Imagine a environment that combines most of your research data management systems so you can access them from a single portal. Think of what a Virtual Research Environment (VRE) would look like that lifts the frustration of copying the same set of data around for curation, compute, archiving and sharing and having to log into different systems?

Definition Virtual Research Environment (VRE)
A self-serviced secure collaborative environment to receive, process and store and provide access to data and analytics that is compliant with the organization's and/or consortium policies and relevant rules and regulations.

Join me in a interactive journey

[Voornaam Achternaam]
[Functie]
Center for Information Technology
University of Groningen

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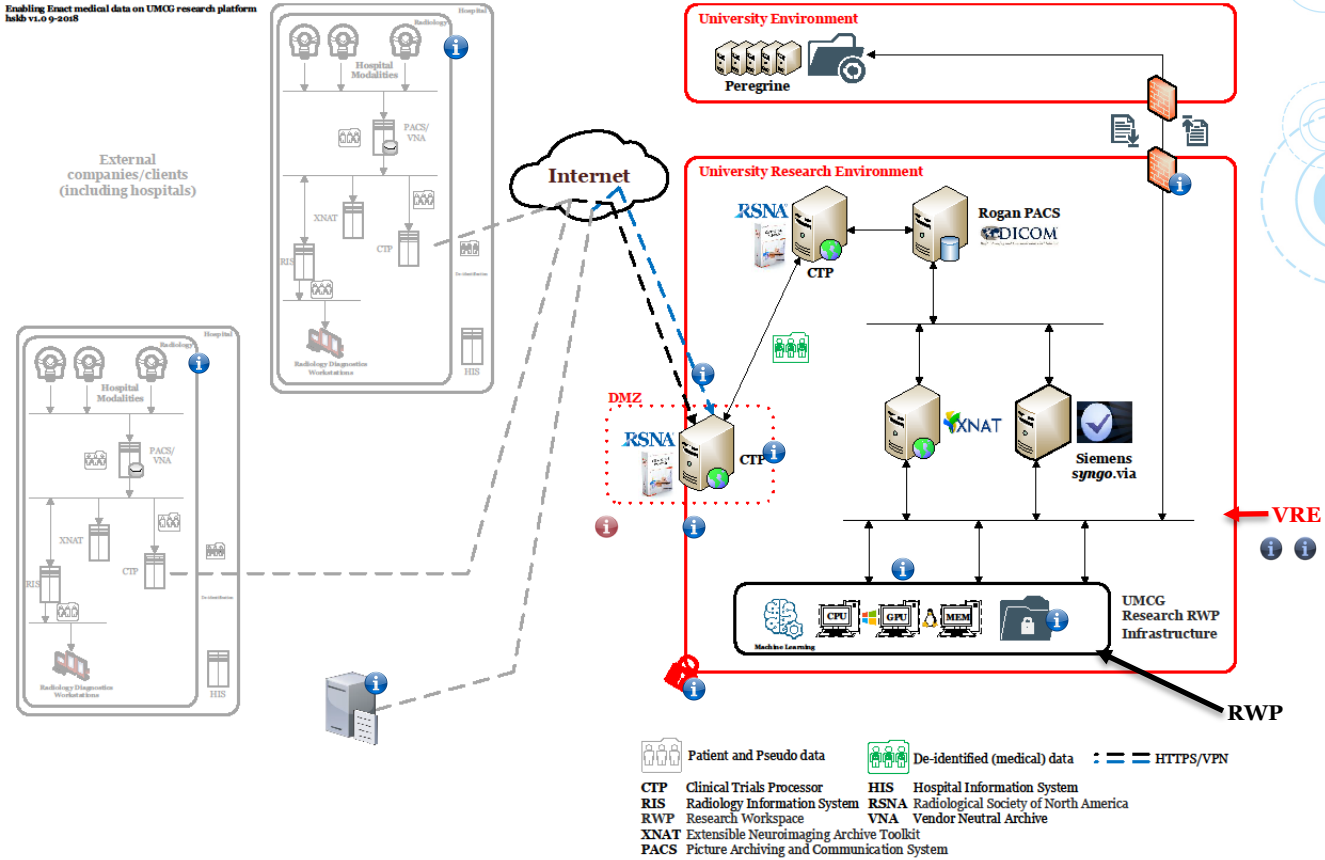

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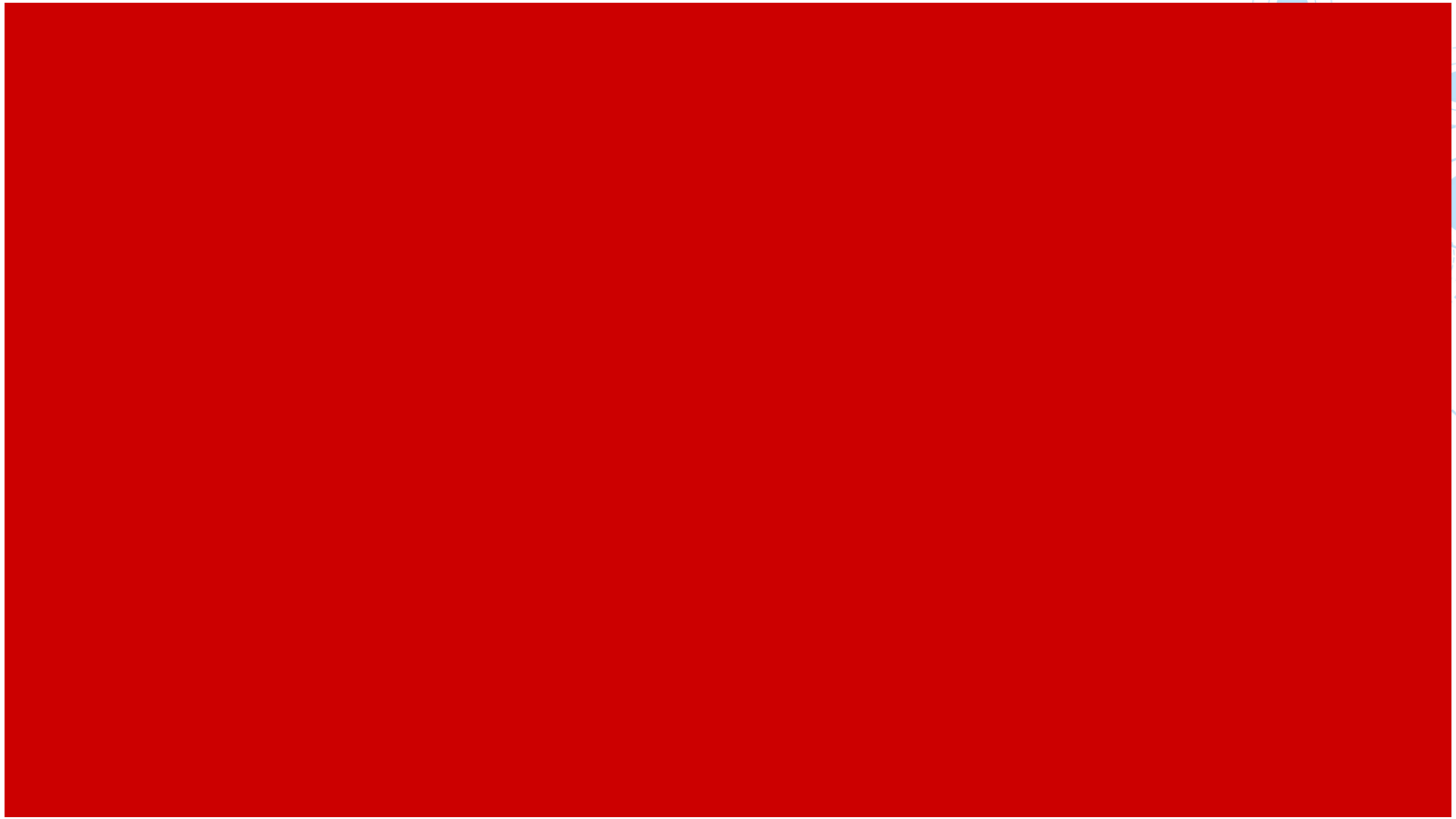

