Overview of Spatial Data Development Experiment

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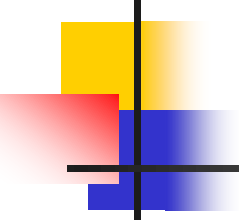
Experiment purposes

- Verification of creation manual for spatial data product specifications
  - → Can product specifications be created using this manual?

- Verification of product specifications
  - → Can spatial data be created using these product specifications?

- Verification of quality evaluation method for spatial data
  - → Can the quality of created spatial data be evaluated?
  - → Are the evaluation results appropriate?

- Fine-tuning of geographic information standards and usage principles

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Overview of Experiment

- Obtain cooperation from model districts
  - → Ogaki City, Gifu Prefecture and Toyonaka City, Osaka Prefecture
- Select test operations managers from WG2,4
  - → Test operations, assistance to Secretariat (Association of Precise Survey and Applied Technology), creation of product specifications
- Recruit participating companies and implement development experiment
  - → Creation of spatial data based on product specifications
  - → Quality evaluation of spatial data and compilation of evaluation report
  - → Creation of metadata, gazetteer, etc.

- Compile experiment results   ← Currently under way
  - → Examination of appropriateness of quality evaluation results
  - → Sampling of examined items with a view to reflection in geographic information standards and product specification creation manual
- Reflect results in geographic information standards and product specification creation manual
  - → Implementation of overall joint research based on test operations manager's report

Assumed application (disaster prevention)

Purpose of application

To obtain an understanding of road conditions, disaster prevention facilities, hazardous facilities, storage facilities, evacuation facilities, medical facilities, recreational facilities, etc. in order to draw up regional disaster prevention plans assuming the occurrence of earthquakes, etc., implement traffic regulations in the event of disaster, and guide evacuations

■ Application functions

→ Determination of or search for the location of hazardous facilities, evacuation facilities, medical facilities, etc.

→ Search for evacuation routes

→ Search for cover areas of fire hydrants and water storage tanks

→ Management of stored materials

→ Assignment of evacuation locations and determination of evacuee populations

→ Determination of areas prone to spread of fire

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Examination procedure for product specifications

- **Feature extraction**

- **Selection of feature definitions, structures, and required quality**

- **Selection of details of product specifications**
  - → Application schema
  - → Encoding rule
  - → Quality evalution procedures
  - → Metadata entry content
  - → Reference system

    (Now, we are examining about the feature catalog.)

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Verification of resulting products and reflection in standards

- **Verification points**
  - → Encoding rule
  - → Gazetteer
  - → Metadata
  - → Appropriateness of quality evaluation results

- **Details of examination for reflection in geographic information standards**
  - → Entry content of product specifications
  - → Metadata entry method
  - → Appropriateness of quality evaluation procedures
  - → Organization method for resulting products and desired form of report

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Overview of ordering through product specifications

- Product specifications

  → Direction for the data preparation

  → Description of application schema

  → Feature Encoding specifications

  → Quality requirements and evaluation procedure definitions

- Ordering specifications

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Verification of quality evaluation procedure (1)

- Verification of quality evaluation result and procedure

  Procedure

  For resulting products of data creation companies, verify such matters as:

  1) Are quality requirements in product specifications satisfied?

  2) Is quality evaluation implemented as specified in product specifications?

  and identify problems, etc.

  Ref.) Calculate total number of man-hours required for quality evaluation

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Verification of quality evaluation procedure (2)

- Verification of appropriateness of sample quantity

  Procedure

  (1) For the completeness of a feature, conduct full inspection. Use the result as "actual quality."

  (2) For the same feature, conduct sampling inspections at 20%, 10%, and 5%, and calculate completeness for each one.

  (3) From the results of (**1**) and (**2**), verify sample quantity that enables estimation of full inspection result.

  Data to be used

  Road intersections (3 companies in Toyonaka)

  Evacuation facilities (Schools, hospitals, parks, shrines and temples for 4 companies in Toyonaka and Ogaki are considered as equivalent features)

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Issues about quality evaluation procedure (1)

