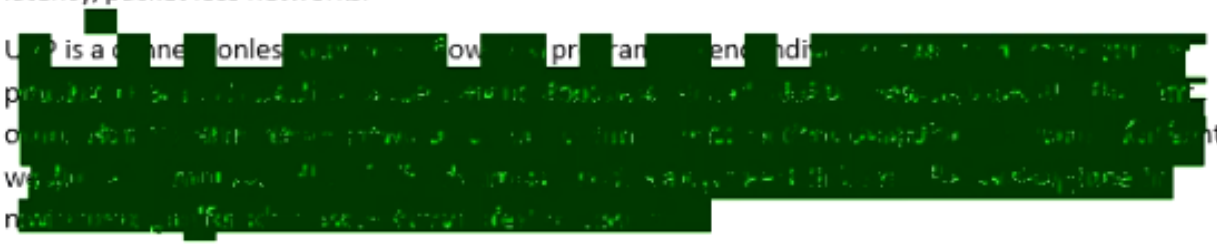



DO TOUCH GLASS!
FISH-GL
60

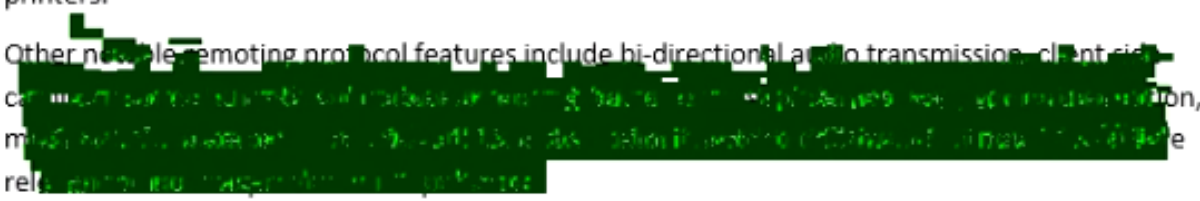
Remoting Protocol Features

Remoting protocols run on top of the Internet Protocol (IP), using Transmission Control Protocol (TCP), User Datagram Protocol (UDP) or a combination a TCP and UDP for different aspects of remoting. While older remoting protocols only used TCP, the modern ones use UDP for the graphics remoting aspect.

TCP is a connection-oriented protocol providing high reliability through error checking, congestion control and a built-in mechanism that rearranges data packets in the order specified. It also guarantees that all data remains intact in the packets transferred. But all this makes TCP relatively heavy-weight, significantly reducing graphics remoting performance on low bandwidth and high latency/packet loss networks.



B there is more a remoting protocol, in particular when it comes to extensibility. The concept of virtual channels provides a way to establish separate streams of data communication while taking advantage of the remote session communication already established. Many remoting protocols use virtual channels to add functions that allow a strict separation from the core features or are not yet specified in the protocol. They represent a platform that future developments can be based on without having to modify the communication methods between host and clients. Examples for virtual channel use cases are joint client and server clipboards or redirecting print jobs to local client printers.



Client Side Rendering versus Host Side Rendering

In a graphics remoting environment, the Windows desktop including its applications is rendered in a


1920x1017
EUC Score for AWS
https://aws.amazon.com/
SL1-RollercoasterDX9
CPU
7% 2.11 GHz
Memory
3.8/15.9 GB (24%)
Disk 0 (C:)
SSD
0%
Ethernet
Ethernet 2
S: 0.1 R: 6.5 Mbps
GPU 0
Intel(R) HD Graphi...
0%
GPU 1
Radeon RX Vega ...
1% (47 °C)

Fishbowl

HTML5 Graphics Benchmark

10 Fish

Fish

10

Layers

- Water
- Frame
- Mask
- Back
- Fish
- Front
- Shine
- Shadow
- Audio
- Logo
- FPS
- Needle

Glossary: Screen Artifacts / Anomalies

- Block boundary – mosaicking, pixelating, quilting, checkerboarding
- Tiling, striping – rendering each section of an image grid, a tile, or a stripe separately
- Smear artifact – grime, smudge, airbrush effect
- Blurriness – out of focus, fuzziness, unsharpness
- Color artifacts – false colors, color bleeding
- Mosquito noise – edge busyness
- Ringing – echoing, ghosting
- Choppy – laggy, jumpy, jerky
- Floating – illusory motion in certain regions while the surrounding areas remain static
- Jitter – loss of transmitted data between network devices
- Flickering – fine-grain flickering and coarse-grain flickering
- Slow motion
- Video stuttering (“micro stutters”)
- Freeze frames

Science of DEX – Human Timings

Nervous System

- Speed of nerve impulse is 120 meters per second
- Human response time is 150-300ms (varies with age)
- Equals to 15,000 – 30,000 km of fiber cables

Visual System

- 24 to 30 frames per second are required for video or motion
- Most desktop monitors' refresh rate is 60 Hz (=16ms)
- Eye blink: 100-150ms
- The brain can process visual data from a single image in 13ms
- Flicker up to 500 Hz

Auditory System

- Range of human hearing is 20 to
  20,000 Hz
- Decibel (dB) measures the force of the sound wave (0-120dB, log.)
- Minimal time interval between two sounds is 3-30ms
- Interaural: 10-20µs

DoD: MIL-STD-1472F/G (1999, 2012)

TABLE V. Acceptable system response times.

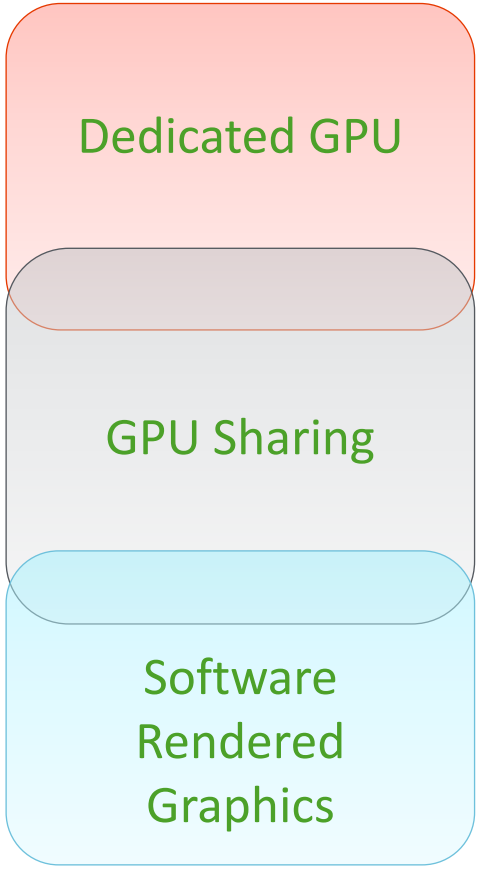
System Interpretation	Response Time Definition	Time (seconds)
Key response	Key depression until positive response, e.g., "click"	0.1
Key print	Key depression until appearance of character	0.2
Page turn	End of request until first few lines are visible	1.0
Page scan	End of request until text begins to scroll	0.5
XY entry	From selection of field until visual verification	0.2
Pointing	From input of point to display point	0.2
Sketching	From input of point to display of line	0.2
Local update	Change to image using local data base, e.g., new menu list from display buffer	0.5
Host update	Change where data is at host in readily accessible form, e.g., a scale change of existing image	2.0
File update	Image update requires an access to a host file	10
Inquiry (simple)	From command until display of a commonly used message	2.0
Inquiry (complex)	Response message requires seldom used calculations in graphic form	10
Error feedback	From entry of input until error message appears	0.2