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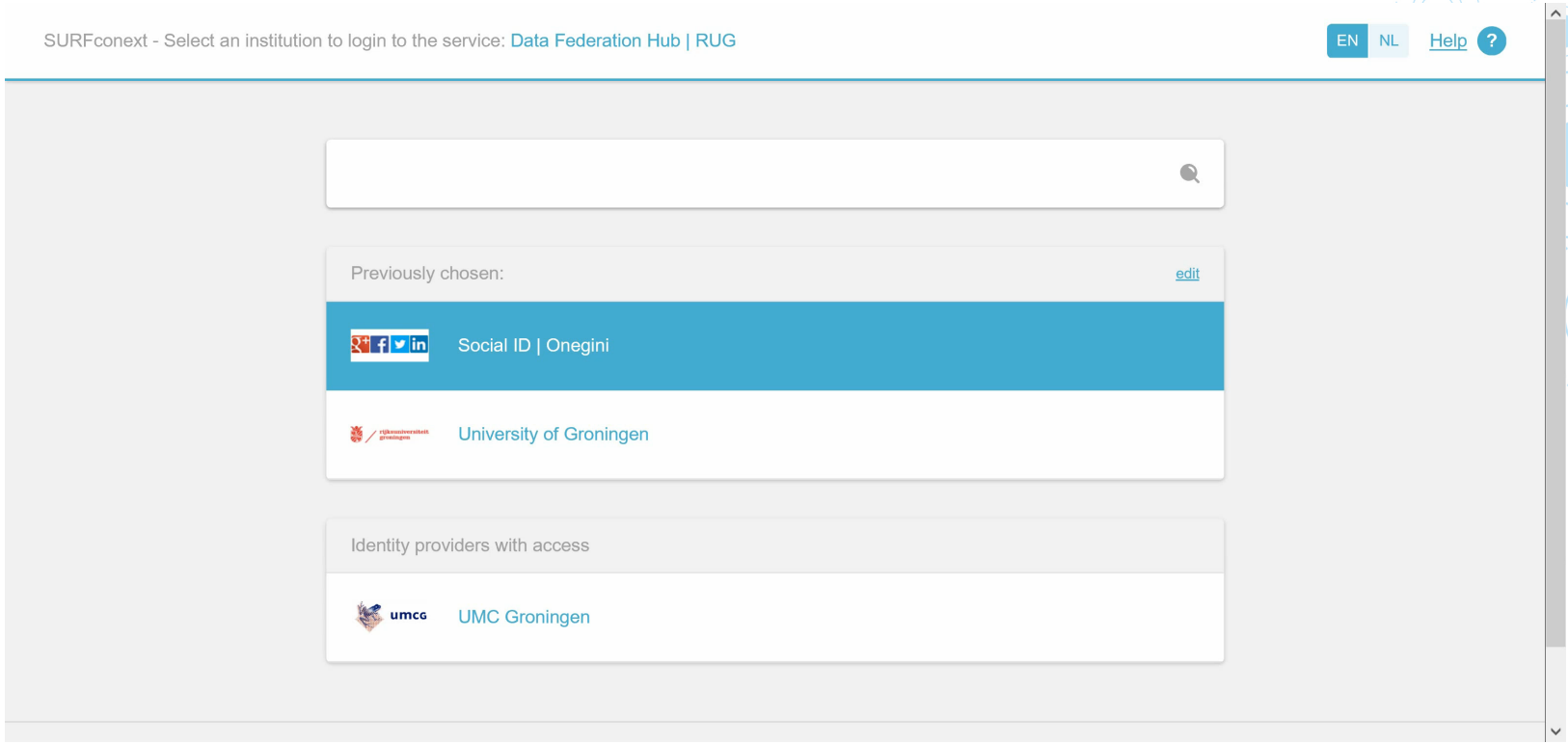

