Documentation of Contributions

2019

Digital Landscape Architecture Conference May 22-25 '2019 *Dessau*

3D Landscape
Vision for the future
Student poster competition

Your passion is fueled by experimental communication of your work, while exploring the boundaries of digital techniques in landscape architecture! Then My 3D Landscape / **Visions for the future student poster competition** provides you with the opportunity you seek!

As a part of the DLA conference 2019, we are inviting recent graduates and landscape architecture students to showcase their work. Submit your poster with your best 3D (or 4D) landscape architecture work in A1 size (portrait) and get a chance to win cash awards.

The evaluation will be done by the conference participants, and the criteria are

- Innovation and creativity of project described
- Complexity of project
- Layout and level of communication of poster

Deadline for online submission: 1 May, 2019
For details and poster submission: DLA-conference.com
Participate in the competition and have the opportunity to listen to and meet leading speakers from around the world:
Dr. Jorg Rekittke (Visiting professor Leibniz University, Hannover)
Prof. Dr. Carl Steinitz (Casa/ UCL and Harvard University)

The DLA poster competition offers the following awards:

1st prize: **400 € (*)**

2nd prize: **300 € (*)**

3rd prize: **250 € (*)**

(*) travel grant for Landscape Architecture students currently outside of Saxony-anhalt

4th to 10th prize: Non cash prize
All posters will be exhibited and published.

Criterias-
The evaluation will be done online for the cash prizes by 5th of May.

The evaluation of all other posters will be done by conference participants at the poster exhibition.

Supported by esri, ECLAS European Council of Landscape Architecture Schools, bdla, DFG Deutsche Forschungsgemeinschaft, virtualcitySYSTEMS, Wichmann, ComputerWorks, Sachsen-Anhalt Ministerium für Wissenschaft und Wirtschaft

Hochschule Anhalt
Anhalt University of Applied Sciences

DLA | Digital Landsacape Architecture www.dla-conference.com

Documentation of all posters submitted to the DLA 2019 Student Poster Competition

#01 **LiLo - Linger & Load**
Sven-Marvin Sommer
Hochschule Osnabrück, Germany

#03 **Sustainable urban development by expanding the green roofs to improve the urban environment quality**
Case study: Karaj city in Iran
Maral Abolghasemi Moghaddam, Sascha Henninger
Technische Universität Kaiserslautern, Germany

#04 **Quarry Texture**
Lucinda Steurer
SUNY ESF, United States

#05 **Martian Scape_Cosmic Landscape and Astronomical Observatory**
Maheshika Ekanayake
University of Moratuwa, Sri Lanka

#06 **Concept of 5th Ecology**
Ting LIU
Hong Kong

#07 **Healing Fractured Landscape_Research and Eco awareness Landscape**
Ishika Aroshana Nanayakkara Godakandage
University of Moratuwa, Sri Lanka

#08 **BTC: City of Opportunities**
Filipa Valenčić, Liza Koštunik, Senta Badovinac Bajuk et al.
University of Ljubljana - Biotechnical faculty, Croatia

#10 **Landscape planning for flood mitigation. A case study of Ci Kapundung upper water catchment area, Bandung Basin, Indonesia**
Medria Shekar Rani
The University of Sheffield, United Kingdom

#11 **Urban Agritecture**
Petra Pečan, Barbara Kostanjšek, Tine Horvat, Darja Matjašec, Nejc Florjanc, Tomaž Pipan
Biotechnical faculty, Department of Landscape Architecture, Slovenia

#12 **Augmented reality 2.0: A novel tool for participatory landscape architeture planning**
Seyed Taher Khalilnezhad
Technische Universität Kaiserslautern, Germany

#13 **Intruder's Flow**
Sena Özant, Nevruz Kurt, Amine Yazar, Ecem Torun
Istanbul Technical University, Turkey

#14 **How much landscape is there in the urban planning exhibition hall**
Xi Lu, Eckart Lange
The University of Sheffield, United Kingdom

#15 **Sensor Reed**
Hadi El-Shayeb, Peggy Wong, Lexi Kalman
University of Toronto, Canada

#16 **AR Technologies X Disaster Preparedness**
Kenya Endo, Chihiro Okajima
Free-lance, Japan

#17 **Training concept**
Claudia Fasold, Ilona Brückner, Uta Stewering
Hochschule Osnabrück, Germany

