



SMART PRODUCT DEVELOPMENT

SmartWorks / Fall 2021

Today

Accelerate innovation with Altair

1 SmartWorks IoT

Build industry-shaking smart products

2 Motorbikes Use Case

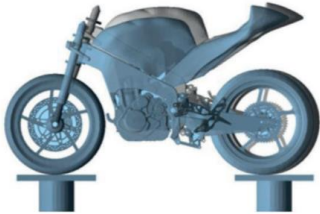
Accelerate the development of smart connected motorbikes

3 Demo

Dive into product itself

Product Development

1 Product Design



CAD Studio
Generative Design
Rapid Prototyping

2 Product Engineering



EM Wave Simulation
Electric Motor Simulation
Topology Optimization
PCB Simulation
Manufacturing Simulation
Motion Simulation
MBSE/Multi-physics

What does this mean for us?



Extend end-user functionality

External

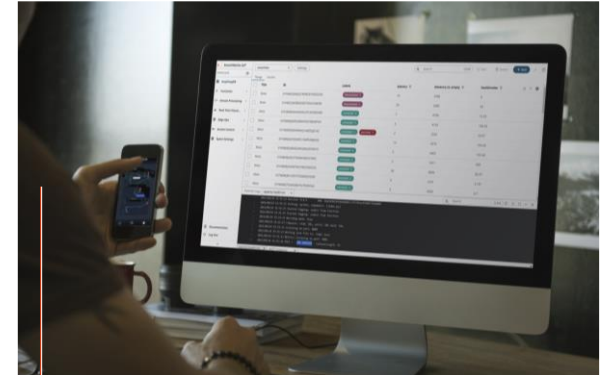
I want to allow my users to control my products from anywhere in the world, and I want to show them their data in an enjoyable way



Provide "as a service" models

Internal

I want to be able to offer my product 'as a service' to produce recurring revenue. But that means now I own much more of the product responsibility and you want to reduce that risk