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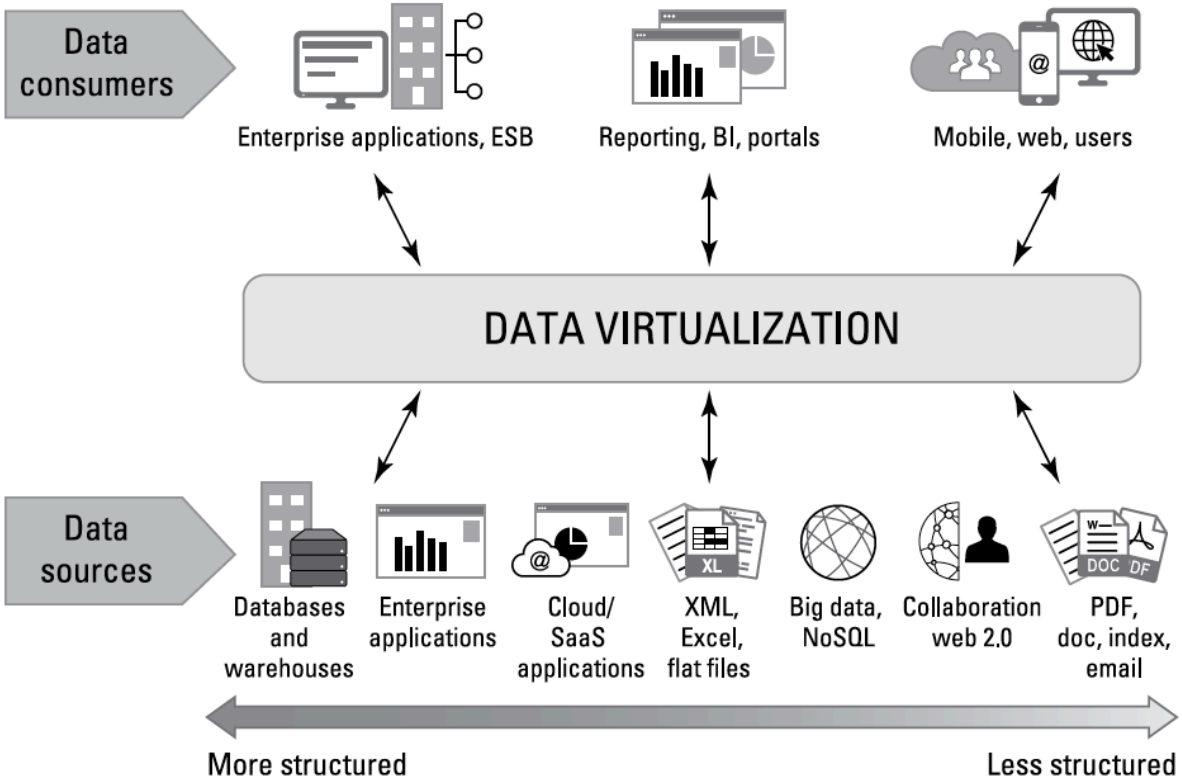
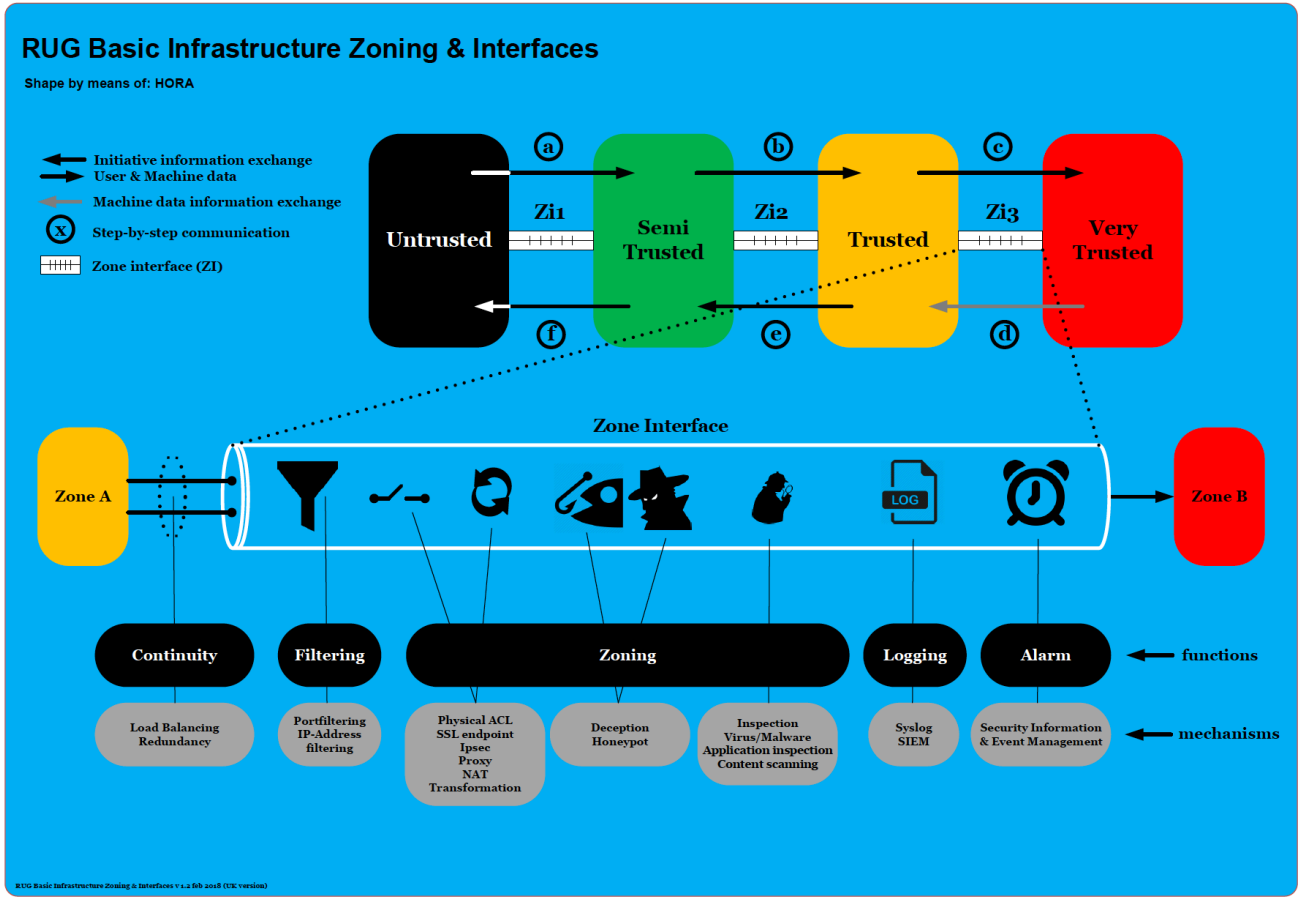
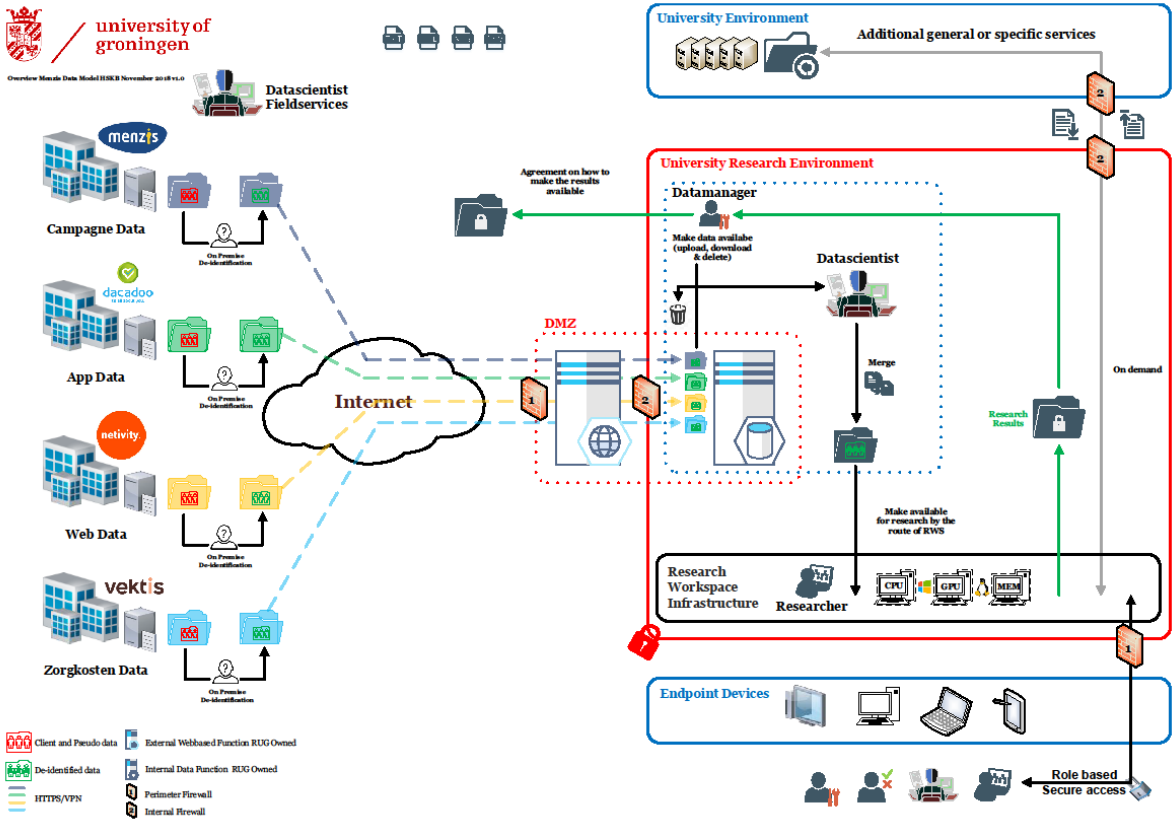


