

# JICA Project on NSDI Creation in Ukraine

**“CREATION OF A NATIONAL GEOSPATIAL  
DATA INFRASTRUCTURE IN UKRAINE”**

## **JICA Study Team**



**JAPAN**  
Official Development Assistance

CREATION OF A NATIONAL GEOSPATIAL  
DATA INFRASTRUCTURE IN UKRAINE



# Background of the Project

- \*Inefficient and unreasonable cases occurred in the preparation, updating and management of Geospatial Information.**
- \*It was not realized the sharing and the common utilization of Geospatial Information among the related agencies.**
- \*Ukrainian Government decided to establish the National Spatial Data Infrastructure (NSDI) at a Cabinet meeting aiming to confirm integration of Geospatial Information, database and common ownership/use to prepare, manage and utilize Geospatial Information reasonably and effectively.**



# Objective and Outputs of the Project

## **\*Objective of the Project**

**「to develop a system of establishing and operating NSDI through the demonstration in a pilot area」**

## **\*Results**

- 1. To establish an institutional framework to implement the above plan**
- 2. To draft practical standards for geographic information and formulate an implementation plan**
- 3. To create a NSDI prototype to demonstrate its utilities**
- 4. To develop capacities of C/P and agencies related to the Project**
- 5. To draft a Plan for NSDI Creation and Operation**

