Construction Plan for Story Theme Park Electronic Map based on Spatial Characteristics

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Abstract. The endeavor to service culture through the electronic map method has recently been extremely active. This research wil contemplate in the critical elements necessary for the construction of electronic cultural map in regards to the Story Theme Park service established in Andong, Korea. Many spaces that appear in the story materials contain the respective characteristics of spot, area, and route. In addition, the relavant time, event, and character are closely related as well. In order to realize such comprehensive information on the electronic map, the respective value for linkage data for each characteristic has to be defined, and this must be reflected in the meta-data to specially break down the space field. Moreover, through the connection with external database, easy access to broad information must be available for the users. Culture is a major differentiating element that a nation or local government has. Differentiated competitiveness in the cultural industry can be achieved by introducing the relevant region's cultural characteristics through the electronic cultural map and by providing a variety of source materials from the cultural contents.

Keywords: Electronic map, Story-telling, Spatial attribute,

1   Electronic Map for Urban Computing

The electronic map is a map that electronically implements a variety of events on the space. Since it provides service on top of the basis of regional information, each space is connected with diverse data, it is used in many projects and services. In particular, many issues that are needed for administration of the national or local government can be solved on the electronic map. The urban infrastructure facilities or disaster-related facilities, security facilities, etc are some prime examples.

However, until now the electronic cultural map has been excluded from the area of Urban Computing. This implies that the data in relation with culture was not significantly needed in administrations. Recently, it has been recognized that the culture of a certain region is the major differentiating factor from other regions. The local governments of various countries around the world are setting culture as their focus of attention in order to set a cultural industry that is differentiated from other regions.

Therefore, the cultural map is receiving attention as a subject for Urban Computing. The first of its kind would be the cultural map related with cultural asset. After that, the construction of cultural map based on respective historical events has been underway. Such event however, has certain limits. For example, the link between the space on top of the map and the culture-related data cannot show all of the context information that the data contain.[1]

This is because the electronic map sets the space as its center axis but the spae does not sufficiently take consideration for the context within the culture-related data. This presentation is purposed for the distinction of spatial attributes that the story material has in relation to the story-telling electronic map, and accordingly for the explanation of the necessity of the construction of the electronic map.[2]

2   Attributes of the Story-telling Space

Electronic maps imply the linkage of data on top of the spatial characteristic. Therefore, interpreting the spatial characteristic is critical. The attributes that space on the map retains are largely distinguished into three types. It is the dot, the area, and the line.[3]

The dot on the map implies a certain spot or location. In other words, it refers to the place where a certain event has occurred. The spatial attribute here corresponds to the purpose of the occurrence. For example, an event to commemorate the scholar in Chosun Dynasty on October 8th 1702, Bungangseowon Bunchun-ri Yeanhyun Gyeongsang-do Korea has occurred.[4] Here, Bungangseowon is the specific spot in terms of spatial attribute.

The area on the map implies a certain domain. This is a bundling of numerous dots into a common attribute. The common attribute can include diverse issues such as geographical, economic, cultural, social, and political issues. In 1805, Gyeongsang-do Korea, there had been a fundraising for establishing the Bong Gang Young Dang,[5] and most of what is now Gyeongsangbuk-do is included in the event. In this case, Gyeongsang-do becomes a domain that retains the common attribute as a fundraising region for Bong Gang Young Dang.

The line on the map implies a certain route. This is the connection of various specific spots into a common attribute. The common attribute here corresponds to the purpose of the people who had passed the route. In 1603, Kim Ryeong, a Korean

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[1] In reality, many electronic maps constructed in ECAI(Electronic Cultural Atlas Initiative, http://www.ecai.org) do not show the spatial characteristic properly.

[2] The model used for this presentation is the Story Theme Park(http://story.ugyo.net) constructed by the Korean Studies Advancement Center in Korea. This site is a place for story material service, but the concept of electronic cultural map has not been adopted yet. Therefore, this presentation organizes the necessary information for the future construction of electronic cultural map in Story Theme Park.

