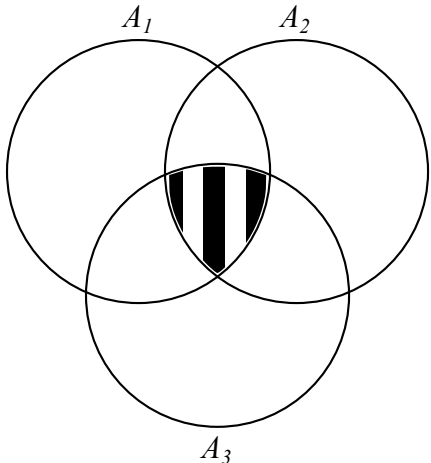
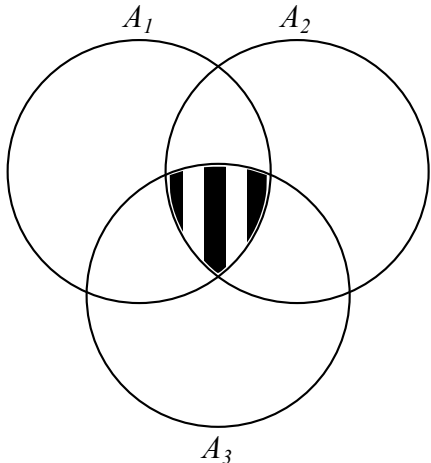


Data point of view

$$Q_1(x; z, w) := A_1(x, y), A_2(y, z), A_3(y, w)$$

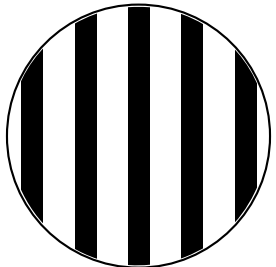


$$Q_2(x; z, w) := A_1(x, y), A_2(y, z), A_3(y, w)$$



Data services point of view

$Q_1.R = \{$
availability > 98%
response time < 2s
price per call < 0.2\$
authentication = true
privacy = yes
trust = high
degree of rawess = none
veracity = true
production time = 12h/day
production rate = 0.5GB/day
data type = none
freshness = yes
provenance = certified
 $\}$



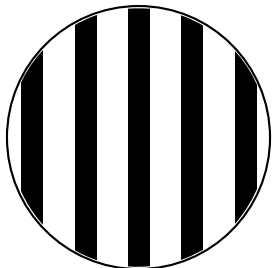
$$Q_1.S \equiv Q_2.S$$

$Q_2.R = \{$
availability > 98%
response time < 2s
price per call < 0.2\$
authentication = true
privacy = yes
trust = high
degree of rawess = none
veracity = true
production time = 12h/day
production rate = 0.5GB/day
data type = none
freshness = yes
provenance = certified
 $\}$

Universe of data services

Rewritings point of view

$Q_1.R = \{$
cost < 5\$
total response time < 5s
 $\}$



$$Q_1.C \equiv Q_2.C$$

$Q_2.R = \{$
cost < 5\$
total response time < 5s
 $\}$