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1.Preamble

As travel, tourism and leisure (TT&L) industry has grown worldwide, inbound and outbound travel agencies have developed their own travel information system to attract more tourists. However, information provided by different travel agencies is often non-standard and available only in a limited number of languages. Also, the redundant system development has increased unnecessary costs as a whole. Furthermore, this ineffectiveness and inefficiency have caused a waste of resources, which in turn influence the environmental problems. These issues have led necessity of establishing a standardized travel information system.

The lack of consolidated standards of travel information has prevented tourists from accessing to desired information. Specifically, tourists often experience difficulty finding accurate locations of attractions when they are called by a common name for a place or a generic name. For example, the name of an area in Korea, "Myeong-dong" is used in multiple entities such as restaurants, coffee shops and lodging facilities. A famous shopping site "Namdaemun market" is commonly called simply "Namdaemun" while "Namdaemun" itself refers to one of historic gates near the market. These non-standardized location names make it even difficult for travel agencies in overseas to collect accurate information. Furthermore, this problem can be a potential obstacle to prompting TT&L industry in the country.

Another issue is redundant investment in developing travel information systems. Online travel agencies have rapidly grown up as individual tourists increase. Online travel agencies process raw information in the form of online content and, based on them, provide new reservation services or local information. In particular, location information services are heavily used in travel planning or comparing prices. However, a number of companies have invested tremendous amount of resources in establishing their own location information systems. As a result, this has unnecessarily increased costs in society as a whole.

The adverse effect can also be considered in the perspective of environmental problems. For example, incorrect location information arouses unnecessary traffic, which in turn increases carbon dioxide (CO_2) emission. Also, the redundant investment wasted electrical or physical resources, which is not free of environmental pollutions.

In order to address these issues, we propose a standardized information system, Destination Travel Information (DTI). We expect that this system is useful not only for TT&L industry but also, as a tourism infrastructure for e-commerce, other industry sectors linked with the common aim of serving the travel needs of tourists. For example, geographic information in the system is used for pinpointing the exact location using the latitude and longitude lines. This can be utilized for the identification Point Of Interest (POI), navigation and location-based storytelling as well. In particular, this can be adopted in public transportation, such as bus, train and airplane, which are becoming smarter due to recent IT technologies.

2.References

1. B2B E-Commerce for the National Tourism Industry Standardization (2009,MCST) *Written in Korean
2. A study on the Information Technology Architecture of Travel Business Process system(KITA,2004)
3. UN/CEFACT –ebXML Core Components Technical Specifications version 2.01 – ISO 1500-5
4. UN/CEFACT Business Requirements Specification version 1.5 (CEFACT/ICG/005)
5. Unified Modelling Language (UML version 1.4)
6. UN/CEFACT CC Library version 2.0 & 3.0
7. eb-XML TR-Naming Convention for Core Components version 1.04 (10 May 2001)

3.Objective

This document is to provide a guideline to establish DTI, which aims to bring an opportunity to promote and foster tourist attractions of each country through more convenient and accurate information exchange.

This document clarifies the usability of the information by explaining the structure of DTI as well as the standards to determine and classify the data. The structure and the flow of information exchange between providers and Customers of the information will be illustrated later in this document. In addition, this document suggests a basic guideline for service suppliers that use DTI to create a new business model.

This document is based on planning phase of individual travelers who do not purchase package tour items. The planning phase consists of broad information collection, location choice, detailed information research, scheduling, budgeting, reservation and payment, departure and arrival and writing a review.

This document illustrates and analyzes service models for the travel planning via DTI. For example, when collecting information for a specific place, a traveler can find its historical and current name of the place, and distinguish two different names of the same place, if any. Virtual tour, which enables travelers to virtually experience their travel plan, can also be available through the use of DTI.

The business documents are composed of Business Information Entities (BIEs), which when available, are taken from the library of reusable business information entities and when not found, are proposed as new BIEs. The contents of the business documents and the BIEs are presented using class diagrams.

4. Scope

4.1. Description

This document targets TT&L industry. However, it can be utilized by any industry interested in doing business in tourism or other related areas (e.g. hotels and restaurants), individuals or organizations.

4.2. Contexts

TT&L industry involved with multiple parties, for example, government administrators, service providers, travel agencies and customers. In perspective of information access in the DTI system, they can be divided into two groups; information providers and information Customers.

Information providers are again divided into public and private sectors. Their roles are registering data such as geographic standards or business information into the DTI system. On the other hand, information Customers utilize it in various ways. For example, service suppliers (e.g. travel agencies) can deliver the information directly to customers or process it to develop new service items. Since service suppliers receive feedbacks or reviews (e.g. POI, navigation or storytelling) from customers, they also can play a role as information providers.

Categories	Description and Values
Business process	Destination Travel Information
Product classification	In all content
Industry classification	TT&L industry
Geopolitical	global
Official constraint	none
Business process role	In all content
Supporting role	In all content
System capabilities	In all content

5. Business Requirements Elaboration

5.1. Requirements List

Business requirement statements and corresponding transaction names are described based on the needs analysis of business models that utilize DTI.

