

# Dataset quality, usability, and conformance needs of GIS-

Klicka här för att ändra format på underrubrik i bakgrunden


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Imad Abugessaisa

imad@fpx.se

Future Position X

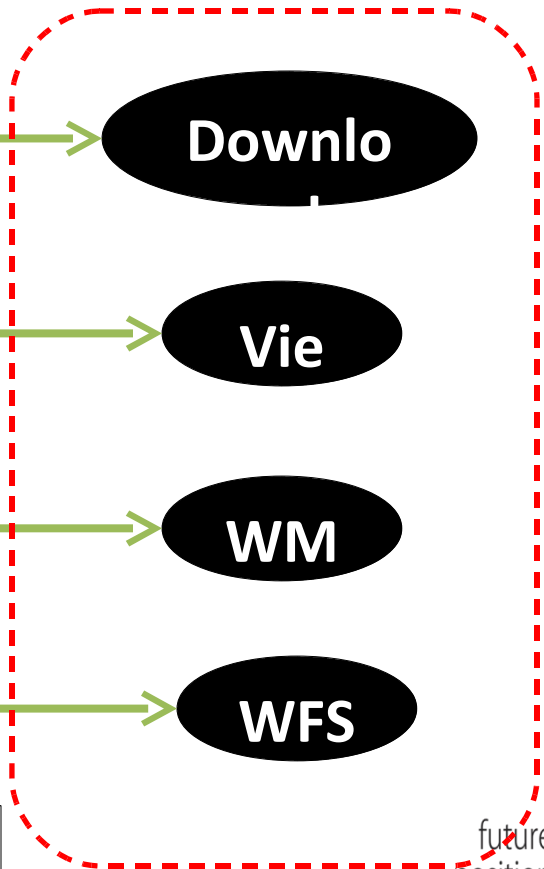
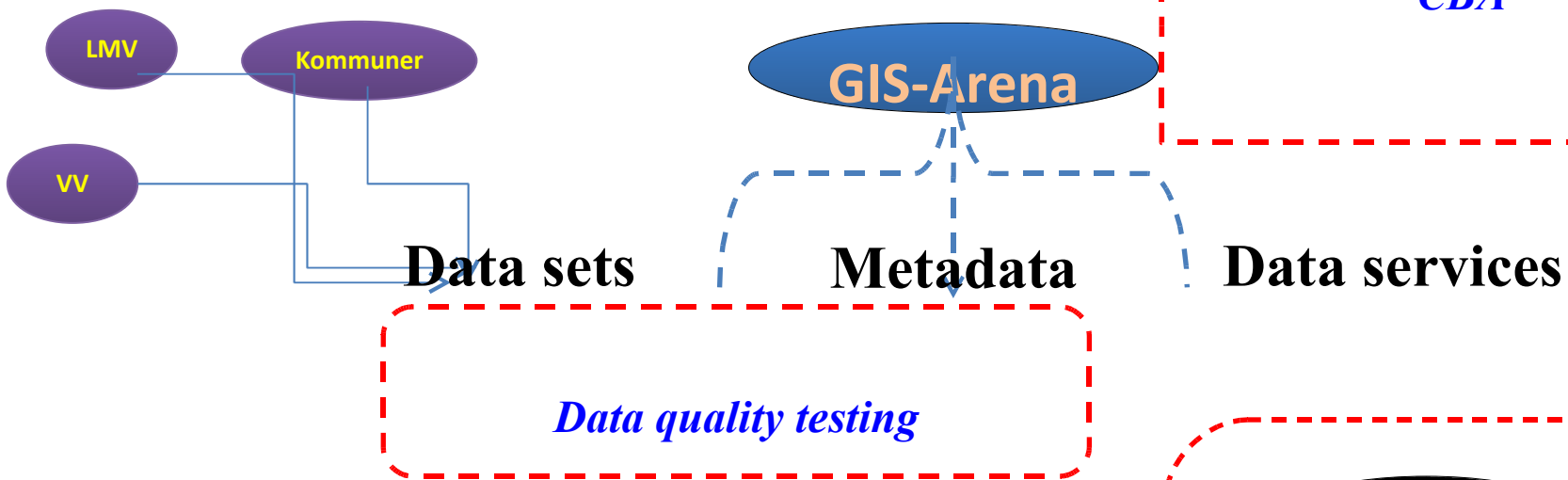
SE-801 33 Gävle, Sweden