#18 **Opposite Encountre**
Aynur Gizem yeşilyurt
Turkey

#19 **Anforderungen an den BIM-Referenzprozess für Freianlagen**
Ilona Brückner, Maike Wozniak, Martin Thieme-Hack
Hochschule Osnabrück, Germany

#20 **Degradation of pasture lands: A threat to food security+ Sustainable Management of natural resources**
Asif Ali Riazudeen
Hochschule Anhalt, Germany

#21 **Layered Interactive VR Garden - Poster competition**
Zaixian Piao
Seoul National University, South Korea

#22 **A Mixed-Methods Approach to Evaluating Participant Experience in Real and Virtual Environments**
Evan Gill, Mark Lindquist
University of Michigan, United States

#23 **Analog ve Dijital Peyzaj Mimarlığı**
Elif Oktay, Sevgi Görmüş
Turkey

#24 **Lead to Green Lane**
Wing Yan Ho
Hochschule Anhalt, Germany

The posters submitted only online and are not part of the exhibition and competition:

No 86 **Landscape as a social change generating tool. Imagining new scenarios in difficult contexts. Healing Garden in Irak**
Juanita Leal Ochoa
Colombia

No 95 **The Hydrophone**
Aaron Hernandez, Devin Tepleski
University of Toronto, Canada

No 109 **“Strangers on a train” - Revalorization of the Post-Industrial Area**
Joanna Chylak, Daria Banach, Anastasiya Prydachyna
Politechnika Krakowska im. Tadeusza Kościuszki, Poland

No 114 **Marstopia** *(not in the Exhibition)*
Chuxuan Zhang
China

DLA Poster Submissions for Student Competition

(PLEASE HAND IN YOUR VOTE BY FRIDAY 14.30)

RESULT of first Online-Evaluation for receiving the travel grand

26 poster submissions from more than 15 universities around the world.
Winners that receive one of the three travel grants.

As an interims result with an average of 3-4 reviewers vote on each paper
poster entry # 92 has 5,67 points
poster entry # 85 has 5,33 points
poster entry # 90 has 5,33 point

- The first travel grand of 400 Euro goes to Nanayakkara Godakandage, University of Moratuwa in Sri Lanka
- The second travel grand of 300 Euro goes to Hadi El-Shayeb, Peggy Wong and Lexi Kalman University of Toronto in Canada
- The third travel grand of 250 Euro goes to Sven-Marvin Sommer, Hochschule Osnabrück in Germany

Congratulations!

ACKNOWLEDGEMENT:

Online reviewer of this year's DLA posters submission

MLA students:
Anna Farb
John Hobbie
Rashmita Jadav
Su Hyun Jun
Mohammad Shamsul Arefin
Mohd Robiul Alam
Raunak Kulkarni

JoDLA Board Members:
Dr. Sigi Hehl-Lange
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Dr. Michele Campagna
Prof. Dr. Ian Bishop
Tess Canfield
Prof. Pia Fricker

Please see this poster displayed at the foyer in building 8 during the DLA and vote for your favorites and meet the authors during the coffee break.

3D - Product design

Development, testing and process optimization with the 3D printer

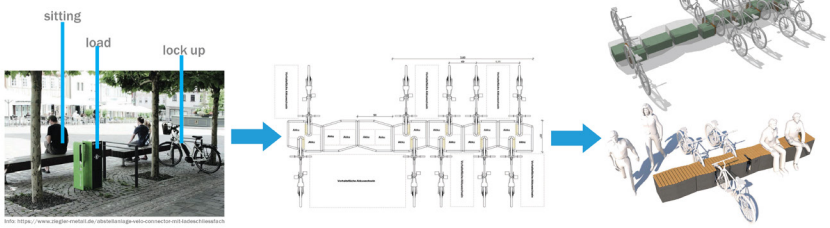
HOCHSCHULE OSNABRÜCK
UNIVERSITY OF APPLIED SCIENCES

Lilo - Linger & Load

0. The vision

An intelligent solution is needed to be able to use e-bikes. The current solutions do not correspond with the qualities of use of the open space. The qualities of use are sitting on a bench, charging on a charging station, and lock up bicycles on a bicycle frame.

We combine these user needs in a multifunctional module. Lilo contains a technical unit from Velofactur. This is combined in such a way that a higher weather and vandalism protection can be ensured.