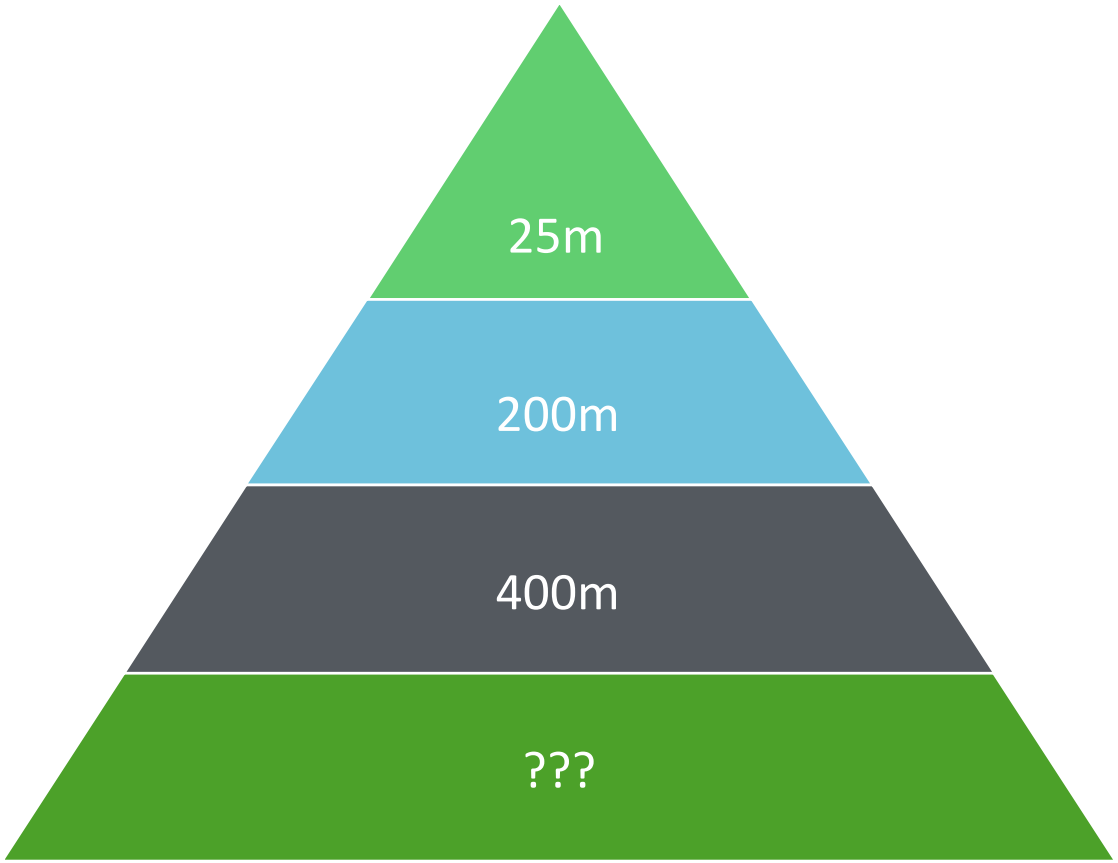
Different Personas and Requirements

	Persona Name	Rendering	IT Workforce	Description
	**Task Worker**	CPU	25-80%	Well-defined, repetitive, and delineated tasks, using a limited number of applications
	**Information Worker**	CPU	25-80%	Find facts quickly, create documents, edit, write & process information
	**Knowledge Worker**	High-end CPU or shared GPU	10-50% ~400m	Tasks include accessing the Internet, using email, and creating complex documents, presentations, and spreadsheets
	**Power User**	Shared GPU or dedicated GPU	5-50% ~200m	People who use multiple compute, network and graphics-intensive applications
	**CAD/CAM Professional Designer**	Dedicated GPU	5-25% ~25m	People who use graphically-intense applications for computer-aided design (CAD) and computer-aided manufacturing (CAM)

Enterprise VM Categories

- **Designers**
- **Power Users**
- **Knowledge Workers**
- **Information Workers**
- **Task Workers**





No GPU: VM Types Across Multiple Clouds

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Instance	CPU	CPU Base Clock Speed	Max CPU Speed - single-core	vCPUs	RAM	Storage Type	Storage Size
Microsoft Azure							
Azure D2s_v3	Intel Xeon 8272 - Cascade Lake	2.6 GHz	3.7 GHz	2	8 GiB	Premium-SSD	256GB
Azure D4s_v3	Intel Xeon 8272 - Cascade Lake	2.6 GHz	3.7 GHz	4	16 GiB	Premium-SSD	256GB
Azure D2s_v5	Intel Xeon 8370C - IceLake	2.8 GHz	3.5 GHz	2	8 GiB	Premium-SSD	256GB
Azure D2ads_v5	AMD EPYC 7763v - Genoa	2.8 GHz	3.5 GHz	2	8 GiB	Premium-SSD	256GB
Azure D4s_v5	Intel Xeon 8370C - IceLake	2.8 GHz	3.5 GHz	4	16 GiB	Premium-SSD	256GB
Azure D4ads_v5	AMD EPYC 7763v - Genoa	2.8 GHz	3.5 GHz	4	16 GiB	Premium-SSD	256GB
Amazon Web Services							
AWS t3.medium	Intel Xeon 8259 – Cascade Lake	2.5 GHz	3.5 GHz	2	4 GiB	EBS GP3	256GB
AWS t3.large	Intel Xeon 8259 – Cascade Lake	2.5 GHz	3.5 GHz	2	8 GiB	EBS GP3	256GB
AWS t3.xlarge	Intel Xeon 8259 – Cascade Lake	2.5 GHz	3.5 GHz	4	16 GiB	EBS GP3	256GB
AWS m6i.large	Intel Xeon 8375C - IceLake	2.9 GHz	3.5 GHz	2	8 GiB	EBS GP3	256GB
AWS m6i.xlarge	Intel Xeon 8375C - IceLake	2.9 GHz	3.5 GHz	4	16 GiB	EBS GP3	256GB
AWS m6i.2xlarge	Intel Xeon 8375C - IceLake	2.9 GHz	3.5 GHz	8	32 GiB	EBS GP3	256GB
Google Cloud Platform							
GCP N1-Standard-2-Win	Intel Xeon - Skylake	2.0 GHz	3.5 GHz	2	7.5 GiB	Zonal SSD PD	256GB
GCP N1-Standard-4-Win	Intel Xeon - Skylake	2.0 GHz	3.5 GHz	4	15 GiB	Zonal SSD PD	256GB
GCP E2-Standard-2-Win	Intel Xeon - Broadwell	2.2 GHz	3.7 GHz	2	8 GiB	Zonal SSD PD	256GB
GCP E2-Standard-4-Win	Intel Xeon - Broadwell	2.2 GHz	3.7 GHz	4	16 GiB	Zonal SSD PD	256GB
GCP N2d-Standard-2-Win	AMD EPYC - Rome	2.25 GHz	3.3 GHz	2	8 GiB	Zonal SSD PD	256GB
GCP N2d-Standard-4-Win	AMD EPYC - Rome	2.25 GHz	3.3 GHz	4	16 GiB	Zonal SSD PD	256GB