## Cooperating Agencies of the Project Activities

**\*State Service of Ukraine for Geodesy, Cartography and Cadastre**

**\*State Land Cadastre Center**

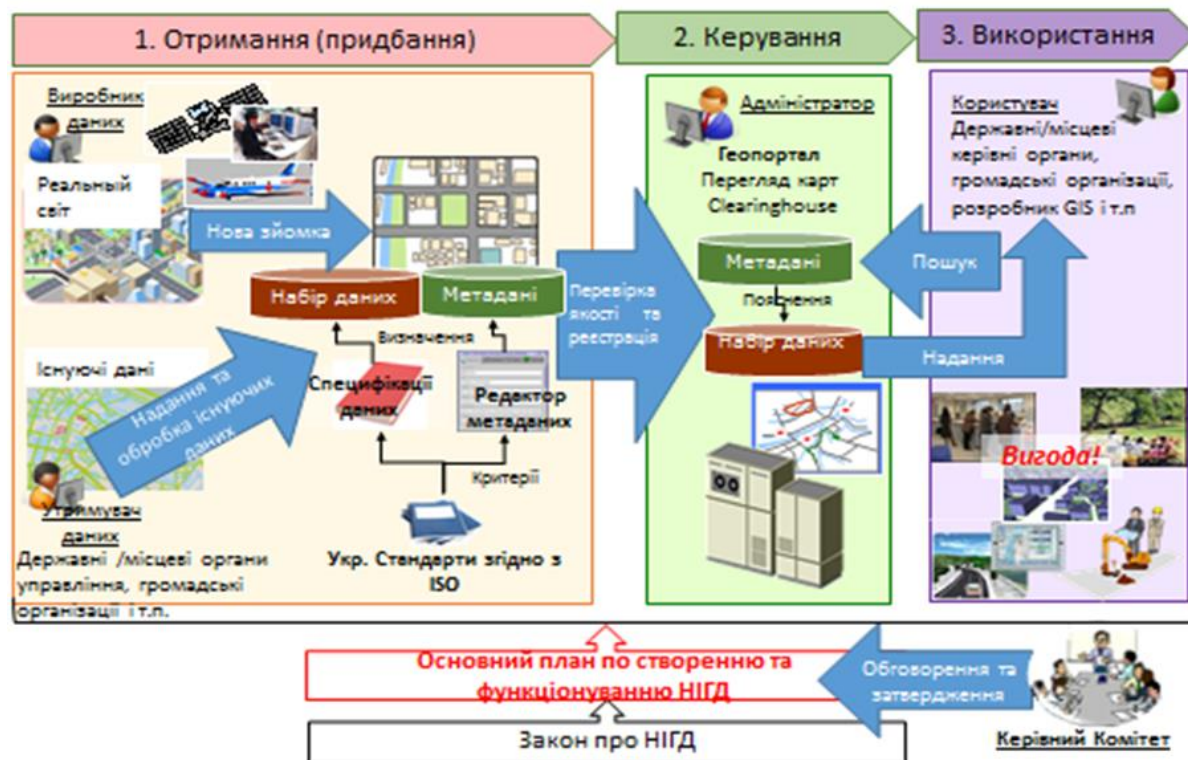
**\*Related Agencies**

**\*Pilot Areas: Binnytsia District**

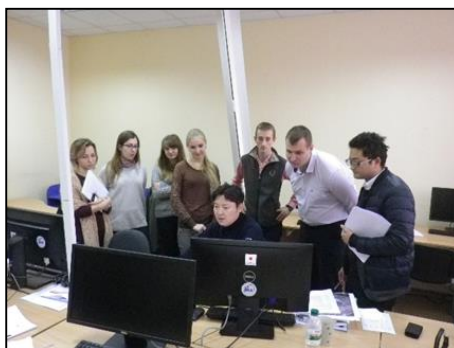
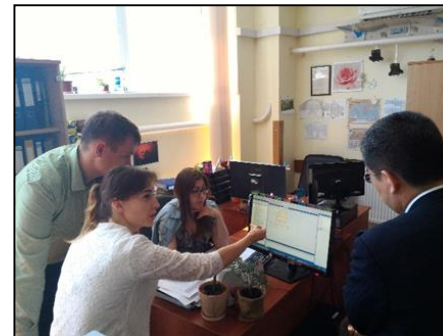


# Outline of Project Activities Items

- A. Establishment of a cooperative framework for related agencies
- B. Preparation of Standards for geographic information (draft)
- C. Creation of a NSDI prototype
- D. Capacity development of C/P and related agencies
- E. Preparation of a Plan for NSDI Creation and Operation (draft)



# Implementation contents of the Project



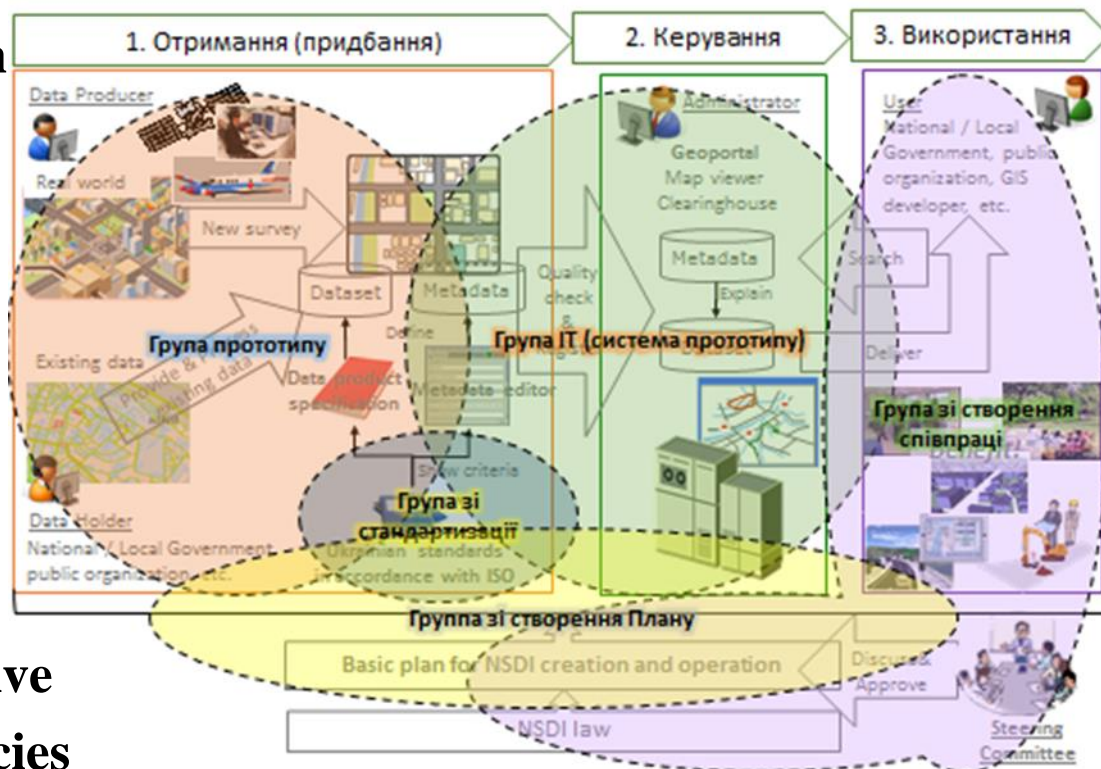
# Implementation of the Project Activities

## Project Implementation Structure

- \* Steering Committee Team
- \* Standardization Team
- \* Data Prototype Team
- \* System Prototype Team
- \* Planning Team

