Increasing Awareness for Urban Cultural Heritage using Information and Communication Technology (ICT)

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Contents

01 Background

Motivation and Literature Review

Background

Cultural heritage (CH)	Heritage preserve	Increasing public awareness

- Definition of cultural heritage
- The importance of cultural heritage
    - Connection to certain social values, beliefs, religions and customs
    - Understand previous generation and history
    - Sense of belonging of a community
- Why people should care cultural heritage
    - Identity of a city
    - Value of a city
    - Knowledge pass from previous to next generation

Background

- Cultural heritage problem: Preserve
  - Destroyed
  - Demolished
  - Forgotten (Reused)—Strijp-S

- Increasing awareness for cultural heritage

  - Public engagement

 - Enhance communication about
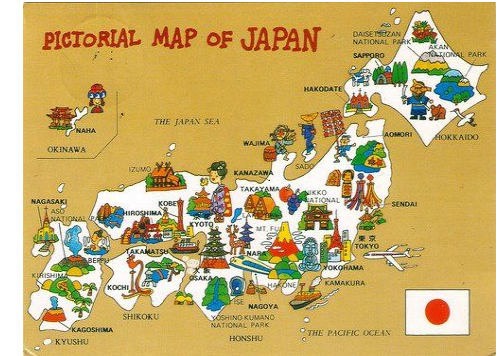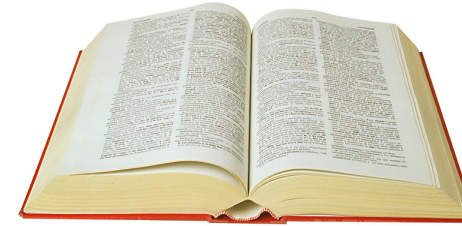   cultural heritage

Literature Review
-- CH communication

- Static information

  - Books: cannot get information efficiently

  - Maps: lack of stories   } 2D information

  - Panels: brief

- New technologies:

  - Virtual reality– ignore feedback from tourists

  - Augmented reality– basic information on screen } Lack of details

  - Webpage– cannot participate

Question: combine 3D visualization and static information?
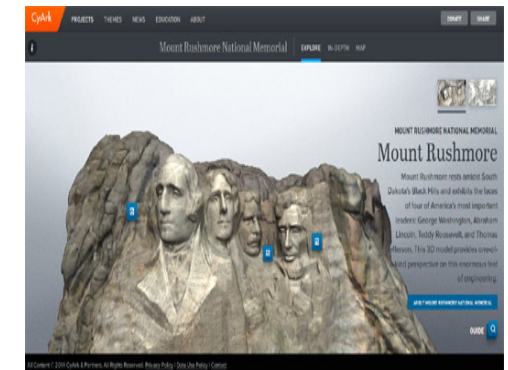
The proposed solution is…..