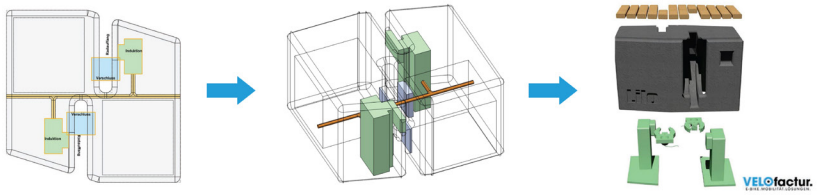
1. Prototyping 1:50

After the multiple design test, a simple, modularly expandable design prevailed. The great advantage of this cubature is its multiple use. The shape allows the areas to sit, park and load. The loading and closing units of the wheels is stowed inside for protection.
A first test process on a scale of 1:50showedthatthearrangement can be extended at will by adding angle elements which allows nearly anny type of arrangments

2. Technical concept

A challenge was the accommodation of the technical units.
In close cooperation with Velofactur, a locking mechanism (blue) and an inductive charging option (green) could be integrated into the module. In addition to fulfilling a demanding design, the technology can now also be set up and protected against vandalism to a large extent.

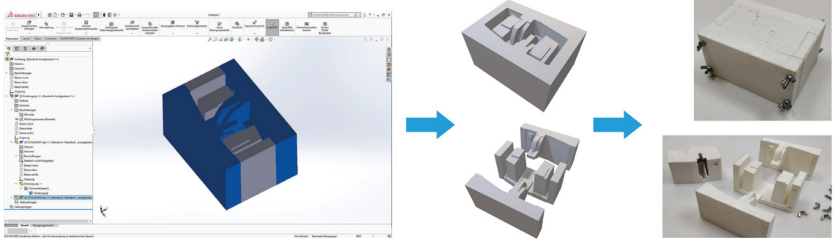
Bicycle removal and release of the lock is possible via the use of a simple app.



3. Formwork concept 1:10

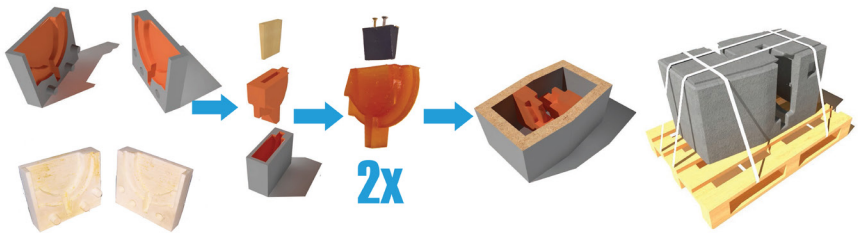
One conceivable implementation of modular construction is the use of concrete.

In order to check the manufacturability of the module, a formwork model was developed in a CAD program. Three cores were created taking demoulding factors into account. These can be „pulled“ laterally. From this model a silicone casting on a scale of 1:10 could be produced in a first test.



4. Process optimization

In order to reduce costs in the production of the moulds, only the casting mould for the technical integration in the 3D printing process is produced. Errors that occur during the printing process are reduced to a minimum. A further advantage is that the casting can be duplicated. The outer mould is built in the classic way with a wooden formwork. The 3D printed casting is then integrated into the respective wooden formwork by means of an inner wedge. With this process, there are no limits to the design of the outer form.



Hochschule Osnabrück
Study program: Landscaping Management SoSe 18
Class: Product development and innovation
Professor: Prof. Martin Thieme-Hack, Prof. Dr. Jürgen Bouillon
Software: Archicad 21; Solidworks 2018
Student: Sven-Marvin Sommer

HOCHSCHULE OSNABRÜCK
UNIVERSITY OF APPLIED SCIENCES

LiLo - Linger & Load

Sven-Marvin Sommer
Hochschule Osnabrück, Germany

#02

Sustainable urban development by expanding the green roofs to improve the urban environment quality; Case study: Karaj city in Iran

Maral Abolghasemi Moghaddam, Sascha Henninger
Technische Universität Kaiserslautern, Germany

Quarry Texture
Lucinda Steurer
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#04

