



VTT

Business Finland project preparation

AMHUB - Additive Manufacturing Hubs for Radical Innovation in Digital Part Delivery Logistics

Dr. Sini Metsä-Kortelainen





VTT – *beyond the obvious*

VTT is a visionary research, development and innovation partner and one of the leading research organisations in Europe.

Our role is to promote the utilisation and commercialisation of research and technology in business and society. Through science and technology, we turn global challenges into sustainable solutions for business and society in a responsible way.

254 M€
turnover and other
operating income

2,093
employees

45%
of the net turnover
from abroad

32%
a doctorate or a
licentiate's degree

Establishment year
1942

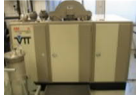
Steered by Ministry
of Economic Affairs
and Employment



Experimental facilities
From powder to product – agile pilots



Material & component testing



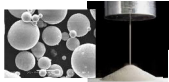
Post processing



Direct Write Technology



Selective Laser Melting



Powder characterization



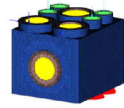
Plasma spheroidization



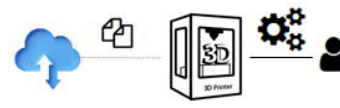
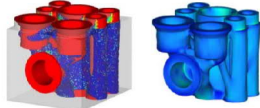
Gas atomization

Application Services

Competitive products & new business models



Design for AM



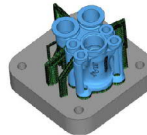
Digital spare parts



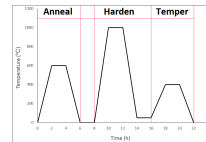
Added intelligence & functionality

Production Services

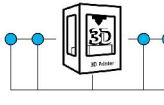
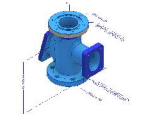
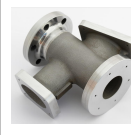
Increased productivity & quality



Thermal distortions mitigation



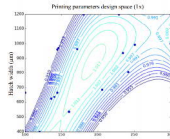
Post-processing



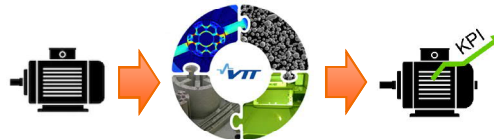
Integration of AM into production

Material Services

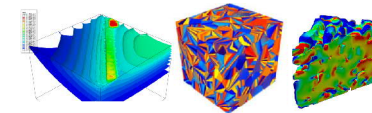
Increased quality & material performance



Powder printability



Application driven materials



Virtual material factory

AMHUB project preparation and the vision

Background

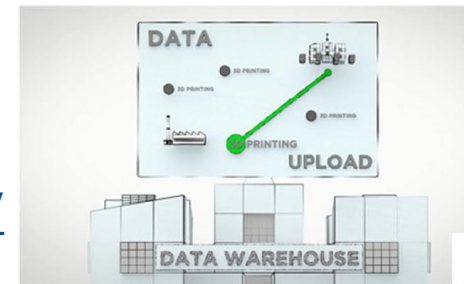


Digital Spare Parts

Two large Business Finland projects:

- Digital spare parts (1.4 M€, 2016-2017)

http://www.vtt.fi/inf/julkaisut/muut/2018/DIVA_final_report.pdf

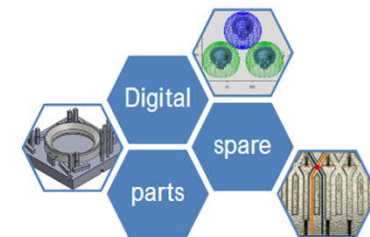


Mika Salmi, Jouni Partanen, Jukka Tuomi, Sergei Chekurov, Roy Björkstrand, Eero Huoti, Kirsi Kukko, Niklas Kretzschmar, Jan Akmal, Kalle Jalava, Satu Korvisto, Matti Vartiainen
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- New business from digital spare parts joint action (1M€, 2018-2020)

https://www.vttresearch.com/sites/default/files/pdf/publications/2020/New_business_from_digital_spare_parts.pdf



New business from digital spare parts

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Collecting insights how AMHUB could serve the customers in the future



AMHUB VISION

is to provide additive manufacturing as-a-service for customers needing high quality parts

AM part design, manufacturing and delivery service providers work together efficiently under the same HUB based on the shared principles and optimized process.