To enhance the awareness for cultural heritage
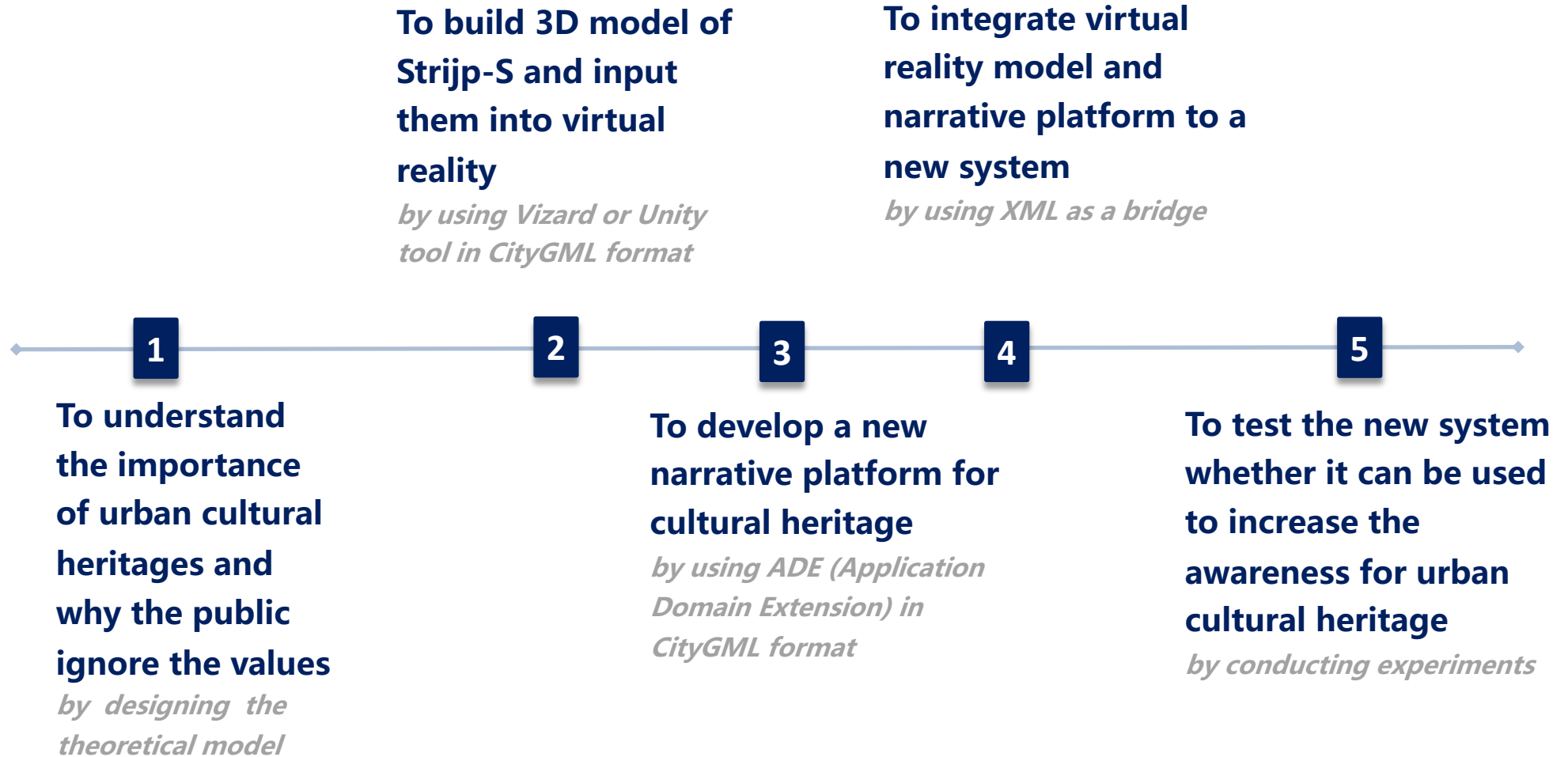
by

