Virus Outbreak Data Network (VODAN)

FAIR Data Points as a service for data-driven research (COVID-19 pressure-cooker use case)

The VODAN Implementation Network is one of the joint activities carried out by **CODATA, RDA, WDS, and GO FAIR** (Link to the **Data Together Statement**).
Read the full statement on **Data Together COVID-19 Appeal and Actions**.

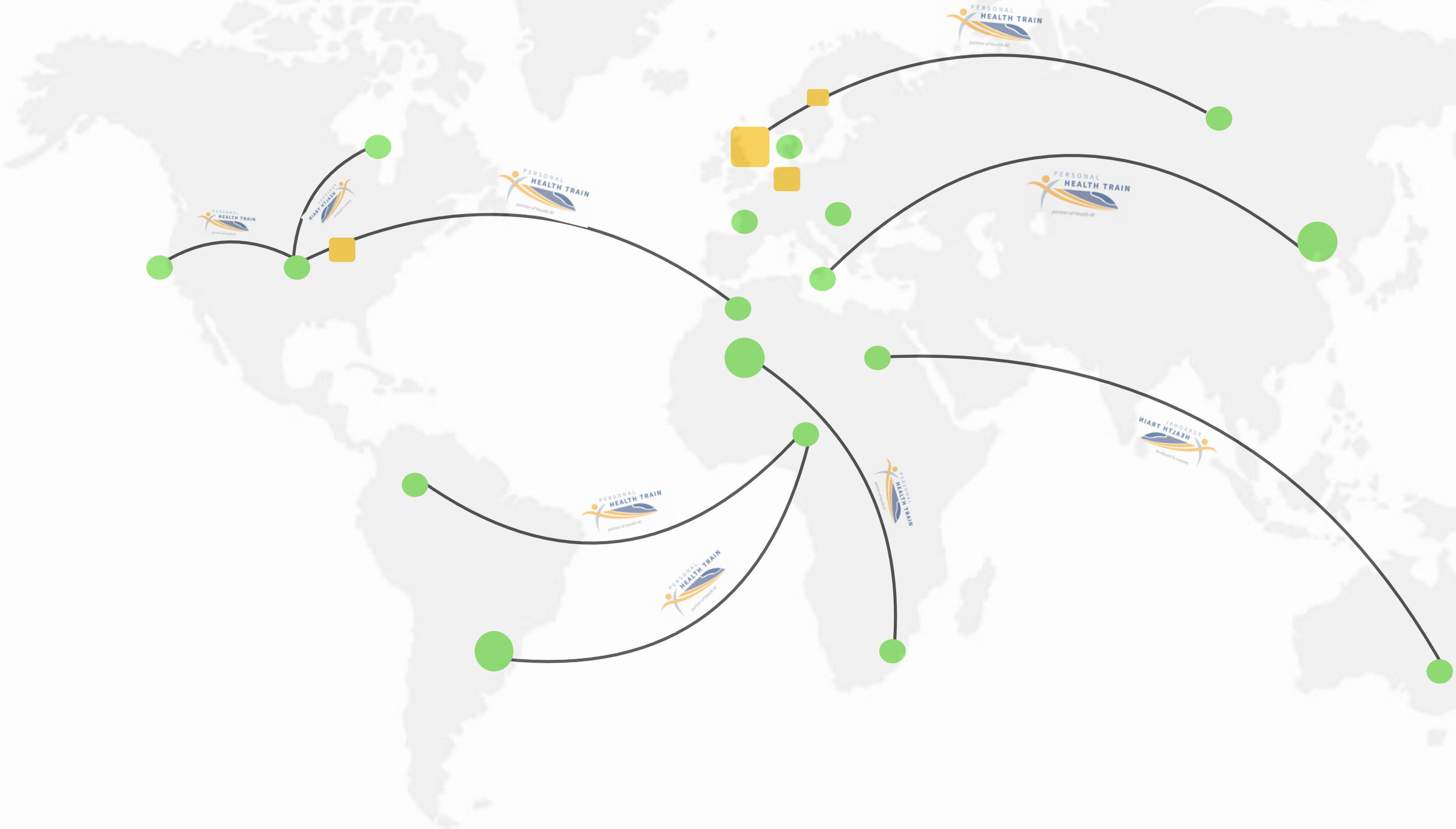
Active GO FAIR Implementation Network

The spread of the virus causing the COVID-19 outbreak is far from over. During this epidemic and in earlier occasions, we have seen severely suboptimal data management and data reuse. Moreover, access to the