

# Realistisen rajat testauksessa

simulointi digitaalisin  
kaksosin ja datan  
käsittely otoksina

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**CGI**



**It needs to be tested but:**

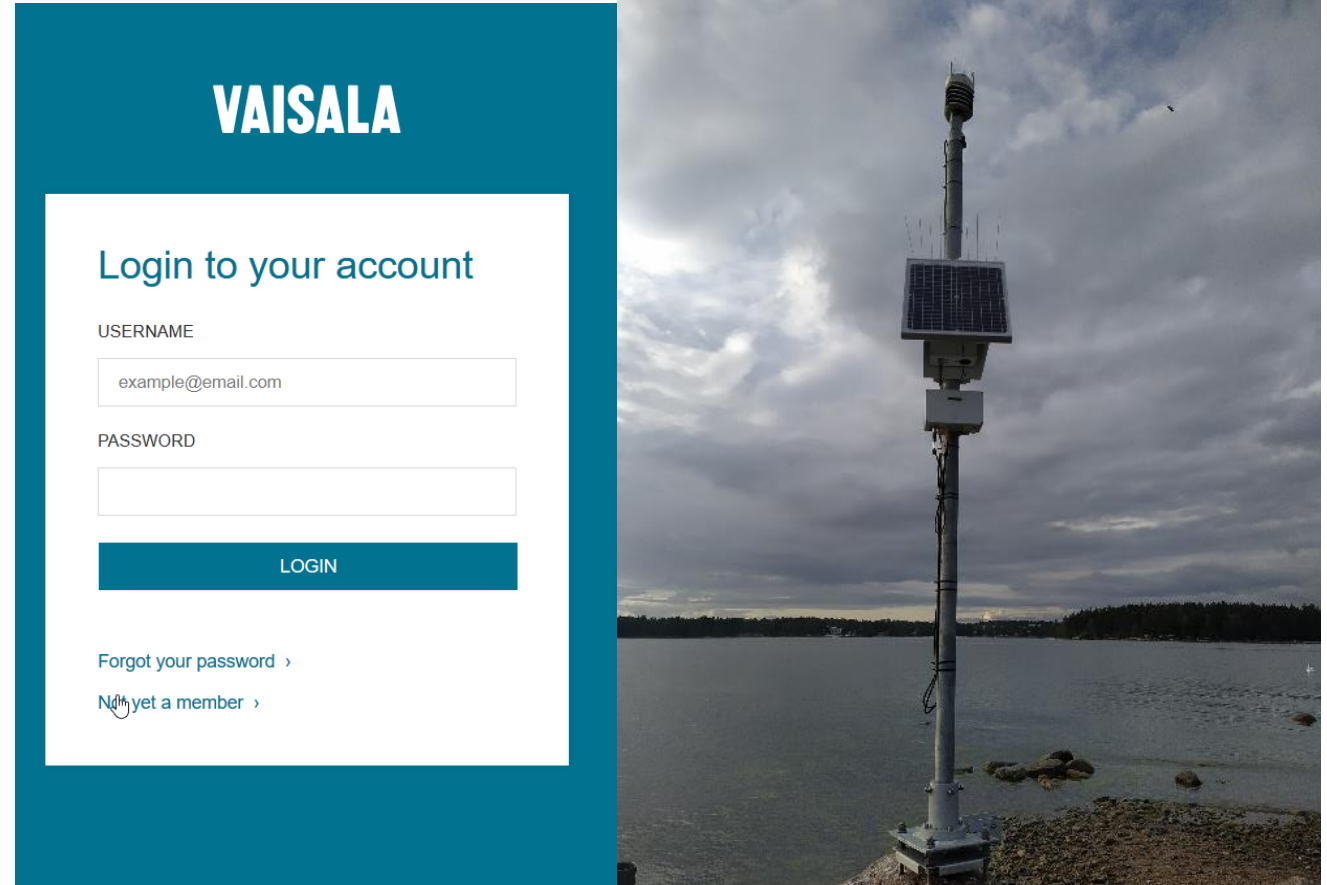
- With real data?**
- With real hardware?**
- With real end to end scenarios?**

**...can't we just simulate and sample?**

# From Olympus with love, 'Managing testing at scale', HUSTEF 2021

Hardware  
Firmware  
Operating System  
Applications  
WebUIs  
Cloud Software

\* note: experience before  
my time at CGI



A digital twin is a highly consistent, software-based replica of a physical system that runs the same software, behaves like the real device, and can be interacted with as if it was the real thing.