GPU: VM Types Across Multiple Clouds

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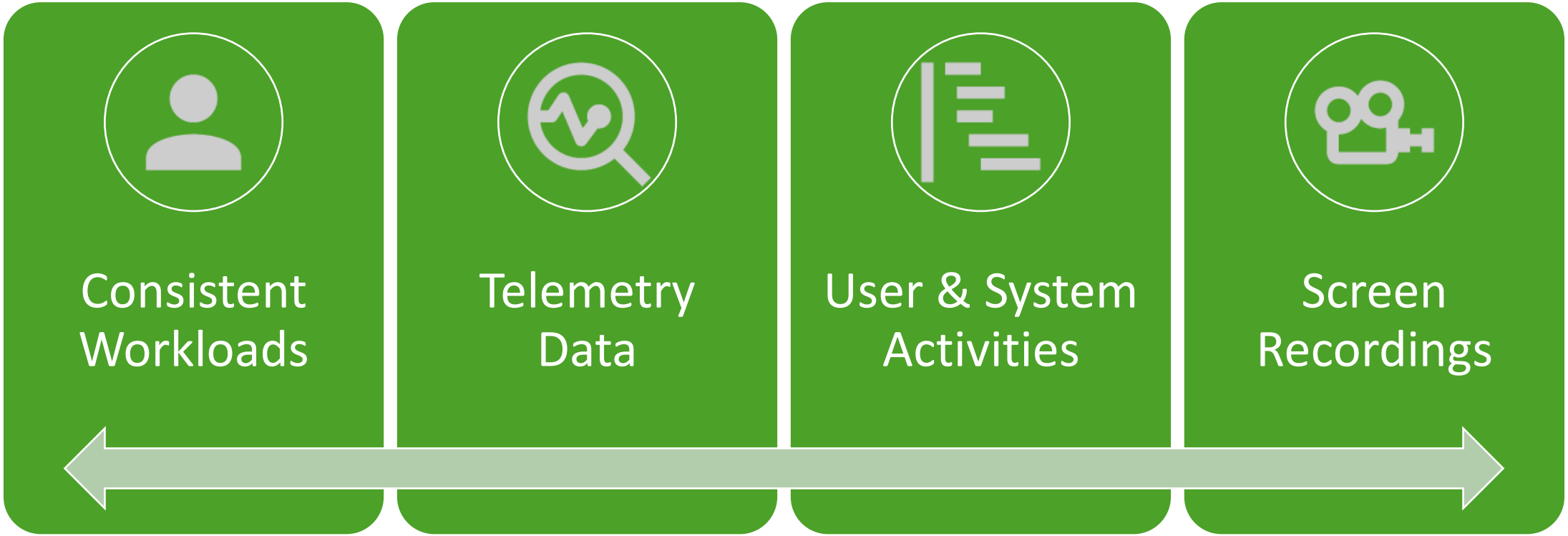
Instance	CPU	CPU Base Clock Speed	Max CPU Speed	vCPUs	RAM	Storage Type	Storage Size	GPU	GPU VRAM	GPU Release Year
Microsoft Azure										
Azure NV6	Intel Xeon E5-2690v3 - Haswell	2.6 GHz	3.5 GHz	6	56 GiB	Standard-SSD	256GB	NVIDIA M60	8 GB	Aug 2015
Azure NV4as_v4	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	4	14 GiB	Premium-SSD	256GB	AMD MI25	2 GB	Jun 2017
Azure NV8as_v4	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	8	28 GiB	Premium-SSD	256GB	AMD MI25	4 GB	Jun 2017
Azure NV16as_v4	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	16	56 GiB	Premium-SSD	256GB	AMD MI25	8 GB	Jun 2017
Azure NV32as_v4	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	32	112 GiB	Premium-SSD	256GB	AMD MI25	16 GB	Jun 2017
Azure NC4asT4_v3	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	4	28 GiB	Premium-SSD	256GB	NVIDIA T4	16 GB	Sep 2018
Azure NC8asT4_v3	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	8	56 GiB	Premium-SSD	256GB	NVIDIA T4	16 GB	Sep 2018
Azure NC16asT4_v3	AMD EPYC 7V12 - Rome	2.45 GHz	3.3 GHz	16	110 GiB	Premium-SSD	256GB	NVIDIA T4	16 GB	Sep 2018
Azure NV6adsA10_v5	AMD EPYC 74F3 - Milan	3.2 GHz	4.0 GHz	6	55 GiB	Premium-SSD	256GB	NVIDIA A10 4Q	4 GB	Apr 2021
Azure NV12adsA10_v5	AMD EPYC 74F3 - Milan	3.2 GHz	4.0 GHz	12	110 GiB	Premium-SSD	256GB	NVIDIA A10 8Q	8 GB	Apr 2021
Azure NV36adsA10_v5	AMD EPYC 74F3 - Milan	3.2 GHz	4.0 GHz	36	440 GiB	Premium-SSD	256GB	NVIDIA A10 24Q	24 GB	Apr 2021
Amazon Web Services										
AWS G4ad.XL	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	4	16 GiB	EBS GP3	256GB	AMD V520	8 GB	Dec 2020
AWS G4ad.2XL	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	8	32 GiB	EBS GP3	256GB	AMD V520	8 GB	Dec 2020
AWS G4ad.4XL	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	16	64 GiB	EBS GP3	256GB	AMD V520	8 GB	Dec 2020
AWS G4ad.8XL	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	32	128 GiB	EBS GP3	256GB	AMD V520 x2	8 GB	Dec 2020
AWS G4dn.XL	Intel Xeon 8259 - Cascade Lake	2.5 GHz	3.5 GHz	4	16 GiB	EBS GP3	256GB	NVIDIA T4	16 GB	Sep 2018
AWS G4dn.2XL	Intel Xeon 8259 - Cascade Lake	2.5 GHz	3.5 GHz	8	32 GiB	EBS GP3	256GB	NVIDIA T4	16 GB	Sep 2018
AWS G4dn.4XL	Intel Xeon 8259 - Cascade Lake	2.5 GHz	3.5 GHz	16	64 GiB	EBS GP3	256GB	NVIDIA T4	16 GB	Sep 2018
AWS.G4dn.8XL	Intel Xeon 8259 - Cascade Lake	2.5 GHz	3.5 GHz	32	128 GiB	EBS GP3	256GB	NVIDIA T4	16 GB	Sep 2018
AWS G5.xl	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	4	16 GiB	EBS GP3	256GB	NVIDIA A10G	24 GB	Apr 2021
AWS G5.2xl	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	8	32 GiB	EBS GP3	256GB	NVIDIA A10G	24 GB	Apr 2021
AWS G5.4xl	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	16	64 GiB	EBS GP3	256GB	NVIDIA A10G	24 GB	Apr 2021
AWS G5.8xl	AMD EPYC 7R32 - Rome	2.8 GHz	3.3 GHz	32	128 GiB	EBS GP3	256GB	NVIDIA A10G	24 GB	Apr 2021
Google Cloud Platform										
GCP N1-STD-2-GPU-T4	Intel Xeon 3647 – Skylake	2.0 GHz	3.5 GHz	2	8 GiB	Zonal SSD PD	256GB	NVIDIA T4	16 GB	Sep 2018
GCP N1-STD-4-GPU-T4	Intel Xeon 3647 – Skylake	2.0 GHz	3.5 GHz	4	16 GiB	Zonal SSD PD	256GB	NVIDIA T4	16 GB	Sep 2018
GCP N1-STD-8-GPU-T4	Intel Xeon 3647 – Skylake	2.0 GHz	3.5 GHz	8	30 GiB	Zonal SSD PD	256GB	NVIDIA T4	16 GB	Sep 2018
GCP N1-STD-16-GPU-T4	Intel Xeon 3647 – Skylake	2.0 GHz	3.5 GHz	16	60 Gib	Zonal SSD PD	256GB	NVIDIA T4	16 GB	Sep 2018