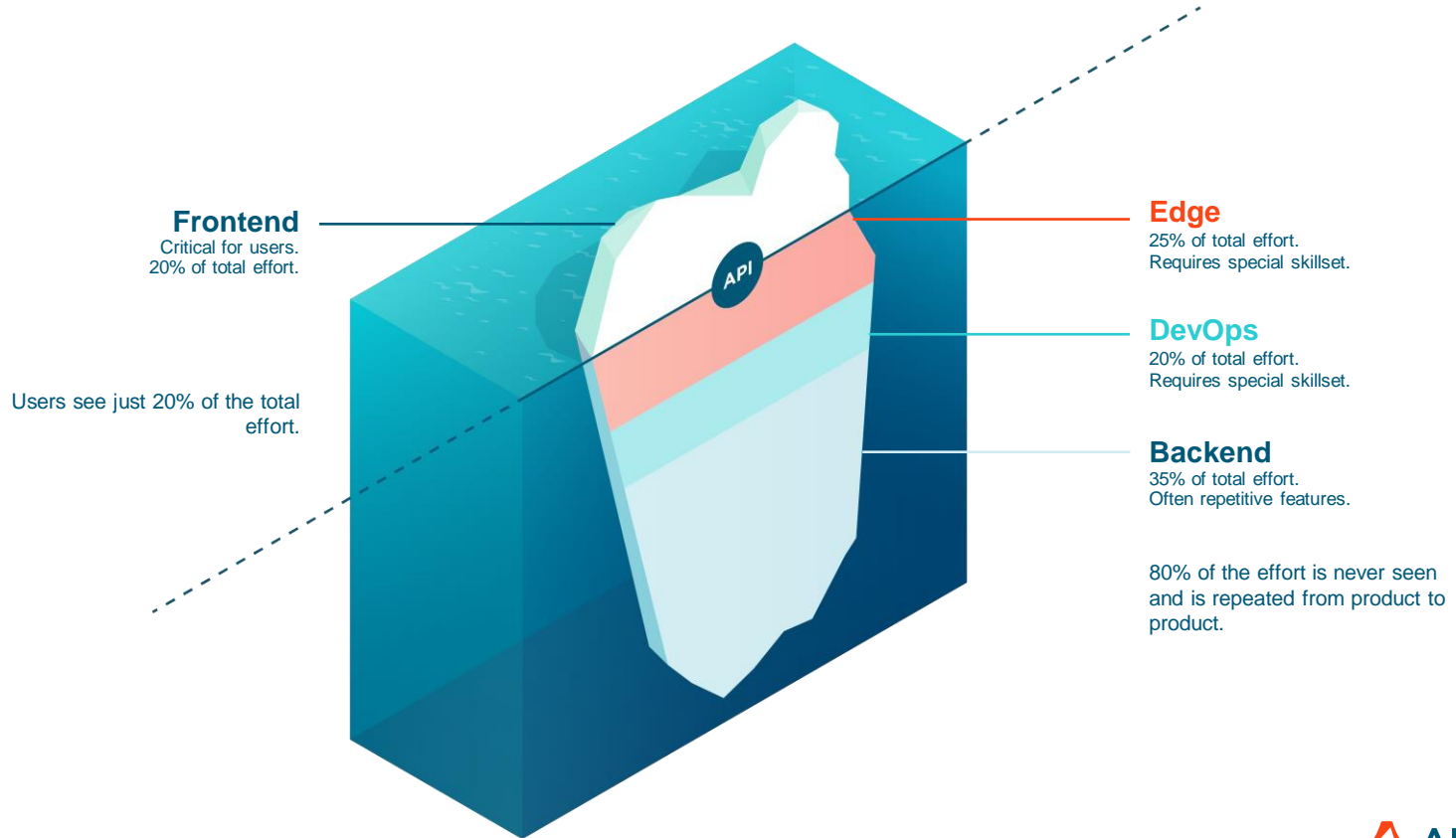


Streamline processes

Internal

I want to keep my assets running as long as possible, as efficiently as possible, for as cheap as possible

The IoT Software Ecosystem ... can be complex



SmartWorks IoT

Low-code IoT application
development platform



Backend for End user IoT Apps



Your Devices



| ID | Name | Status | Location | Altitude | Speed | Heading | Signal | Battery |
|-----------|-----------|---------|----------|----------|-------|---------|--------|---------|
| 123456789 | Device 1 | Online | 123.456 | 12.34 | 12.34 | 12.34 | 12.34 | 12.34 |
| 123456790 | Device 2 | Offline | 123.457 | 12.35 | 12.35 | 12.35 | 12.35 | 12.35 |
| 123456791 | Device 3 | Online | 123.458 | 12.36 | 12.36 | 12.36 | 12.36 | 12.36 |
| 123456792 | Device 4 | Online | 123.459 | 12.37 | 12.37 | 12.37 | 12.37 | 12.37 |
| 123456793 | Device 5 | Online | 123.460 | 12.38 | 12.38 | 12.38 | 12.38 | 12.38 |
| 123456794 | Device 6 | Online | 123.461 | 12.39 | 12.39 | 12.39 | 12.39 | 12.39 |
| 123456795 | Device 7 | Online | 123.462 | 12.40 | 12.40 | 12.40 | 12.40 | 12.40 |
| 123456796 | Device 8 | Online | 123.463 | 12.41 | 12.41 | 12.41 | 12.41 | 12.41 |
| 123456797 | Device 9 | Online | 123.464 | 12.42 | 12.42 | 12.42 | 12.42 | 12.42 |
| 123456798 | Device 10 | Online | 123.465 | 12.43 | 12.43 | 12.43 | 12.43 | 12.43 |

SmartWorks IoT
Cloud Backend



Your User App

- Device Connectivity
- Data Storage
- Application Logic Engine
- Edge App Orchestration
- User Access Control