Martian Scape_Cosmic Landscape and Astronomical Observatory

Maheshika Ekanayake
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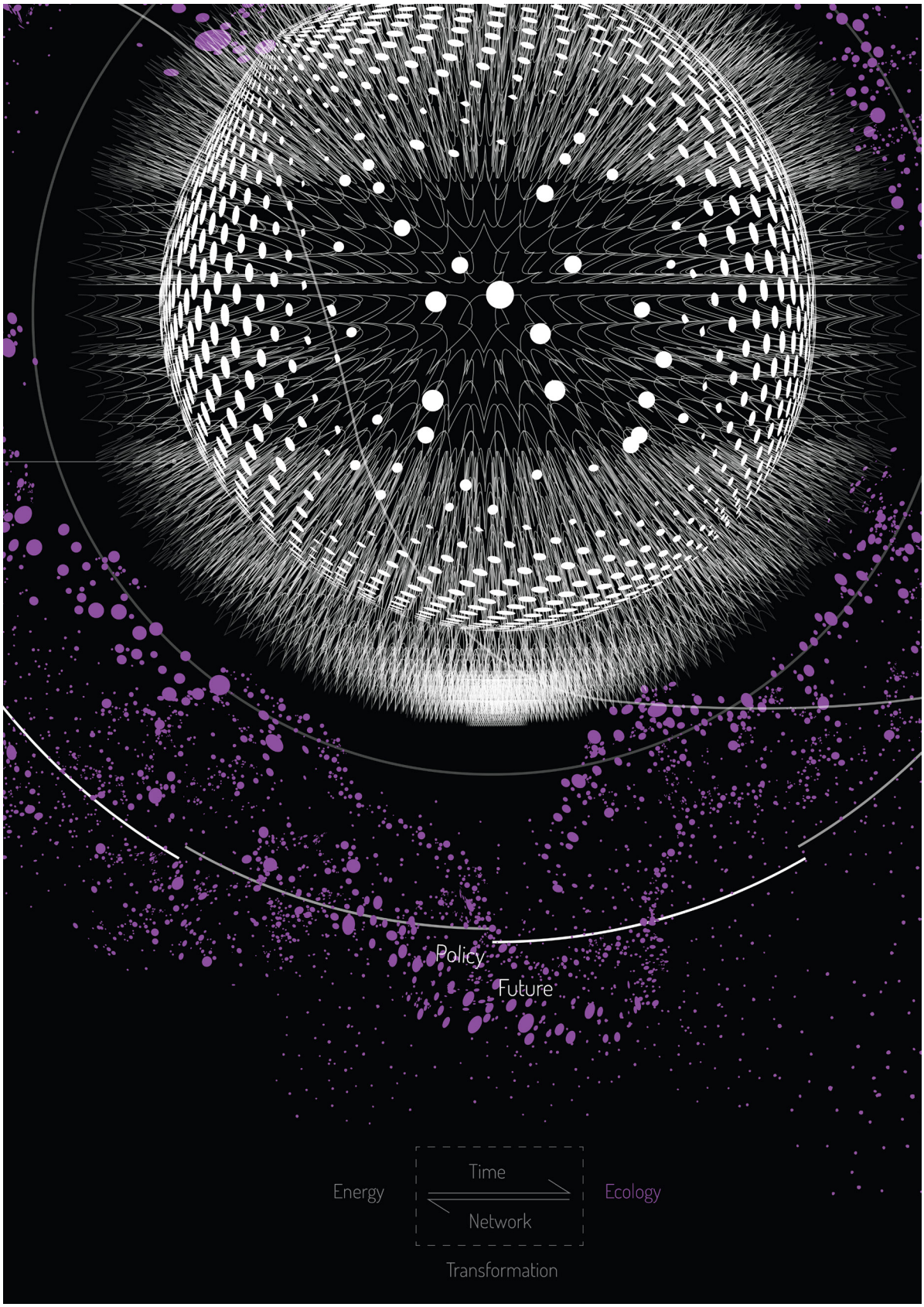

Concept of 5th Ecology

Ting LIU
Hong Kong

#06

N.G.ISHIKA AROS HANA
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Ishika Aroshana Nanayakkara

RESEARCH AND ECO AWARENESS LANDSCAPE
@ GALGAMA ,BANDARAGAMA

Construction of Expressways are the most emerging development tendency in Sri Lanka. With these development activities, there are a lot of environmental and social issues started. As a third world country, general society appreciate the urbanization by ignoring the environmental imbalance. **Project formulate to build an awareness among the people about the sustainable land use practice and environmental impact/ Mitigation measures due to the rapid urbanization within Sri Lanka.** It also work as a prototypical landscape for restore the existing degraded land forms caused by urbanization. **Project work as a research and recreational landscape that improve the resilience factor of rapid development within Sri Lanka.**

Project mainly formulate under two stages. Within the first stage of the project general public involve to recover the damage by restoring the disturbed land. After the first stage is finished, A part of land convert in to experiential and recreational landscape that demonstrate how the restored landscape looks like and give the awareness and the knowledge about importance of proper land use with care.