Azure Cloud PC – Windows 356

Instance	vCPUs	RAM	Storage Size	GPU	GPU VRAM
Microsoft Azure					
Windows 365 Basic	2	4 GiB	64-256GB	No	--
Windows 365 Standard	2	8 GiB	128-256GB	No	--
Windows 365 Premium	4	16 GiB	128-512GB	No	--
Windows 365 Premium+	8	32 GiB	128-512GB	No	--
Windows 365 Premium++	16	64 GiB	512GB – 1TB	No	--
Windows 365 GPU Standard	4	16 GiB	512GB	Yes	8GB
Windows 365 GPU Super	8	56 GiB	1TB	Yes	12GB
Windows 365 GPU Max	16	110 GiB	1TB	Yes	16GB

User Experience Benchmarking

Requirements for running a scientific DEX4DaaS experiment



Client-Side vs Host-Side User Simulation

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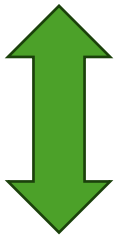
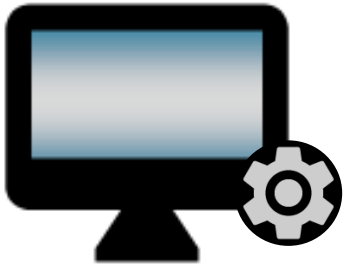
Client-Side Synthetic Users

Endpoint Device

Logon simulator and Robotic Process Automation (RPA)



Remoting Protocol



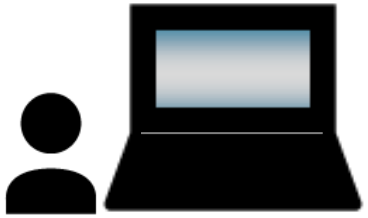
User session(s) with monitoring solution

System Under Test

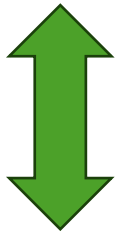
Host-Side Synthetic Users

EUC Score

Endpoint Device



Full range of Remote Connection Clients



Remoting Protocol

User session(s) with Simloads, Avatar and Telemetry Collector

System Under Test

Screen Video Recording Options

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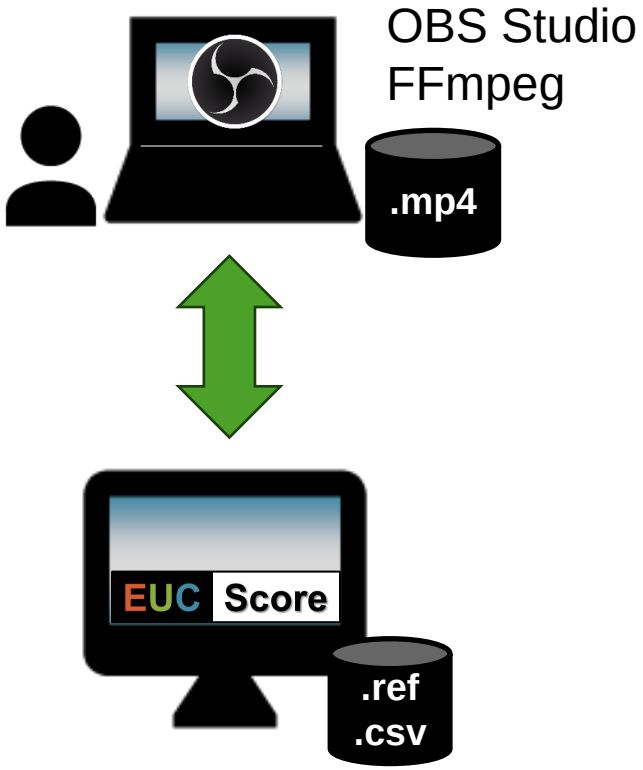
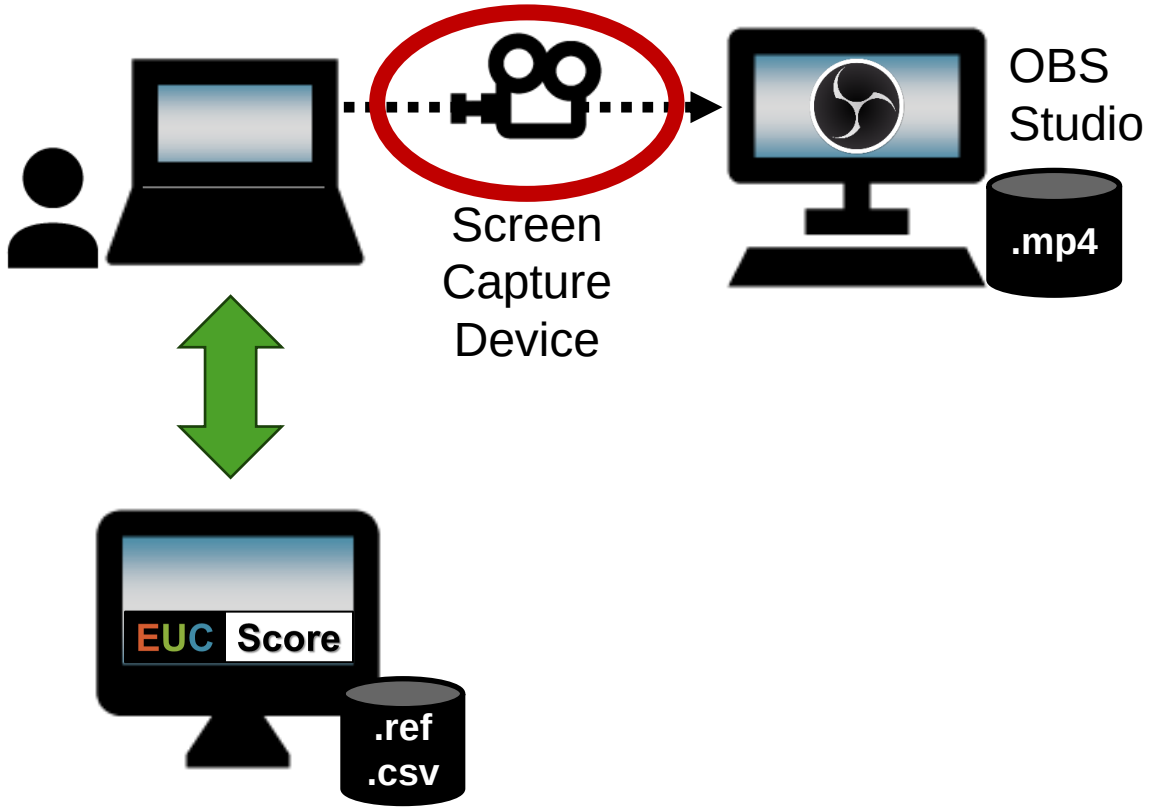
Endpoint Device