Data virtualization integrates data from disparate sources, locations, and formats to support multiple applications and users.*

* Data Virtualization For Dummies® , Denodo Special Edition © 2019


RUG Basic Infrastructure Zoning & Interfaces
Shape by means of: HORA
Initiative information exchange
User & Machine data
Machine data information exchange
Step-by-step communication
Zone interface (ZI)
Untrusted
Zi1
Semi Trusted
Zi2
Trusted
Zi3
Very Trusted
a
b
c
d
e
f
Zone Interface
Zone A
Zone B
LOG
Continuity
Filtering
Zoning
Logging
Alarm
functions
Load Balancing
Redundancy
Portfiltering
IP-Address
filtering
Physical ACL
SSL endpoint
Ipsec
Proxy
NAT
Transformation
Deception
Honeypot
Inspection
Virus/Malware
Application inspection
Content scanning
Syslog
SIEM
Security Information
& Event Management
mechanisms
RUG Basic Infrastructure Zoning & Interfaces v 1.2 feb 2018 (UK version)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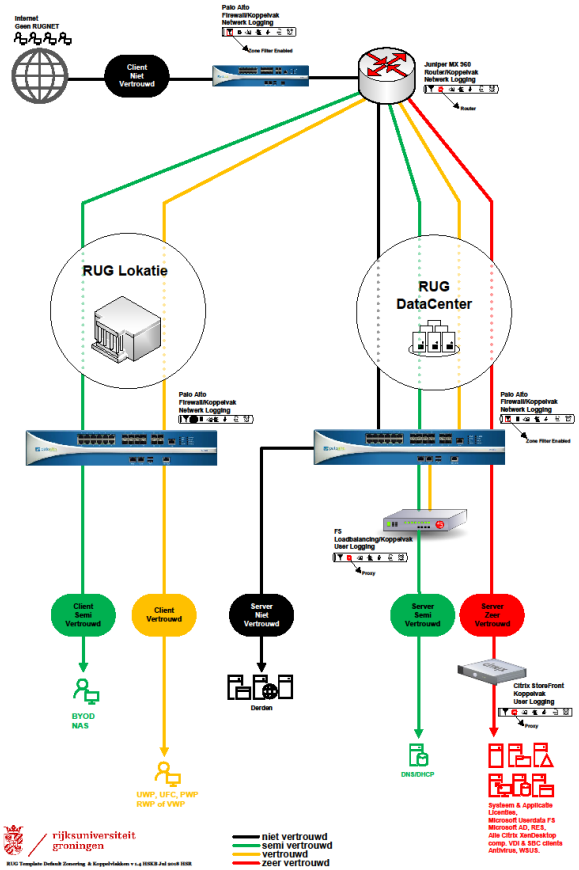
Overview Mondo Data Model HSKB November 2018 v1.0
Datascientist Fieldservices
menzis
Campagne Data
dacadoo
App Data
netivity
Web Data
vektis
Zorgkosten Data
On Premise De-identification
Internet
DMZ
Agreement on how to make the results available
University Environment
Additional general or specific services
University Research Environment
Datamanager
Make data availabe (upload, download & delete)
Datascientist
Merge
On demand
Research Results
Make available for research by the route of RWS
Research Workspace Infrastructure
Researcher
CPU
GPU
MEM
Endpoint Devices
Role based Secure access
Client and Pseudo data
De-identified data
HTTPS/VPN
External Webbased Function RUG Owned
Internal Data Function RUG Owned
Perimeter Firewall
Internal Firewall

RUG Uitgangspunten 2 + 4 Zonering & Koppelvlakken (HSR)



