

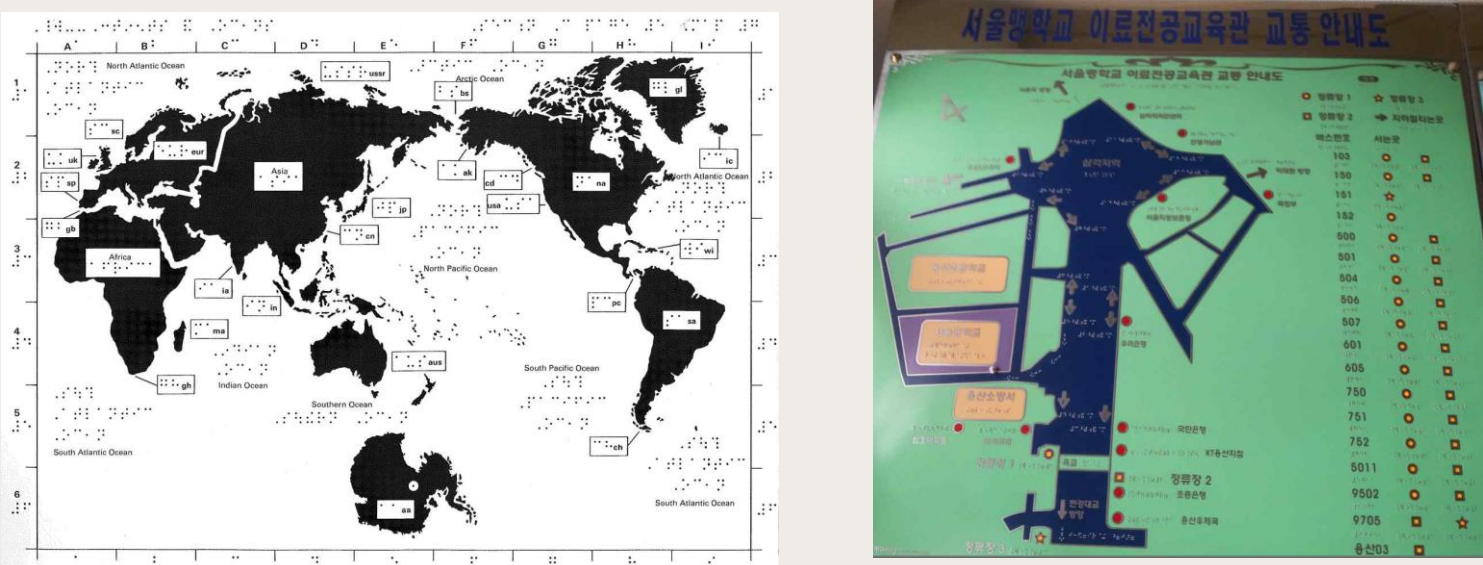
Geographic Information for People with Disabilities

Introducing Tactile maps by the Republic of Korea



Maps for People with Visual Disability

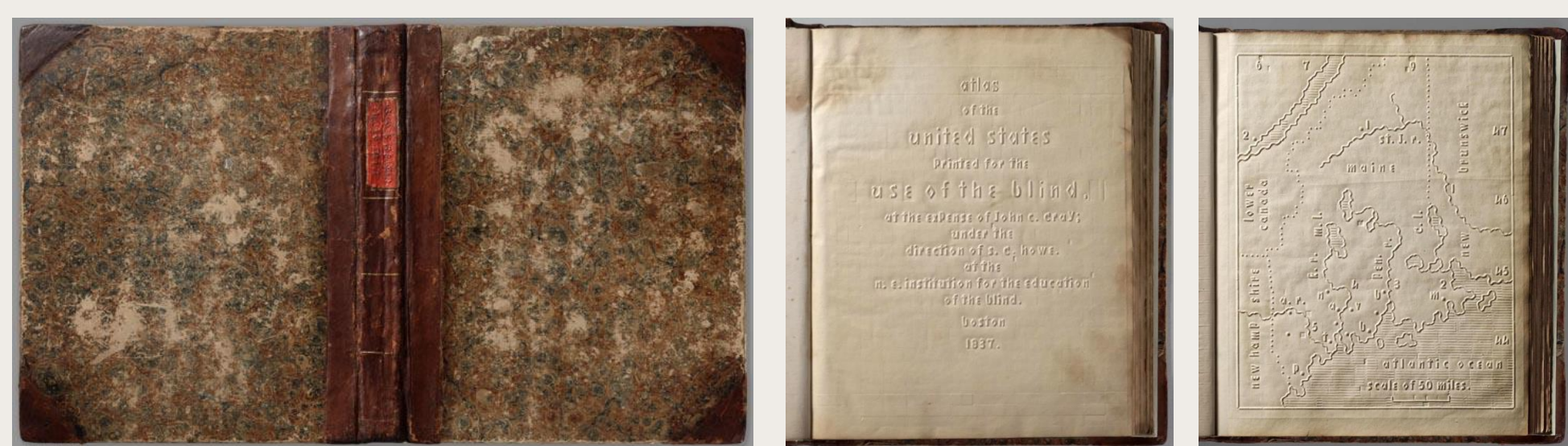
- ▶ Tactile maps is the geographical map using braille, tactile sign, or other embossed lines and surfaces
- ▶ Map for the blind is a comprehensive map producing technology, which includes tactile graphic maps and simple braille maps.