## Project Activities to be implemented

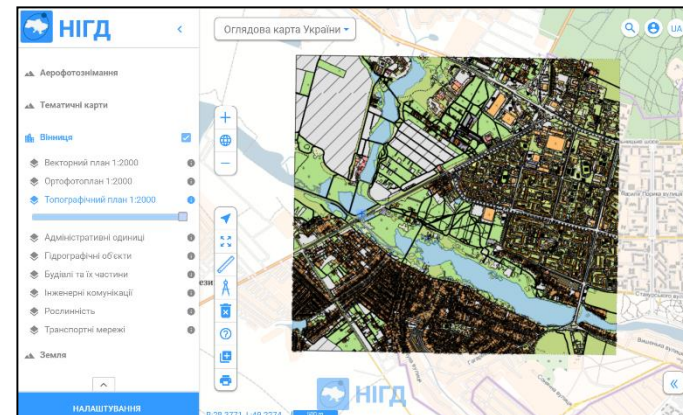
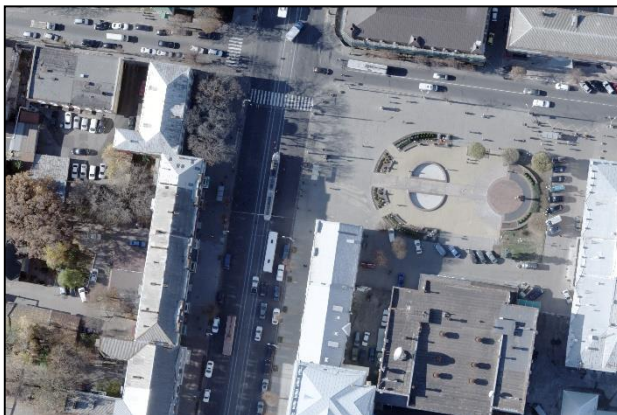
- Establishment of a cooperative framework for related agencies
- Preparation of Standards for geographic information (draft)
- Creation of an NSDI prototype
- Capacity development of C/P and related agencies
- Preparation of a Plan for NSDI Creation and Operation (draft)



# Implementation Results of the Project



|   |                 |
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| Chapter 1: Introduction .....                                       | 1 <sup>4</sup>  |
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| 1.2. General information on NSDI .....                              | 1 <sup>4</sup>  |
| 1.3. Social background of NSDI in Ukraine .....                     | 1 <sup>4</sup>  |
| Chapter 2: Policy of NSDI .....                                     | 5 <sup>4</sup>  |
| 2.1. Government and other related policies of NSDI in Ukraine ..... | 5 <sup>4</sup>  |
| 2.2. INSPIRE .....  | 8 <sup>4</sup>  |
| Chapter 3: Principles and goals .....                               | 11 <sup>4</sup> |
| 3.1. NSDI principles in Ukraine .....                               | 11 <sup>4</sup> |
| 3.2. Vision of NSDI in Ukraine .....                                | 11 <sup>4</sup> |



# Implemented Results of the Project (Outline)

## **A. Establishment of a cooperative framework for related agencies**

- \* The structures of organization to be instructed and realized, and the contents of works for the organization were confirmed.

## **B. Preparation of Standards for geographic information (draft)**

- \* The Standards for geographic information (UkrGIS) was prepared and the draft dissemination plan was formulated. Also, the standards for geographic information (UkrGIS) is normalized domestically.

## **C. Creation of an NSDI prototype**

- \* NSDI data and NSDI systems were established for the pilot areas, and Various kind of information for future nationwide deployment were obtained.

## **D. Capacity development of C/P and related agencies**

- \* The capacity strengthening of C / P organization's was promoted through the cooperated works, Technology transfer and Training in Japan. Also, the capacity strengthening of related agencies were realized through the workshop.

## **E. Preparation of a Plan for NSDI Creation and Operation (draft)**

- \* NSDI Creation and Operation (draft) was prepared based on the results of surveys.





# Implemented Results of the Project Activities in detailed

## A. Establishment of a cooperative framework for related agencies

The organizational structure for promoting NSDI Establishment and Operation was defined based on the results of surveys and the discussion with related agencies.

The main member of the organizational structure for promoting NSD, S/C and W/G, were appointed based on the NSDI Act (draft) and mutual consensus.



- Склад керівного комітету**
- \* Міністерство оборони України
  - \* Міністерство інфраструктури України
  - \* Міністерство екології та природних ресурсів України
  - \* Міністерство аграрної політики та продовольства України
  - \* Державне космічне агентство України
  - \* Державна служба України з питань надзвичайних ситуацій
  - \* Науково-дослідний інститут геодезії та картографії
  - \* Державне агентство енергоефективності та енергозбереження України
  - \* Державна служба статистики України
  - \* Державне агентство лісових ресурсів України
  - \* Держгеокадастр
  - \* Центр державного земельного кадастру

# Implemented Results of the Project Activities in detailed

## A. Establishment of a cooperative framework for related agencies

The function (activities) of S/C, W/G was summarized as management contents.