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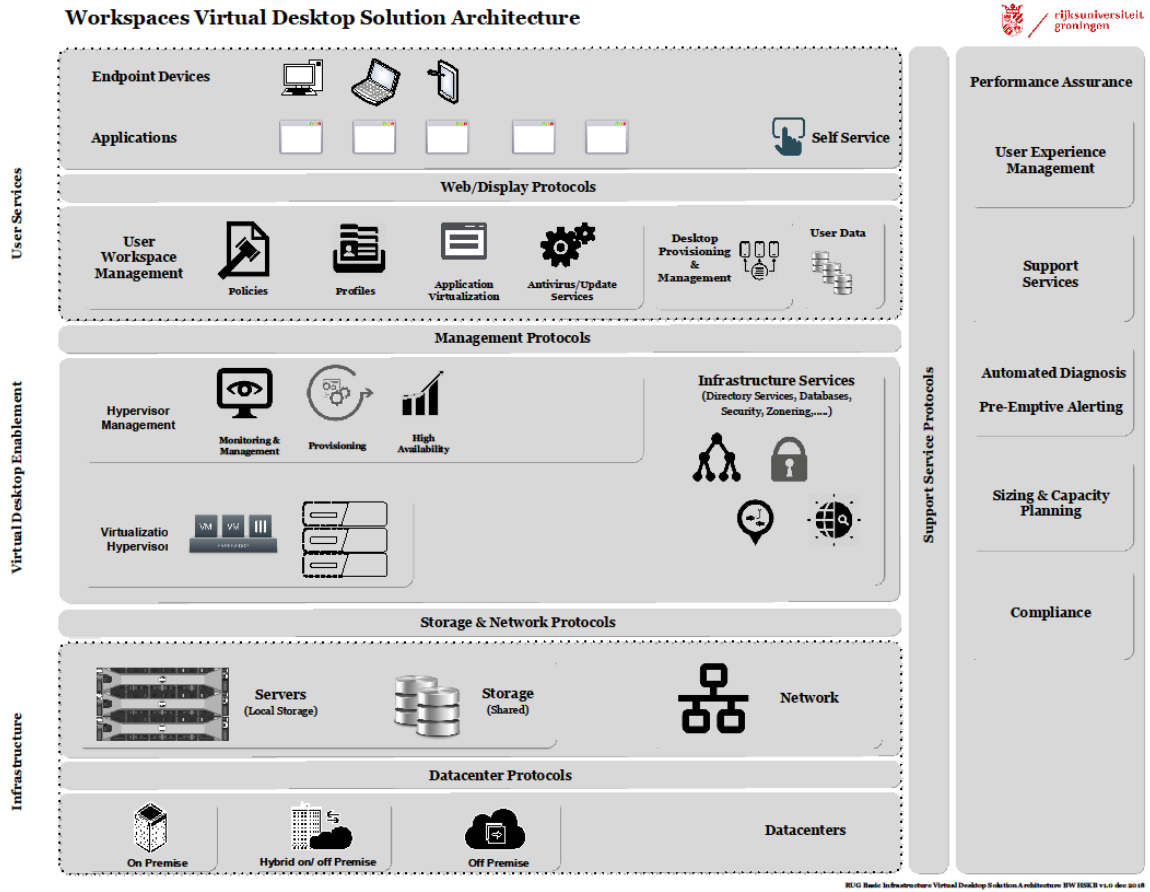
Workspaces Virtual Desktop Solution Architecture



RUG Basic Infrastructure Virtual Desktop Solution Architecture BW HSKB v1.0 dec 2018

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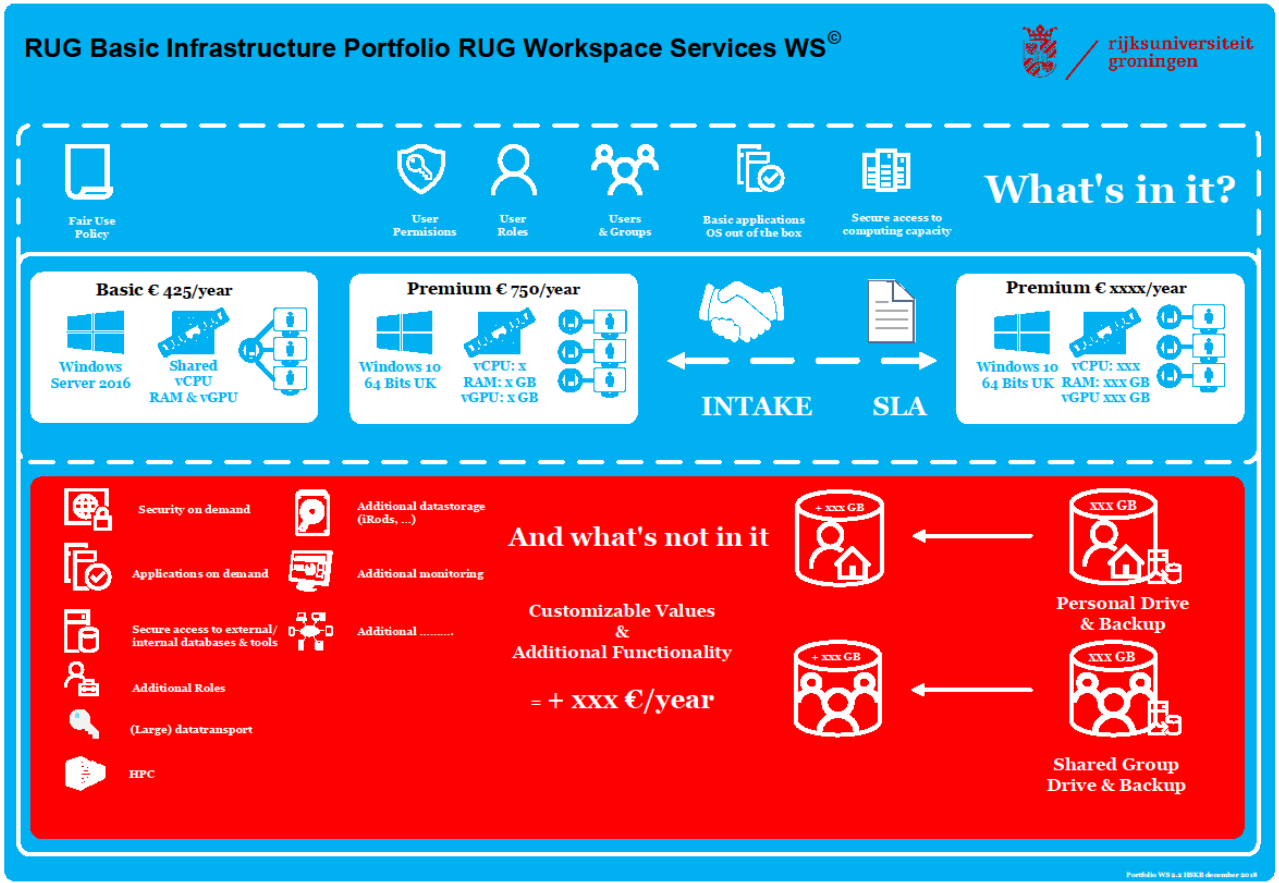
11 Interactive VRE EN