# Test data

	Current practice	Target practice
 <b>Data obfuscation</b>	Copy full sets from production, masking identifiers Copy partial sets from production, masking identifiers Secondary system with daily lifecycle of fake data	On-demand fake partial data following production patterns
 <b>Refresh cycle</b>	Updated rarely, living in the now Updated rarely, with systemic timetravel Updated on demand, as a service	Updated on demand, self-service; repeatable data
 <b>Property-based discovery</b>	Searching as a service, human networks Searching as a service, limited to properties in own data	Chat-based test data discovery
 <b>Lifecycle simulation</b>	Building lifecycle services for data in testing	Short cycle between pick and use
 <b>Cross-system state orchestration</b>	Timing data picking across data of multiple organizations Simplification of data on 3rd party systems	Trustworthy contract testing with mock data
 <b>Data change intake</b>	Analyzing features and stories for data migration impacts	Comparing patterns of data available
 <b>Data maintenance</b>	Allowing emergent data differences over time	Removing data differences from production



# Digital likeness of real world

...from people to  
hardware systems

Your visual and your written styles  
mimicking on demand at everyone's  
fingertips.

Product I test is my  
external imagination.  
I am my developer's  
external imagination.

—Maaret Pyhäjärvi

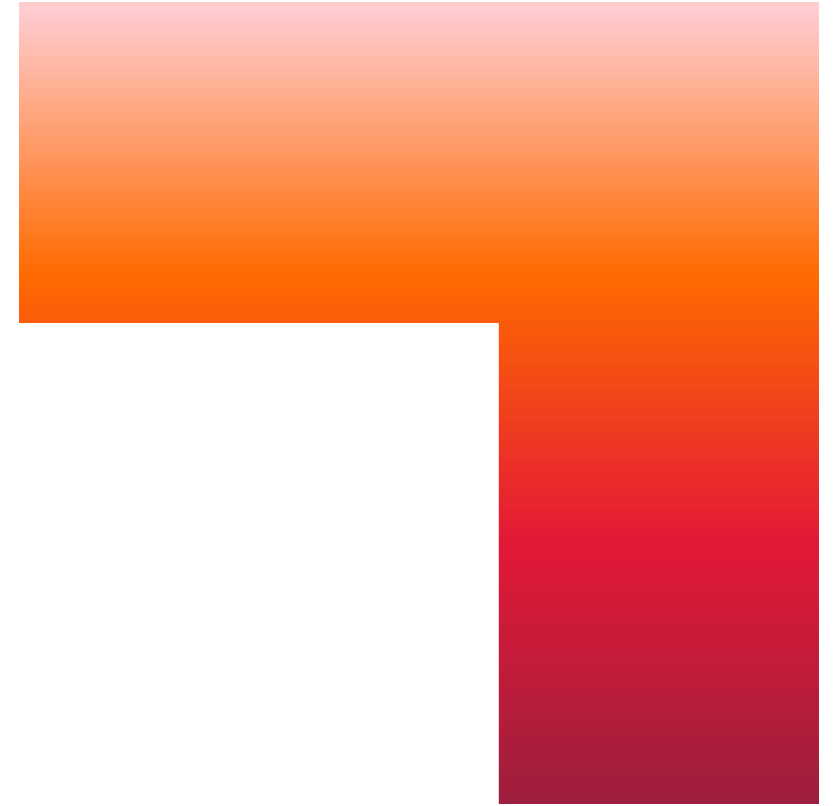
Digital twins  
take  
simulation  
fidelity to  
where our  
imagination  
is supported.

# Insights you can act on

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