The administrative manual of the secretariat service was formulated.



|                  |  |
|------------------|--|
| 1 <sup>+</sup>   | Опис НІГД К/К та Р/Г <sup>+</sup>              |
| 1.1 <sup>+</sup> | Опис НІГД <sup>+</sup>                         |
| 1.2 <sup>+</sup> | Опис К/К НІГД <sup>+</sup>                     |
| 1.3 <sup>+</sup> | Опис Р/Г НІГД <sup>+</sup>                     |
| 1.4 <sup>+</sup> | К/К та Р/Г НІГД Опис секретаріату <sup>+</sup> |
| 2 <sup>+</sup>   | Процес здійснення планів <sup>+</sup>          |
| 2.1 <sup>+</sup> | Обов'язки секретаріату <sup>+</sup>            |
| 2.2 <sup>+</sup> | Повноваження членів <sup>+</sup>               |
| 2.3 <sup>+</sup> | Модерування засідань К/К та Р/Г                |
| 2.4 <sup>+</sup> | Операції з управління контентом <sup>+</sup>   |
| <sup>+</sup>     | Складання документів <sup>+</sup>              |



| Types                        | S/C Functions                                       | W/G Functions  | Details of implementation  |
|------------------------------|---|--|--|
| Institutional infrastructure | Define <u>constitution of the meeting body</u>      |  | Define the members and posts of the S/C consisting of the heads of organizations, the W/G consisting of the working-level officials from organizations, and the secretariat. (Drafted by the secretariat of NSDI S/C)        |
|                              |   | Draft <u>S/C and W/G operation plan</u>                  | Draft operation plan for the both S/C and W/G meeting bodies. The plan includes intervals of meetings, scale of meetings, major tasks and activities for S/C and W/G of the conference body. Submit the drafted plan to S/C. |
|                              | Approve S/C and W/G operation plan                  |  | Approve, reclaim, modify addition, and/or deletion the drafted operation plan.   |
|                              |   | Draft <u>NSDI long-term plan</u>                         | Draft a long-term (about 3-6 years) plan concerning the institutional infrastructure and technical infrastructure, and the use of NSDI, as well as business model including cash flow.                                       |
|                              | Approve NSDI long-term plan                         |  | Approve, reclaim, modify addition, and/or deletion the drafted NSDI long-term plan.  |
|                              | Approve NSDI development plan (In an initial phase) | Draft <u>NSDI development plan</u> (In an initial phase) | Draft an initial phase NSDI development plan. Submit the draft plan to the S/C.  |
|                              |   |  | Approve, reclaim, modify addition, and/or deletion the drafted NSDI development plan.  |

A study session and a preparatory meeting for smooth management of S/C and W/G were held



# Implemented Results of the Project Activities in detailed

## B. Preparation of Standards for geographic information (draft)

“Status of Standardization of Geographic Information Standards in Ukraine”  
 ISO19101 (Geographic information – Reference model) only was standardized.

**A review system was formulated.**

**Targeted International Standards for UkrGIS**

| Організація        | Основні ролі   |
|--------------------|--|
| Робочі групи       | <ul style="list-style-type: none"> <li>• Розгляд міжнародних стандартів з географічної інформації</li> <li>• Мінімальні відповідні стандарти для практичного стандарту з функціонування НІГД обираються серед міжнародних стандартів</li> <li>• Підготовка українського Профілю стандартів з географічних відомостей та інструкції до нього</li> </ul> |
| Наглядовий комітет | <ul style="list-style-type: none"> <li>• Підтвердження результатів розгляду робочими групами</li> <li>• Управління процесом розгляду робочими групами</li> <li>• Затвердження попередніх стандартів із географічної інформації</li> </ul>  |

| Цільові міжнародні стандарти |                                      |          |   |
|------------------------------|--------------------------------------|----------|---|
| ISO19101                     | Базова модель                        | ISO19112 | Геопросторова прив'язка за допомогою географічних ідентифікаторів |
| ISO19107                     | Геопросторова схема                  | ISO19115 | Метадані  |
| ISO19108                     | Часова схема                         | ISO19118 | Кодування   |
| ISO19109                     | Правила для прикладної схеми         | ISO19123 | Схема для включення геометрії та функцій                          |
| ISO19110                     | Каталог властивостей                 | ISO19131 | Технічні характеристики даних                                     |
| ISO19111                     | Просторова прив'язка за координатами | ISO19157 | Якість даних  |



