Fostering Knowledge Transfer for Space Technology Utilization in Disaster Management:
An Actor-Network Perspective

Florian M. Neisser, Department of Geography, University of Bonn, Bonn, Germany

ABSTRACT

Disaster Management is an issue of global importance which requires timely and accurate information as well as clear and suitable communication technology to guarantee coordinated efforts to save lives and property. Thus, technology for gathering, retaining, managing and transferring information and the ability of linking experts plays an eminent role. This study is an observation of the setting of the web-based UN-SPIDER (United Nations Platform for Space-based Information for Disaster Management and Emergency Response) Knowledge Portal based on the Actor-Network Theory. The theory treats the Knowledge Portal as an assemblage of heterogeneous entities. The observation is focused on the configuration and the processes which form this actor-network with the aim to bring together the space technology and the disaster management community to support and nurture virtual Communities of Practice and enable knowledge transfer.

Keywords: Actor-Network Theory, Communities of Practice, Disaster Management, Human-Technology Interaction, Hybrid Geography, Knowledge Transfer, Qualitative Social Research, Space-Based Information, Web Portal

INTRODUCTION

Given the rising number of losses of lives and property worldwide due to natural and technological disasters in the last decades, there is an urgent need for coordinated efforts to mitigate potential and respond to actual disasters (Coyle & Meier, 2009; Dikau & Weichselgartner, 2005; UNISDR, 2009a; 2009b). Disaster Management is an issue of global importance which requires timely and accurate information as well as clear and suitable communication technology to guarantee coordinated efforts to save lives and property. Information about the disaster, the geographical region and circumstances as well as the expert knowledge in various fields is crucial for today's disaster management.

Web-based services give the prospect of using the potential for coordination and collaboration of experts and interested parties from all over the world for forming a global network of experts in disaster management (Alexander, 2000). The combination of the Internet and other technologies like remote sensing and geo-

graphic information systems forms a powerful potential for managing disasters and transmitting information about disasters (Gruntfest & Weber, 1998). This presents an important opportunity and plays an eminent role in how people can face disaster preparedness, response and recovery. Technology itself cannot be the solution (OCHA Reliefweb, 2007). Technology needs to be adopted (Coyle & Meier, 2009) to meet the requirements of the user community. The provision of data and information as well as the sharing of expertise in an interactive way are increasingly useful and important in today's handling of disasters. The utilization of communication media, in this case an Internet platform, for managing disasters during all of the phases of the disaster management cycle is becoming an important day-to-day aspect of dealing with disasters.

This study[1] is an observation of the setting of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) Knowledge Portal based on the Actor-Network Theory. The following study will elaborate on the design and use of the web-based UN-SPIDER Knowledge Portal as a setting of human and technological actants (Callon & Latour, 1981)[2] for bringing together the space technology and the disaster management community. Hence, this study elaborates how the UN-SPIDER Knowledge Portal, which focuses on the utilization of space-based technology for Disaster Management, is configured as an actor-network to connect experts in these fields to aggregate information and knowledge. The observation focuses on the configuration and the processes that form this actor-network, which aims to bring together the space technology and the disaster management community to support and nurture virtual Communities of Practice (CoP)[3] (Lave & Wenger, 1991) and enable knowledge transfer. "The success of a portal depends on its ability to provide a base site that users will keep returning to after accessing other related sites," (Tatnall, 2005, 4) and "if it can provide most of the services, information, and links that users want" (Tatnall, 2005, 5). The main

questions are based around how the portal is configured and how it should be configured to be successful in bridging the gap between the two communities. The Actor-Network Theory provides the framework to understand interactions of social and technological actants, and therefore the success or failure of innovations (Tatnall & Gilding, 1999).

THE UN-SPIDER KNOWLEDGE PORTAL

In 2006 the United Nations General Assembly agreed to found the "United Nations Platform for Space-based Information for Disaster Management and Emergency Response – UN-SPIDER" as a program of the United Nations Office for Outer Space Affairs (UNOOSA) with the mission to "[...] ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle" (United Nations General Assembly 2007, p. 13). By this the General Assembly acknowledged that the increasing application of space technology like earth observation, communication and navigation satellites is useful for the purpose of supporting disaster management and emergency response (Arévalo-Yepes et al., 2010; Backhaus & Young-Lyu, 2009). In recognition of these needs the United Nations General Assembly, in its resolution 61/110 of 14 December 2006, acknowledged that the use of existing space technologies can play a major role in supporting disaster management (Backhaus & Young-Lyu 2009).

The UN-SPIDER program promotes the application of space-based earth observations and space technologies such as remote sensing and satellite navigation and communication as well as geographic information systems, communication tools and studies for the benefits of risk assessment and early warning. In June 2009 the first official launch of the UN-SPIDER Knowledge Portal (http://www.un-spider.org) took place during the 52nd session of the Com-

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