3D Narrative System
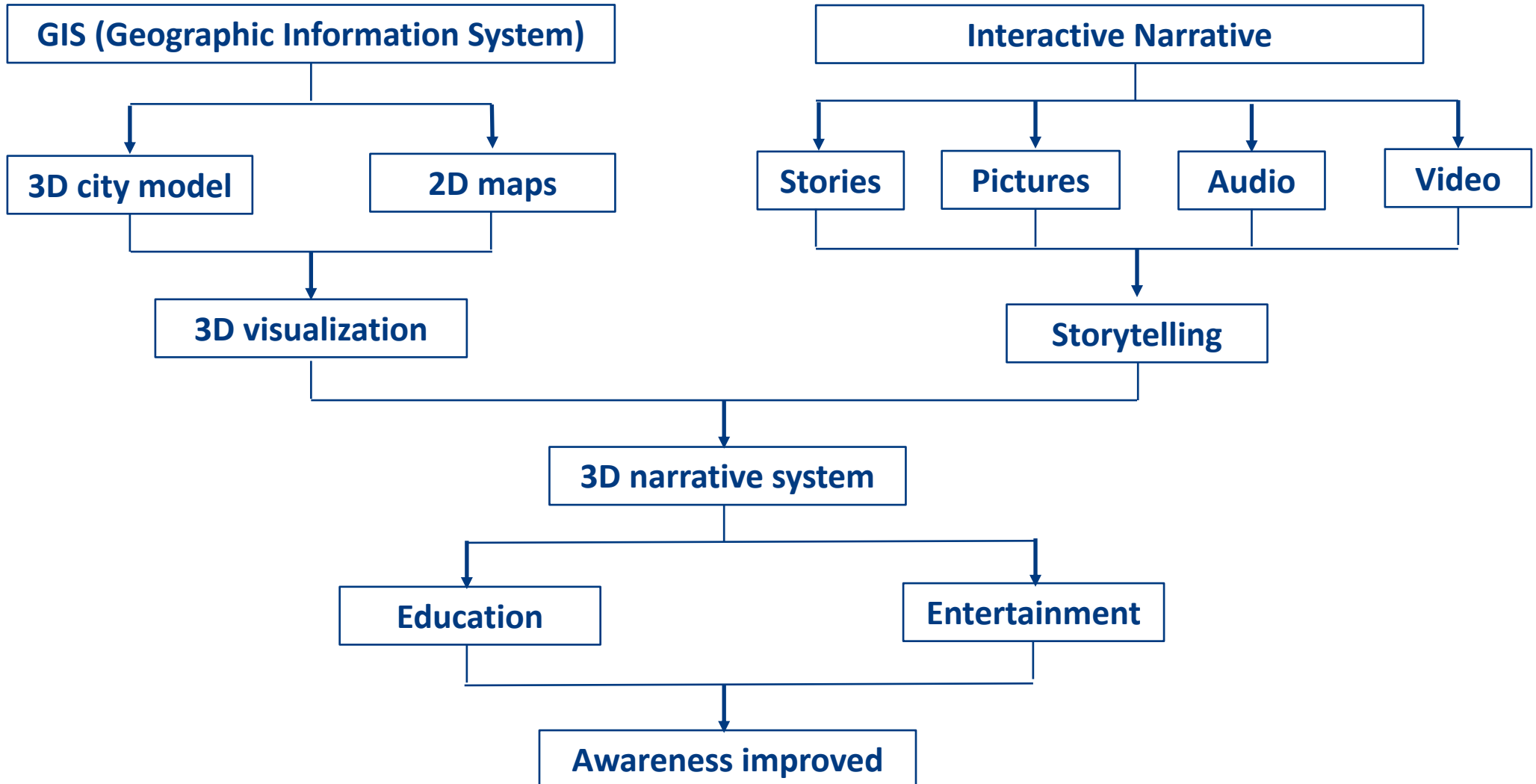
02 Objectives

The Aim and Sub-goals of the Study

Objectives

To increase the awareness for urban cultural heritage by using 3D narrative system

1

To understand the importance of urban cultural heritages and why the public ignore the values

by designing the theoretical model

2

To build 3D model of Strijp-S and input them into virtual reality

by using Vizard or Unity tool in CityGML format

3

To develop a new narrative platform for cultural heritage

by using ADE (Application Domain Extension) in CityGML format

4

To integrate virtual reality model and narrative platform to a new system

by using XML as a bridge

5

To test the new system whether it can be used to increase the awareness for urban cultural heritage

by conducting experiments

03 **Framework**

Big Picture of the Study

Framework

GIS (Geographic Information System) → 3D city model, 2D maps → 3D visualization

Interactive Narrative → Stories, Pictures, Audio, Video → Storytelling

3D visualization + Storytelling → 3D narrative system → Education, Entertainment → Awareness improved
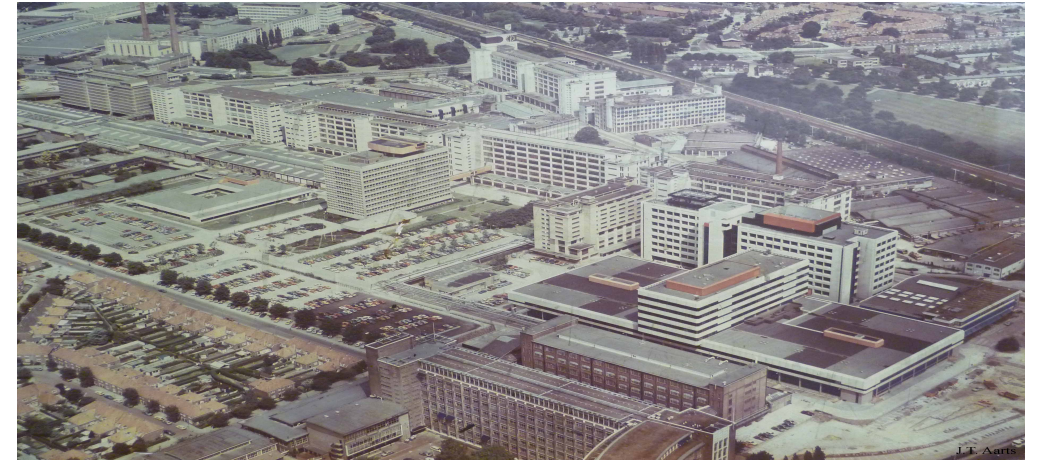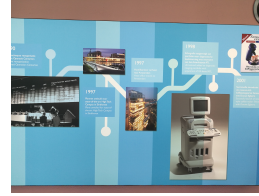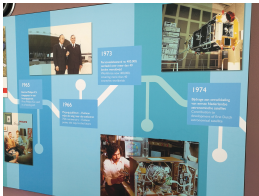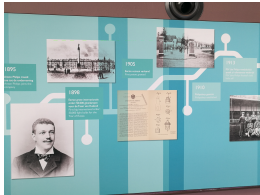
04 Methodology