# Implemented Results of the Project Activities in detailed

## B. Preparation of Standards for geographic information (draft)

**“Preparation of Geospatial Information Standards(draft) :UkrGIS”**

Normalization of

UkrGIS in Ukraine

| Категорія  | Назва стандарту  |
|--|--|
| Профіль стандартів                               | Правила моделювання геопросторових даних   |
|  | Український профіль метеоданих   |
| Ідентичний переклад                              | Якість даних   |
|  | Специфікації продукту даних  |
| Метод обкладинки                                 | ISO 19103:2017 Мова концептуальної схеми   |
|  | ISO 19107:2017 Просторова схема  |
|  | ISO 19108:2017 Часова схема  |
|  | ISO 19109:2017 Правила прикладної схеми  |
|  | ISO 19110:2017 Методологія каталогізації об'єктів                                |
|  | ISO 19111:2017 Просторова прив'язка за координатами                              |
|  | ISO 19112:2017 Просторова при візка з використанням географічних ідентифікаторів |
|  | ISO 19117:2017 Відображення  |
|  | ISO 19118:2017 Кодування   |
|  | ISO 19119:2017 Сервіси   |
|  | ISO 19123:2017 Схема для геометрії покриття та функції                           |
|  | ISO/TS 19127:2017 Геодезичні коди та параметри                                   |
|  | ISO 19136:2017 Географічна мова розмітки (GML)                                   |
| ISO/TS 19139:2017 Метадані – створення схеми XML |  |

**”Preparation of Operation Manual for Geographic Information Standards”**



# Implemented Results of the Project Activities in detailed

## C. Creation of an NSDI prototype

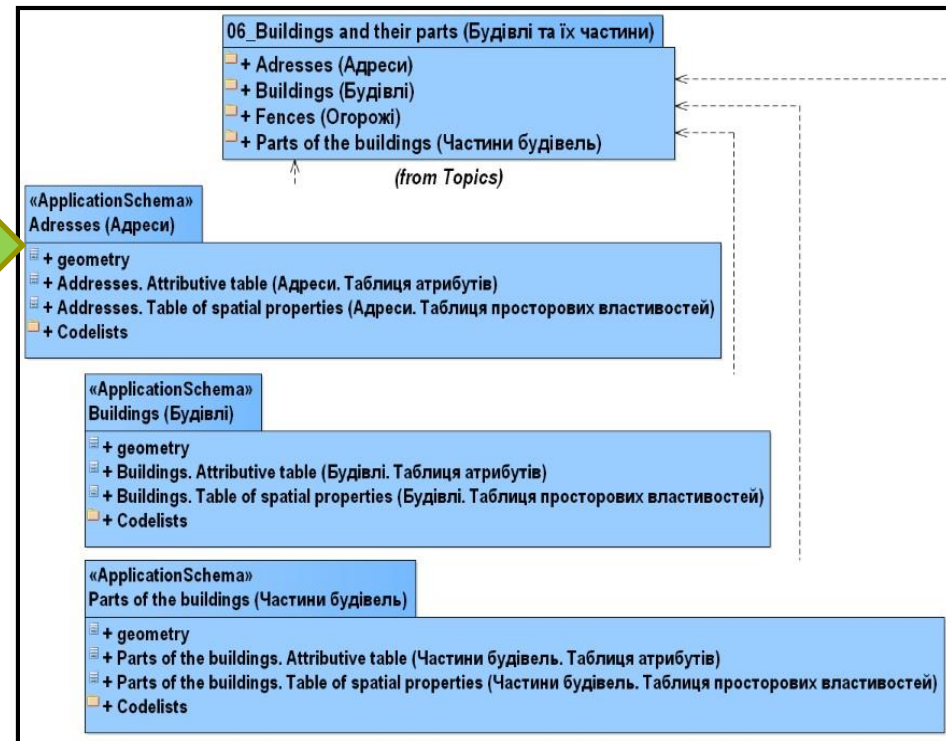
### Creation of an NSDI prototype

“Preparation of Orthophoto”



“Preparation of Specification of Basic Geospatial Data”

“Preparation of NSDI data”