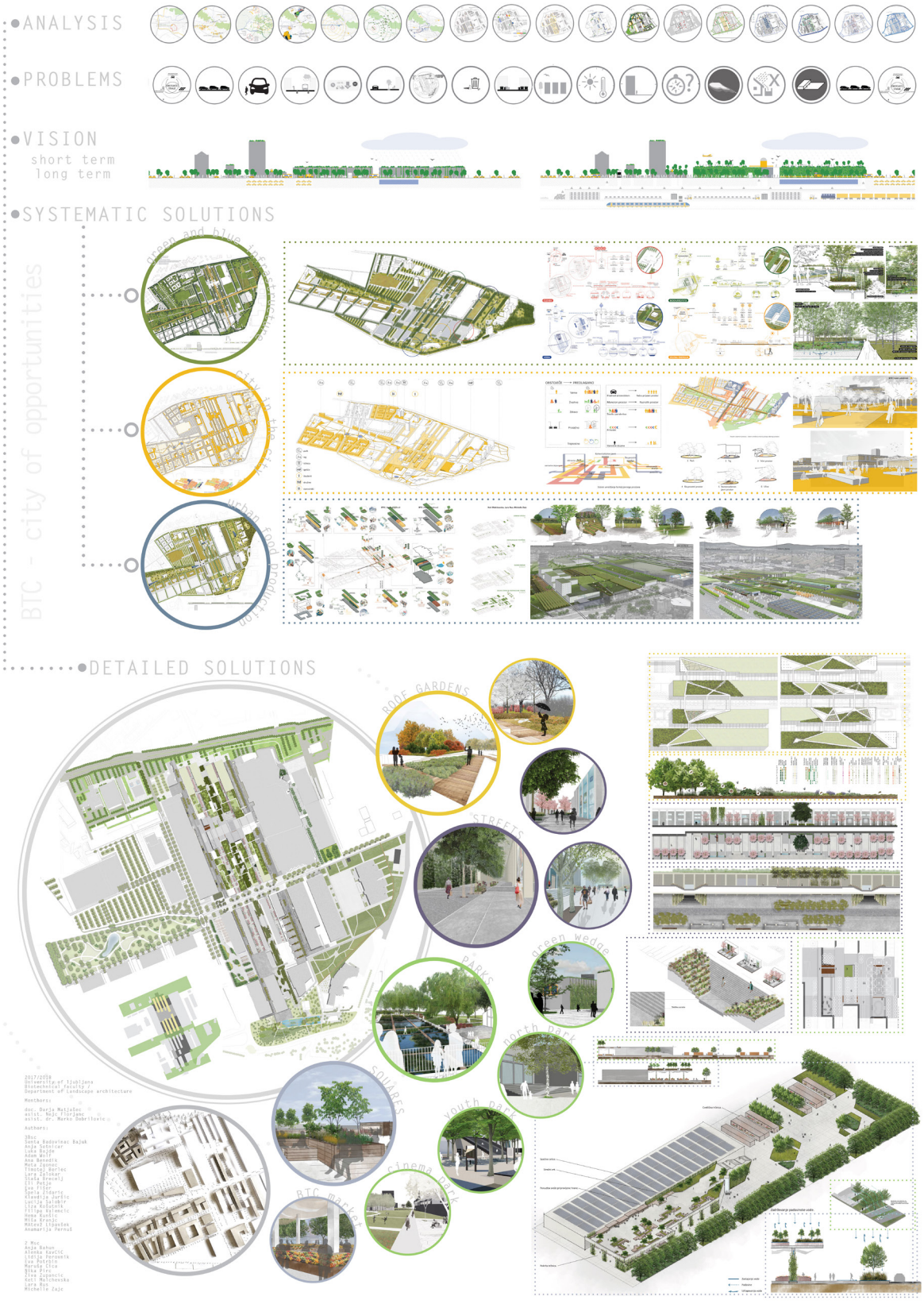
Concept of the design express the idea the planet earth comes long way within 4.5 Billion years, by converting into different formations and different formations of organisms. In the present Human are the main key-stone specie within planet, we responsible for the land use changes, and its effects. And more importantly responsible for make the changes more sustainable and environment friendly way.
Finally Design give awareness and practice about the
"Human- natural harmonious co-existence".
That will greatly benefit to the country sustainability.