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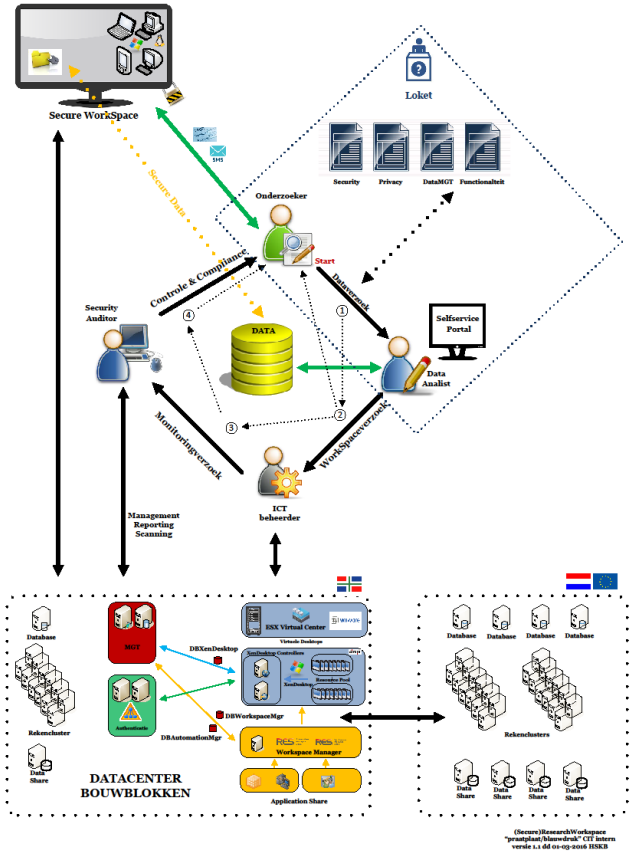

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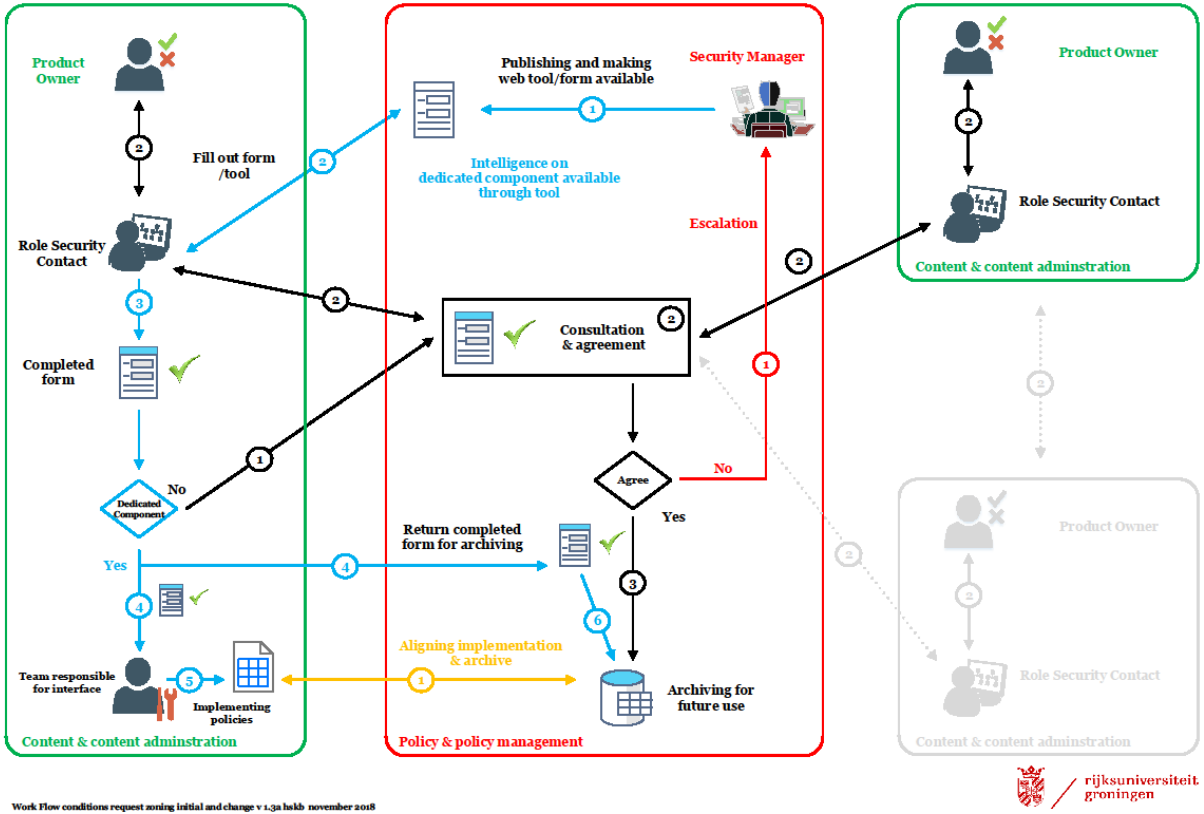