- ▶ Braille is a character for the visually impaired, which makes small, round six points protruding
- ▶ Different types and meanings are created depending on which point is projected
- ▶ Korean braille system is composed of initial consonant, vowel, and ending consonant
e.g., 책 = ㄷ + ㅐ + ㄱ

chaek = ㄷ + ㅐ + ㄱ
book consonant vowel consonant

- ▶ The oldest tactile map in the world is the "Atlas of the United States Printed for the Use of the Blind" published in 1837.



Atlas of the United States Printed for the Use of the Blind

Using Geographical Names

- ▶ The geographical names or topographical features are displayed with Toponym Labels in Tactile map.
- ▶ The use of toponym labels should be minimized for the readability of tactile map
- ▶ Since all place names can not be expressed on the map, it is a very important task to select place names according to the importance of them.
- ▶ Toponym labels are expressed with numbers or symbols on the map and explained in additional legends.
- ▶ Barcode for the voice guidance can be used to provide more information about the toponym labels
- ▶ Maps for the blind by the NGII include indices arranged in an alphabetical order to help users to find a page of interest.

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Example of Index In Seoul Braille Map for Visually Impaired Persons

The General Rule of Making Tactile Maps

- ▶ The chapter 2 of the "Rules for Publishing Tactile Map" enacted by the National Geographic Information Institution provides the detail of displaying geographical features.

Articles	Contents
Article #5	location and coordinates
Article #6	tactile map and explanation of tactile map
Article #7	Generalization
Article #8	Geographic features
Article #9	Differentiation of lines
Article #10	Differentiation of planes
Article #11	Use of Brailles
Article #12	Standard for Printing Brailles

- ✓ Very small or detailed features have to be generalized
- ✓ If there is a need to provide detail information, use separate legends or annotations
- ✓ Braille characters should be printed distinctly

Tactile Symbols used for the Map for Blind

- ▶ The tactile symbol means a protruding emblem representing the feature and geographical information in the braille map.
- ▶ Tactile Symbols used in the "Atlas for People with Visual Disability" by NGII

Classification	Symbol*	Symbol**	Features
Social Welfare			Welfare Centers and Facilities Hospital, Pharmacy
Culture & Tourism			Gallery, Museum, Historic Site Tourist Destination, Cultural District
Public Facilities			School, Public Office, Police Station, Fire Station, Court, etc.
Subway			Station, Transit Station
Subway Line			Subway lines
Platform			Taxi, Bus
Cross-walk			
Facilities for Pedestrians			
Facilities			Department Store, Post Office, Library, Bank etc.
Land Use			Forest
			River and Creek
			Farmland
Boundary			
Topography			Mountain
Direction			Cardinal directions

* UV method: Coated on paper with ultraviolet curing resin
** Embossing method: The surface of the paper is protruded