Major design considerations

- Create the steps, ramps and decks with respect to the existing formations, maximum usages of existing ground formations.
- Solids and voids of rock excavation holes create the aesthetics with the observation flat forms. Experience the negative spaces.
- Observation flat form with the isometric view of expressway and surrounding landscape flat form also contain the earlier landscape character by the graphical presentation.
- The facility building create with giving priority to the environment, the structure with minimum disturbance to the existing geological formations.
- The vegetation proposal highly consider the water existence of the site, because of the disturbance to the rock the water retaining capacity reduced.
- The facility building create with giving priority to the environment, the structure with minimum disturbance to the existing geological formations.

Healing Fractured Landscape_Research and Eco awareness Landscape

Ishika Aroshana Nanayakkara Godakandage
University of Moratuwa, Sri Lanka



BTC: City of Opportunities
Participant names are on the facing page
University of Ljubljana - Biotechnical faculty, Croatia

#07

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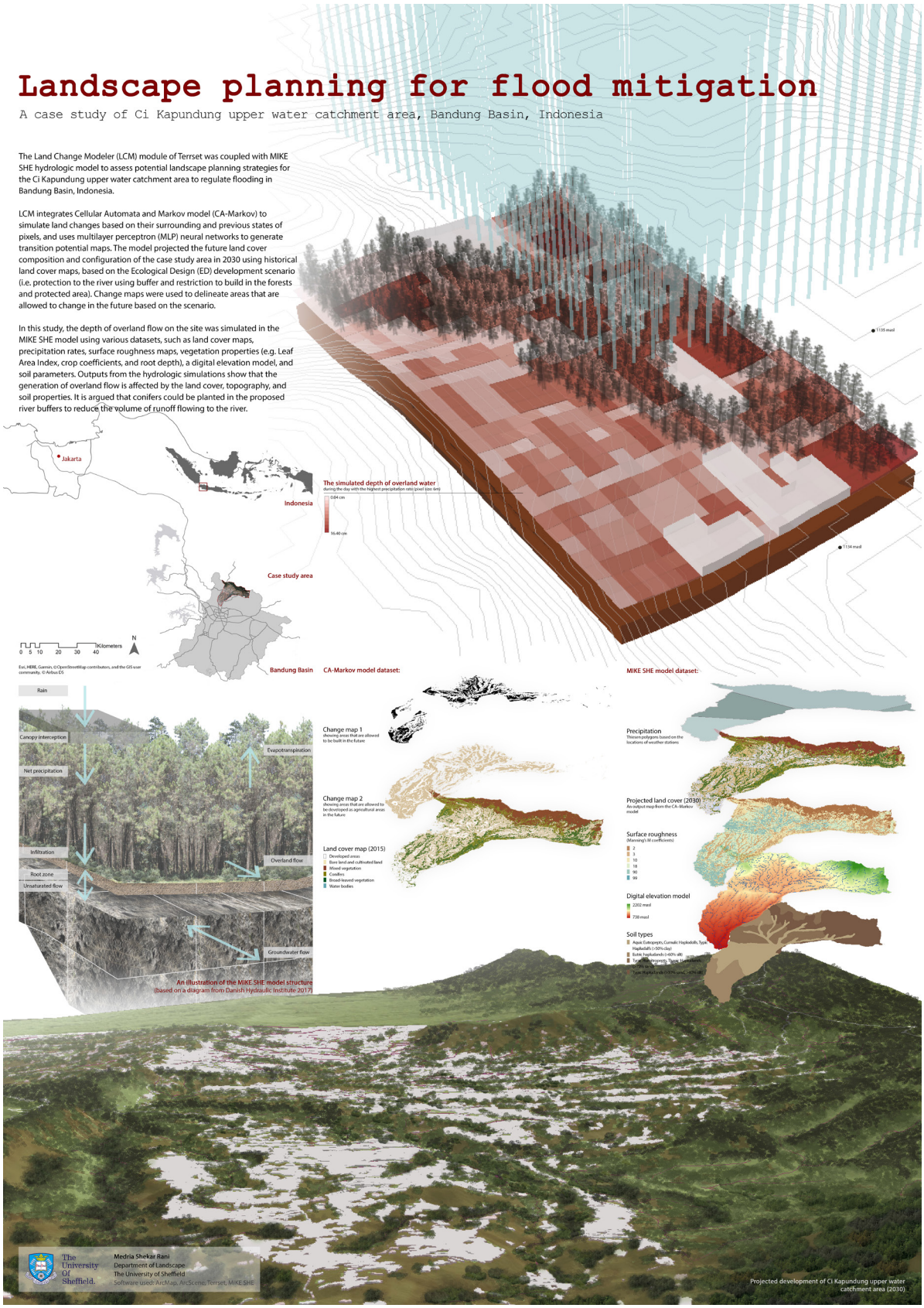
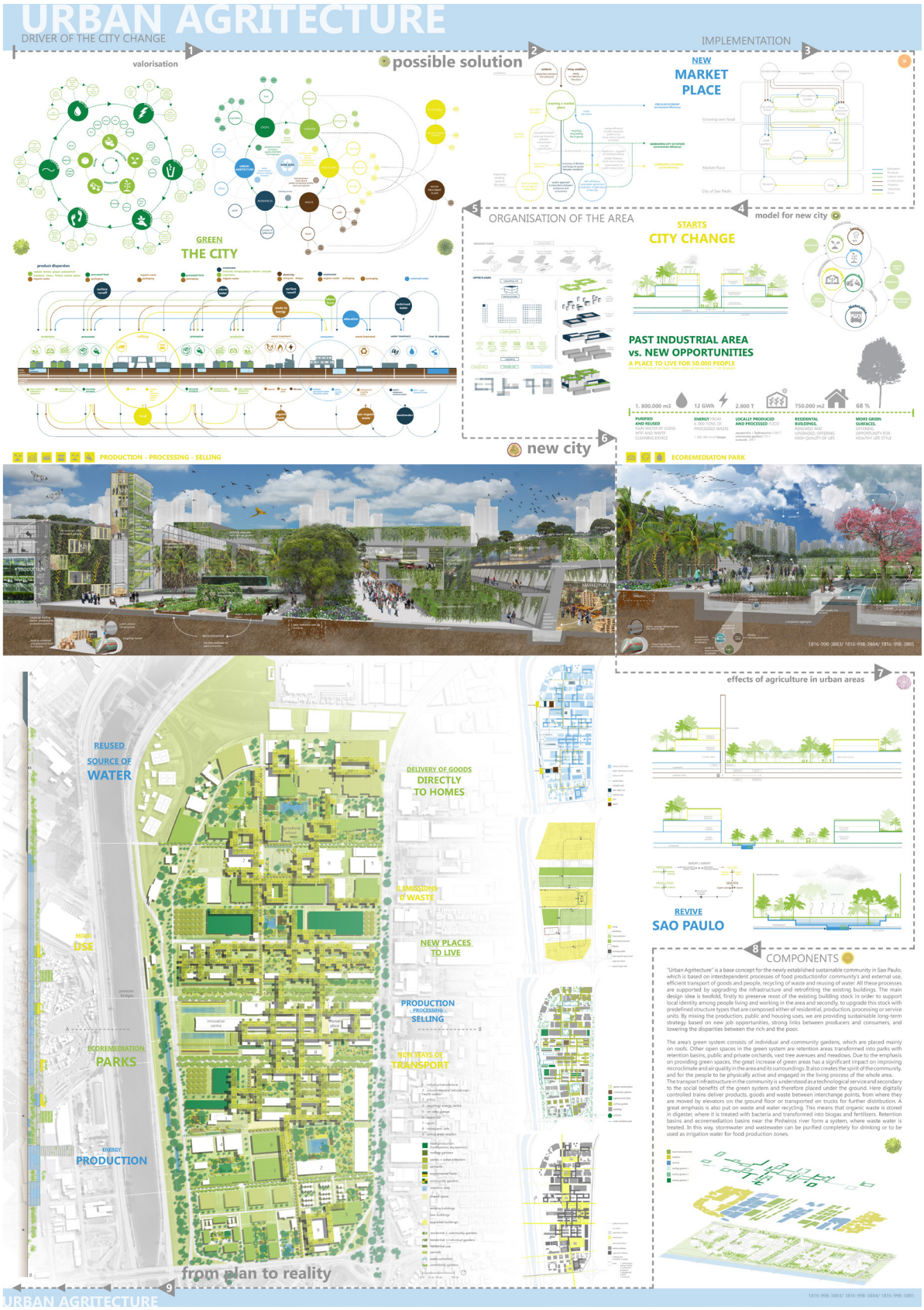