Work Flow conditions request zoning initial and change v 1.3a hskb november 2018

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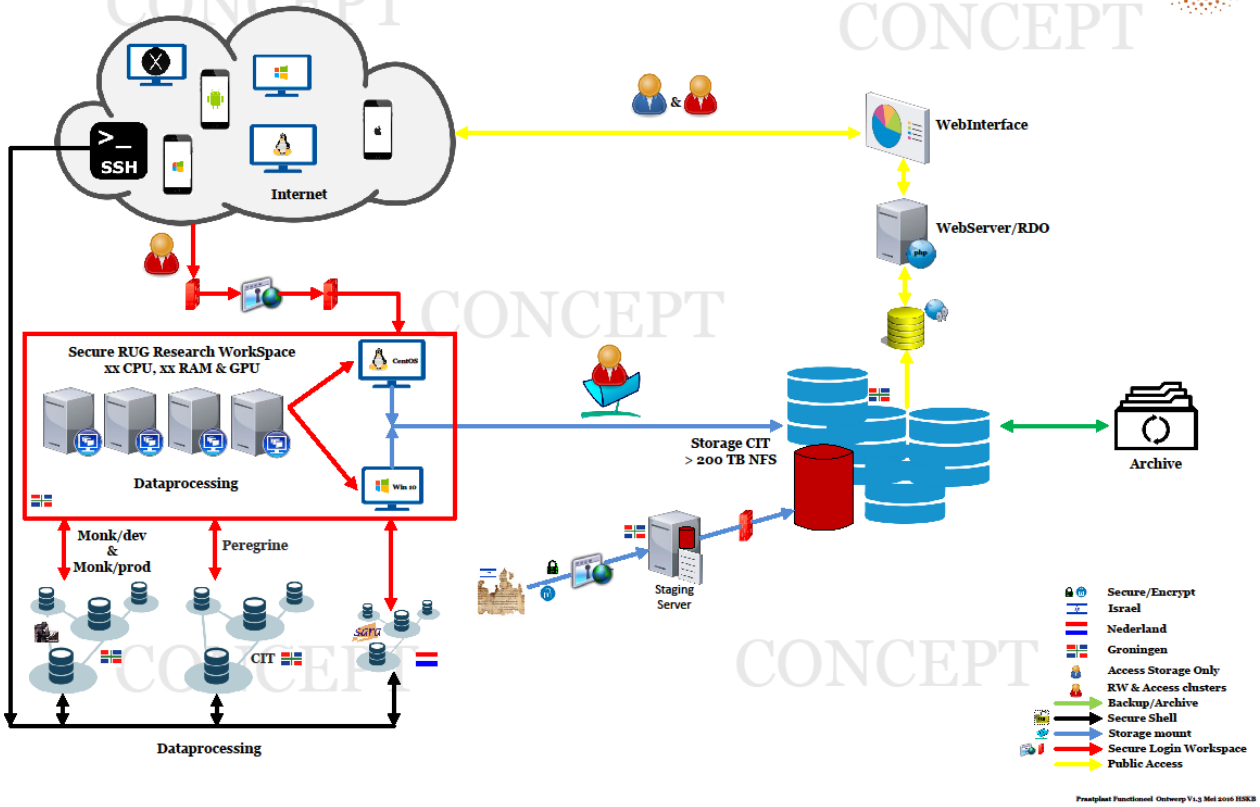
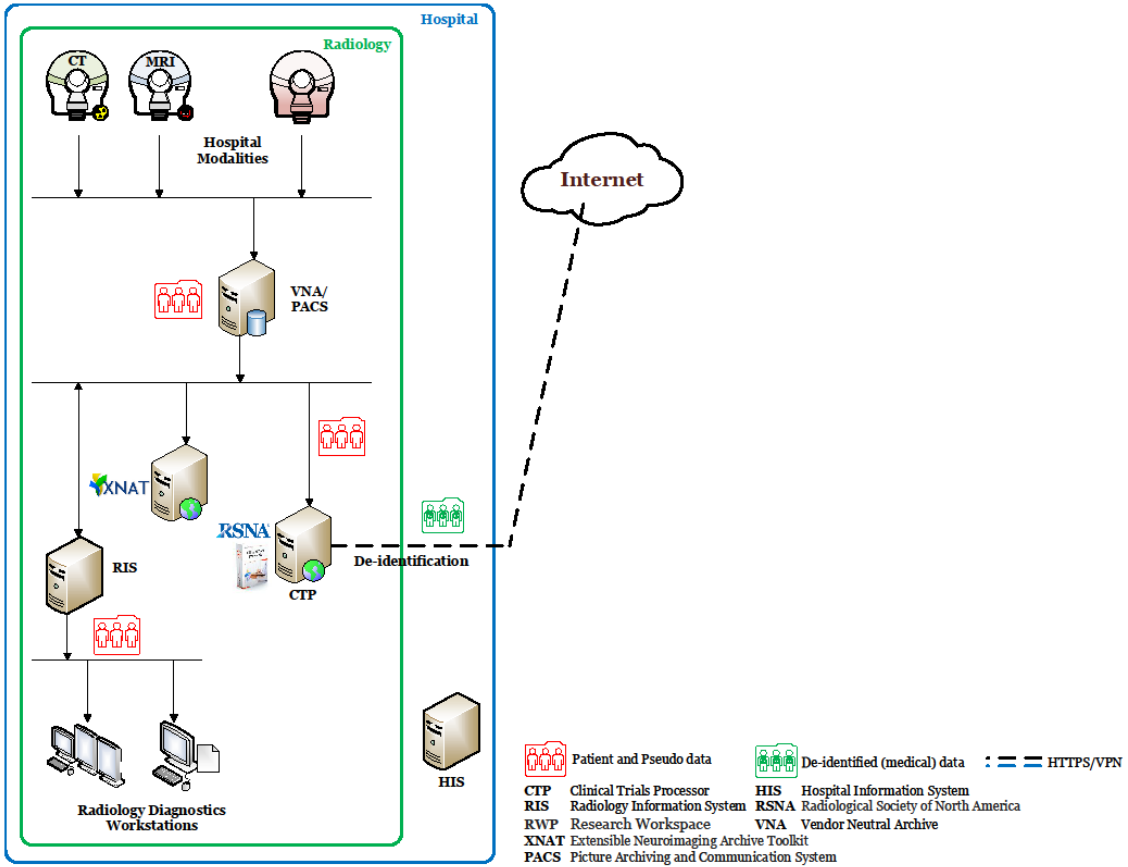

CONCEPT
CONCEPT
CONCEPT
CONCEPT
SSH
Internet
&
WebInterface
WebServer/RDO
Secure RUG Research WorkSpace
xx CPU, xx RAM & GPU
CentOS
Win 10
Dataprocessing
Storage CIT
> 200 TB NFS
Archive
Monk/dev
&
Monk/prod
Peregrine
CIT
Staging
Server
Dataprocessing
Secure/Encrypt
Israel
Nederland
Groningen
Access Storage Only
RW & Access clusters
Backup/Archive
Secure Shell
Storage mount
Secure Login Workspace
Public Access
Prestplaat Functioneel Ontwerp V1.3 Mei 2016 HSKB



Patient and Pseudo data
De-identified (medical) data
HTTPS/VPN

CTP Clinical Trials Processor
RIS Radiology Information System
RWP Research Workspace
XNAT Extensible Neuroimaging Archive Toolkit
PACS Picture Archiving and Communication System
HIS Hospital Information System
RSNA Radiological Society of North America
VNA Vendor Neutral Archive

