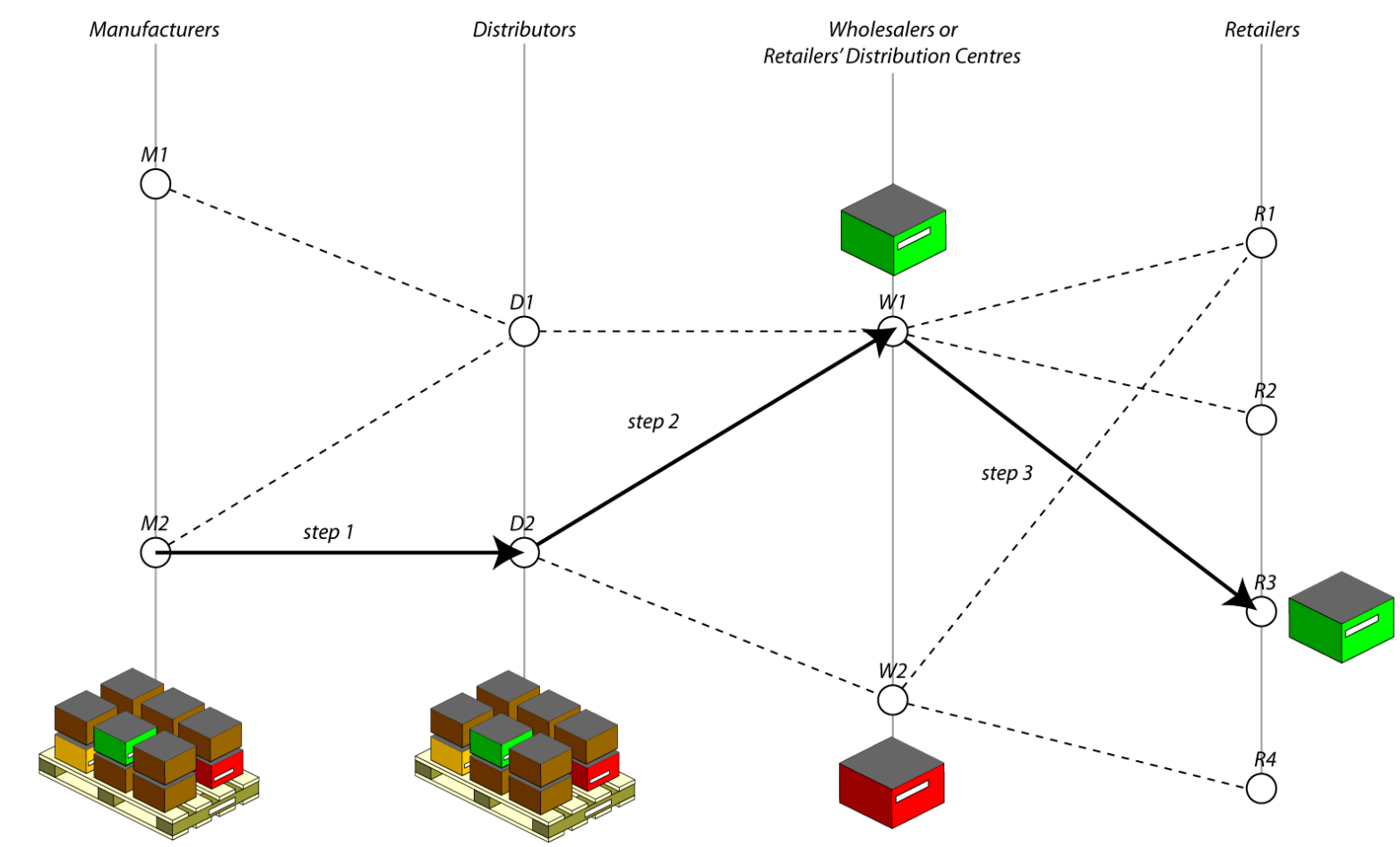
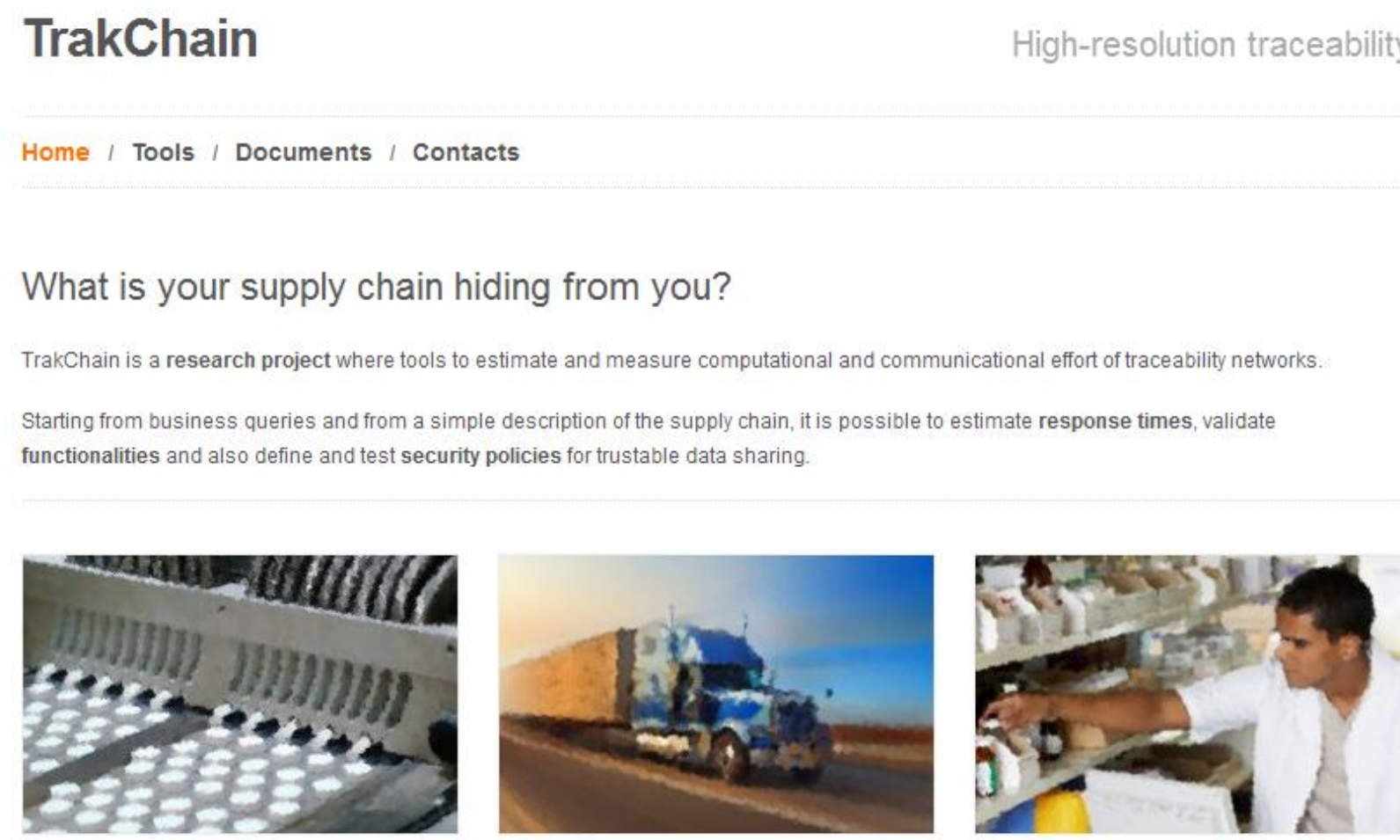
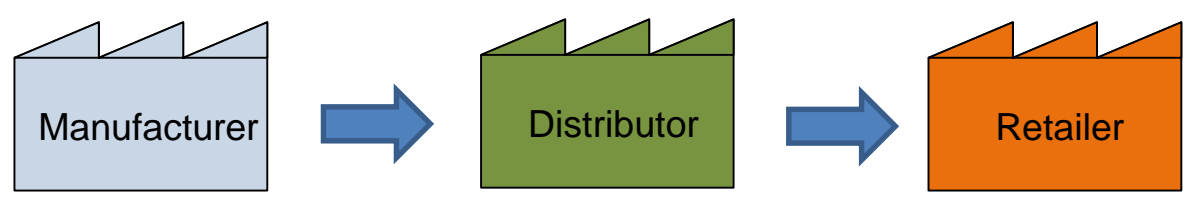