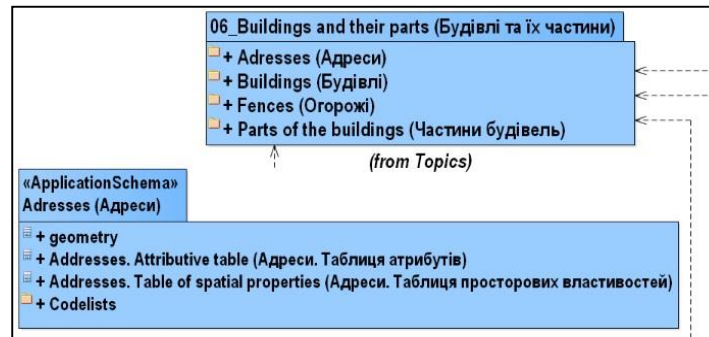
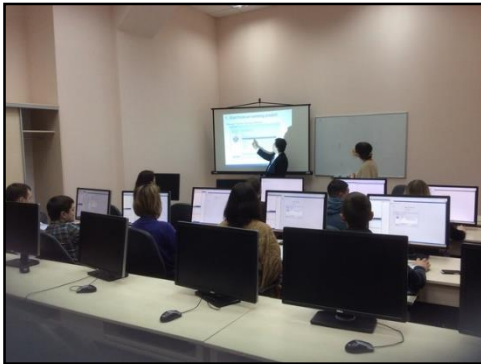


# Implemented Results of the Project Activities in detailed

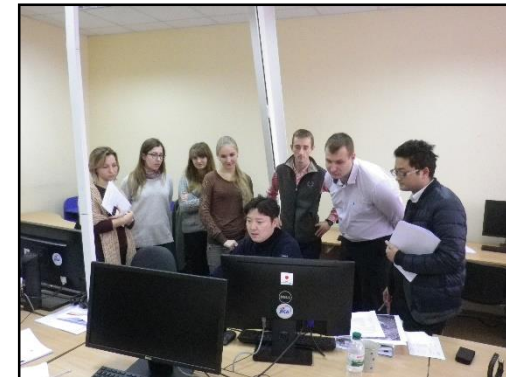
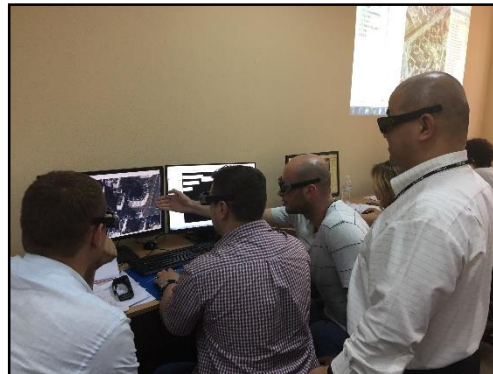
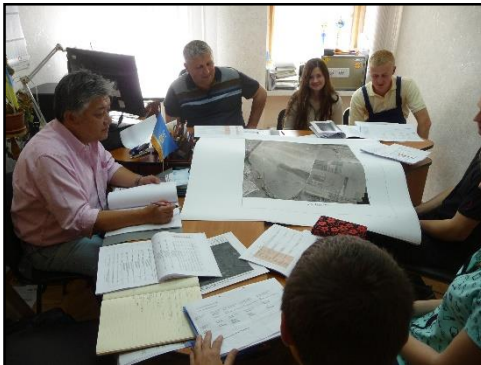
## C. Creation of an NSDI prototype