System Under Test

Endpoint Device

Video Recorder



System Under Test

OBS Studio

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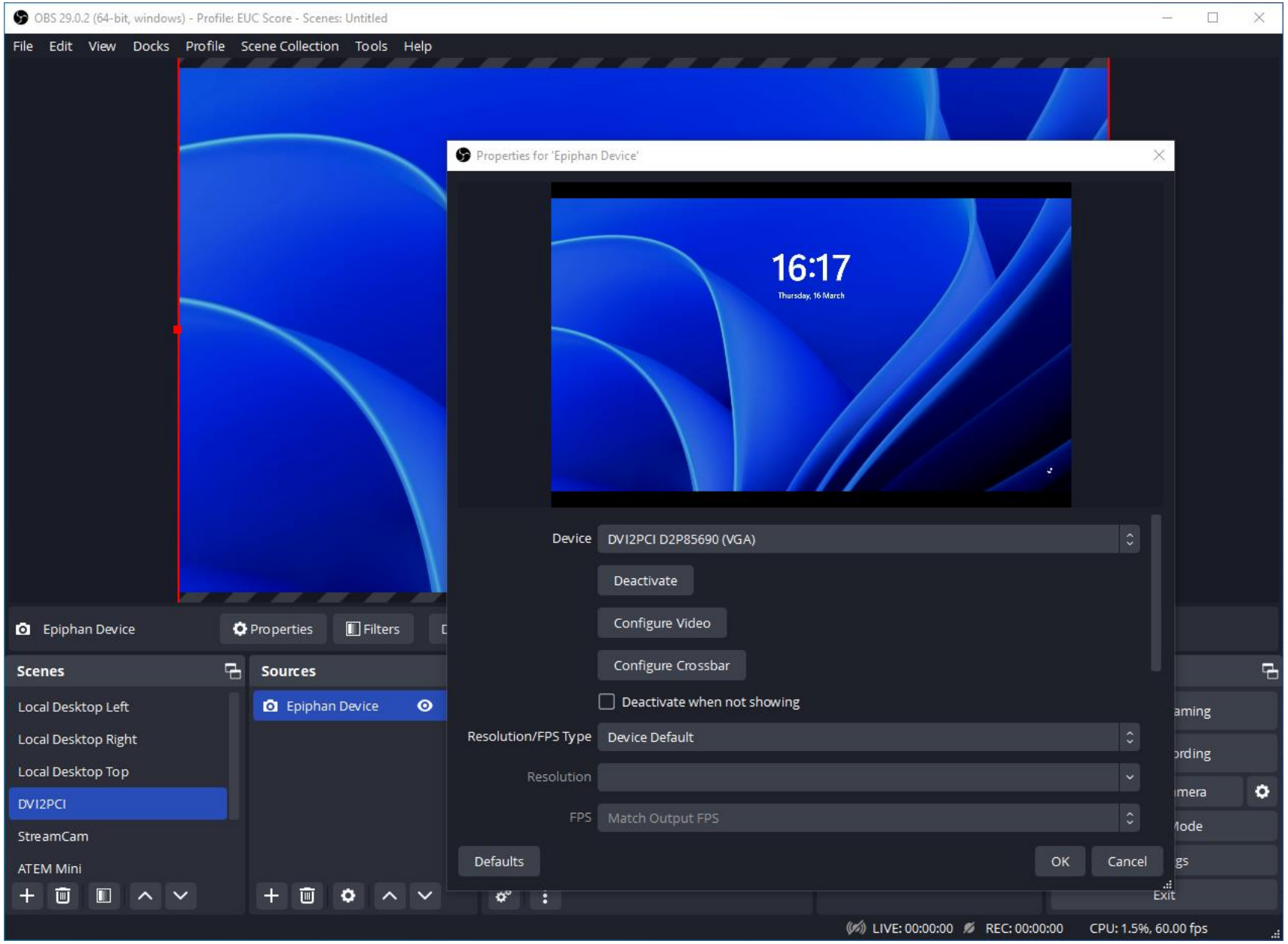

Alternative:
Ffmpeg

Building a Complete DEX Test Lab

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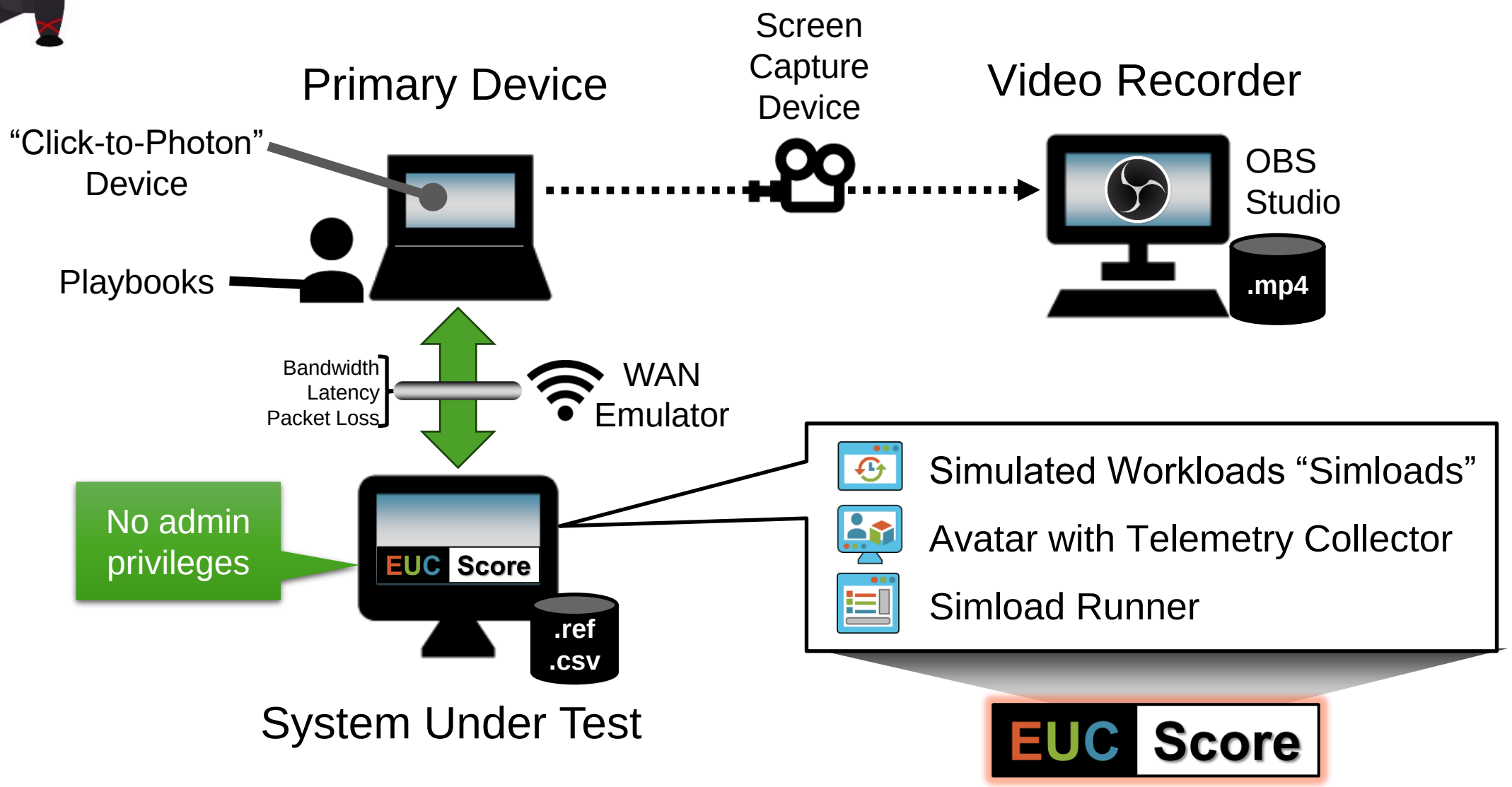