[3] Kim Sang-heon: Concept and Usage of Cultural Atlas for Culture Studies. The Journal of History and Culture. Vol.34, (2009)

[4] http://story.ugyo.net/front/sub01/sub0103.do?chkId=S_KKH_0032

[5] http://story.ugyo.net/front/sub01/sub0103.do?chkId=S_KKH_0056

scholar, travels from Gyeongsang-do to Chungju in order to take state examination.[6] Here, the particular spots that he had gone, through becomes Kim Ryeong's route to take the state examination.

As such, regardless of the space marked on the map, the spatial characteristic is regulated according to the past stories that occurred there. Therefore, when constructing an electronic map, there must be a construction plan that reflects the respective spatial characteristic.

3   Structuralization Solution for the Spatial Characteristic

In most electronic map services, they largely allow the searching for time, space, and topic and show the results. Setting the electronic map to the service interface is purposed for the users' easy access to the data. The data of which users want may be a single story plot, or may be a common topic that multiple materials have. In some cases the characters may be specific characters, and in others, there may be a specific spatial background.

Just as the data that users want are diverse, there is need for the access method on the electronic map to also be diversified. For example, if a certain space is searched on the electronic map, the search results can be shown distinguishing the spatial characteristics. In other words, if 'Dosanseowon' is searched, the results can be shown with the categorization of spot, area, and route so that it would be much more convenient for the users to search what they want.

To do this, there is the need to structuralize information from the respective spatial information through close interconnection. The table shown below describes the linkage relationship of the information that can be connected with the respective spatial characteristics.

Table 1. Connection information of the story material information according to the spatial characteristic

Spatial Characteristic	Information	Form	Subordinate Connection Information
Spot	Spatial Information	ngle or multiple	
	Time Information	ngle or multiple	
	Event	ngle or multiple	
	Character	ngle or multiple	
Area	Spatial	ngle or multiple	Connect with the subordinate spot

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[6] http://story.ugyo.net/front/sub01/sub0103.do?chkId=S_PHS_1005

	Information		
	Time Information	ingle or multiple	Connect with the subordinate time
	Event	ingle or multiple	Subordinate spot - time connection
	Character	ingle or multiple	Subordinate spot - time - event connection
Route	Spatial Information	Single or multiple	Connect with subordinate spot
	Time Information	Single or multiple	Connect with subordinate time
	Event	Single or multiple	Subordinate spot – time connection
	Character	Single or multiple	Subordinate spot – time – event connection

By connecting the information as shown above, one would be able to understand not only the spatial characteristic but also the overall context of the story material when he/she searches for information based on space. On top of this, if the external database such as information in relation with the description of the space or the description of the character is connected, a broader range of information can be provided. The navigation flow of such information is as shown below.
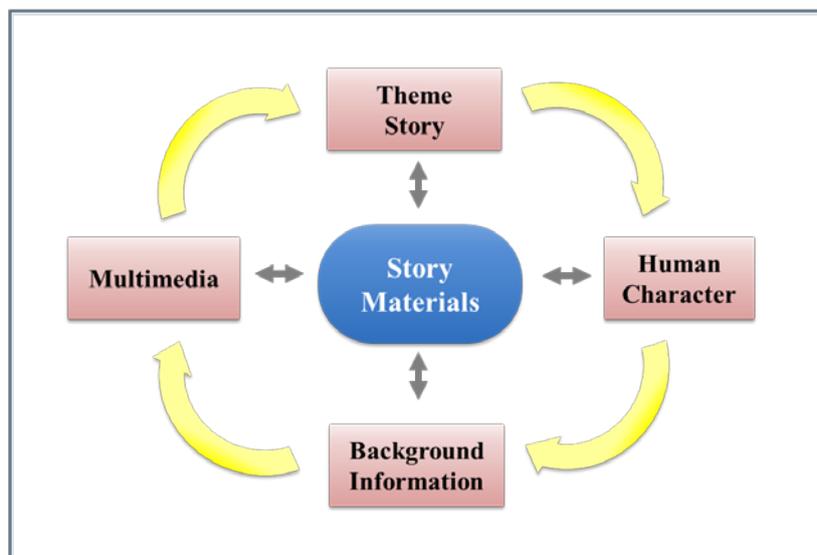

Fig. 1. Story Material Information Navigation Flow

4 Composition of the Story Material Meta-data for the Electronic Map

The story materials marked on the electronic map have their own respective meta-data element. The current meat-data elements for Story Theme Park[7] are shown below.

