

Spatio-temporal Access Control: Challenges and Applications

Panel

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1. PANEL OVERVIEW

In the last few years, a number of spatial and spatio-temporal access control models have been developed especially in the framework of pervasive computing and location-aware applications. Yet, how useful and effective those models are in real applications is still to be proved. The goal of this panel is to discuss access control requirements in mobile applications.

Categories and Subject Descriptors: D.4.6 [Security and Protection]: [Access control]

General Terms: Management, Security

Keywords: Spatio-temporal access control, mobility

2. THE CONTEXT

Following the technological advances in location-sensing technology, large amounts of data about the individuals' movement are becoming increasingly available. Those data have both a spatial and temporal dimension and often take the form of trajectories. To deal with spatio-temporal data, data management techniques are being developed to support the storage and retrieval of past, present and future positions, as well as the processing of queries over streams of spatio-temporal data and complex data analysis; further techniques for the sharing of personal spatio-temporal data are provided to support collaborative and social network applications. *GeoPKDD* [2] is a European research project which addresses various aspects related to spatio-temporal data management and analysis, in particular the development of data warehouses and data analysis methods for trajectories of moving objects. Those methods are designed to preserve the privacy and possibly protect the source sensitive data. Spatio-temporal data management is a lively area of research. By contrast, we believe that the requirements for controlled access in the geo-spatial and mobile domain have not been investigated in depth [1]. In the last few years, a number of spatial and spatio-temporal access control models have been developed in the framework of pervasive comput-

ing and location-based services. The distinguishing feature of those models is that the access authorization is subordinated to the satisfaction of contextual conditions, such as spatial proximity or containment in certain spaces. For example, health records can be only accessed by personnel located in the hospital during working hours. In most cases those models extend RBAC to allow for the specification of simple constraints based on location and time which are then enforced upon users' request. Yet, very few applications exist, therefore there is not enough evidence of the actual usefulness of those techniques in real settings. Further many issues remain to be investigated, for example the security challenges in moving object databases, the administration of spatio-temporal policies and the specification of usage control in mobile applications. The panel offers an opportunity for presenting and discussing requirements and research challenges in the mobile setting.

3. OPEN CHALLENGES

The participants to the panel are from academy and industry and present a mix of competences ranging from mobile data management, context-based access control and privacy. The goal of this panel is to discuss the information security requirements and issues in the mobile scenario, trying to link research to real business problematic. Questions addressed by the panel include the following ones:

- (1) Which kinds of information and services need to be protected in mobile applications? Do real business applications make a difference between information and services in terms of security?
- (2) Spatio-temporal data is typically imprecise and non-secure. How can those data be used in the framework of access control?
- (3) Access control and privacy have typically complementary goals. How can those techniques coexist? Which trade-off?

4. REFERENCES

- [1] E. Bertino, M. Gertz, B. Thuraisingham, and M. L. Damiani. Security and Privacy for Geospatial Data: Concepts and Research Directions. In *Proc. of 1st ACM Workshop on Security and Privacy in GIS and LBS, Irvine (US)*, 2008.
- [2] GeoPKDD. <http://www.geopkdd.eu/>.