Building a Multi-User DEX Test Lab

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Primary Device

Screen Capture Device

Epiphan
Hauppauge
Elgato
AVerMedia
“HDMI2USB”

Video Recorder

OBS Studio

.mp4

“Noisy Neighbors”

EUC Score
.ref
.csv

EUC Score
.ref
.csv

EUC Score
.ref
.csv

EUC Score
.ref
.csv

Multi-User System Under Test

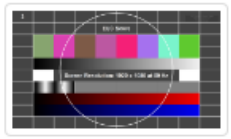
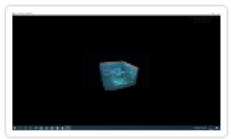
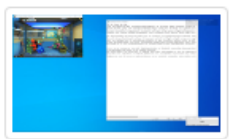
Simulated Workloads – “Simloads”

Type		Description
	**Type 1 Primary**	Test run with an application that highlights a specific graphic or multimedia format (GDI, DirectX, OpenGL or video) – may require a pre-installed application.
	**Type 2 Persona**	Sequence of chained or overlayed user activities, orchestrated in such a way they generate the characteristic behavior and consistent load pattern of a predefined interactive user type.
	**Type 3 Score**	Measures predefined system metrics used to produce a number (=score) that represents the performance. Typically, each score Simload is associated with a specific theme.

https://eucscore.com/gallery.html

EUC Score Simload Gallery: https://eucscore.com/gallery.html

https://eucscore.com/gallery.html

Thumbnail	Simload Type	Description
	**System**	**SL0-TestScreen** Open a test pattern screen and save system information.
	**Primary** Base	**SL1-NotepadEdit** Open Microsoft Notepad and start writing a novel with random type speed.
	**Primary** Base	**SL1-WordpadScroll** Open local DOCX file with PNG images in Wordpad and randomly move pages up and down every second.
	**Primary** JPEGView	**SL1-JPEGViewStatic** Open JEPG image in JEPG View. **NOTE**: This is the most basic Simload as it includes neither animations nor user interactions.
	**Primary** JPEGView	**SL1-JPEGViewAnim** Open animated GIF image in JEPG View.
	**Primary** WMPlayer	**SL1-WMPlayer480pWMV** Open local 480p WMV video in Windows Media Player, switch from windowed to fullscreen mode.
	**Persona** Base	**SL2-Base** **Foreground**: SL3-AppDialog **Background**: SL1-JPEGViewAnim

+ custom or manual Simloads with real user playbooks

Running (Custom) Workloads

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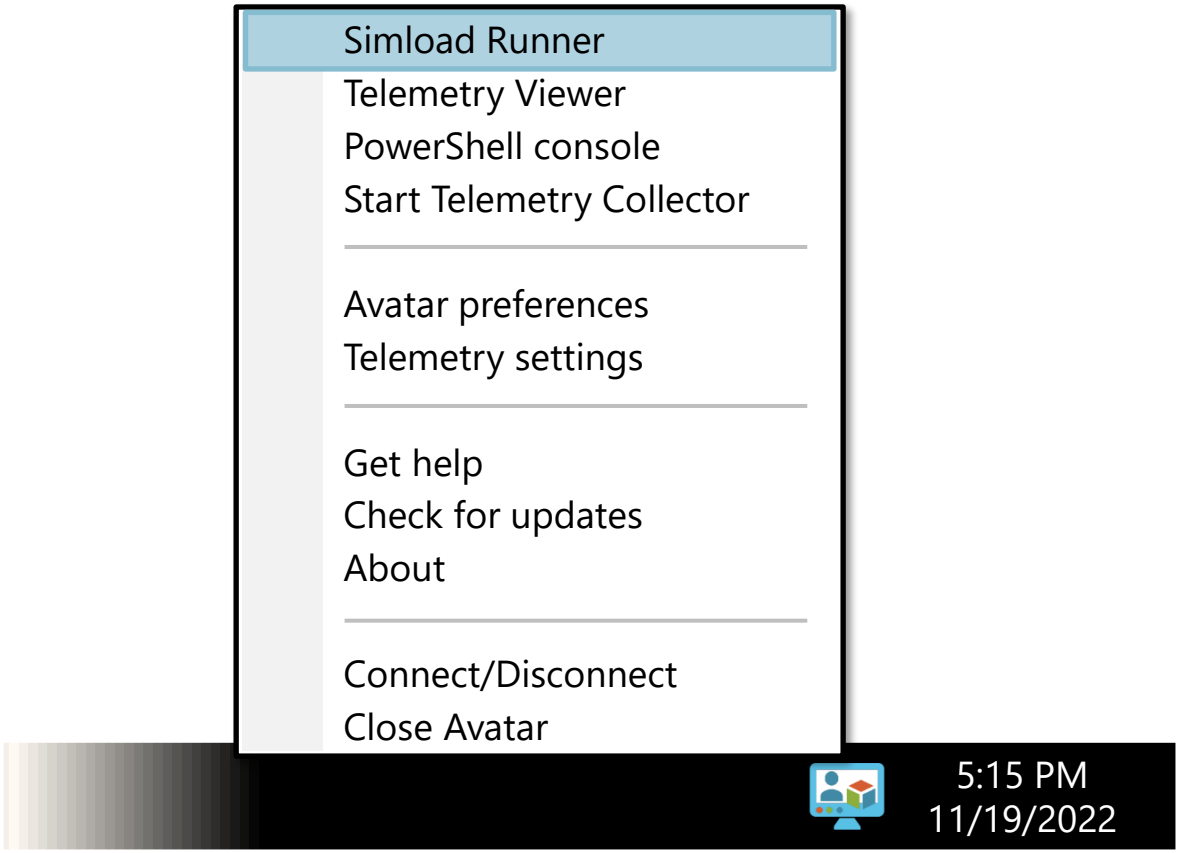