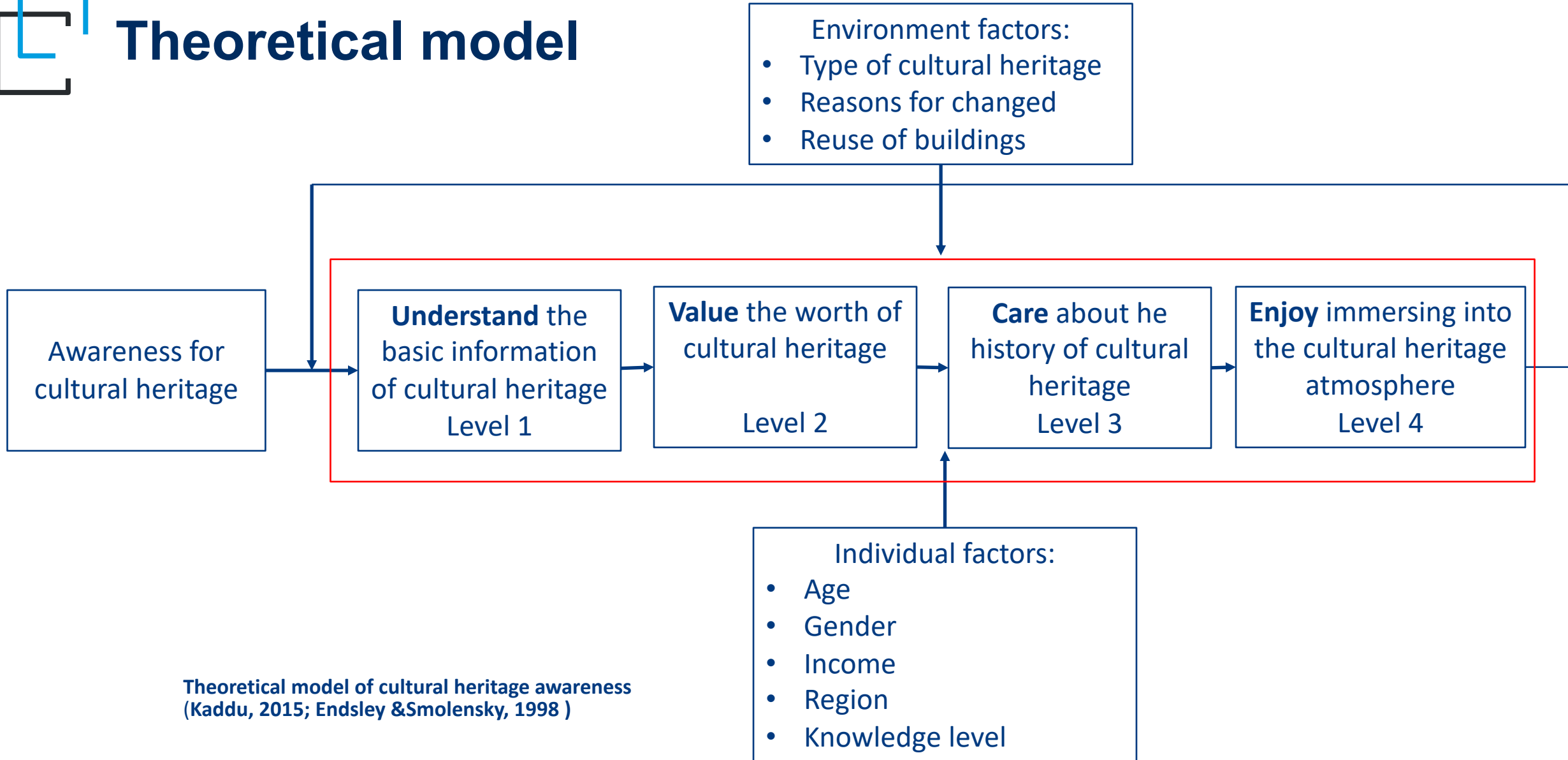**Theoretical model;**
System development;
Experiments;

