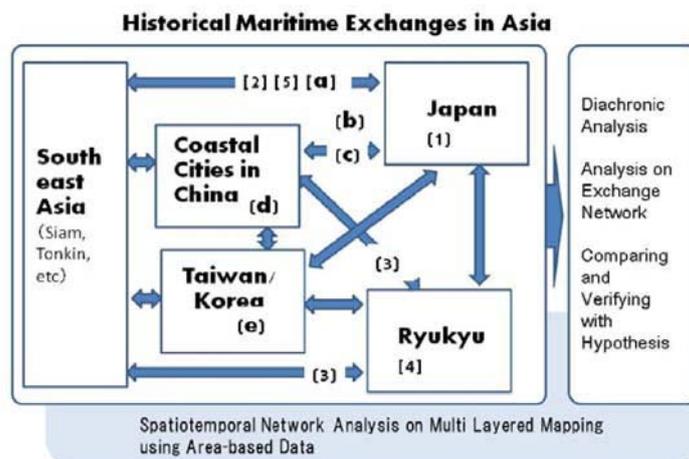# Spatiotemporal Analysis of Historical Maritime Exchanges in Asia Using HuMap and HuTime

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This project aims to explore a dynamism on maritime exchange network between East and Southeast Asian countries from the 17th to 20th centuries based on area-based historical documents. HuMap and HuTime, which employ functions of spatiotemporal analysis, are being used for analyzing multi layered networks extracted from relations shown in the data of commodities and ships. The area-based historical documents compose of 10 sources, such as the "Imported/Exported Commodity Record by Chinese Ships: 1637 -1833"[1], the Ryukyu diplomatic document "Rekidai Hoan: 1420-1890"[3], the "Shuin-sen" (trading ships licensed by the shogunate), "Statistics of Tariff on Maritime Commodity Trade in China"[d], and etc as shown in Figure. The symbol [1]-[5] and [a]-[f] in Figure are already digitized and digitizing planned documents respectively. For example, the number of ships for importing and exporting at Nagasaki, Japan in those days are 1613 and 884, and transaction items are 3151 and 530 respectively in the document[1]. The historical multi layered mapping focusing on each commodity by each ship with its maritime route is being processed as first step using the HuMap and HuTime, so that new findings can be expected to discover by which specific data focused by user can be retrieved from the data set with logical operation between multi layered items in the HuTime. After mapping all of items, maritime exchange networks can be seen with relations of departure and destination ports.

Spatiotemporal Network Analysis on Multi Layered Mapping using Area-based Data

An obtained result can be shown on the HuMap in this case study. The way of analysis makes user to compare and verify an output with the hypothesis.

In this report, an outline of the project, a way of mapping, and spatiotemporal analyses using HuMap and HuTime are introduced.