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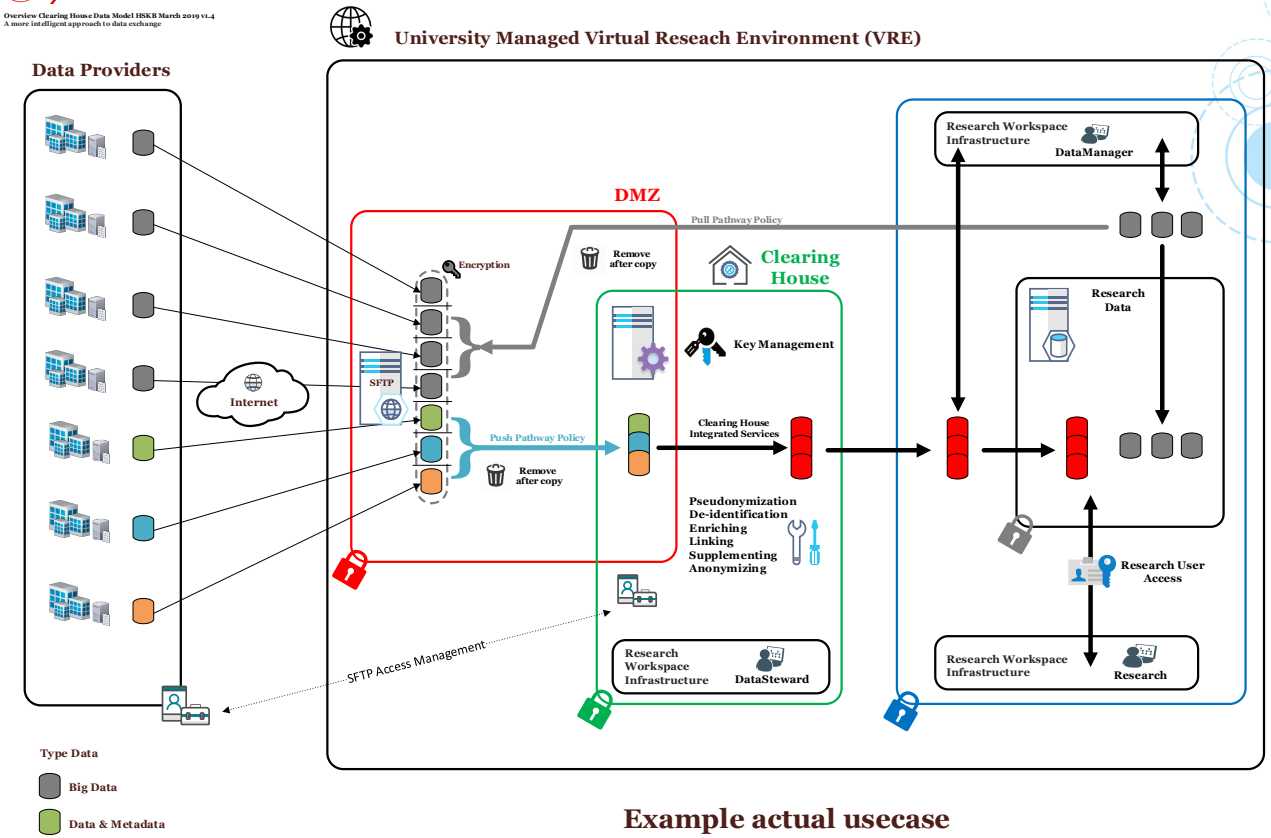
Overview Clearing House Data Model HSKB March 2019 v1.4
A more intelligent approach to data exchange



Example actual usecase

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virtual research environment

Virtual Research Environment

Self-serviced secure collaborative environment to receive, process and store and provide access to data and analytics that is compliant with the organization's and/or consortium policies and relevant rules and regulations.

https://youtu.be/YZL1X-1AzHg

Built, shaped, developed and evolving through experience

Data science, visualisation, hpc en data science teams are partners in an increasing number of research teams and contribute to research output in the form of publications, bachelor- and mastertheses, conference papers, visualisations, maps and poster presentations.

Peregrine high performance cluster already processed 2.27 million jobs.

Data Science actively supports dozens of projects and puts out a call for proposal to support 6 projects a year. Geodienst supported near to a hundred publications.

NL opendata price winner with Geodienst's **citizen science**platform PAN.

Research Portal

A repository and digital preservation service for research in and output, a comprehensive source of information on all aspects of research and self-serviced access to research tools and infrastructure.

Research Data Management System

Research data management system (RDMS) is a facility that takes care of the organization, storage, preservation, and sharing of data collected and used in a research project

Virtual Desktop Infrastructure

Virtual desktop infrastructure (VDI) is a managed, secure desktop service, a fast, responsive desktop of your choice that they can access anywhere, anytime, from any supported device.

High Performance Computing

Use of super computers and parallel processing techniques for solving complex computational problems.

Clearing House

Acts as an intermediary between a research use case and VRE organization and seeks to ensure that the process from intake to VRE solution is smooth.

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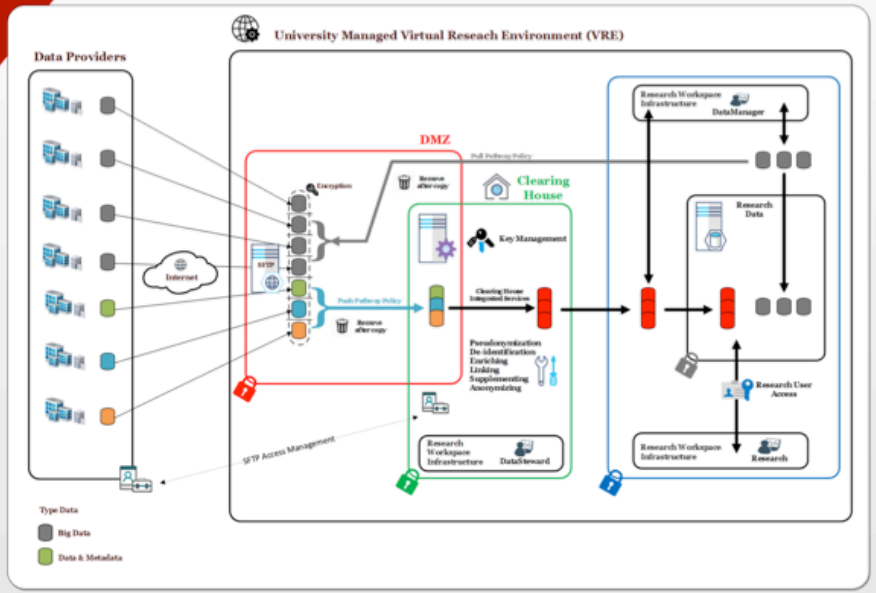
virtual research environment

Built with and for Researchers

The displayed diagram depicts an actual use case of research currently being conducted. The study makes use of several VRE components which have been set up to enable the researchers to work with Human Subject Data.



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