AMHUB helps customers to set up the AM part portfolio and designing parts to start using AM. When the readiness is built, AMHUB provides the required tools and services for managing and tracking order-manufacturing-delivery process for easy ordering.

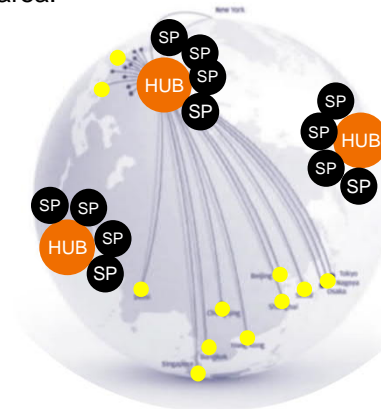
In AMHUB pre-qualified service providers work efficiently together

UNDER a network of additive manufacturing HUBs

TO PROVIDE the required additive manufacturing and delivery end-to-end service

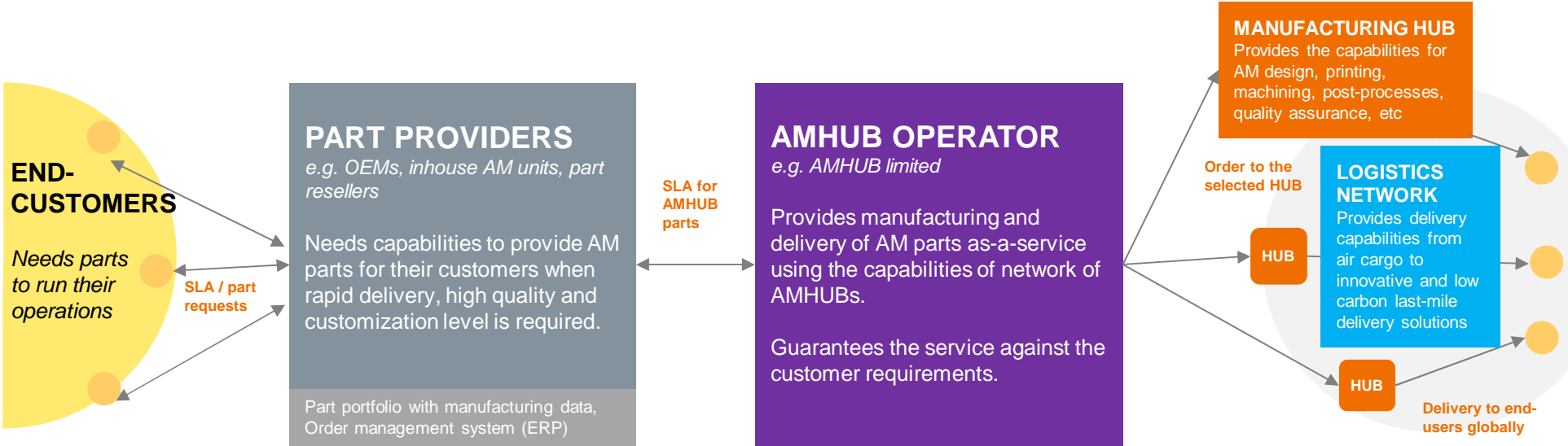
FOR CUSTOMERS with one-stop-shop principle.

Network of HUBs are located in central logistics points to serve customers in the large geographic area.



AMHUB operator that works between customers and service providers and selects the best HUB for the customer AM parts based on the customer needs and capabilities provided by each HUB.

AMHUB service model with key building blocks in the value network



↑↓ - Order-to-delivery tracking

↑↓ - Order management & Order-to-delivery tracking
↓↑ - Manufacturing data

↑↓ - Order management
↓↑ - Customer support & management

↑↓ - Order fulfillment information
↓↑ - Safe delivery of manufacturing data

ORDER-TO-DELIVERY BACKEND SYSTEM

Provides secure platform for

- Order management (e.g. offer requests, quotes, orders)
- AM manufacturing information sharing (e.g. specifications, 3D models)
- Order fulfillment tracking (e.g. status, quality assurance)

Next steps & international collaboration

Next steps and international collaboration

- Business Finland Co-Innovation project (national project)
 - Consortium building
 - Defining common goals & research questions
 - Building international collaboration (research exchange / other collaboration)

- Horizon Europe project
 - VTT is looking for interested partners to build a consortium and to prepare a proposal related to AMHUB concept / digital spare parts

bey⁰nd

the obvious

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