Case study—Strijp-S

- Old factory of Philips, was built since 1891
- The factory buildings have been changed to other uses based on the society development
- The young generation and people who live here ignore the value of these histories

Theoretical model

Environment factors:
- Type of cultural heritage
- Reasons for changed
- Reuse of buildings

Awareness for cultural heritage

Understand the basic information of cultural heritage
Level 1

Value the worth of cultural heritage
Level 2

Care about he history of cultural heritage
Level 3

Enjoy immersing into the cultural heritage atmosphere
Level 4

Individual factors:
- Age
- Gender
- Income
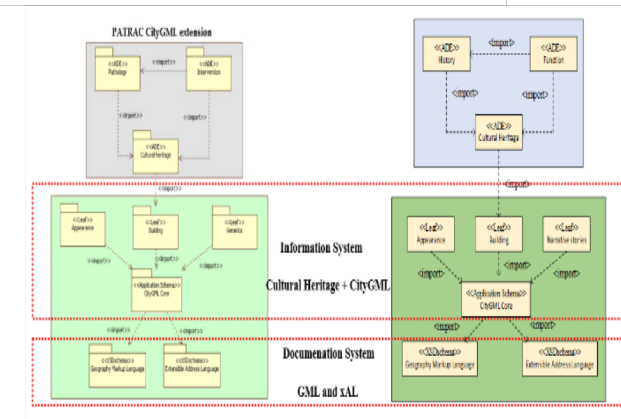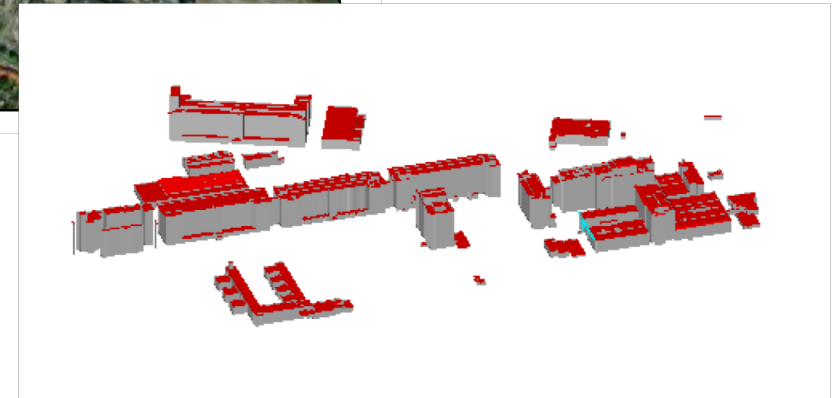- Region
- Knowledge level

Theoretical model of cultural heritage awareness
(Kaddu, 2015; Endsley &Smolensky, 1998)

