

Owner-Centred Group-Based Access Control for Epidemic Resources

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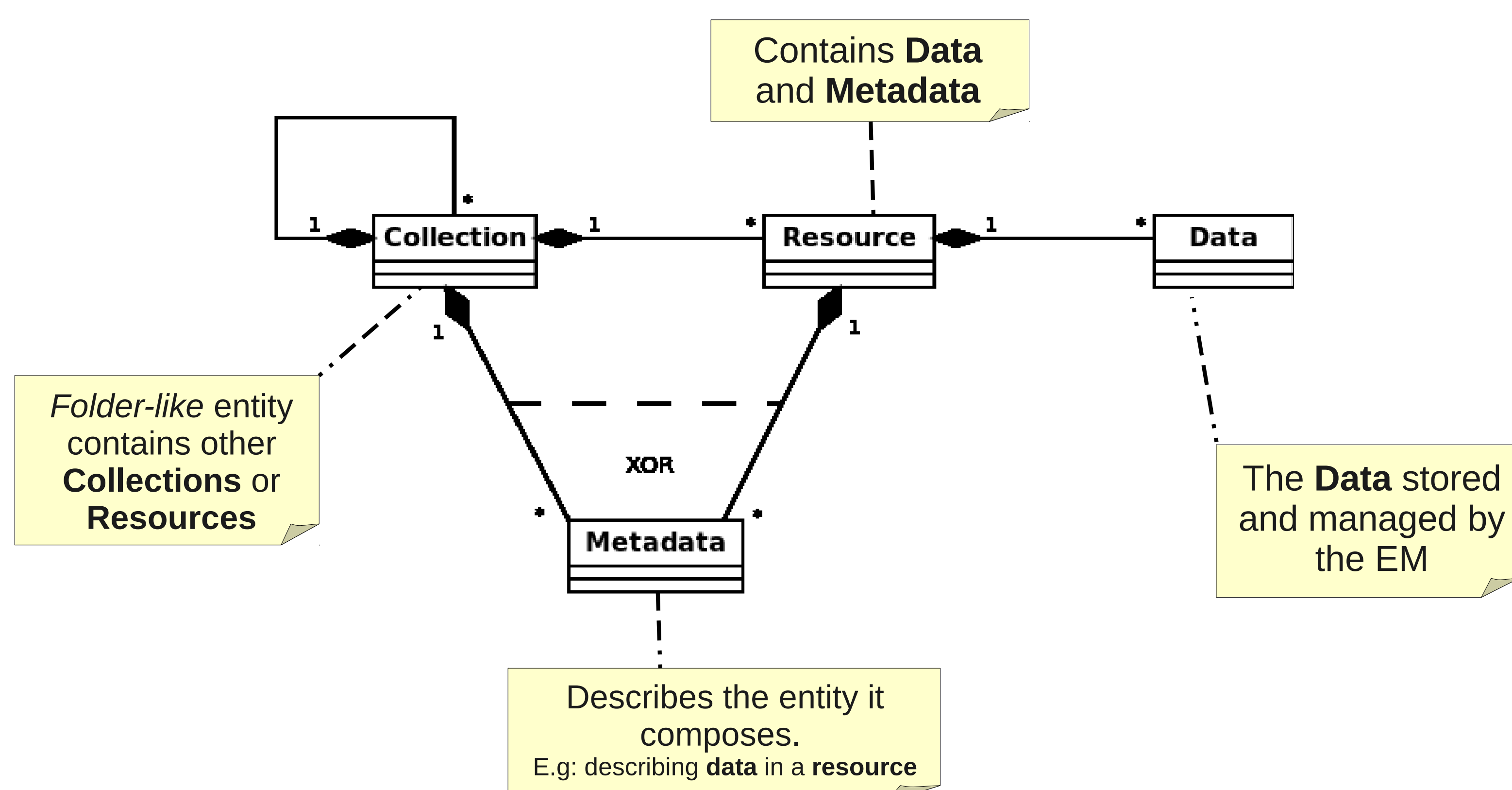
Epidemic Marketplace

- ▶ The Epidemic Marketplace (EM) is an information platform for storage, management and sharing of epidemiological resources.
- ▶ In the EM you can **browse** or **search** existing resources through their metadata and you can **upload** new resources.
- ▶ It is designed to be used by people, via a web-browser interface, or by other applications through a web-based application programming interface.

Objectives

- ▶ An access control model that fosters collaboration in a resource sharing environment.
- ▶ Enable resource sharing across different groups of users.
- ▶ A model that respects resource-owners trust, giving them access control over their resources.
- ▶ A simple, easy to understand model with little administrative overhead.