immensely valuable data of past and current epidemics is not always equally accessible for different affected populations and countries. For instance, the data from the past Ebola epidemics are very difficult to find, to access, and if accessible, they are not interoperable, *let alone reusable*. Under the urgent need to harness machine-learning and future AI approaches to discover meaningful patterns in epidemic outbreaks, we need to do better and ensure that data are FAIR (in this sense also meaning **F**ederated, **AI**–**R**eady).

ZonMw

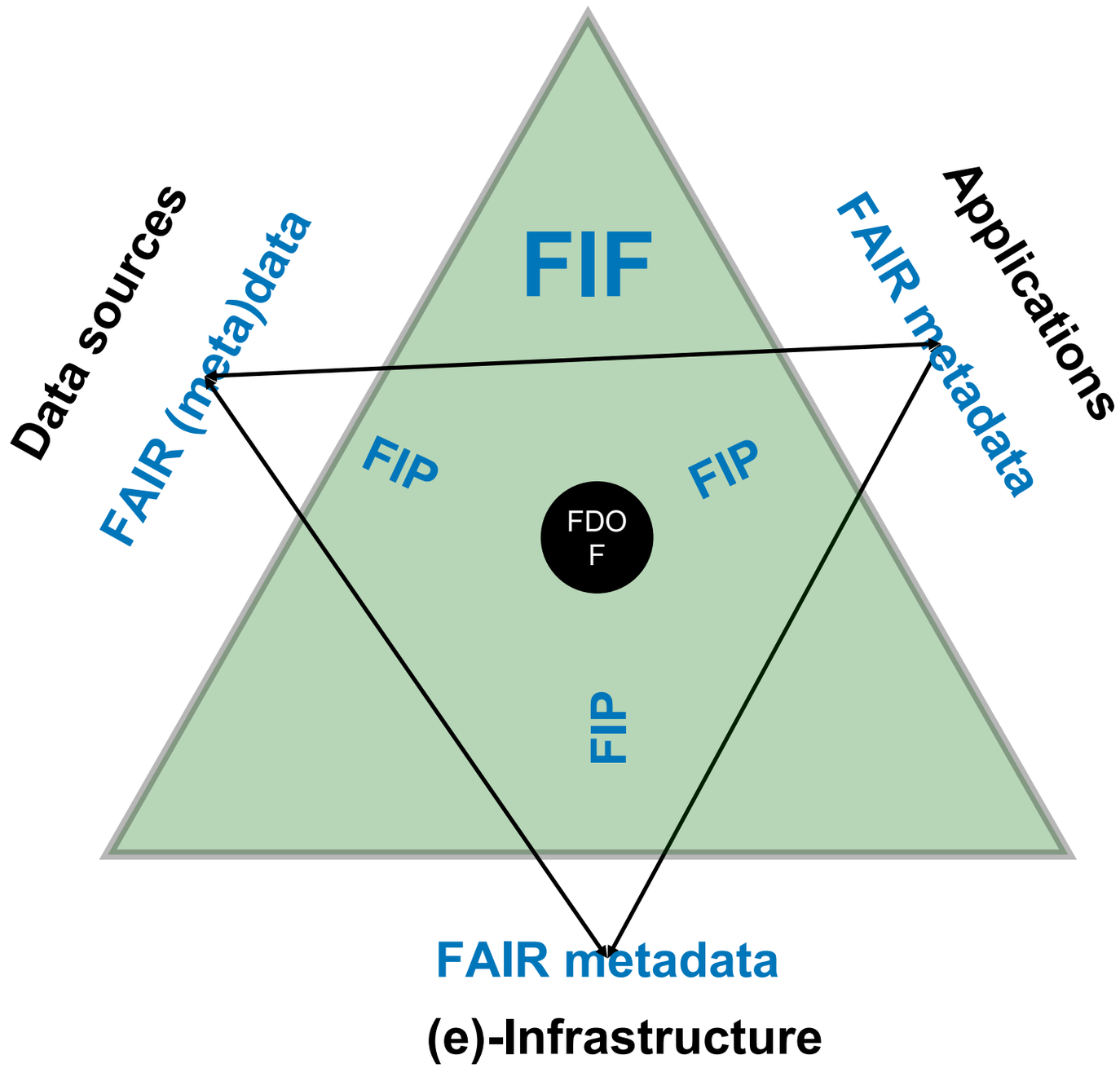
The VODAN-IN approach: distributed analytics over FAIR data

