



smiths
bringing technology to life

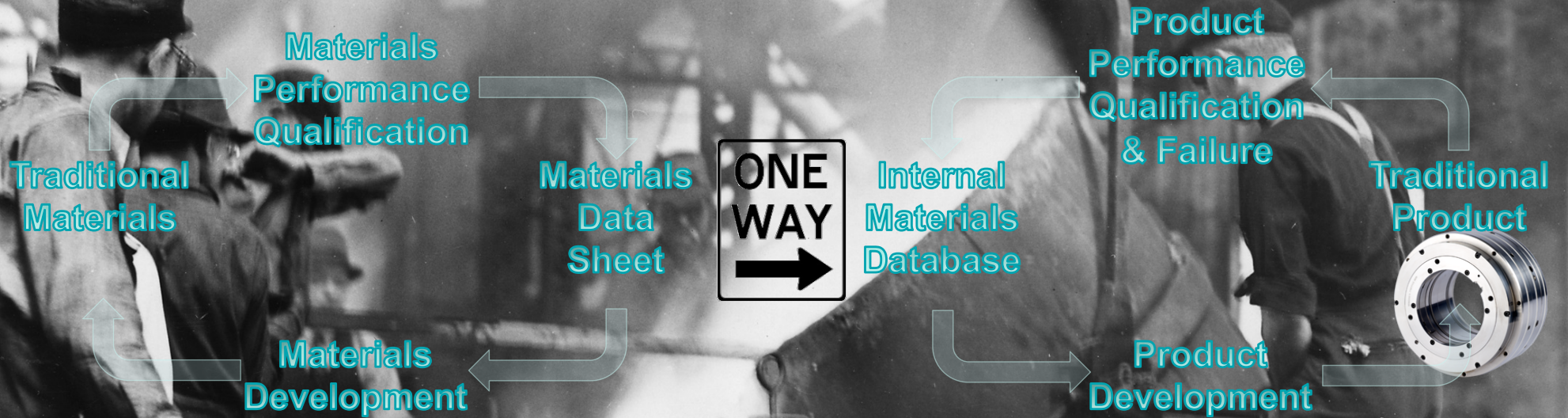
IoT & Data Analytics for New Materials Solutions

Andrew Reynolds Smith
CEO Smiths Group plc

World Materials Forum
Plenary Session 6
Nancy 30 June 2017

DaVinci 45G

Old Paradigm – disparate data



Materials data generation is capital and expense intensive
Resulting in slow materials adoption and development

Traditional Seal

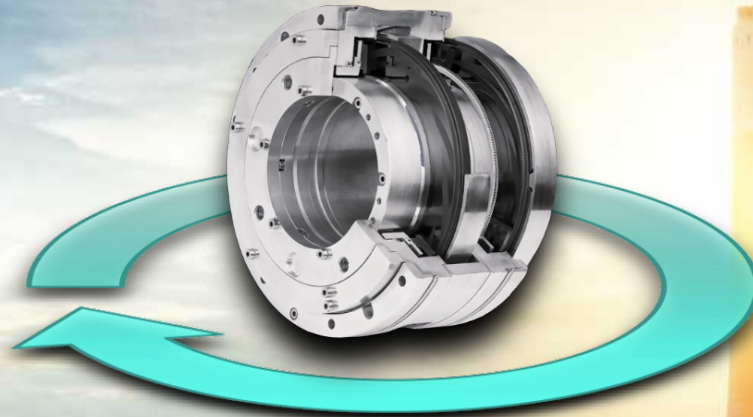
Qualification

- Thermal Conductivity
- Thermal Expansion
- Thermal Shock
- Hardness
- Strength
- Ductility
- Elasticity
- Density
- Dimensions

