# DATA SHARING MANAGEMENT MODEL IN NETWORKED COLLABORATIVE ENVIRONMENT

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# 1. Letter of Report Submission

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Ybhg. Prof.,


**LAPORAN AKHIR PENYELIDIKAN  "DATA SHARING MANAGEMENT MODEL IN NETWORKED COLLABORATIVE ENVIRONMENT"**


Merujuk kepada perkara di atas, bersama-sama ini disertakan 2 (dua) naskah dan 1 (satu) CD Laporan Akhir Penyelidikan bertajuk "Data Sharing Management Model in Networked Collaborative Environment".


Sekian, terima kasih.


Yang Benar,


Dr. Nasiroh Binti Omar
Ketua Projek Penyelidikan

# 5. Report

## a. Proposed Executive Summary

Networked collaborative environment is a computer mediated system for interaction between users (Abidin *et al.*, 2006). Dickerson (2008) defines networked collaborative system as 'virtual reality spaces that enable participants to collaborate and share objects as if physically presence at the same place'. Communication in the networks involves many processes (either clients or servers) that need to be coordinated. The coordination is usually depended on the application. In recent years, most applications in networked collaborative systems not only facilitate communication but also improve collaborative works (Masud and Kiringa, 2007; Abidin *et al.*, 2004). Most collaborative activities involve data sharing and movements between parties.

Data is valuable to relevant parties. For example, employee, supplier and stock data are all valuable to the related companies (Abidin *et al.*., 2010; Hristidis *et al.*, 2009). Research data is also a valuable resource that usually requires much time and money to be produced. According to Wainhouse Research (2002) and Cheung (2006), data sharing leads to facilitating new collaborations between data users and data creators; reducing cost of duplicated data collection and encouraging the improvement and validation of data collection. Though data sharing leads to good things, it also raises common problems in management issues.

Server-centric data management methodology occurs in distributed heterogeneous collaborative design such as openness, scalability and flexibility (Atzeni *et al.*, 2002). In the server-centric data management mode, data is usually stored in the server side. For the authorization, a user can login into server systems for data management and performs data update operation (Rosen and Rimor, 2009). The server records the updated data according to the operation logs. Then, it transmits the updated information over the network. In the whole process, all activities are fulfilled by the server. Thus, server is heavily burdened that leads to the degrading reliability of network management. For example, when collaborative activities involve several groups of partner enterprises, issues of security in sensitive design for the server system must be seriously managed (Ferrin *et al.*, 2005; Eaglestone and Ridley, 2001; Ruan and Vardharajan, 2010).

Besides security, data incompatibility from various sources is also a major issue in collaborative data sharing. Other factors that must be considered include (Floria and Blondia, 2008):

- lack of basic infrastructure to make data sharing appropriate for users
- losing data control
- inappropriate method of data sharing
- incompatible data from sharing partners

In order to resolve the above issues, this research will model data sharing management that includes all the elements regarding security, infrastructure, data control, data sharing and data incompatibility. All the elements will be classified and represented in the form of mathematical equation.

## b. Enhanced Executive Summary

Fundamental activities of data sharing cover the ability of importing, exporting, copying and modifying data (Fienberg *et al.*, 1985; Hsio, 1992). Complication on managing such data sharing activities increase with requirements and requests made by related parties (Hull *et. al.*, 2004). Issues such as protecting proprietary interest, national security and subject confidentiality lead to complex data management.

User request is one of the constraints for data sharing management. The purpose of data sharing is not only to accomplish shared data among participants but also satisfy the participants' trust and request. Participants would be pleased if they could have full control over what they could share with others. Data should be shared as openly as possible without violation of federal law or regulation or compromising personal rights. Dissemination and sharing of data had been studied since 1985 (Ahmad *et al*., 2011) and data sharing policy implementation had been created since then. Accomplishment of data sharing depends on data format; restriction on data; owner and publisher guidelines; and availability of appropriate repositories (Onaeus, 2008; Grief and Sarin, 2001).

In order to resolve the above issues, this research will model data sharing management that includes all the elements regarding security, infrastructure, data control, data sharing and data incompatibility. All the elements will be classified and represented in the form of mathematical equation.