Number	Business Requirement Statement	Business Transaction name for this Req.
A.1	Customer-friendly search service that provides reliable information of certain countries and/or cities	Conditional search
A.2	An automatic information extraction feature that allows Customers to use an image file to find a geographical coordinates and/or to find pictures taken in searched area	Location information collection (Automatic Information Extraction Feature)
A.3	A video that records and tracks travel routes which allow Customers multiple positions and courses trajectory	Multiple position Registration
A.4	• Location information specified by its longitude and latitude coordinates • The information is up to date and each location cannot be registered with multiple names	Registration management
A.5	• A service that captures certain area by connecting pictures taken in different locations • Customers can search and register the information about captured area	Geofencing Registration (Boundary specitfifition)
A.6	Public transportation navigation service to find directions for transit routing	Public transportation information
A.7	A service that distinguishes a geographical area and an accessible route of an airport	Schedule planning, Route planning
A.8	Prescribed classification codes that enables travelers to find description and price ranges of food and/or a specific restaurant	Restaurant business codification
A.9	DTI requires predetermined classification codes for the accommodations information providers with the rates of amenities and accommodations	Category Registration
A.10	-A public entity can certify the registered data and establish standards Need to define a standardized of SOPs -The standard helps FIT and travel agencies gathering tour information by clarifying the categories of the information	Information Search Registration
A.11	DTI allows authorized private sectors to commercialize and recreate DTI with minimal registration process	Information Registration

Number	Business Requirement Statement	Business Transaction name for this Req.
A.12	DTI Customers do not have restrictions on access across the nations Customers of any country can have an access to different country's DTI with minimal registration process	Customer Registration

Business requirement statements and corresponding transaction names are described based on the needs analysis of business models that utilize DTI.

| Number	Data Requirement Statement
B.1	Basic information collection (name, description, contact information, official website and business hours)
B.2	Longitude/latitude, observation angle, distance and direction
B.3	Registration record management time, on-site POI media registration time
B.4	Official name of attraction and the classification standards
B.5	Classification category: accommodations, options or packages
B.6	Central DTI consists of government owned assets (attractions), commercial and Private
B.7	Information management: original copy, information user track, information usage track)
B.8	Coded categories are classified by country/state or city/products/occasion

5.2 Definitions Business Terms

Table 4. specifies business terms used in this document. Those terms and definitions are to help understanding different phases of the implementation and utilization of the DTI system.

Terms	Definitions
Travel Destination	Destination that reflects an individual traveler's POI
Travel Schedule	A list of travel destinations without considerations of location and time
Travel Route	A travel schedule that states:
Public DTI exchange	Information exchange about government-owned assets
Private DTI exchange	Information exchange about privately owned assets such as privately owned attractions, leisure and entertainment facilities, restaurants, accommodations and architectures
Private DTI	Registered FITs share their experience and information through DTI
DTI Provision	Customers can obtain information from DTI servers through API
Destination POI	Travel destination location
Indicator POI	The center or main spot of a destination to indicate the location on the map
Emotional POI	Destination POI with emotional approach to provide a unique experience for certain attractions

5.3 Business Requiremens view

Business Requirements view must be formalized with adequate UML: Activity diagram, class diagram, business choreography diagram and worksheet. Detailed UMLs will be provided in an additional RSM document.

5.3.1 Business Domain view
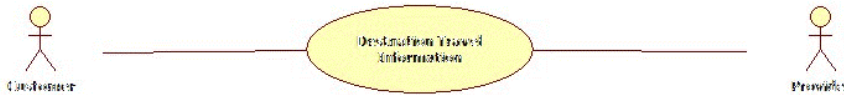
5.3.1.1 Business Process Worksheet

Form for Business Process	
General	
NAME	Implementation Business Process
Description	Process to input basic information of DTI (travel destination, geographical coordinates, basic description, classification code and key word for searching option)

Form for Business Process	
General	
NAME	Operating Business Process
DEscription	Operating system maintenance process to update information and analyze the information quality by assessing the magnitude of content usage

Form for Business Process	
General	
NAME	Utilization Business Process
DEscription	Process to foster value-creating project or businesses using DTI

5.3.1.2 Business Process Use case
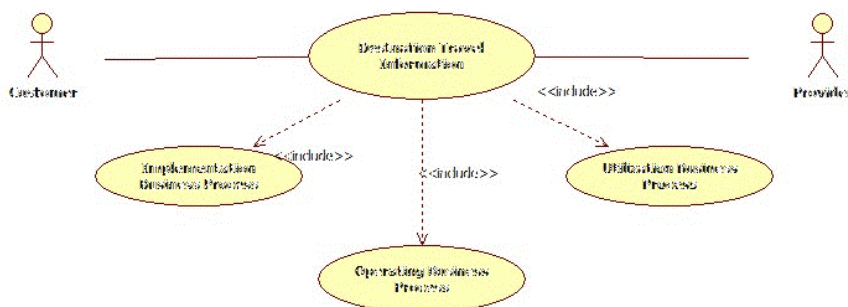
Business processes consist of implement, operation and development process.
They can be used to create a new business model/method.

5.3.2 Business Partners View

Public provider Private provider Information user DCC Direct user onsite Service user

5.3.2.1 Information model definition (Class diagram)

The class diagram of the destination travel information used in the Business Domain Use Case Diagram in Figure 5 is shown as follows in Figure 9.

Figure9. Destination Travel Information Conceptual Model Classes and Attributes
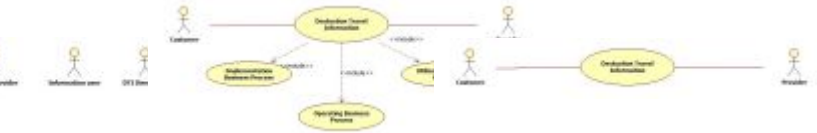
Figure 8. Business Partners View

Figure 7. Business Process Use Case

Figure 5 DTI Business Domain Use case diagram