Dashboard Creator for Asset Monitoring and Predictive Analytics



Your Devices

| ID | NAME | TYPE | STATUS | LOCATION | DATE | TIME | VALUE | UNIT | DESCRIPTION |
|----|------------|------------|---------|----------|------------|-------|-------|------|-------------|
| 1 | Motorcycle | Motorcycle | Online | 123456 | 2023-10-27 | 10:00 | 100.0 | km/h | Speed |
| 2 | Scooter | Scooter | Offline | 123457 | 2023-10-27 | 09:55 | 50.0 | km/h | Speed |
| 3 | Motorcycle | Motorcycle | Online | 123458 | 2023-10-27 | 10:05 | 120.0 | km/h | Speed |
| 4 | Scooter | Scooter | Online | 123459 | 2023-10-27 | 10:10 | 80.0 | km/h | Speed |
| 5 | Motorcycle | Motorcycle | Offline | 123460 | 2023-10-27 | 10:15 | 0.0 | km/h | Speed |

SmartWorks IoT
Cloud Backend

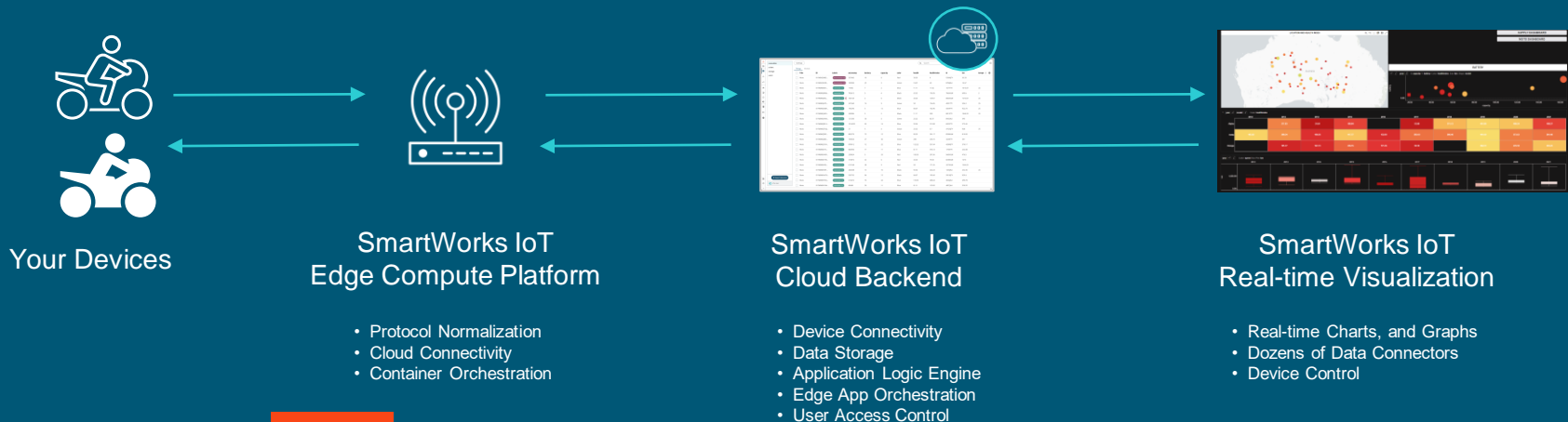


SmartWorks IoT
Real-time Visualization

- Device Connectivity
- Data Storage
- Application Logic Engine
- Edge App Orchestration
- User Access Control

- Real-time Charts, and Graphs
- Dozens of Data Connectors
- Device Control

Orchestration platform for Edge AI and Automation



Modern. Scalable. Secure.