# TrakChain protects Track & Trace data in the Internet of (many) Things

<http://trakchain.net>

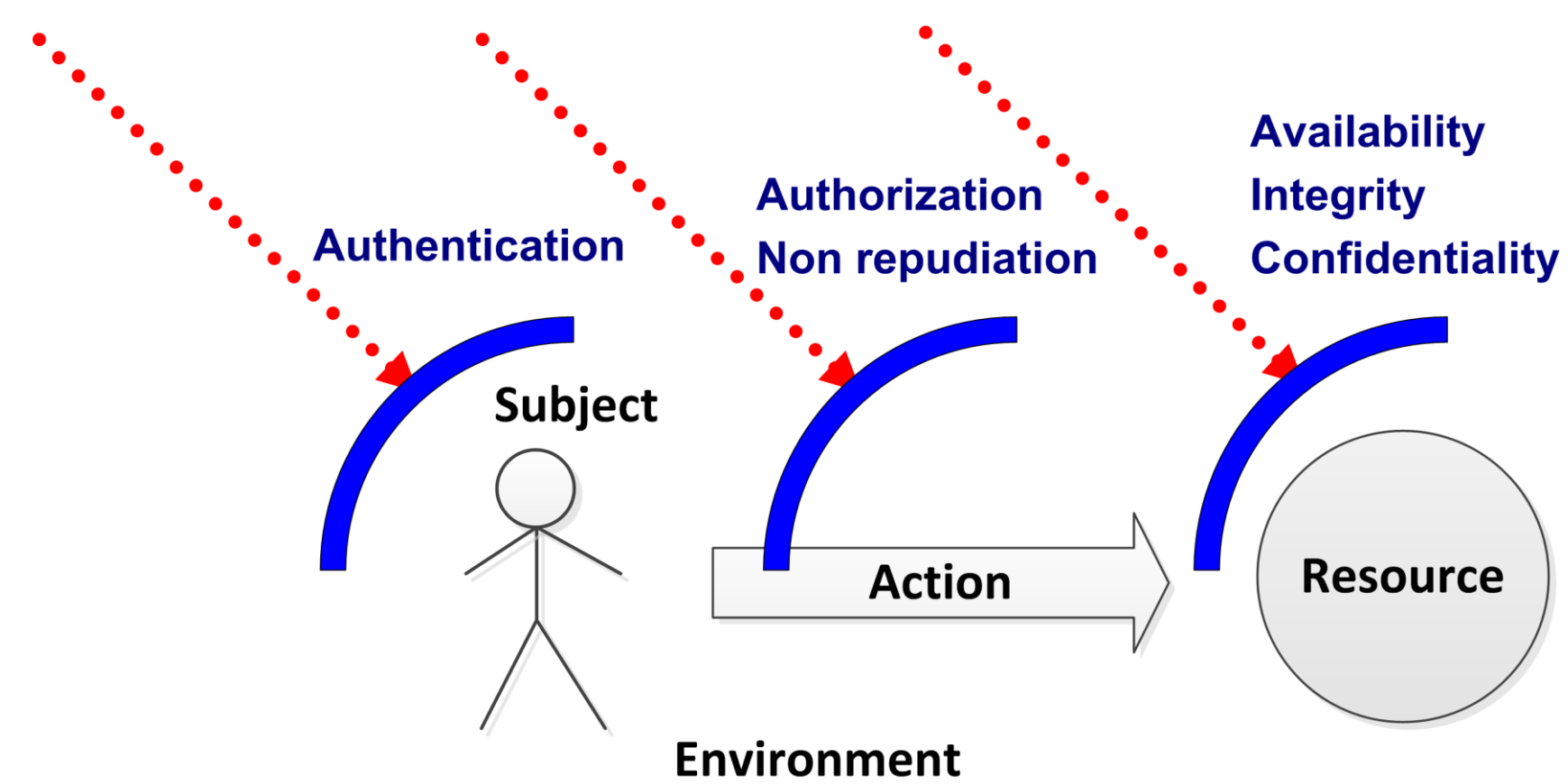
## Traceability systems assessment framework



Each individual item takes a unique path...