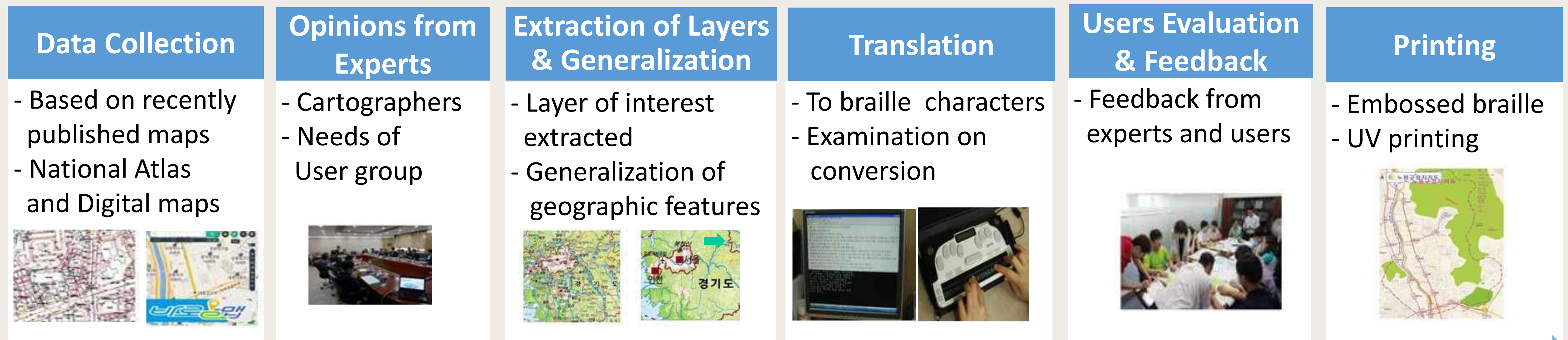
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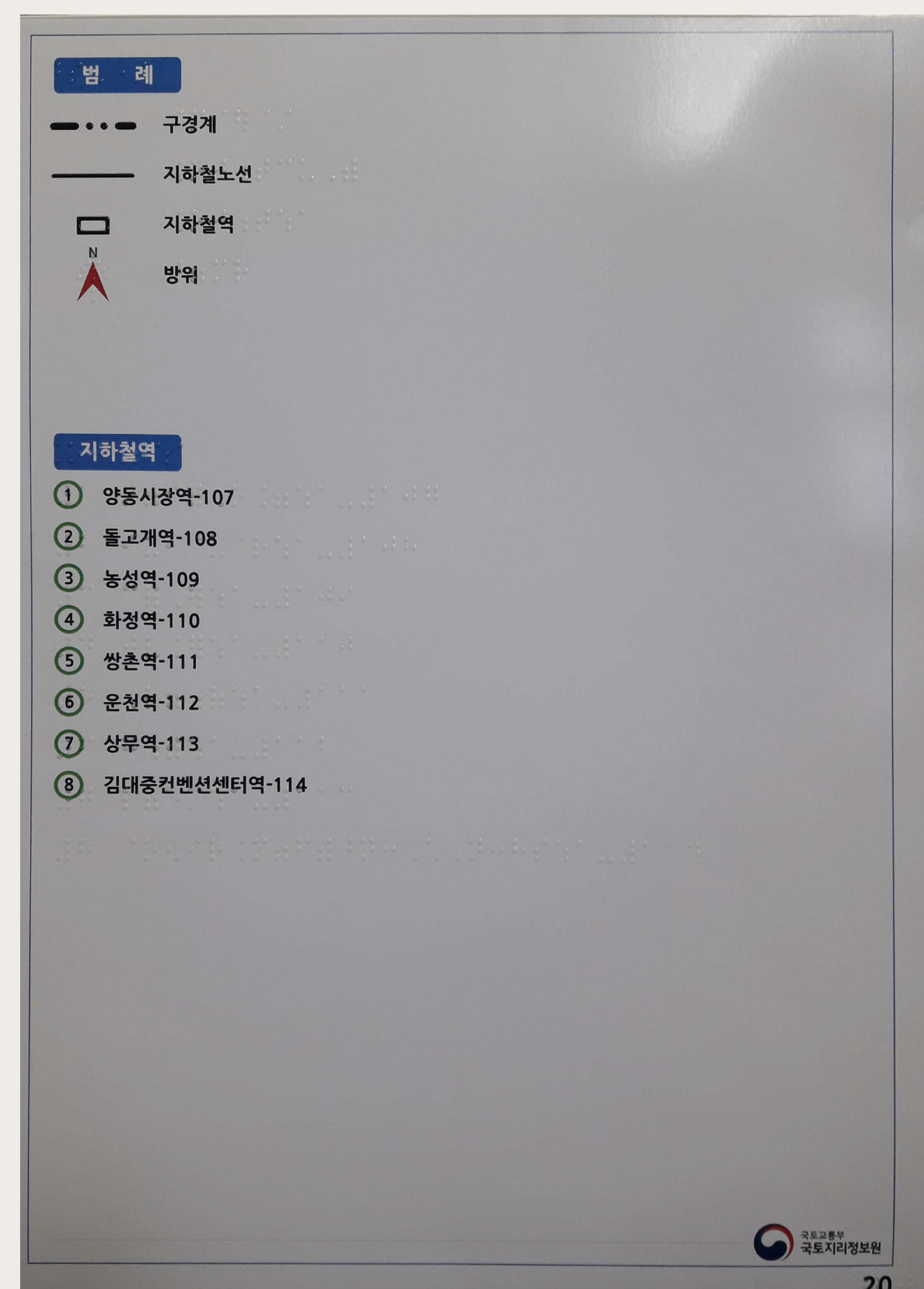
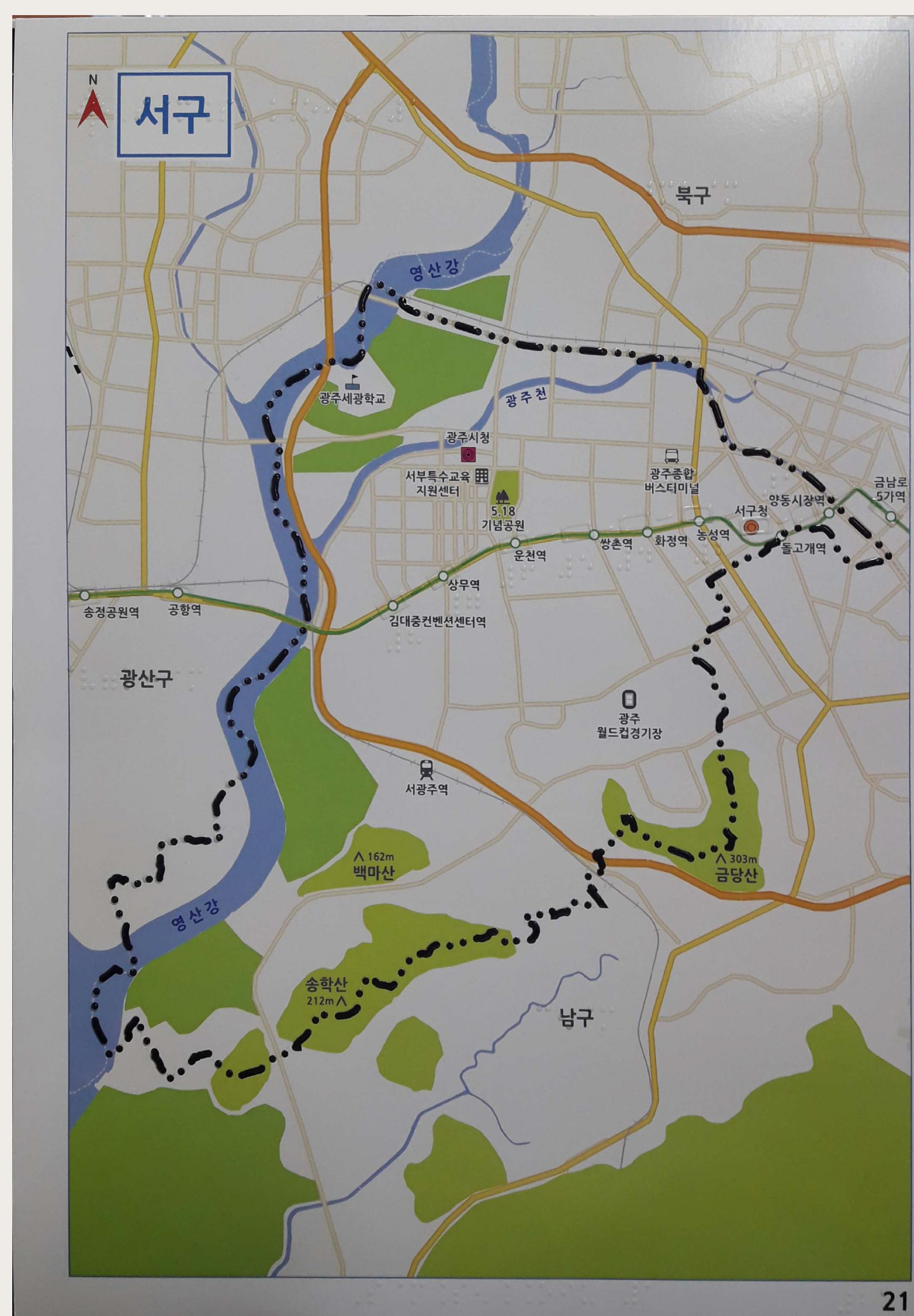