### Technology Transfer

\* The technology transfer of preparation of product specification



\* The technology transfer of preparation of NSDI data

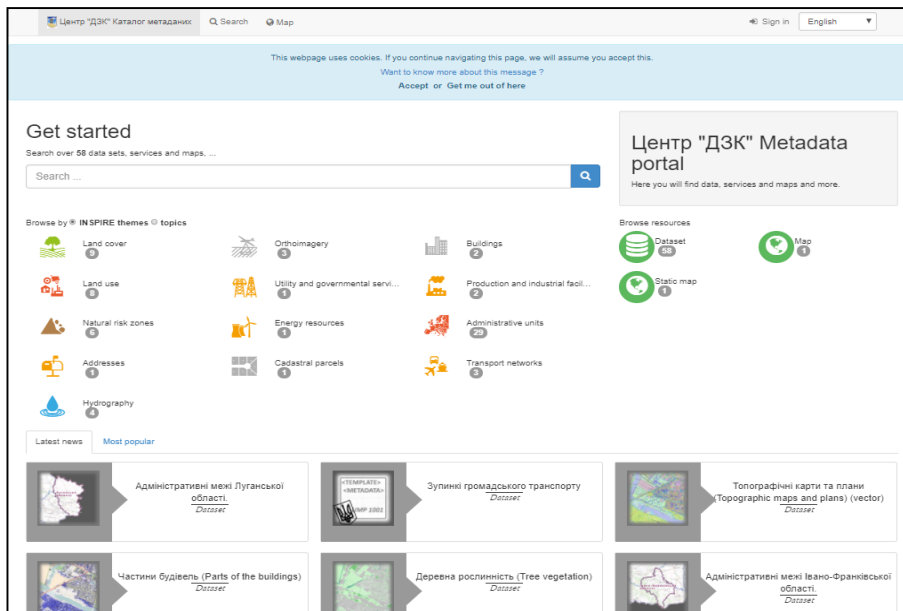


# Implemented Results of the Project Activities in detailed

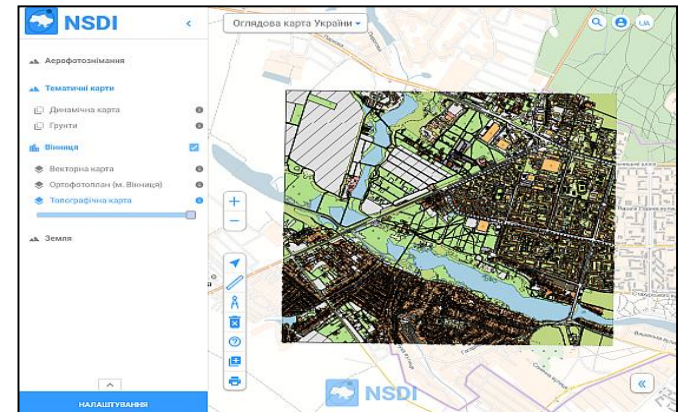
## C. Creation of an NSDI prototype

### NSDI Prototype System

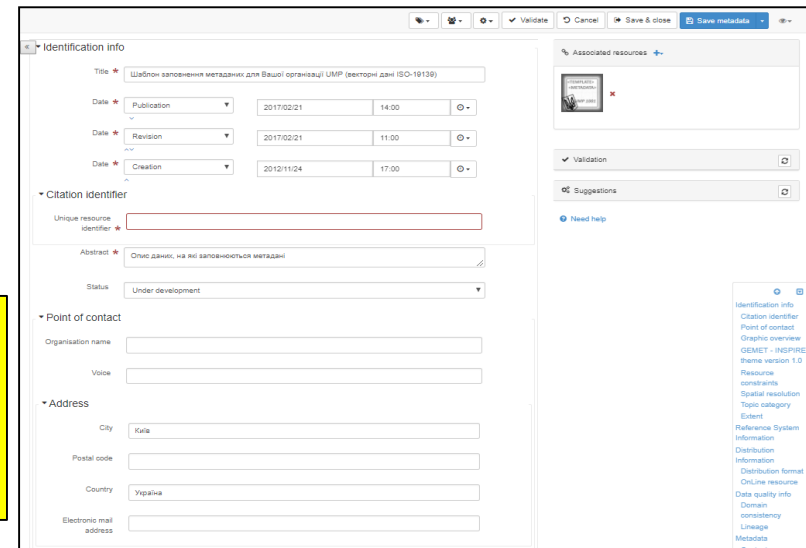
#### Clearinghouse



#### Viewer Service of Geospatial Information



#### Metadata Editor



### EX. Portal Site:

Viewer Service ⇒ <http://212.26.144.103/>

Clearinghouse ⇒ <http://geoportal.dzk.gov.ua/>

# Implemented Results of the Project Activities in detailed

## D. Capacity development of C/P and related agencies

### Cooperation with Operation Guidance Study Team

1<sup>st</sup> Cooperation with Operation Guidance Study Team (Dec, 2015) was done.



1<sup>st</sup> Cooperation with Operation Guidance Study Team (Nov, 2016) was done.