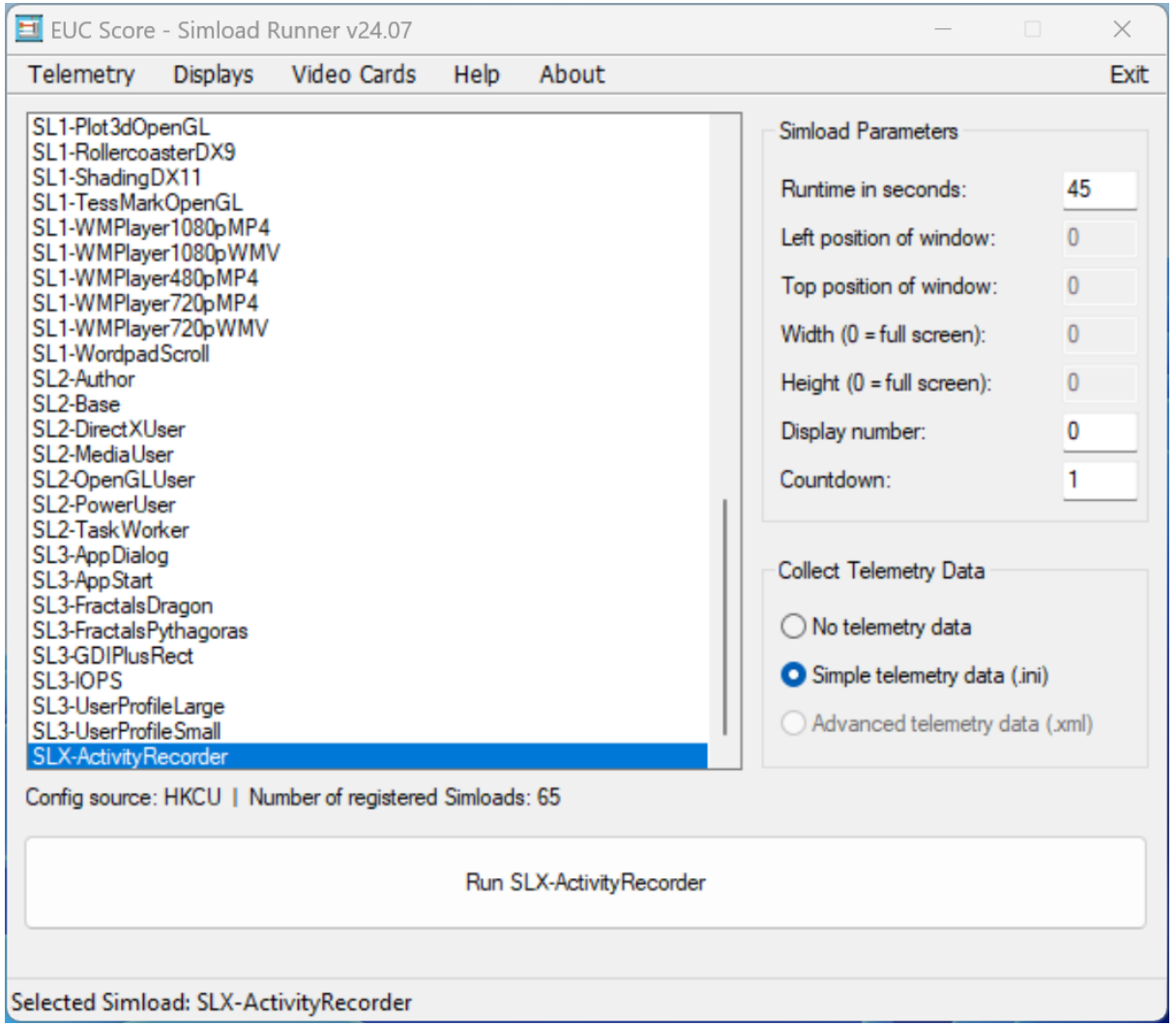

Collecting Telemetry Data

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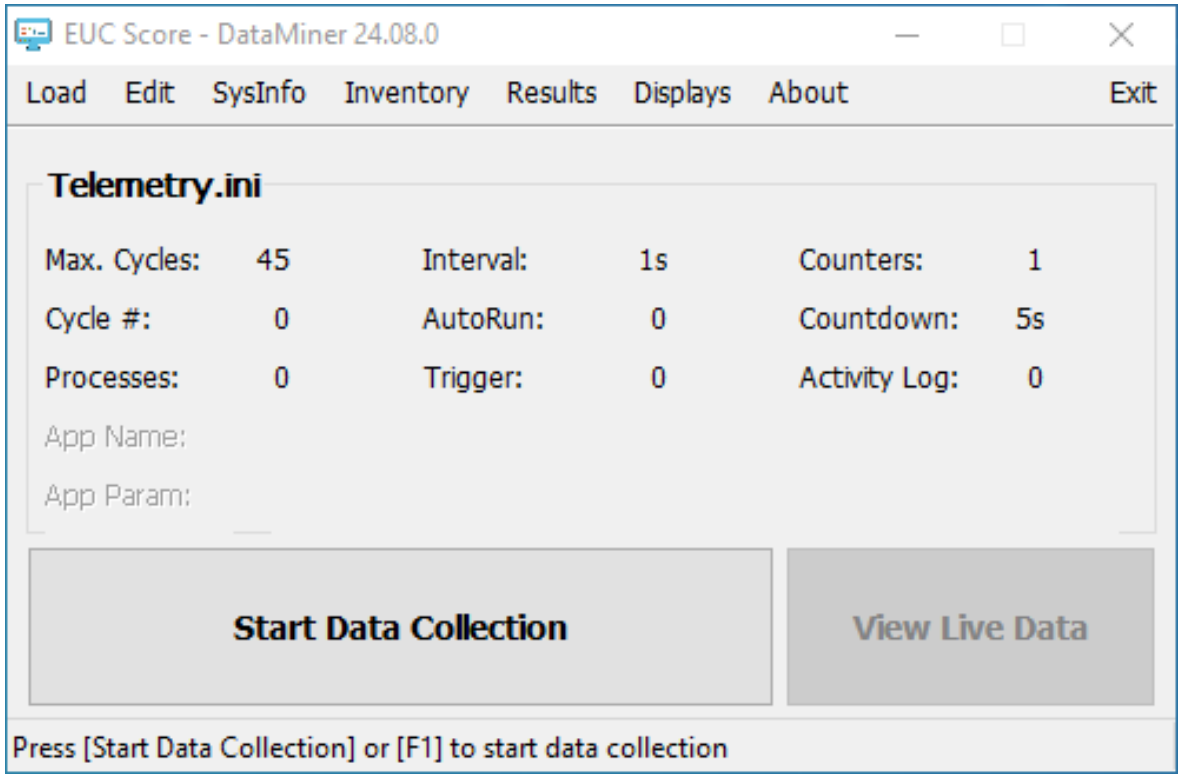

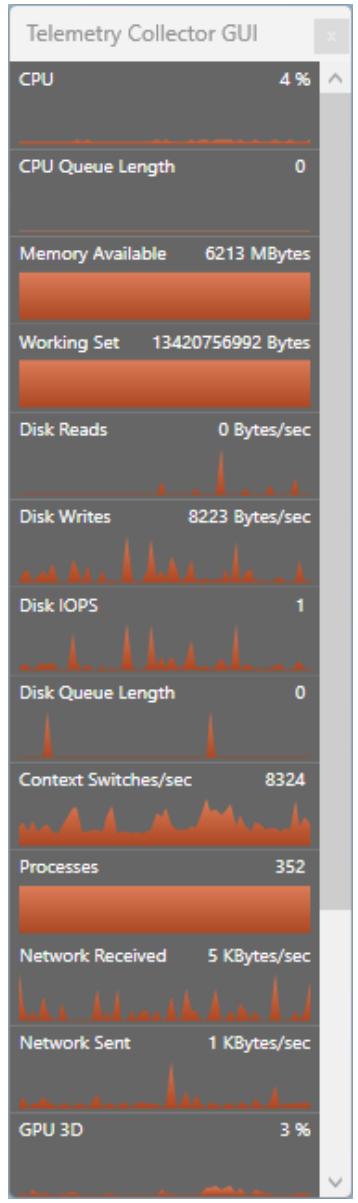

Check out details in my session “Everything Workplace Ninjas need to know about Windows performance counters in AVD and Win365 VMs”