 2009-05-15  
<http://www.geotest.se>

future  
position | ~~86°40'17" North  
17°06'11" East  
213741.9020~~

# Agenda

- Conformance testing “ Performance”
- Usability testing
- Dataset quality
- Cost benefit analysis
- Training



# Why testing

- Testing will increase **accessibility** and ensure the **acceptance**
- Communication between **end users** and project **administration**
- Ensures presence of required characteristics and **requirements**
- An input for **new** versions and development
- Evaluate the **feasibility** and **CE**



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# What is usability ?

- The extent to which the product can be used by specific users to achieve specific goals with **effectiveness**, **efficiency**, and **satisfaction** in a specific context of use.
  - ***Effectiveness** measures the accuracy and completeness with which users achieve specified goals*

# Usability testing aims

- Focused on users satisfaction
- Usability evaluation aims at identifying strengths and weaknesses of GIS-Arena and gives hints for improving its usability.
- Ensure the acceptance of the system

# Bad Vs. good usability



Good usability provide competitive advantages and provide returns to all who are involved in the value chain providing usable information.

Bad usability can prevent the system from being used at all.

# GIS-Arena testing and usability

- A process of trying to **find errors** by means of experimentation in a software product.
- Users play an important role in determining data usability.
- GIS data might not be usable enough to enable the quality and speed of decision.
- Care about the user experience.

# Usability of GIS-Arena

- Three main elements of usability are required to make the system effective

1. **Completeness of data set**
2. **Relevance of the sets to the user needs**
3. **Status of dataset available at a GIS-Arena**
4. **Metadata elements**

**Content**

**Determined by**

1. **Rate of frustration**
2. **Awareness of possibilities and content**
3. **Time necessary to master a new functionality**

**Satisfaction**

**GIS -Arena**

**Possibilities of a user to link up with datasets by using functionalities:**

1. **zoom**
2. **pan**
3. **identify**
4. **proximity**
5. **layer selection**

**Interaction**

# Usability study



- A usability study consists of
  - Individual user, target group, focus group
- Develop different testing scenarios
- Scenarios describe the tasks in a way that takes some of the artificiality out of the test.

