# VTT Data Innovation Lab

About VTT

- The **VTT Technical Research Centre of Finland (VTT)** is one of Europe's leading research and technology institutes. It is a **state-owned, non-profit limited company** operating under the Finnish Ministry of Economic Affairs and Employment.

- **Personnel**
  - Over **2000 employees**
  - Staff represent **around 60 nationalities**, with a strong share of highly educated researchers and engineers.

- **Locations**
  - **Headquarters:** Otaniemi, Espoo (near Helsinki)
  - Other main Finnish sites: Tampere**, Oulu,** Jyväskylä, Kuopio, Kajaani
  - VTT also operates internationally through subsidiaries and collaborations.

- Through collaboration with companies, public institutions, and international partners, VTT aims to transform scientific knowledge into practical technologies and business solutions that address global societal challenges.

- I am from Advanced Data Spaces Team

VTT – beyond the obvious
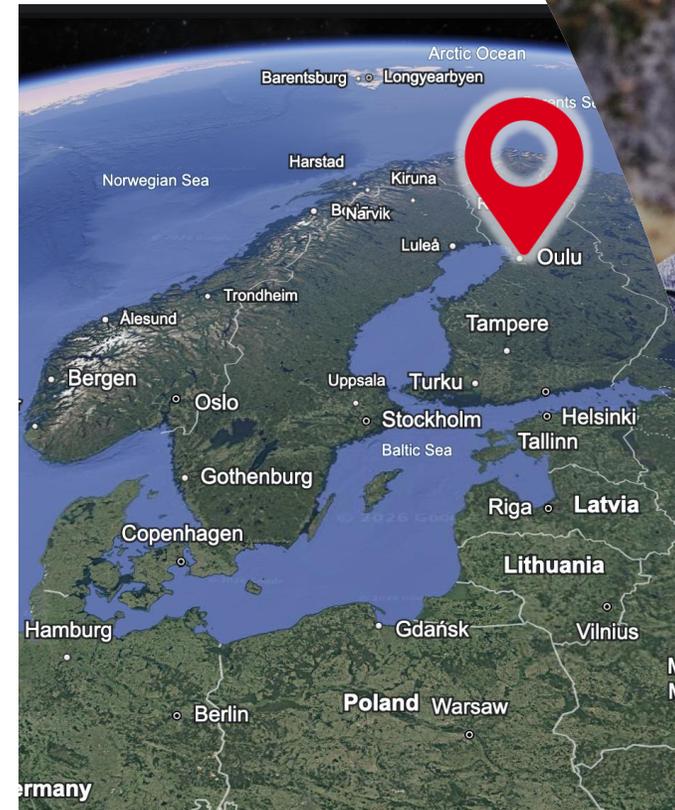
Use cases

Factory shopfloor integration of data

- IoT data ingration OPC-UA / MQTT / FIWARE
- Task and product line management data

