INTEGRATED LUNAR WEB-GIS ENVIRONMENT USING DATA OBTAINED BY LUNAR EXPLORATION. J. Terazono[1], N. Asada[1], H. Demura[1], N. Hirata[1], K. Saiki[2], A. Iwasaki[3], R. Oka[1], T. Hayashi[1], T. Suzuki[1], H. Miyamoto[4], J. Haruyama[5], M. Ohtake[5], T. Matsunaga[6], S. Sobue[5], H. Okumura[5], T. Fujita[7] and A. Yamamoto[7]. [1]The University of Aizu (Tsuruga, Ikki-Machi, Aizu-Wakamatsu, Fukushima 965-8580, Japan; terazono@u-aizu.ac.jp) , [2]Osaka University, [3]Faculty of Engineering, The University of Tokyo, [4]University Museum, The University of Tokyo, [5]Japan Aerospace Exploration Agency (JAXA), [6]National Institute for Environmental Studies, [7]Remote Sensing Technology Center of Japan (RESTEC).

Introduction: The dissemination of Web-GIS (Geographical Information System) in the research field demonstrates that the map, shown in the web pages, are the most basic data for the scientific activity. This fact also have an effect on lunar exploration.

In Kaguya project, the handling of huge quantities of data will be the key to promote research. Most of the data are obtain by LISM, Lunar Imager and Spectrometer, consists of Multiband Imager (MI), Spectral Profiler (SP) and Terrain Camera (TC). The image data will form the base of the Kaguya data for global mapping and topographical understanding of the moon.

The network-based collaboration environment enables them to utilize those image data without carrying them on in the meeting and share their result on the net. It will contribute in the increasing of scientific productivity and indurate future style of research in lunar exploration.

In this presentation, we will show current implementation status of the Web-GIS based collaboration environment using lunar exploration data.

System Concepts: The following functions are required for our system [1]:

- System is fully web-based, and operated in cooperation with the database server. All system facilities should be provided via the web-based features.
- System has data uploading and downloading function not by command-line based, but web-based for usability.
- System should be arranged based on open-source software as the latest capabilities can be implemented.
- System should handle large amount of data, without any stressful operation and complicated procedures.
- System should be security-aware. This system should prepare not only protection from the intrusion from outside but the intrusion by internal users which share same system resource.

This system consists of the following two components:

(1) The WMS (Web Mapping System) server at SOAC (SELENE Operation and Analysis Center) at JAXA Sagamihara Campus at Kanagawa Prefecture, and WMS server at The University of Aizu (UoA) which is connected to one at SOAC.

(2) Servers to enable Web-GIS based collaboration environment, located at UoA.

Collaboration Environment: The system consists of two servers (a web server and a database server) and an attached storage (approximately 12 TB in total). The web server also has a WMS function, and the system further facilitates collaboration environment that users can communicate via the network.

Currently, we are testing several Wiki-like software for the front-end of the collaboration environment. One of the candidate is the OLAT (Opensource Learning Management System) [2]. Mainly focused for use in e-learing, OLAT has appropriate function for the web-based collaboration such as schedule sharing and message delivery. Connecting to the external database and linking with the GIS enable us to develop the total collaboration framework based on Web-GIS.

Also, we are developing communication software specialized for geological use [3].

Current Implementation: As for the WMS server, we already confirmed the functionality of the distributed GIS system between SOAC and UoA. System now can display image data observed by Kaguya including LISM (TC, SP and MI).

Basic GIS function has been set up at the collaboration environment server. The linkage between GIS and front-end software is underway.

Future Tasks: We will proceed the implementation of the system and integration of the each function. In future, the system fully utilize data obtain by Kaguya. Preparing for the large amount of data and validation of the total performance is the most required task. We will demonstrate system usability through the closed test and performance checks.

References: [1] Terazono J. *et al.* (2008), *Proc. Intl. Symp. on GeoInformatics for Spatial-Infrastructure Development in Earth and Allied Sciences,* 239–244. [2] http://www.olat.org/ [3] Kanzawa M. et al. (2008), *IEEE 8th International Conference on Computer and Information Technology*.