# Use-cases development

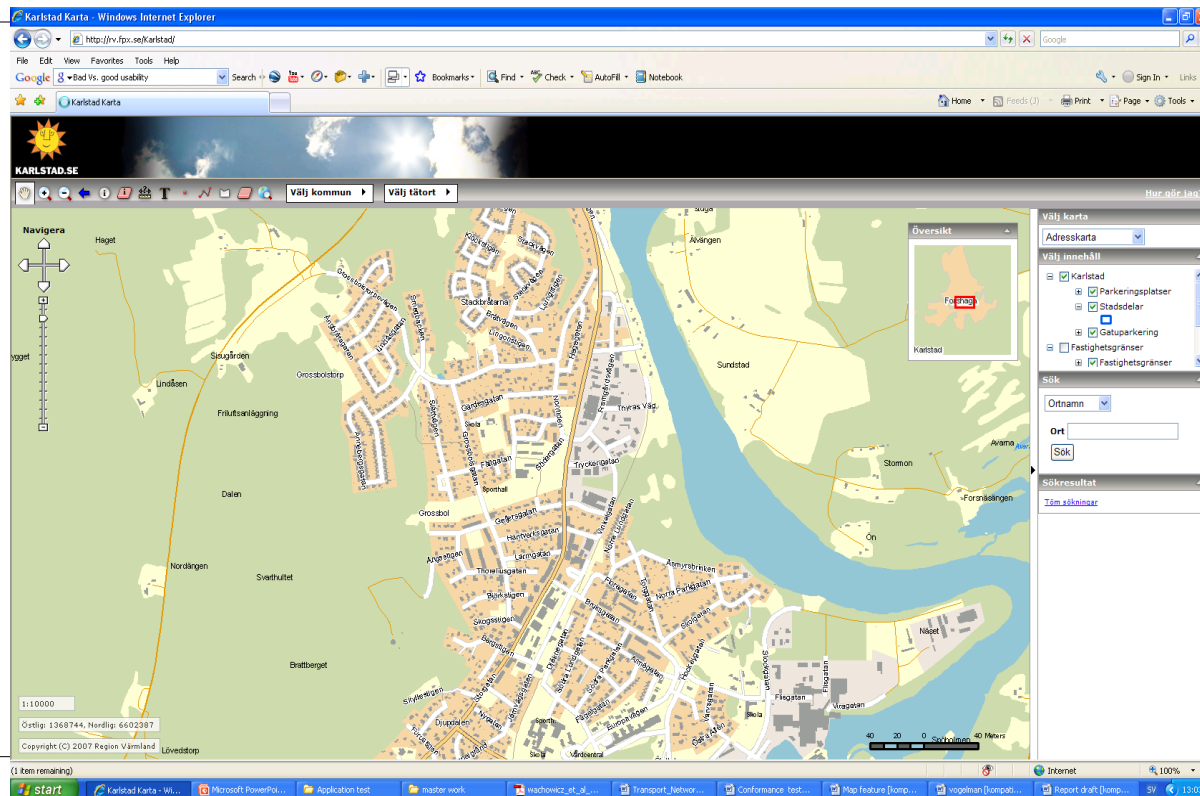
- Use case diagrams overview the usage requirements for a system.
- UCD can be developed with different target groups and then tested.
  - Potential and target users
- Will provide new requirements

# Elements of map

- We will consider four typical sections of a GIS-arena user interface as being one of the following:
  - Map display (i.e. the map viewer) where the maps were shown
  - Table of content where information layers could be visible and/or active
  - Basic map functionalities which were used to allow the respondents to interact with the map

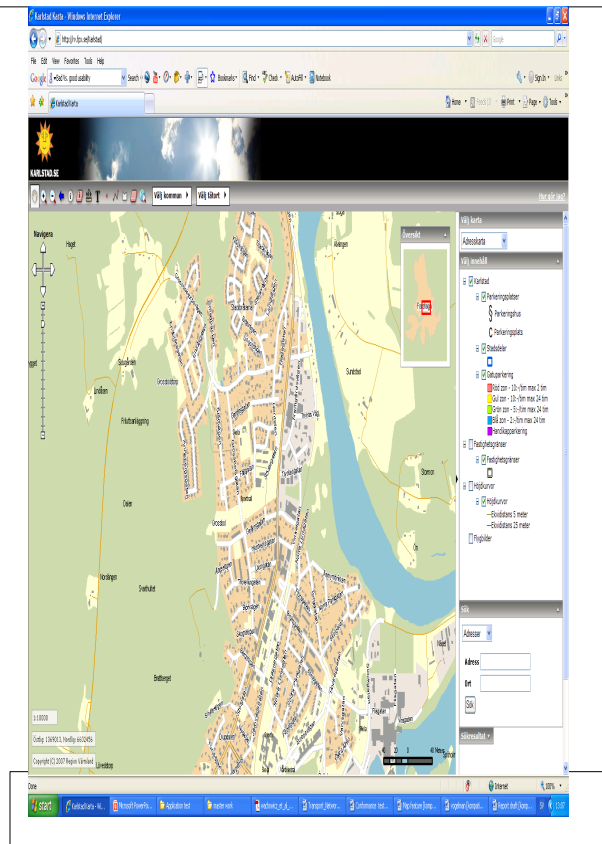
# Map display

- Map display (i.e. the map viewer) where the resulting maps were shown;



