Access Control for Shared Epidemic Datasets

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The **Epidemic Marketplace** (EM)[1] (www.epimarketplace.net) is **a platform for integrating and sharing epidemiological data, developed in the Epiwork project**.

To share sensitive information constrained by access restrictions, scientists must:
1. trust the data privacy and protection mechanisms available in the repository.
2. easily control who can access their data.

The **Discretionary Access Control** (DAC) model relies on **user identification** and **user-assigned authorizations**, while **resources have associated owners**. In the Ownership DAC model, the resource owners have the ability to set permissions over their resources. On the **Decentralized DAC** model, **the owners can delegate the ability to grant permissions to other users**.

On the **Role-based Access Control** (RBAC) model, the concept of Role is introduced, where each role has a set of associated permissions. Roles are assigned to users, who inherit the set of permissions associated with the role(s) assigned to them. This is a **widely accepted approach**[2].

Decentralized-GB DAC

The EM adopted a **DAC model with group support**, where permissions are assigned to groups instead of individual users.

Dynamic groups

To further enhance the expressiveness of the access control model, users may also create dynamically defined groups. Instead of providing a static set of users, **group administrators can specify a rule that dynamically defines the group**.

Social Groups

The EM provides means to use **social information for the specification of access restrictions**. Open Social, a set of **common APIs for building social applications across multiple Websites**, provides the mechanisms for this integration.

This enables **epidemiologists** to easily **share resources with their professional connections** (e.g. Linkedin connections) without the requirement of re-introducing collaborators information in the EM website.

Social Groups are suggested to EM users when sharing their resources. The EM asks the Social Network for the connected users and matches them with locally registered users. This feature is currently under development.

[1] L. F. Lopes, F. A. Silva, F. Couto, J. Zamite, H. Ferreira, C. Sousa, and M. J. Silva, "Epidemic marketplace: an information management system for epidemiological data," in *Information Technology in Bio-and Medical Informatics, ITBAM 2010*. Springer, 2010, pp. 31–44.
[2] D. Ferraiolo, R. Sandhu, S. Gavrila, D. Kuhn, and R. Chandramouli, "Proposed NIST standard for role-based access control," *ACM Transactions on Information and System Security (TISSEC)*, vol. 4, no. 3, pp. 224–274, 2001.