National Geographic Information Institute
Ministry of Land, Infrastructure and Transport

Process of Braille Atlas Production



Example of Map for People with Visual Disability



Long-term Planning and Future of the Maps for People with Visual Disability by NGII

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> ▪ Technology <ul style="list-style-type: none"> > State-of-the-art technologies for maps e.g. Smartphone, 3D Printer, Tablet PC, electronic devices ▪ Steps | <ul style="list-style-type: none"> ▪ Contents <ul style="list-style-type: none"> > For Education <ul style="list-style-type: none"> : textbook for student and public > For Daily life <ul style="list-style-type: none"> : Guide map for social welfare facilities Public transportation map, Tourist map | <ul style="list-style-type: none"> ▪ Policy Support <ul style="list-style-type: none"> >> Policy support for the foundation of map production and utilization |
|--|--|---|

2016	2017	2018	2019	2020	after2020
	Maps for daily lives published and distributed				
	Maps for transportation network in 85 cities				
		Maps for Tourism			
World map for education	Establishment of cooperation and education system among affiliated institutions				
Improvement of analog printing method					
	Development and distribution of automated system for braille maps				
	3D printing support system development				
Pilot Project	Development contents and technologies for mobile devices				
	Establishment of support system to distribute braille maps for private sectors and local governments				