# Table of content

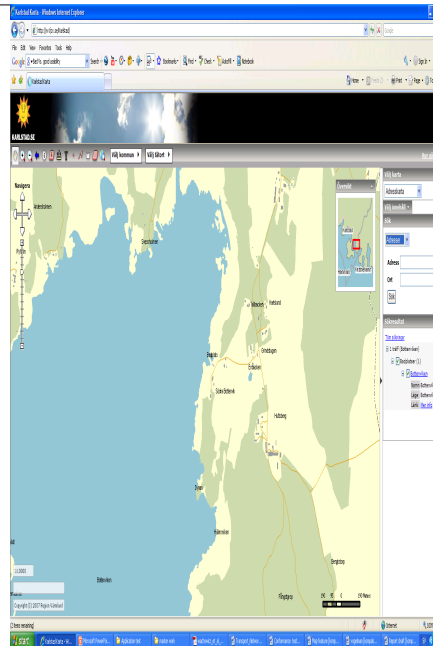
- Table of content where information layers could be visible and/or active



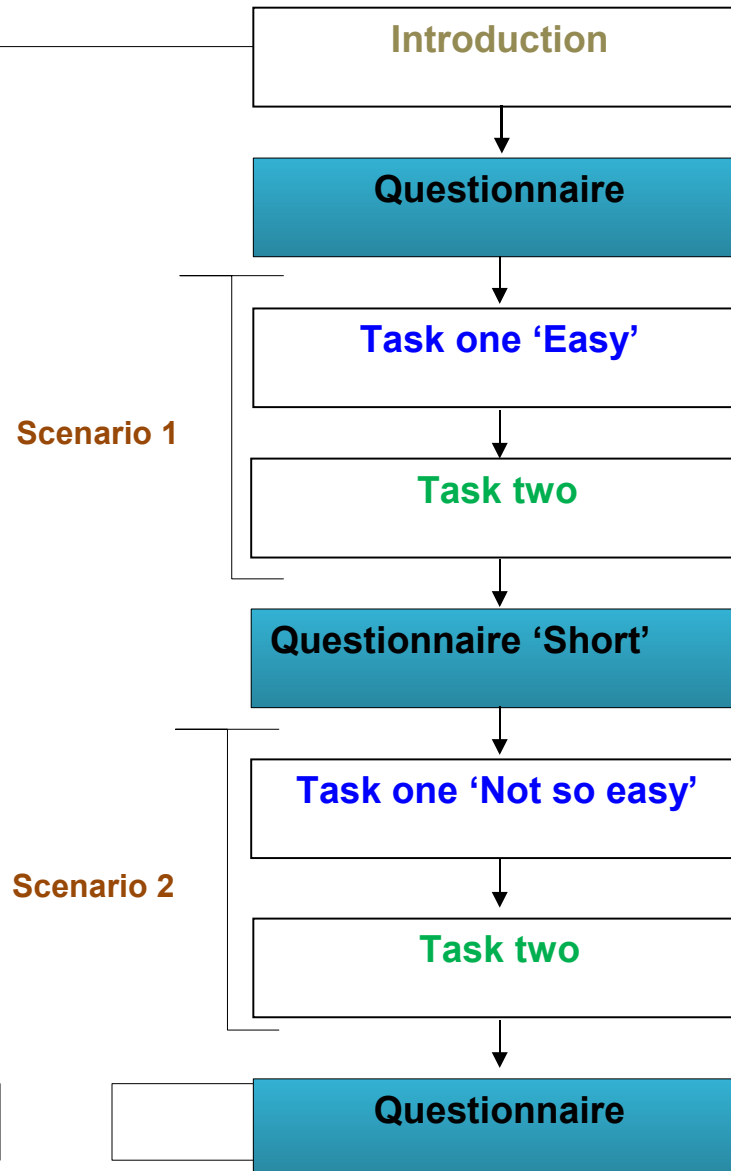


# Query box

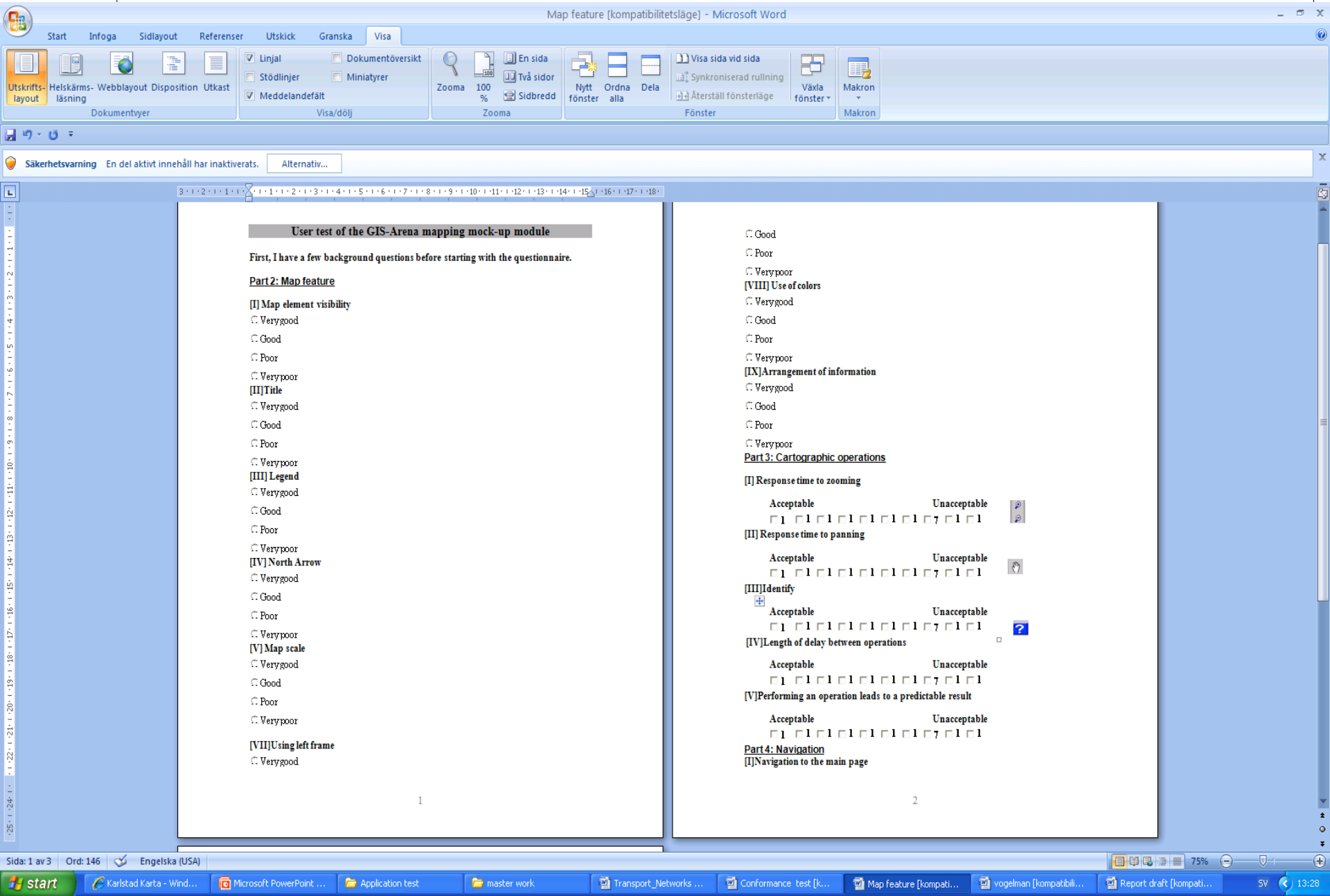
- Query box which were used to query basic information about the information layers in the database



# Scenario and questionnaire flow



# Sample questionnaire



## User test of the GIS-Arena mapping mock-up module

First, I have a few background questions before starting with the questionnaire.