Visual Data Analytics

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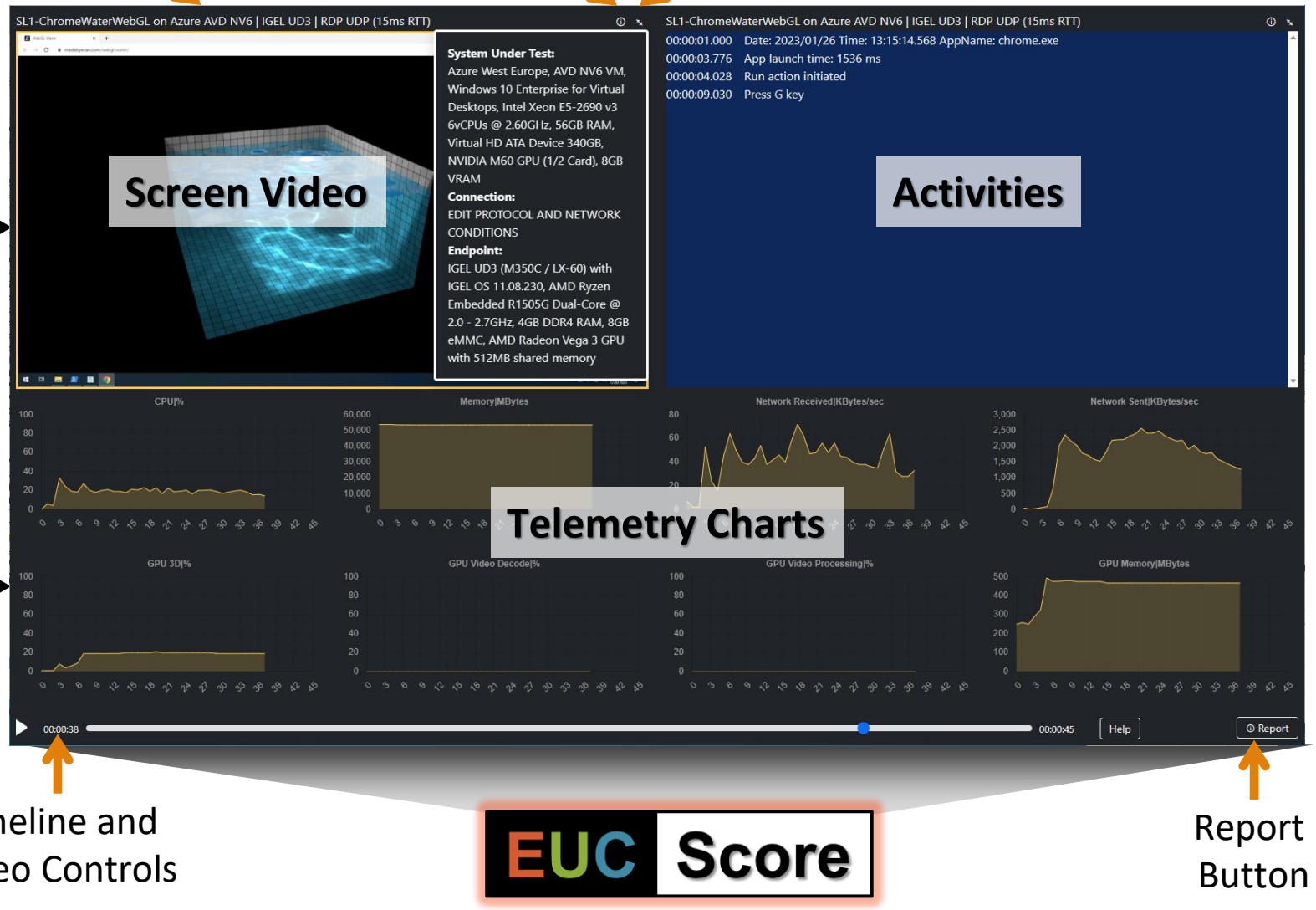
Primary User Endpoint

User Experience

Remoting Protocol

Telemetry Data
User Activities

System Under Test



Show Time

Azure Observations

- Windows 365 Cloud PC “Entry Level” performs better than expected – it’s ideal for Task Worker workloads at a 24/7 price that is hard to beat (< $0.07/hour)
- Use Dsv5 machines instead of v3, they provide 25% better performance at a lower price
- The Azure D4s_v5 and D8ads_v5 VM types are my personal favorites for Information Worker and Knowledge Worker single-session scenarios
- Azure NVv4 VMs do not provide great performance, despite the AMD M25 GPU – low 3D performance, no video encoding / no hardware encoding exposed; NV4v4 VMs are limited 18fps max and it may fall behind CPU-only VM types
- Azure NC8asT4 – if you don’t need the vCPUs or RAM, then go for the NC4asT4 – same GPU; SPEC performance almost the same, but 30% cheaper
- Azure NV6adsA10 provides more CPU and RAM at the same price as the NC4asT4; But NC4asT4 provides much better GPU performance because of full GPU vs GPU partition
- CAUTION: NCasT4 VM types with missing certification for CAD applications may be a deal breaker

Summary – Recommendations

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	Persona Name	VM Specs	Network	VM Types
	Task Worker	CPU 2-4 vCPUs Memory minimum of 2GB GPU no	Bandwidth low Latency 0-200ms Packet loss 0-2%	Win365 Basic or Standard Azure D2s_v5, D2ads_v5
	Information Worker	CPU 2-4 vCPUs Memory minimum of 4GB GPU no	Bandwidth low Latency 0-100ms Packet loss 0-1%	Win365 Standard or Premium Azure D4s_v5, D4ads_v5
	Knowledge Worker	CPU 4-8 vCPUs Memory minimum of 8GB GPU no or shared	Bandwidth medium Latency 0-50ms Packet loss 0-0.5%	Win365 Premium or GPU Standard Azure D8s_v5, D8ads_v5 NG8ads_V620_v1
	Power User	CPU 4-16 vCPUs Memory minimum of 16GB GPU shared or dedicated	Bandwidth medium Latency 0-50ms Packet loss 0-0.1%	Win365 Premium+ or GPU Standard Azure D16s_v5, D16ads_v5 NG16ads_V620_v1, NC4as_T4_v3
	CAD/CAM Designer	CPU 8-16 vCPUs Memory minimum of 16GB GPU high-end	Bandwidth high Latency 0-20ms Packet loss 0%	Win365 GPU Super or GPU Max Azure NG16ads_V620_v1 NC8as_T4_v3, NC16as_T4_v3
	Media Designer	CPU 8-16 vCPUs Memory minimum of 16GB GPU high-end	Bandwidth very high Latency 0-30ms Packet loss 0%	Win365 GPU Super or GPU Max Azure NG16ads_V620_v1 NC16as_T4_v3, NC16as_T4_v3

Call to Action

If you want to learn more about the EUC Score toolset, send an email to

info@eucscore.com

EUC Score

https://eucscore.com

NOTE: The complete EUC Score toolset is free for community benchmarking tests if the results are made freely available to the public

EUC Score Links

Home Page

Freeware Download

- Toolset documentation: https://docs.eucscore.com
- Test Methodology: https://eucscore.com/methodology.html
- Simload Gallery: https://eucscore.com/gallery.html
- Test Results (Sync Player): https://eucscore.com/results
- Terminology (Glossary): https://eucscore.com/terminology.html
- Lab Equipment: https://eucscore.com/equipment.html

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We love Feedback

https://wpninjas24.sched.com/

Great Session!

Okay Session!

Not so okay Session!

Workplace Ninja Summit 2024

Thank You

Workplace Ninja Summit 2024