Agriculture & Robot Task management

- Data sharing between data providers, analysts and end users

Digital Product Pasports

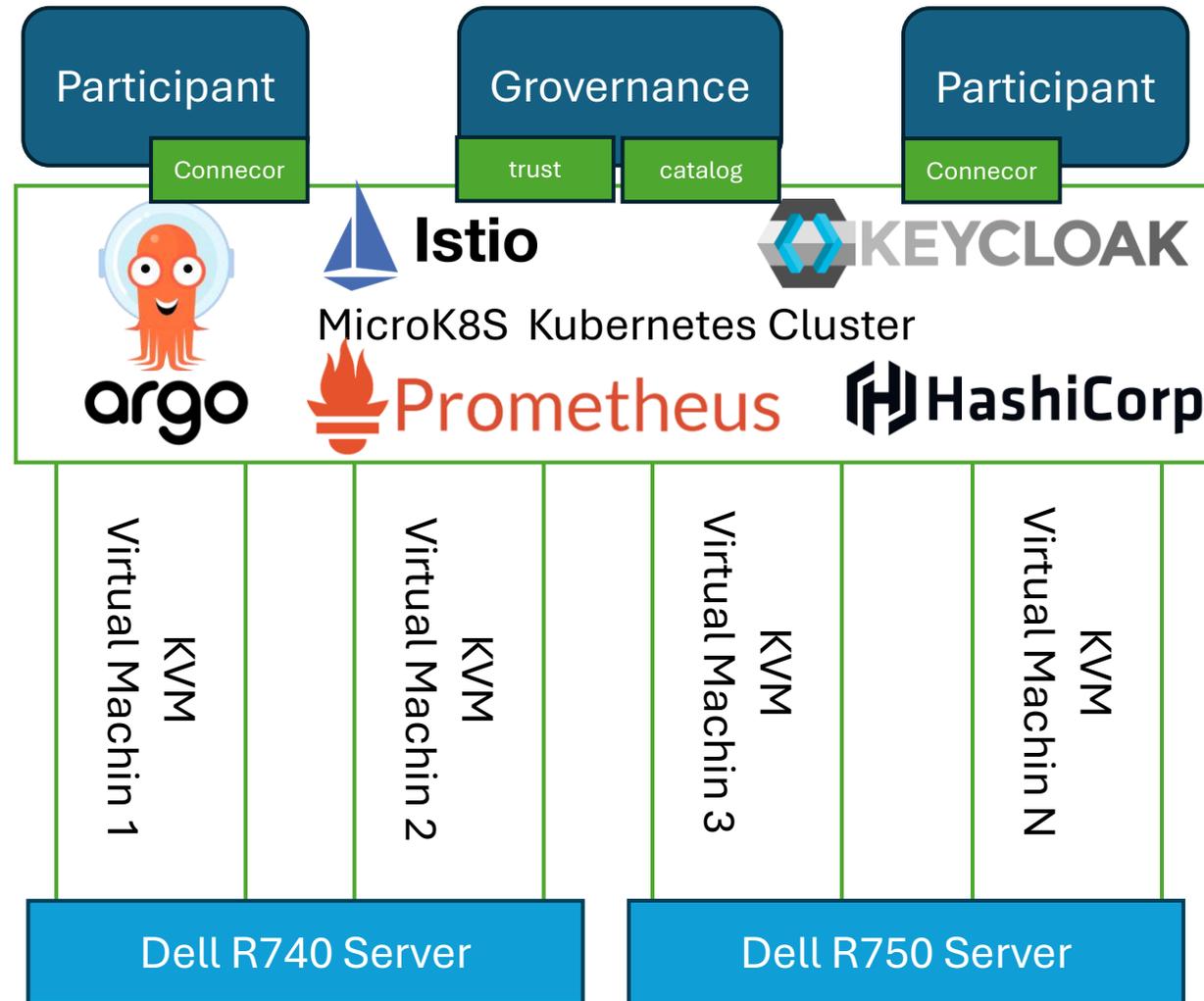- Circular economy of textile products

Energy Domain
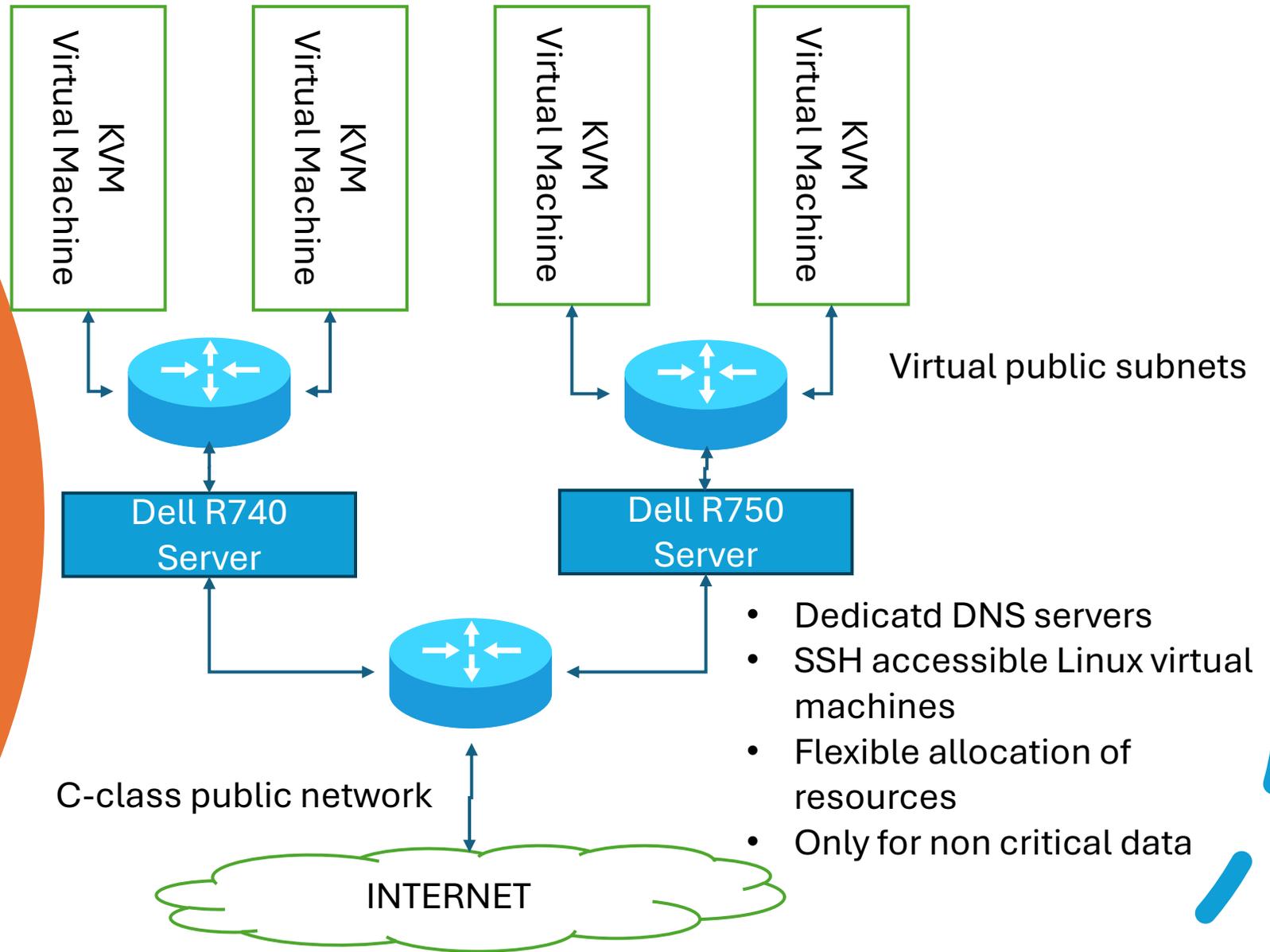
- Smart buildings

Cross Border Identity Federation

TBD

- Japan-EU Identity federation

DIL Data Space Kubernetes Playground

KVM Virtual Machine

KVM Virtual Machine

KVM Virtual Machine

KVM Virtual Machine

Virtual public subnets

Dell R740 Server

Dell R750 Server

- Dedicatd DNS servers
- SSH accessible Linux virtual machines
- Flexible allocation of resources
- Only for non critical data

C-class public network

INTERNET

DIL Data Space Kubernetes Playground

Key Concepts When Using the MicroK8s Cluster

- **Single Sign-On (SSO) via Keycloak**
  - Keycloak acts as unified authentication provider for platfrom services access
  - Rolebased access control (RBAC) supported
- **Subdomain based tenant routing**
  - Each tenant assigned to its own subdomain with TLS support (e.g. tentant.dil.collab-cloud.eu)
- **Service routing preferably via path based routing (e.g. tenant.dil.collab-cloud (RBAC).eu/service**
  - Subdomain possible if you bring your own TLS certificate
- **Istio or Traefik Ingress gateway**
- **ArgoCD for CI/CD pipeline**

Bottomline

Kubernetes is a handfull. Docker Engine is also available if kubernetes service orchestration consumes too much time

DIL Data Space Offering

- Certified IDSA Data Space Connector
  - Also EDC with Gaia-X and SIMPL

- Test environement for data space components
  - Identity management
  - Catalog components
  - Connectors
  - Different data planes

- Real life deployment with various IT infrastructures
  - KVM Virtual Machines and bare metal
  - Dockerized environments
  - Kubernetes cluster

- Support for Data Space deployments for on-premises environment, cloud infrastructure and hybrid environment