### Part 2: Map feature

#### [I] Map element visibility

Verygood

Good

Poor

Verypoor

#### [III] Title

Verygood

Good

Poor

Verypoor

#### [III] Legend

Verygood

Good

Poor

Verypoor

#### [IV] North Arrow

Verygood

Good

Poor

Verypoor

#### [V] Map scale

Verygood

Good

Poor

Verypoor

#### [VII] Using left frame

Verygood

Good

Poor

Verypoor

#### [VIII] Use of colors

Verygood

Good

Poor

Verypoor

#### [IX] Arrangement of information

Verygood

Good

Poor

Verypoor

### Part 3: Cartographic operations

#### [I] Response time to zooming

Acceptable

1  2  3  4  5  6  7  8

Unacceptable

#### [III] Response time to panning

Acceptable

1  2  3  4  5  6  7  8

Unacceptable

#### [III] Identify

Acceptable

1  2  3  4  5  6  7  8

Unacceptable

#### [IV] Length of delay between operations

Acceptable

1  2  3  4  5  6  7  8

Unacceptable

#### [V] Performing an operation leads to a predictable result

Acceptable

1  2  3  4  5  6  7  8

Unacceptable

### Part 4: Navigation

#### [I] Navigation to the main page



Utskrifts-layout Helskärm-läsning Webblayout Disposition Utkast

Dokumenttyper



Linjal Stödlinjer Meddelandefält Dokumentöversikt Miniatyrer

Visa/dölj



Zooma 100 % En sida Två sidor Sidbredd

Zooma



Nytt fönster Ordna alla Dela

Fönster



Visa sida vid sida Synkroniserad rullning Återställ fönsterläge

Fönster



Växla fönster Makron

Makron



Säkerhetsvarning En del aktivt innehåll har inaktiverats. Alternativ...

3 1 2 1 1 1 1 1 1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 1 9 1 10 1 11 1 12 1 13 1 14 1 15 1 16 1 17 1 18

### Navigation

#### [I] Navigation to the main page

Difficult Easy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

#### [II] Navigation to sub page

Difficult Easy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

#### [III] Activation of map layer

Difficult Easy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

#### [III] Comparison between different countries are

Difficult Easy

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

### Part 5: Miscellaneous

#### [I] Road safety related terminology

Inconsistent Consistent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

#### [II] Cartographic related terminology

Inconsistent Consistent

○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

### Map evaluation matrix

Map feature	User response and satisfaction level.			
	Very good	Good	Poor	Very poor
Map element visibility				
Comparison of countries				
Use of colors				
Arrangement of information				
Response time to zooming				
Response time to panning				
Printed map are				

# CBA

- Cost Benefit Analysis (CBA) is an instrument for evaluating the feasibility or desirability of GIS-Arena in the region.
- The CBA will obtaining information on:
  - Direct user value or benefit
  - Social Value
  - Institutions operational benefits
  - Institutional financial value

# Conformance testing

- Is to test and determines which parts of the project specification are implemented correctly in the current version or in the new release.
- Determine if certain standards exist, and whether if its maintained or not.
- Test cases will be generated from the specifications.

# WMS

- A Web Map Service (WMS) produces maps of spatially referenced data dynamically from geographic information.

# WMS testing

- Test Purpose: Verify that a WMS client satisfies the requirements for request parameter rules.
- Test Method: Generate an adequate sample of requests from the client and verify that each is a valid request.
- Performance of WMS and WFS
  - User perceived system response time
  - Response time

# Quality of dataset and metadata

- Check quality against SDI standards
- Check the availability of the Metadata and metadata tools

# Process schedule

- Base schedule and resource estimates on measurable testing activities.
  - Development of Use-case(s)
    - Dataset to be tested
    - Usability session(s) planning and execution ( time and place)
    - For CBC, number of interviews and questionnaire preparation.
    - Etc.....