Table 2. Current story materials meta-data of the Story Theme Park

Field	Attribute	Field	Attribute
ID	Identifier	Topic Word	Key word
Classification	Classification system of content	Story	Story plot
Title	Story Title	Image Link	Original image link
Space-Location	Location in the story(multiple)	Text Link	Original text link
Space-Location	Route in the story	Source	Story's source
Time	Period of the beginning and end of the story	Reference	Reference materials
Character	Characters that appear	Writer	Meta-writer

However, it is difficult to appropriately mark the aforementioned spatial characteristic to construct the electronic map that has the meta-data elements. Some story materials may show only certain spots, and other story materials may show numerous locations. Such space may be identical or different in background of the time. If this is distinguished, one time and space may correspond to a material, one time and several spaces may correspond to a material, several times and one space may correspond to a material or several times and several spaces may correspond to a material.

It is likely to be efficient to compose the meta-data so that such characteristics of a story material's time and space are reflected. To solve such problem, most electronic map services have separated the service menu of the composition. The railway conducted from University of Nebraska and the modern times era U.S. construction project maps are servicing different menus according to time and subject. (http://railroads.unl.edu/)

Taking this into consideration, composing the meta-data will be as shown below.

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[7] Story Theme Park is a service that provides information derived from the diaries of scholars from the Chosun dynasty that contain contents for creation material(http://story.ugyo.net/)

Table 3. Story materials meta-data construction solution for the electronic map

Field			Attribute		Field	Attribute
ID			Identifier		Character	Character that appears
Classification			Content's classification system		Topic word	Keyword
Title			Story's title		Story	Story plot
Time and Space	Time	Space	Single time and Space	Single spatial coordinate	Image link	Original image link
	Time	Space	Single time and multiple spaces	Multiple spatial coordinate	Text link	Original text link
	Time	Space	Multiple times and single space	Single spatial coordinate	Source	Story's source
	Time	Space	Multiple times and multiple spaces	Multiple spatial coordinate	Reference	Reference material
Characteristic of Space			Topic of Story Material		Writer	Meta-writer

By reflecting the meta-data elements with the application of appropriate spatial characteristic of the story based on the segmentation of time and space information of the story, and providing the common attribute, story materials can be serviced with appropriate correspondence with spatial characteristics. When these meta-data elements are actually used in the simulation of the electronic cultural map service for the Story Theme Park, the results are as shown below.
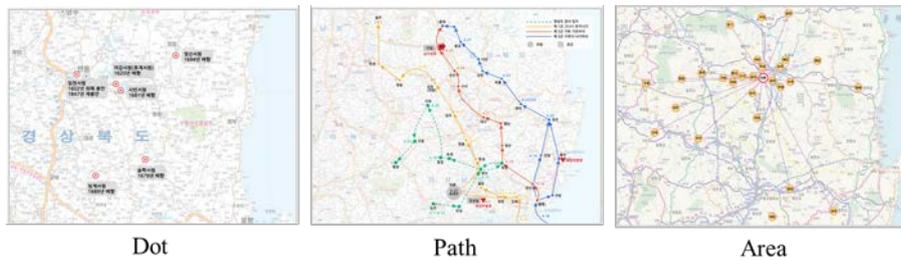

Dot   Path   Area

Fig. 2. Example of story theme park electronic cultural map service

5 Conclusion

The Story Theme Park service is a site that filters the appropriate stories for cultural contents creation from the diary materials of the Chosun dynasty scholars. Until now, the story materials had to be searched according to the story's theme or the characters. However, in order to allow the workers in the creative industry to seamlessly find materials in the future, the electronic map service is necessary.[8]

The electronic map service is based on space. However, each space has different attributes according to the story material contents, and therefore a more detailed meta-data element is needed. Furthermore, connection with the external database is also critical during service in order to allow the users to acquire a broader range of information.

Such construction of electronic cultural map is extremely important in the aspect of cultural industry enhancement targeted by the nation or the local government. Therefore, just as a nation or local government managing a city's infrastructure, constructing the cultural contents material as the subject of urban computing in the cultural aspect is desirable.

References

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[8] Kim Dong-Hun, Kim Sang-Hyeon, Moon Hyun-Joo : A Study on Knowledge·Information Service with Electronic Culture Maps. The Conference of HCI.(2009)