## Traceability data security



## Externalized security

Authentication

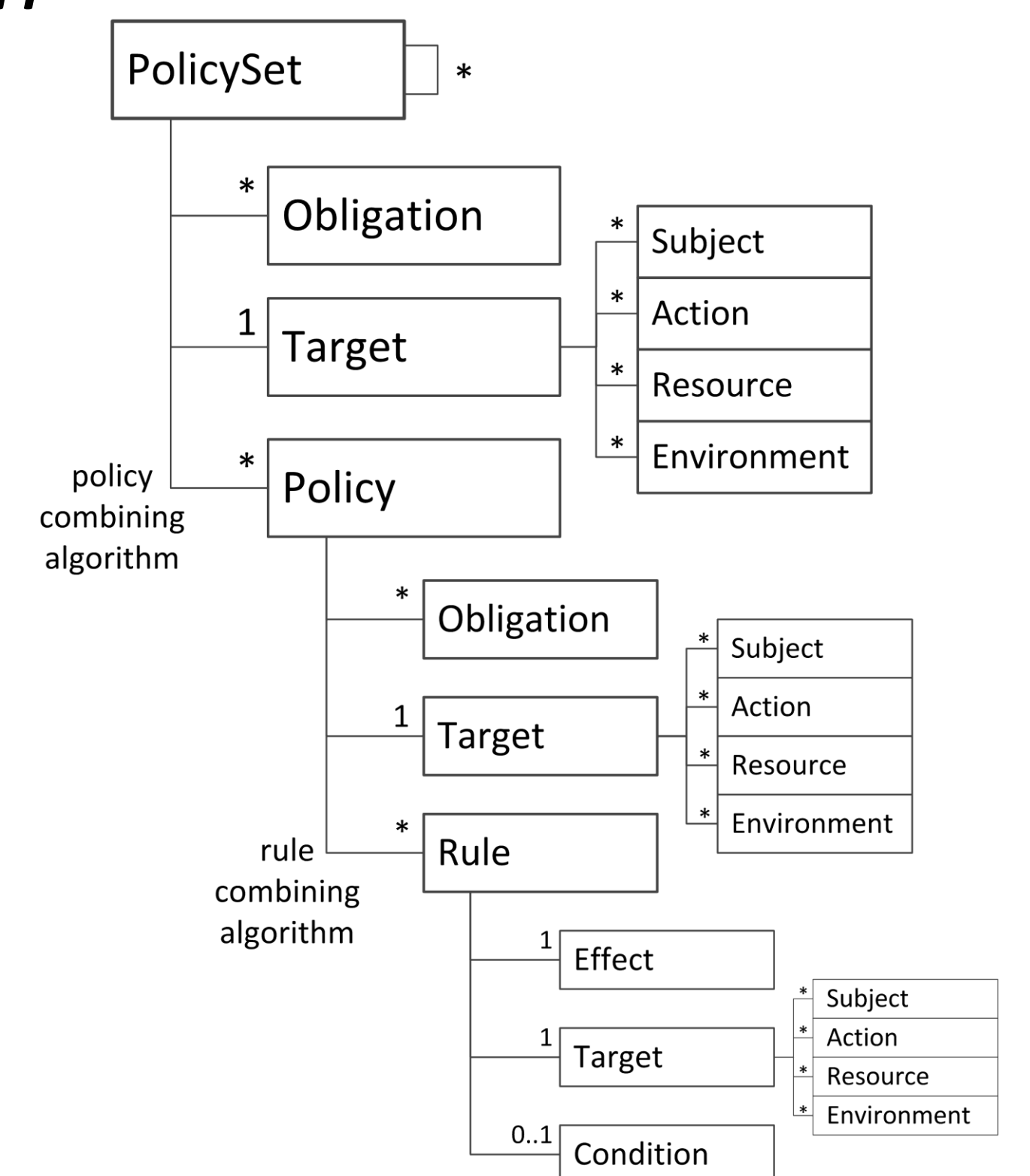
SAML

TLS

Message level (crypto) security

## XACML – eXtensible Access Control Markup Language

Authorization