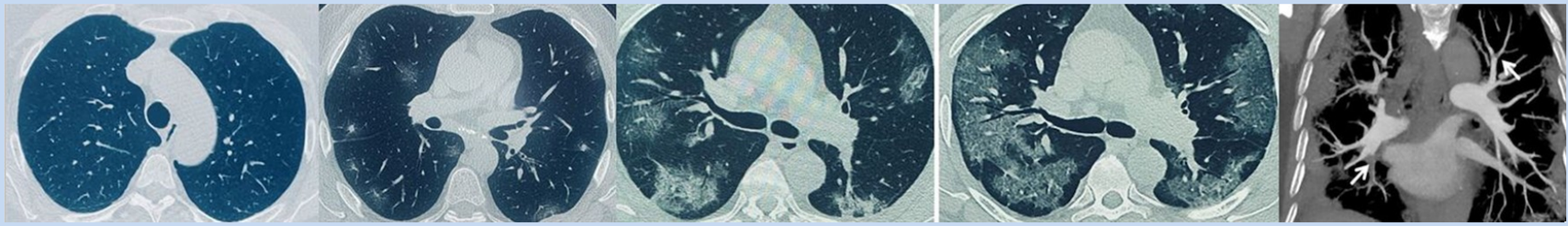
https://vimeo.com/143246458



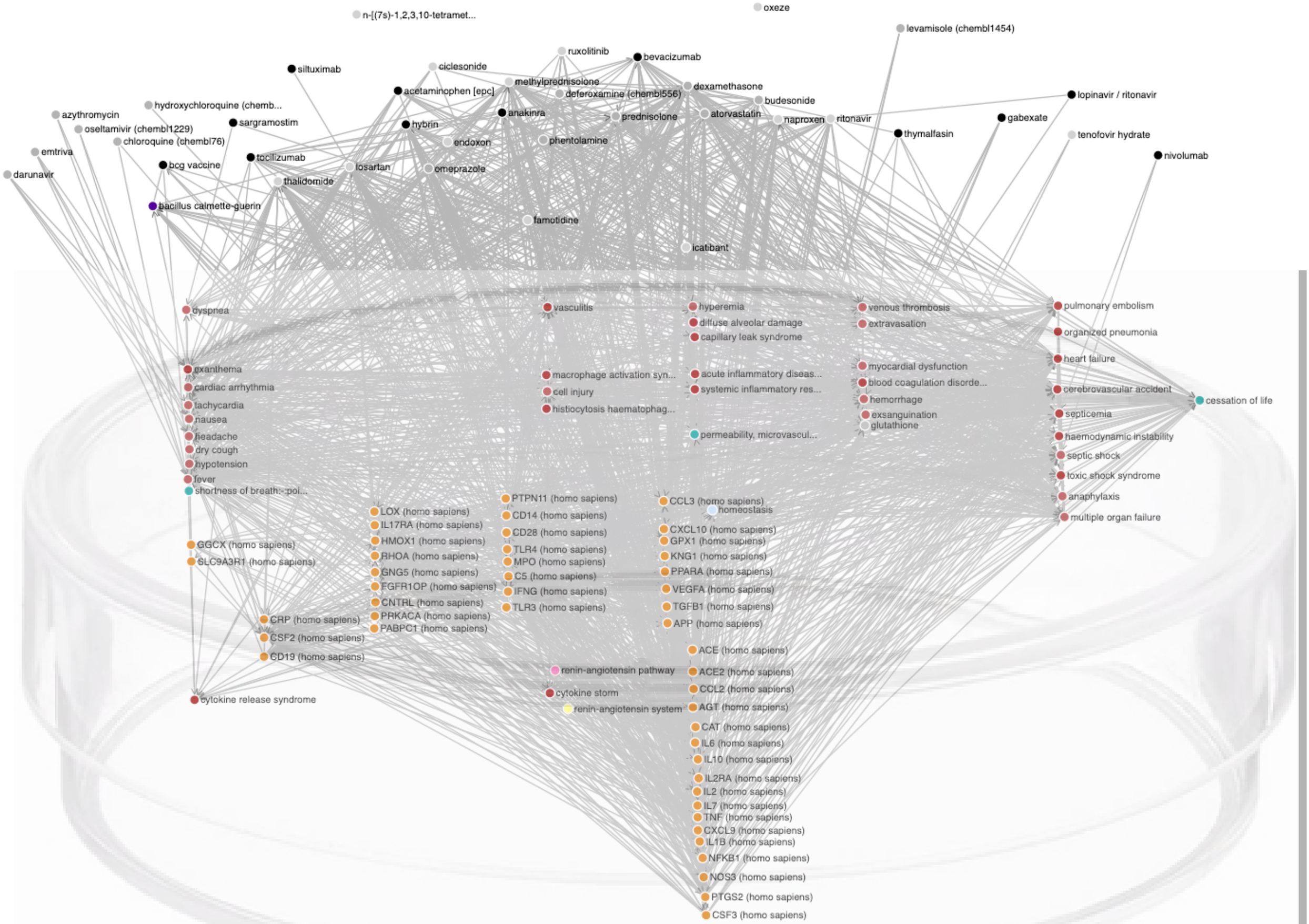
IFDS: 2: Basic Implementation Choices

- Based on FAIR GP
- Implementation is FAIR implementation Framework (FIF)
- Architecture FIF based on FD(o)F
- All elements have FAIR metadata, some data are FAIR
- All elements become ‘inter’-actionable via FAIR implementation profiles (FIP)





I
II
III
IV
V
dyspnea
exanthema
cardiac arrhythmia
tachycardia
nausea
headache
dry cough
hypotension
fever
shortness of breath:-:poi...
GGCX (homo sapiens)
SLC9A3R1 (homo sapiens)
CRP (homo sapiens)
CSF2 (homo sapiens)
CD19 (homo sapiens)
cytokine release syndrome
vasculitis
macrophage activation syn...
cell injury
histiocytosis haematophag...
LOX (homo sapiens)
IL17RA (homo sapiens)
HMOX1 (homo sapiens)
RHOA (homo sapiens)
GNG5 (homo sapiens)
EGFR1OP (homo sapiens)
CNTRL (homo sapiens)
PRKACA (homo sapiens)
PABPC1 (homo sapiens)
PTPN11 (homo sapiens)
CD14 (homo sapiens)
CD28 (homo sapiens)
TLR4 (homo sapiens)
MPO (homo sapiens)
C5 (homo sapiens)
IFNG (homo sapiens)