Intuitive interfaces

REST, MQTT, SDK's

Cloud-native Architecture

*Kubernetes, Docker, Containers,
Microservices, Terraform, Helm*

Modern Languages

Go, Python, Typescript

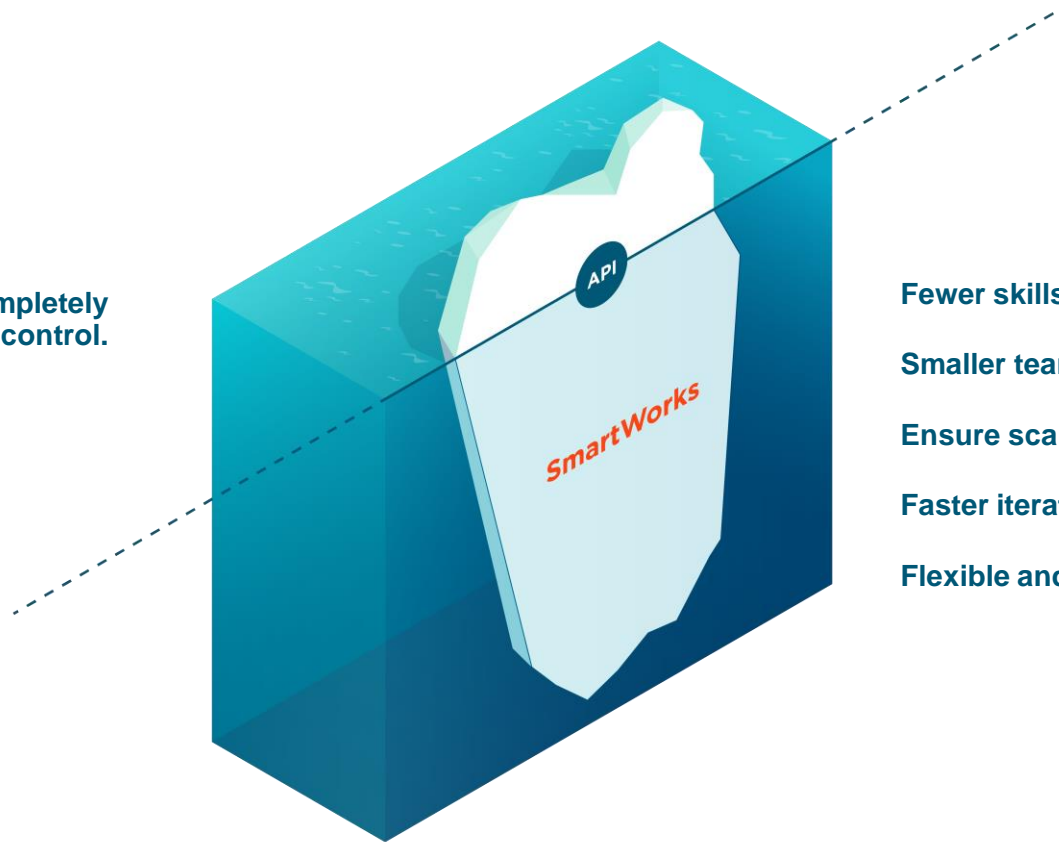
Modern, Open Toolset

*Kafka, TiDB, KrakenD,
ORY, VernMQ, React,
Web Components*

Do More with Less



Frontend is completely
in your control.



Fewer skills needed. ✓

Smaller team needed. ✓

Ensure scalability and security. ✓

Faster iterations. ✓

Flexible and configurable. ✓

SmartWorks vs. Others



Specialized for Product Developers

SmartWorks is specifically designed to solve for the hiccups developers encounter in the development of applications for IoT ecosystems



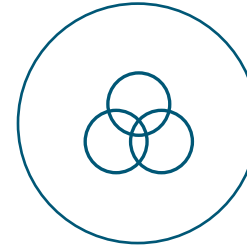
Cloud Agnostic

SmartWorks can be deployed on any public Cloud giving you the flexibility to choose your cloud provider of choice and not tying you to any of them



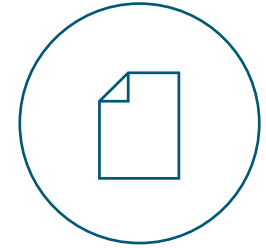
Deploy On-Premises

SmartWorks is deployable in a private cloud, on premises, in a hybrid architecture, or we can host it. Your place or ours, we are happy to accommodate.



Integrated with Altair

Altair and SmartWorks bring together a unique set of technologies to help our customers solve the hardest challenges and innovate in new ways.



Units Business Model

The Units Business Model let's you take advantage of SmartWorks in the convenient Units model that you

**DISCOVER CONTINUOUSLY.
ADVANCE INFINITELY.**

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