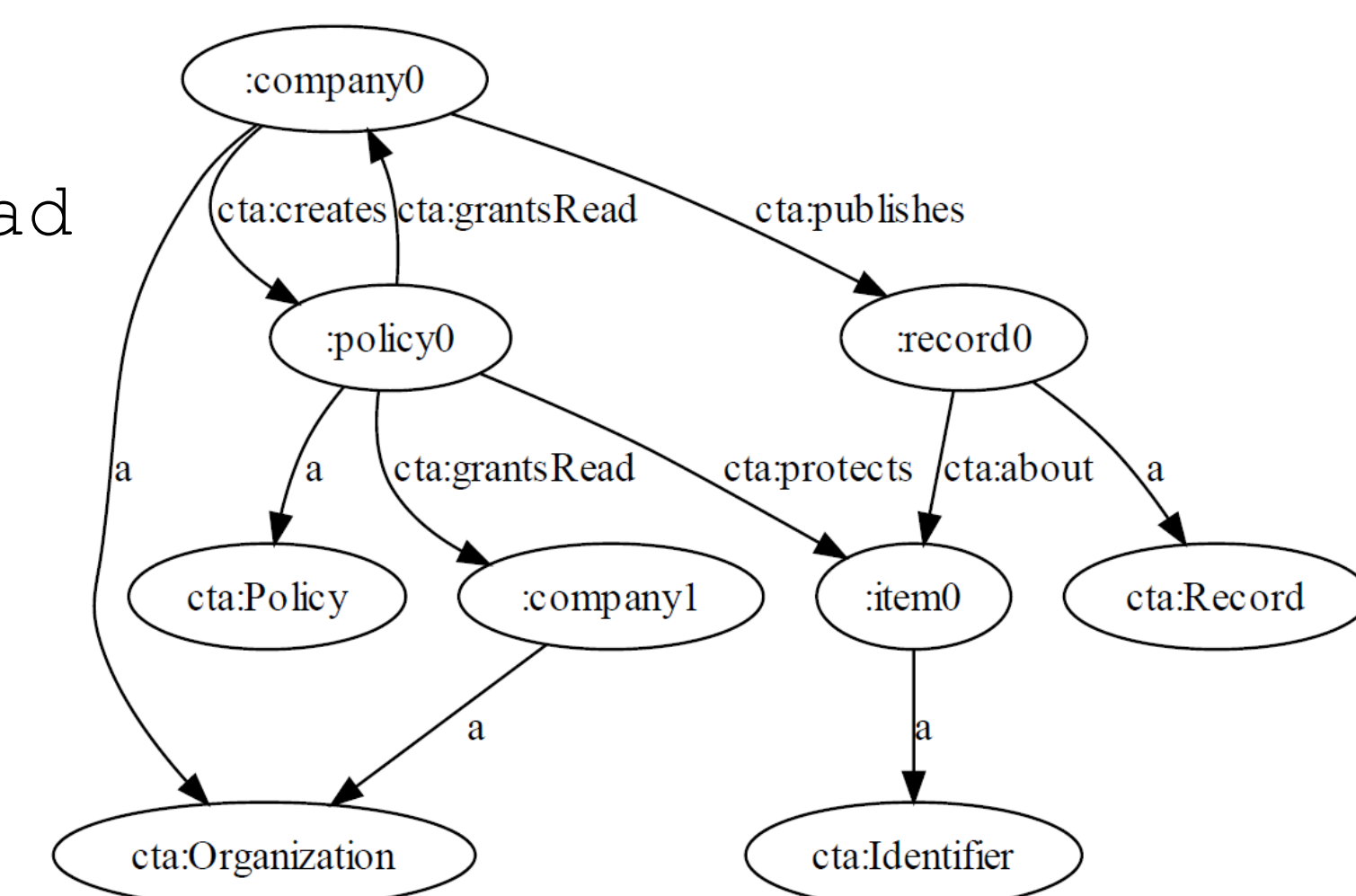
## Contributions

- Data sharing policies:
- Protect privately relevant information
- But still give access to non-predefined participants

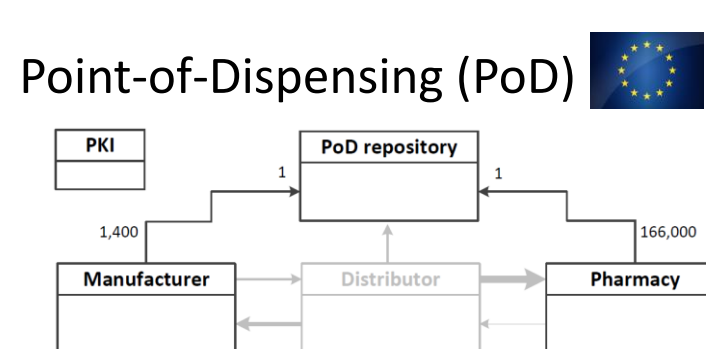
## SCAz – Supply Chain Authorization Language