End of Life

- Time since install
- Failure mode
- Dimensions

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Connected Seal

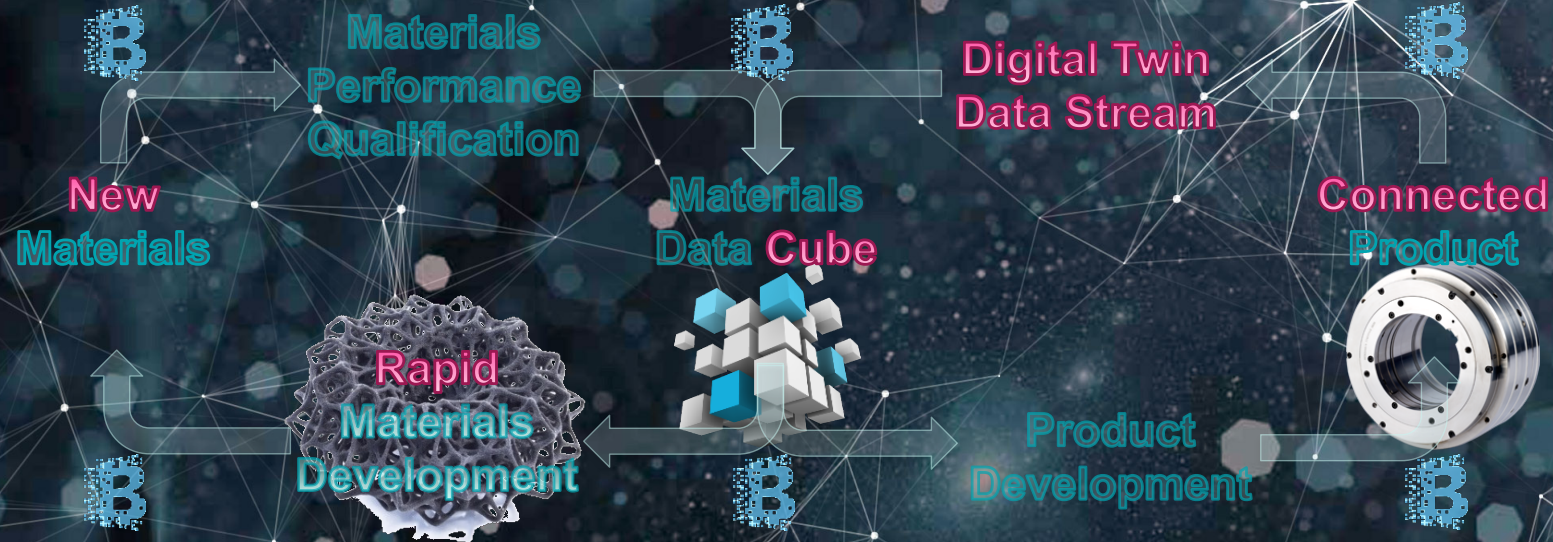
Qualification + End of life

Data Log/s During Life

- Force
- Speed
- Pressure
- Flow
- Temperature
- Engagement
- Deflection
- Shock & Vibration
- Thermal Shock
- ...and more

1Tb per seal between maintenance & 2M seals...

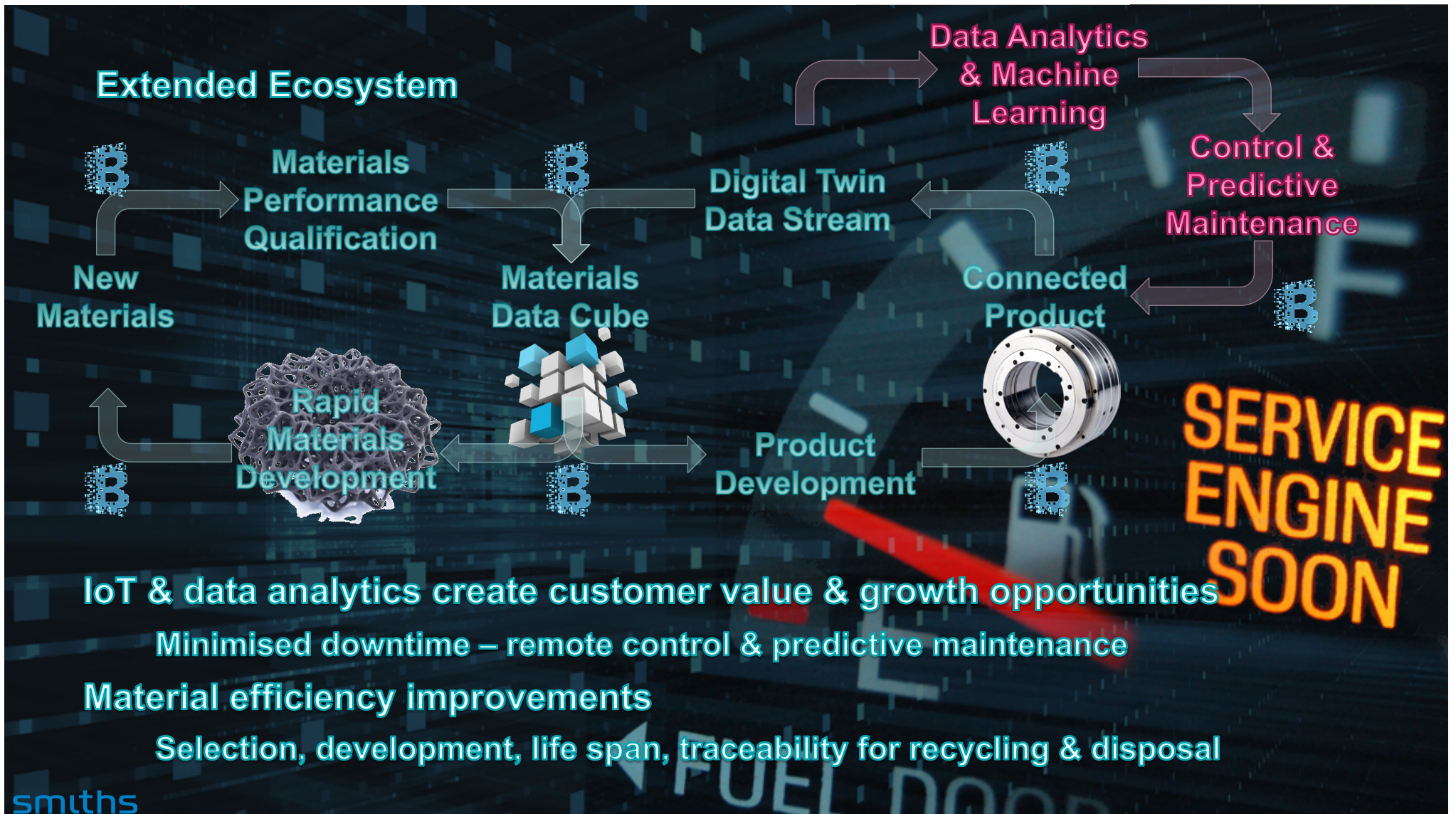
Emerging Paradigm – IoT drives efficiencies & new materials