### Counterpart Training in Japan



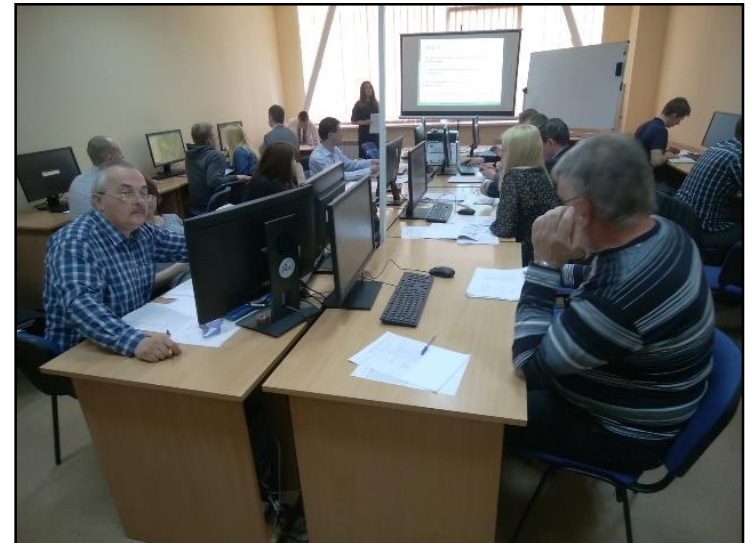
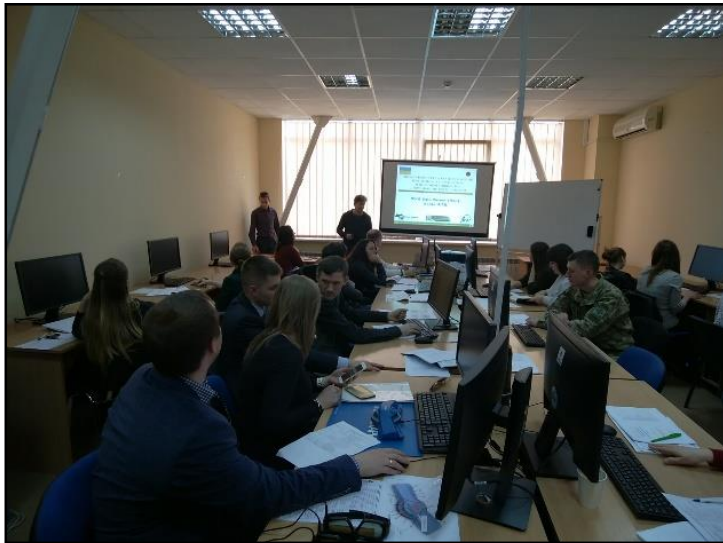


# Implemented Results of the Project Activities in detailed

## D. Capacity development of C/P and related agencies

### Workshop for Capacity development of related agencies

- \* Geospatial Information Specification Consultation
- \* Technology transfer of a concept of product specification and its production method
- \* Technology transfer of production method of geospatial information
- \* Introduction of NSDI prototype system developed



# Implemented Results of the Project Activities in detailed

## **E. Preparation of a Plan for NSDI Creation and Operation (draft)**

### **Surveying**

- \* **Organization/Agency related to NSDI**
- \* **Organization/Agency related to Geospatial Information**
- \* **Legal framework of Ukraine related to NSDI**
- \* **Current State of Geospatial Information Construction**
- \* **Example of NSDI**

### **Examination of the establishment and operation method of NSDI**

- \* **Organizational Structure for Establishment and Operation of NSDI**
- \* **Legal Framework (NSDI Act, Geographic information standard etc.) in Establishment and Operation of NSDI**
- \* **Construction and Management of NSDI data**
- \* **Cost of NSDI establishment (Data preparation, System development)**



# Implemented Results of the Project Activities in detailed

## E. Preparation of a Plan for NSDI Creation and Operation (draft)

### Preparation of a Plan for NSDI Creation and Operation (draft)

- \* Formulation of “NSDI in Ukraine. Establishment and Operation plan” based on the results of surveys, examinations and project
- \* The table of contents of the proposed plan draft is as follows.



| TABLE OF CONTENTS  |    |
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# Establishing and Operating NSDI



# Establishing and Operating NSDI

## OUTCOMES of PROJECT

- \* NSDI Act
- \* Dissemination of NSDI basic concepts
- \* Organizational structure for promoting NSDI
- \* Legal frameworks of NSDI
- \* NSDI Data
- \* NSDI System
- \* Human resources development

Each Tasks



# Establishing and Operating NSDI

## **Support for NSDI Act approval**

- \* **Support for NSDI Act Approval in the Parliament**

## **Dissemination of the NSDI basic concepts**

- \* **Dissemination of NSDI basic concepts through NSDI seminars, lectures, workshops, study sessions, exhibitions etc.**

## **Establishment of promoting organizational structure**

- \* **Establishing a promoting organizational structure officially**
- \* **Managing a promoting organization structure smoothly**

## **Legal Frameworks of NSDI**

- \* **Domestic Normalization of UkrGIS (Geographic Information Standards)**
- \* **Consistency with related laws**



# Establishing and Operating NSDI

## **NSDI Data**

- \* Preparation of Product Specification of Basic Geospatial Data**
- \* Construction of Basic Geospatial Data**
- \* Publication of Geospatial Information**

## **NSDI System**

- \* Improvement of weaknesses of NSDI Prototype System developed**
- \* System Update for a revision of ISO Geographic Information Standards and a full-scale operation of NSDI**

## **Human Resources Development**

- \* Formulation and Implementation of a organizational/systematic human resources development plan related to NSDI**
- \* Introduction of Workshop, Study meeting and Appropriate qualification system**





**Thanks you very much  
for  
Your attention**