Chain of Trust Assertions

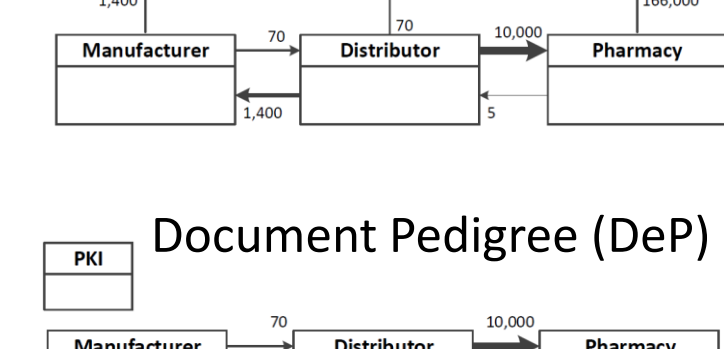
RDF graph for visibility policy  
cta:grantsRead predicate



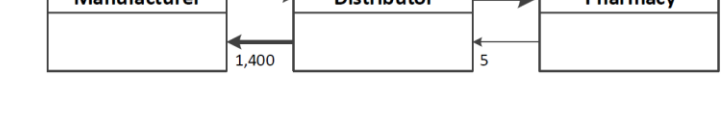
## Case study assessment results



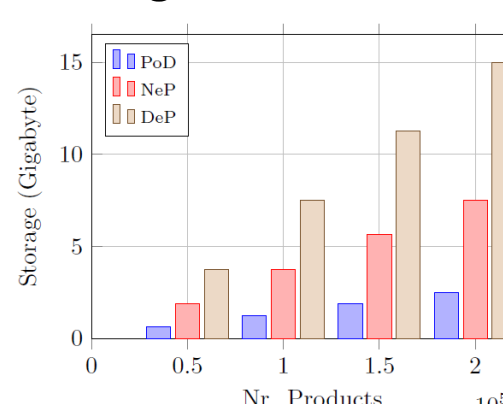
## Network Pedigree (NeP)



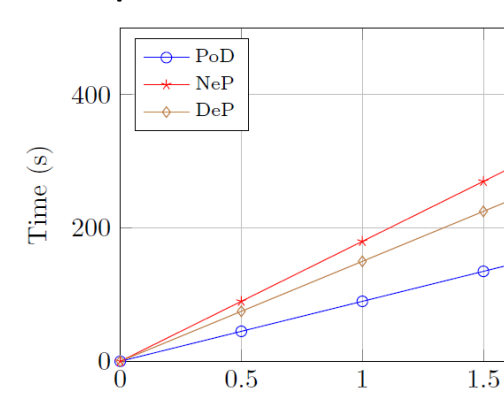
## Document Pedigree (DeP)



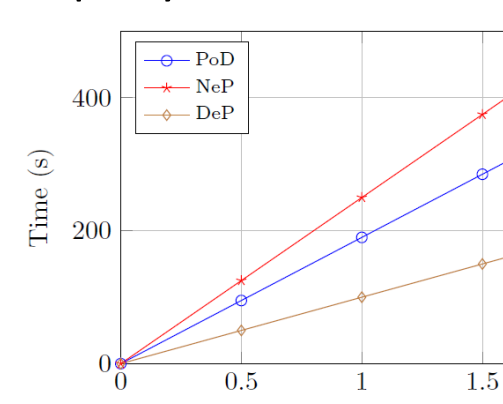
storage



capture



query



Requirements elicited from Pharma industry prototype  
GHX, Abbott, McKesson, Veterans Admin. Hospital Service provider, manufacturer, distributor, dispenser

Rich sharing conditions expressed with assertion extensions  
Delegated  
Transitive  
Conditional  
Bulk

Chain-of-Trust Assertions (CTA) performance is similar to other approaches – ACLs and Tokens – but it is **extensible**

XACML overhead is significant but acceptable

## Future work

- Connect authorization with business systems
- Integrate with ERP and SCM to derive data sharing assertions
- Reduce administrative burden
- Improve performance XACML
- Find best formulations for the proposed assertion extensions