System development
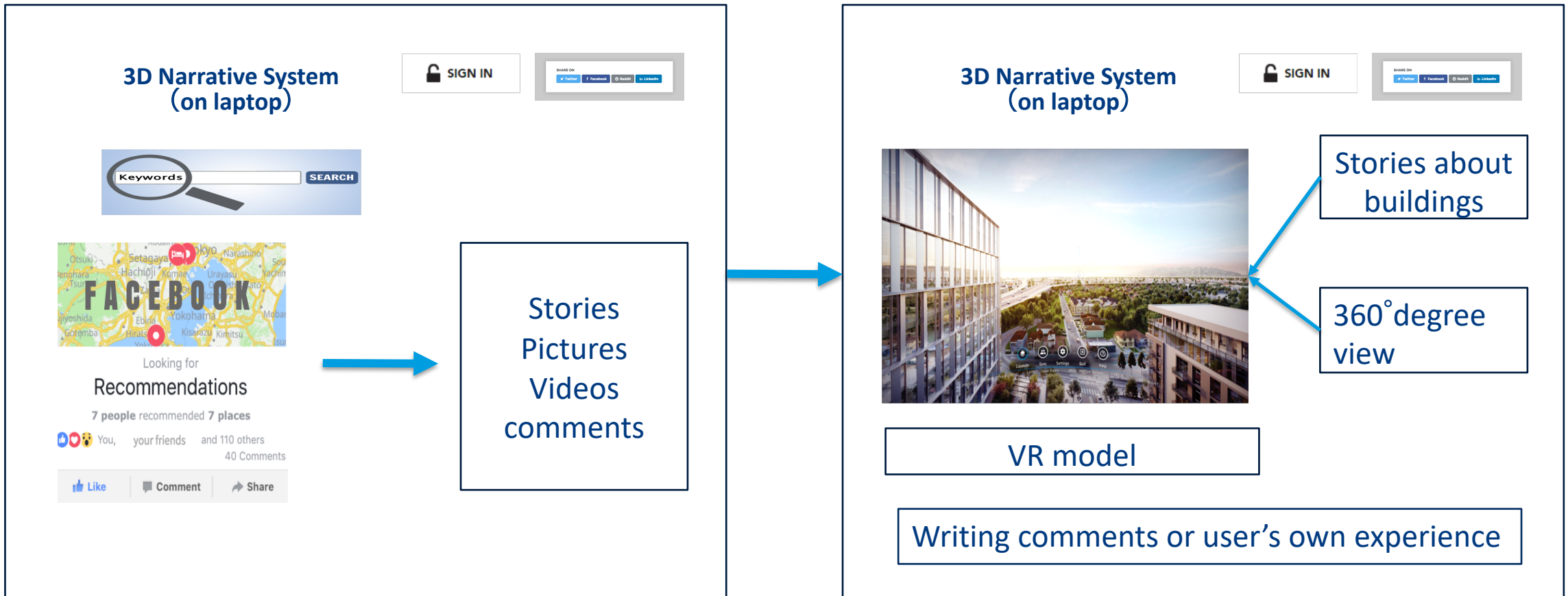
- Creating 3D city model of Strijp-S by Sketchup

- Applying CityGML (City Geography Markup Language) format to build model and input into virtual reality

- Cultural Heritage Extension from CityGML—base of narrative platform

- XML (Extensible Markup Language) as a bridge between narrative system and VR model
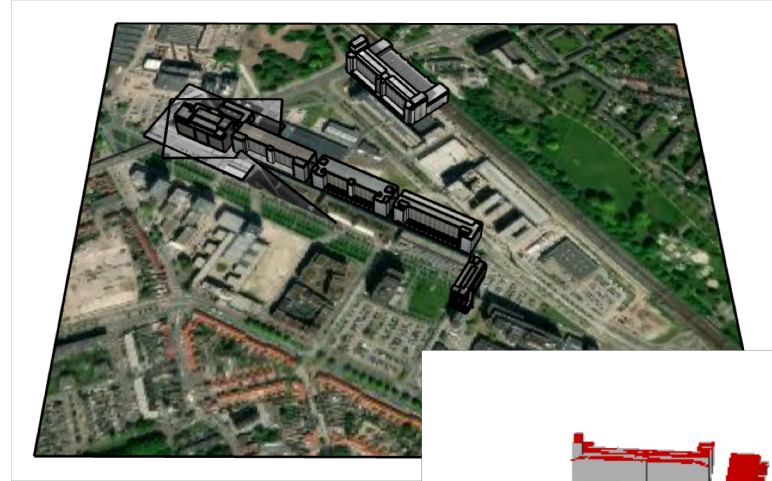
System Interface
— Laptop

3D Narrative System
（on laptop）

SIGN IN

SHARE ON
Twitter | Facebook | Reddit | LinkedIn

Keywords | SEARCH

FACEBOOK

Looking for
Recommendations

7 people recommended **7 places**

You, your friends and 110 others
40 Comments

Like | Comment | Share

Stories
Pictures
Videos
comments

3D Narrative System
（on laptop）

SIGN IN

SHARE ON
Twitter | Facebook | Reddit | LinkedIn

Stories about buildings

360°degree view

VR model

Writing comments or user's own experience

System Interface
—Smart phone

3D Narrative System
（on smart phone）

SIGN IN

SHARE ON
Twitter Facebook Reddit in LinkedIn

Keywords   SEARCH

FACEBOOK
Looking for
Recommendations
7 people recommended 7 places
You,   your friends   and 110 others
40 Comments
Like   Comment   Share