Object Model



- ▶ This Object Model enables users to organise resources in different degrees of granularity using Collections.
- ▶ Metadata which describe collections and resources is used to perform searches on the repository.
- ▶ If object owners can set access control for all of these objects they can give their resources the degree of exposure they see appropriate.
- ▶ Exposing only metadata enables other users to search for content an owner created while protecting the data itself. The user should then be able to negotiate with the owner for access to the data.

Access Control Model

Owner-Centred

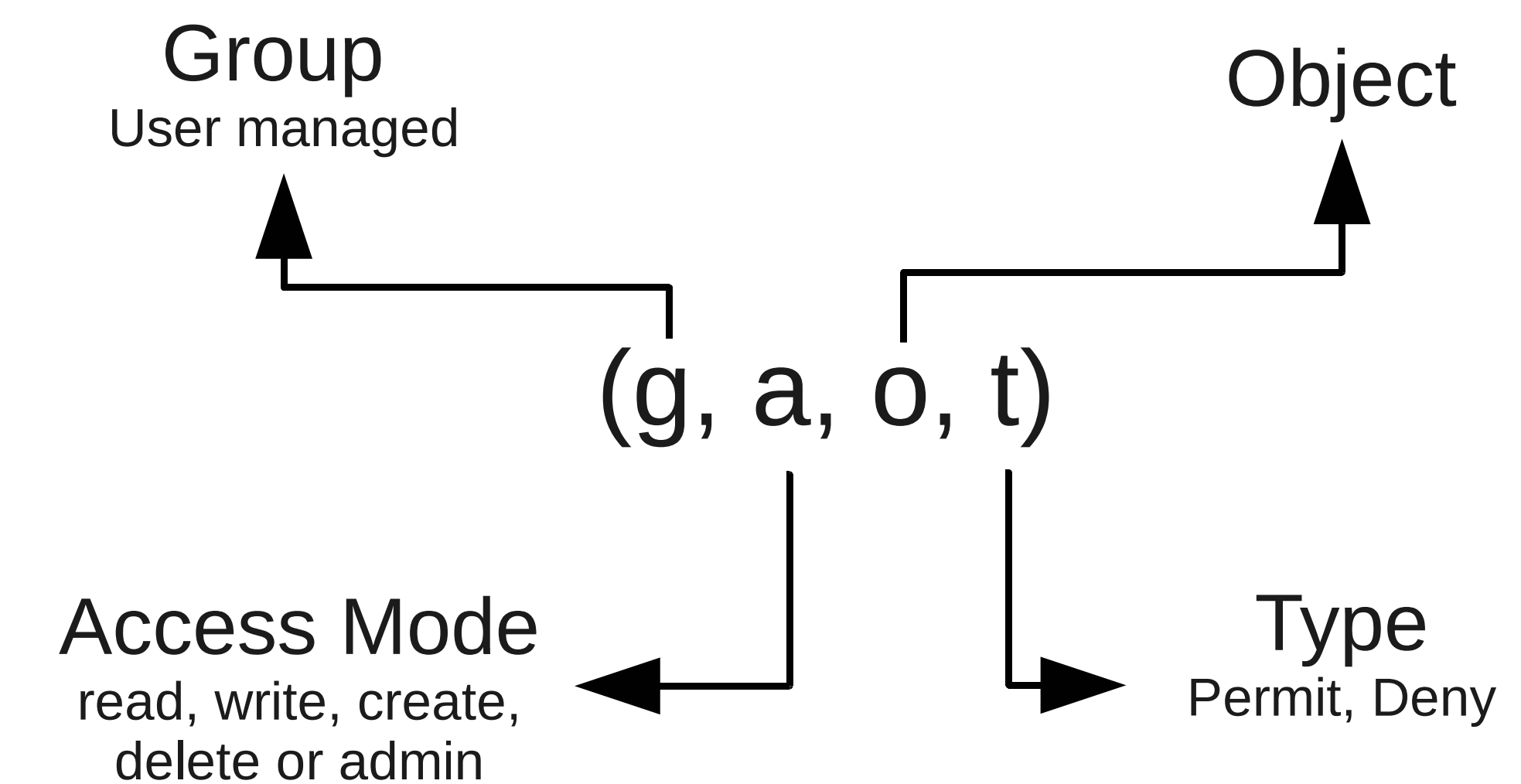
Owners must retain control of their created resources to foster trust in the repository. Doing this helps assuring that the resources have the degree of exposure considered necessary by its creator. Furthermore this removes administrative overhead from the repository staff.