TLR3 (homo sapiens)
renin-angiotensin pathway
cytokine storm
renin-angiotensin system
hyperemia
diffuse alveolar damage
capillary leak syndrome
acute inflammatory diseas...
systemic inflammatory res...
permeability, microvascul...
CCL3 (homo sapiens)
homeostasis
CXCL10 (homo sapiens)
GPX1 (homo sapiens)
KNG1 (homo sapiens)
PPARA (homo sapiens)
VEGFA (homo sapiens)
TGFB1 (homo sapiens)
APP (homo sapiens)
ACE (homo sapiens)
ACE2 (homo sapiens)
CCL2 (homo sapiens)
AGT (homo sapiens)
CAT (homo sapiens)
IL6 (homo sapiens)
IL10 (homo sapiens)
IL2RA (homo sapiens)
IL2 (homo sapiens)
IL7 (homo sapiens)
TNF (homo sapiens)
CXCL9 (homo sapiens)
IL1B (homo sapiens)
NFKB1 (homo sapiens)
NOS3 (homo sapiens)
PTGS2 (homo sapiens)
CSF3 (homo sapiens)
venous thrombosis
extravasation
myocardial dysfunction
blood coagulation disorde...
hemorrhage
exsanguination
glutathione
pulmonary embolism
organized pneumonia
heart failure
cerebrovascular accident
septicemia
haemodynamic instability
septic shock
toxic shock syndrome
anaphylaxis
multiple organ failure
cessation of life