- Sample extraction
    - Which methods are not affected by spatial correlations?
    - Verification of random sampling and others sampling
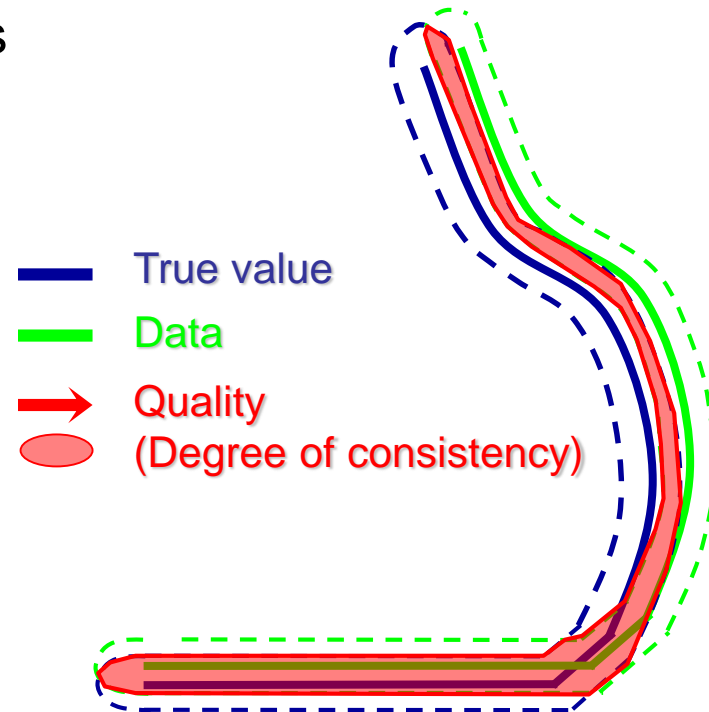   - Verification of suitability of ISO 2859 and ISO 3951

↑ Many

↓ Few
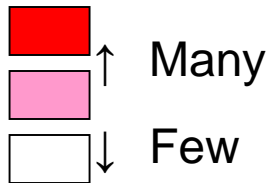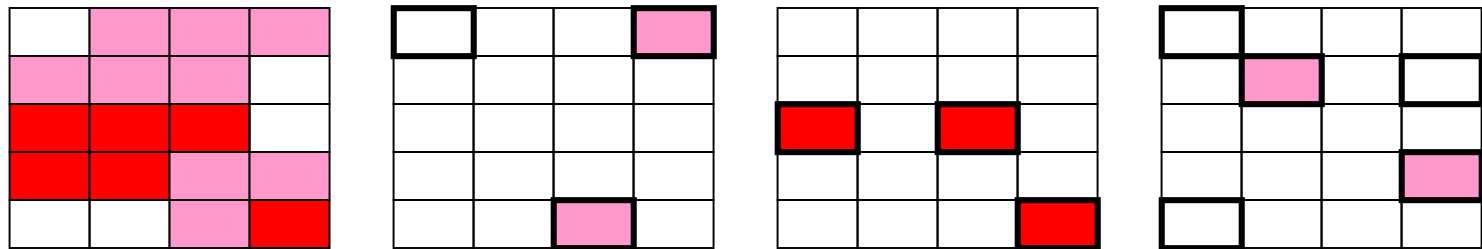
Issues about quality evaluation procedure (2)

- Quality evaluation procedure taking into account feature characteristics
  - Points, curves, surfaces

True value

Data

Quality
(Degree of consistency)
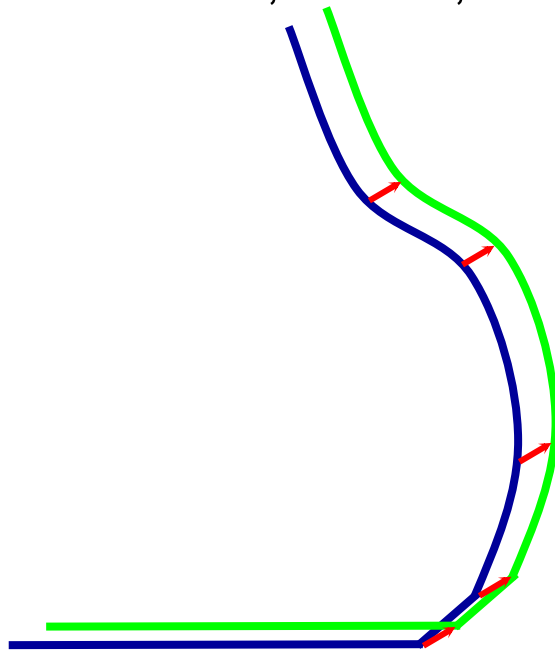
- Evaluation using inflexion point vector quantity
(This experiment)

- Evaluation using buffer overlap area
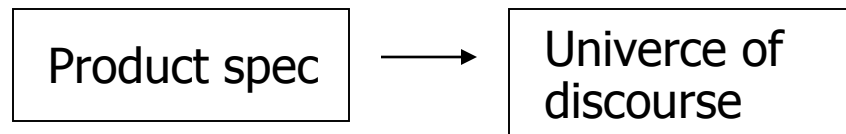(Issue: More accurate evaluation method)

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Results

Official…..　This test has not been finished yet.

(My Question)

Description

Comparison

| Product spec | → | Univerce of discourse | | Spatial data |

No material

(To make material)

| Product spec | → | Univerce of discourse |

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No material

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