Access Control Model (continued)

Group-Based

Groups, created by users, can be used to identify collaborators and can be fitted to a user's need to share his resources. Using these groups a resource owner can create policies that share resources with his collaborators while protecting data from other parties. Managing resources at a group level is less complex than dealing with individual discretionary permissions.

Access Rules



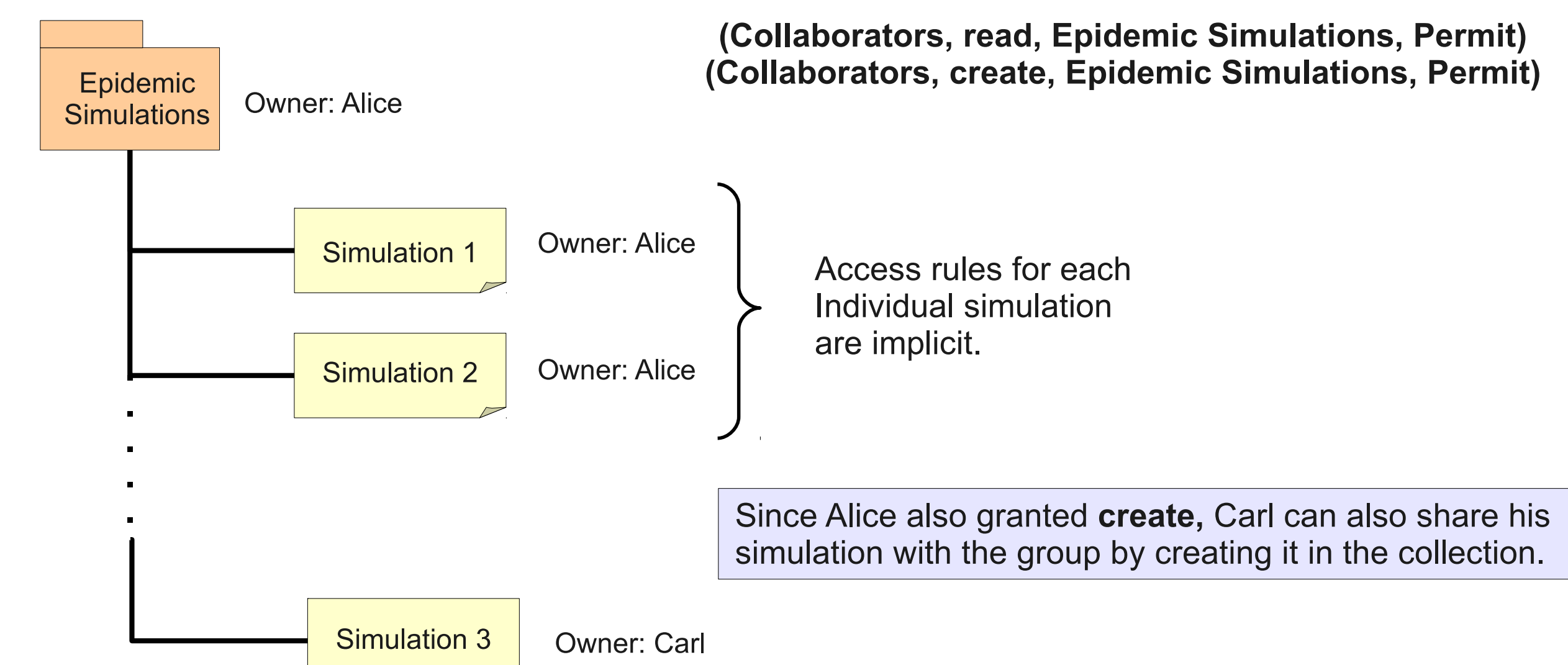
Implication Rule - Access rules for a container object are implied for objects it is composed of. Object owners are always granted all access modes for their owned objects.

Example

Alice wants to share two epidemic simulations with her group of collaborators.

Collaborators = {Alice, Bob, Carl, Dave}

Alice Creates the "Epidemic Simulations" Collection and sets the following access rules:



Conclusions

- ▶ The access control model enables owners to manage access control over their resources, fostering trust while reducing administrative overhead.
- ▶ Collaborative behaviour is fostered by enabling users to create and manage their groups of users over which access rules are set.
- ▶ Using the object model it is possible to set access rules at a collection level which becomes a less complex task than individually assigning rules to each resource.
- ▶ Furthermore, with the current object model it is possible to expose resource metadata without exposing the data itself, enabling users to search resources which are not fully disclosed. This, together with owner centred access control enables users to negotiate access to the data, and once an agreement has been reached the resource owner can add the requesting user to a group with further permissions.