n-[(7s)-1,2,3,10-tetramet...
oxeze
levamisole (chembl1454)
ruxolitinib
bevacizumab
siltuximab
ciclesonide
methylprednisolone
dexamethasone
acetaminophen [epc]
deferoxamine (chembl556)
budesonide
lopinavir / ritonavir
hydroxychloroquine (chemb...
azythromycin
anakinra
prednisolone
atorvastatin
naproxen
ritonavir
gabexate
sargramostim
oseltamivir (chembl1229)
hybrin
thymalfasin
tenofovir hydrate
chloroquine (chembl76)
endoxon
phentolamine
emtriva
nivolumab
tocilizumab
bcg vaccine
losartan
omeprazole
darunavir
thalidomide
bacillus calmette-guerin
famotidine
icatibant
dyspnea
vasculitis
hyperemia
diffuse alveolar damage
capillary leak syndrome
venous thrombosis
extravasation
pulmonary embolism
organized pneumonia
heart failure
exanthema
cardiac arrhythmia
tachycardia
nausea
headache
dry cough
hypotension
fever
shortness of breath; poi...
macrophage activation syn...
cell injury
histiocytosis haematophag...
acute inflammatory diseas...
systemic inflammatory res...
permeability, microvascul...
myocardial dysfunction
blood coagulation disorde...
hemorrhage
exsanguination
glutathione
cerebrovascular accident
cessation of life
septicemia
haemodynamic instability
septic shock
toxic shock syndrome
anaphylaxis
multiple organ failure
LOX (homo sapiens)
IL17RA (homo sapiens)
HMOX1 (homo sapiens)
RHOA (homo sapiens)
GNG5 (homo sapiens)
FGFR1OP (homo sapiens)
CNTRL (homo sapiens)
PRKACA (homo sapiens)
PABPC1 (homo sapiens)
PTPN11 (homo sapiens)
CD14 (homo sapiens)
CD28 (homo sapiens)
TLR4 (homo sapiens)
MPO (homo sapiens)
C5 (homo sapiens)
IFNG (homo sapiens)
TLR3 (homo sapiens)
CCL3 (homo sapiens)
homeostasis
CXCL10 (homo sapiens)
GPX1 (homo sapiens)
KNG1 (homo sapiens)
PPARA (homo sapiens)
VEGFA (homo sapiens)
TGFB1 (homo sapiens)
APP (homo sapiens)
GGCX (homo sapiens)
SLC9A3R1 (homo sapiens)
CRP (homo sapiens)
CSF2 (homo sapiens)
CD19 (homo sapiens)
renin-angiotensin pathway
cytokine storm
renin-angiotensin system
ACE (homo sapiens)
ACE2 (homo sapiens)
CCL2 (homo sapiens)
AGT (homo sapiens)
CAT (homo sapiens)
IL6 (homo sapiens)
IL10 (homo sapiens)
IL2RA (homo sapiens)
IL2 (homo sapiens)
IL7 (homo sapiens)
TNF (homo sapiens)
CXCL9 (homo sapiens)
IL1B (homo sapiens)
NFKB1 (homo sapiens)
NOS3 (homo sapiens)
PTGS2 (homo sapiens)
CSF3 (homo sapiens)
cytokine release syndrome

Example: The Trusted World of Corona