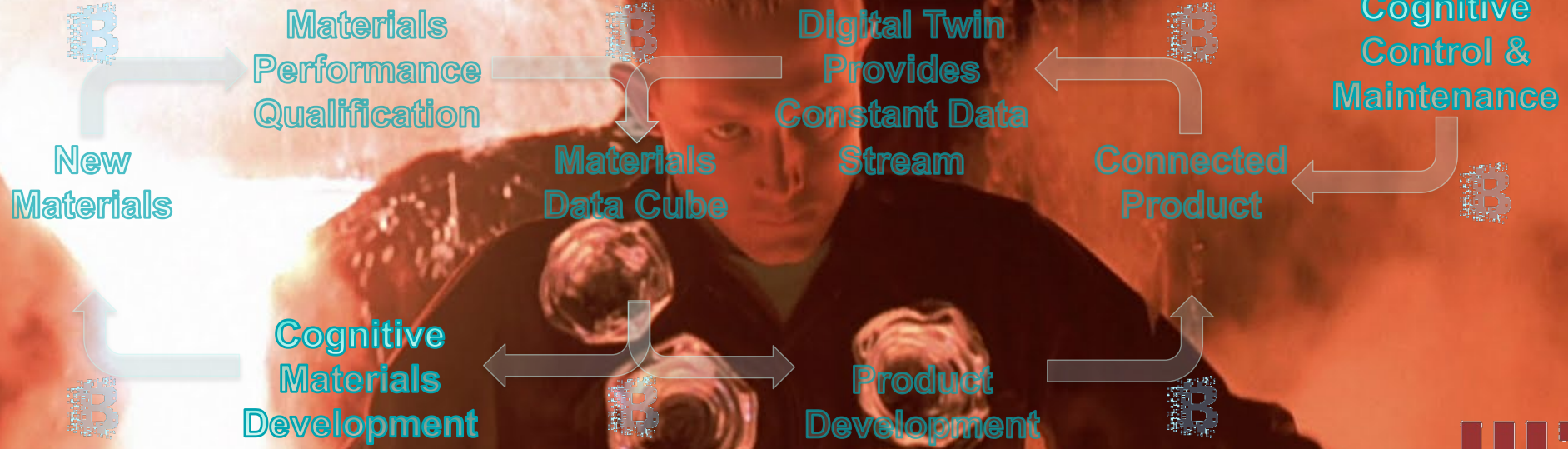
Access data via new business models and partner networks

Customer value created by efficiencies and new material solutions

Blockchain provides cradle to grave traceability



Cognitive Era Opportunities



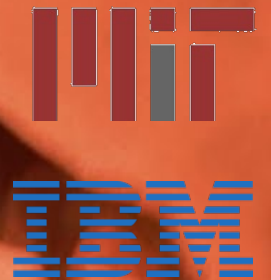
Emerging materials applications & classes

Waste Energy Harvesters, MaaSensor, Smart Healing

Cognitive materials development

Materials Genomics Initiative – Databases

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Taking Opportunities Created by Cognitive IoT

• Connected Partner Networks maximise data...

... availability

... traceability

... value

Connected & Cognitive Era Materials

New applications and classes

Cognitive Creation

New Business Models

IP play - 3D printer recipes

MaaS - Materials by the hour

Data monetisation

The background is a dark, abstract digital landscape. It features a central bright white light source that radiates outwards, creating a lens flare effect. Several glowing, wavy lines in shades of blue and purple flow across the scene, resembling data streams or neural pathways. The background is filled with a dense, slightly blurred pattern of binary code (0s and 1s) in a light blue color.

Thank You!

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