Stories
Pictures
Videos
comments

3D Narrative System
（on smart phone）

SIGN IN

SHARE ON
Twitter Facebook Reddit in LinkedIn

Stories about buildings

360°degree view

VR video

Writing comments or user's own experience
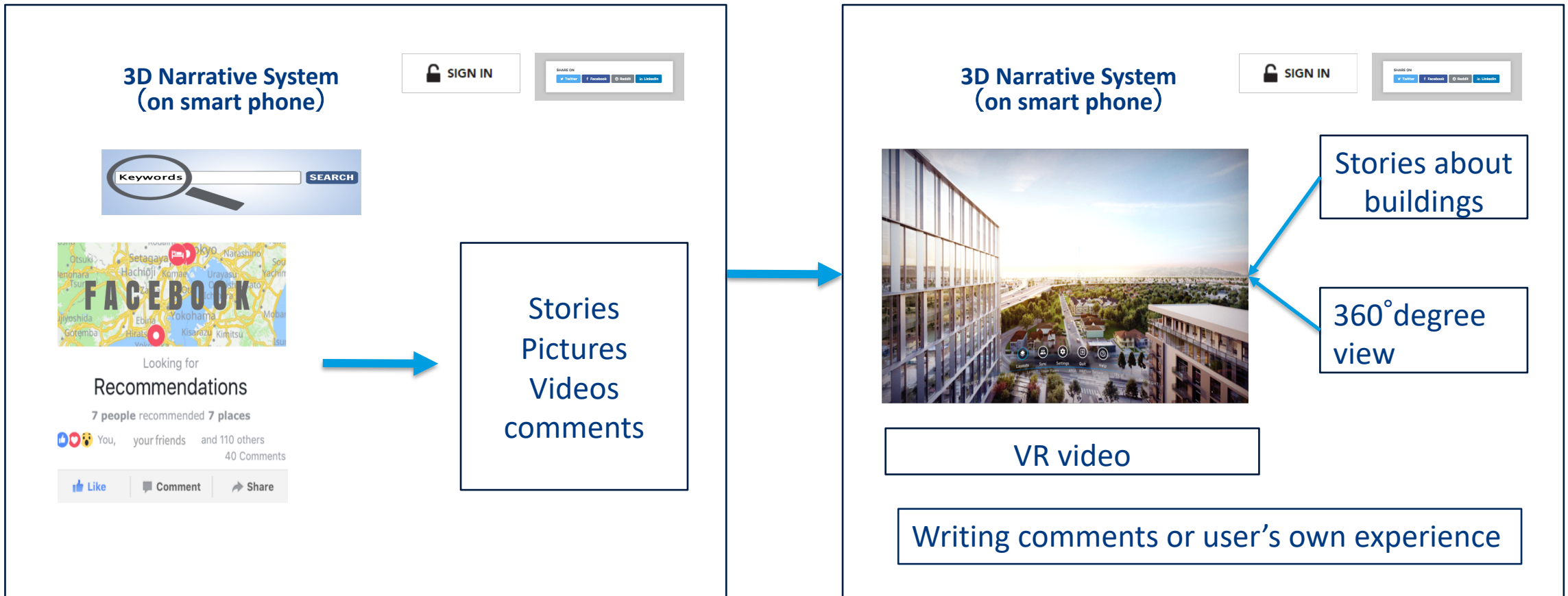
System Interface —Data collection

Data collection:

Pictures and videos:

- Philips Museum
- Strijp-S manager

Stories, memories and experience:

- Previous workers

Experiments

	Group	Participants	Detail	Test the system
First	2	Mixed Group (30 to 50)	One group uses the new 3D narrative system before the visit One group uses the new 3D narrative system during the visit	To find appropriate timing to use the system
Second	2	Mixed Group (30 to 50)	One group visits the site without access to the new 3D narrative system One group visits the site with access to the new 3D narrative system	To examine the variance for awareness

Data collection:

Surveys on "cognitive content", "spatial knowledge" and "affective states" before and after site visits to test awareness

　　Cognitive content: knowledge on historical context

　　Spatial knowledge: Geographical information, layout of site

　　Affective states: Value of cultural heritage

Post-hoc Interviews to understand attitudes towards the new system and how it can be improved - > Future implementations in the system

Q&A

Thank you