Landscape planning for flood mitigation. A case study of Ci Kapundung upper water catchment area, Bandung Basin, Indonesia

Medria Shekar Rani
The University of Sheffield, United Kingdom

#09



Urban Agritecture

Petra Pečan, Barbara Kostanjšek, Tine Horvat, Darja Matjašec, Nejc Florjanc, Tomaž Pipan

Biotechnical faculty, Department of Landscape Architecture, Slovenia

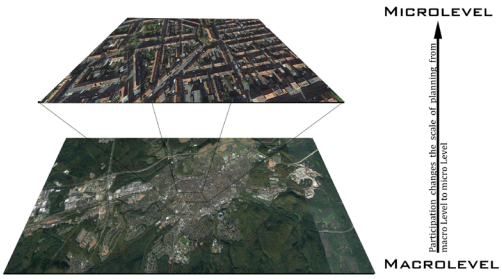
Augmented Reality 2.0

A Novel Tool For Participatory Landscape Architecture planning

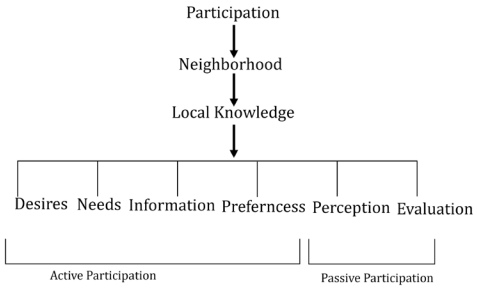
Abstract

Participatory planning and designing is one of the social sustainability dimensions in which people and stakeholders propensity and preferences will be realized to define some criteria for environmental intervention. Stakeholders' participation in the planning process can be implemented by different means, changing from distributing the questionnaire to holding a communicative meeting led by planners and similar experts. However, these kinds of tools and techniques have not far-reaching access to the total society to reflect their social attitudes. Emerging communication technology brings about new capabilities of engaging stakeholders and laypeople in urban and environmental planning. New advances, such as Information and Communication Technology (ICT) and Augmented reality, provide extensive and easy participation of people in environmental planning and design. In this presentation, the potentiality of Augmented reality 2.0, an integrated tool combined of augmented reality and web 2.0, in

Meaning of Participation in Urban Planning

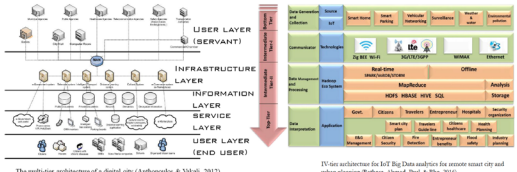


Based on the literature review participation in urban planning should change the process of the planning from more procedural process to a process more concentrated on context and content. Such an approach requires to begin the process from the micro level and from there reach to a macro level. This means that participatory planning has a more local attribute than regional and national meaning. participation in urban planning means understanding and discovering what people think and know about their local and neighborhood.



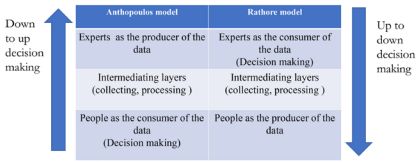
Participatory planning in the smaert city

Rathore describes a model of the smart city with four-tier architecture which provides a useful framework for applying in e-participatory environmental planning. In this model in the first tier data generates and collects from various resources. The second and third tiers are two the intermediate layer that transmitting and processing the collected data respectively. In the last tier, the data interpreted in order to use the result and producing reports. Anthopoulos represents another model of the smart city in witch smart city and urban planning are responding to their requirements in an interactive, beneficial, and supportive interrelation. Based his argument the smart city architecture consists of four different layers that are: user layer, service layer, infrastructure layer and data layer.

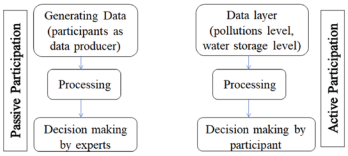


The multi-tier architecture of a digital city (Anthopoulos & Vakali, 2012).

IV-tier architecture for IoT Big Data analytics for remote smart city and urban planning (Rathore, Ahmad, Paul, & Rho, 2016).



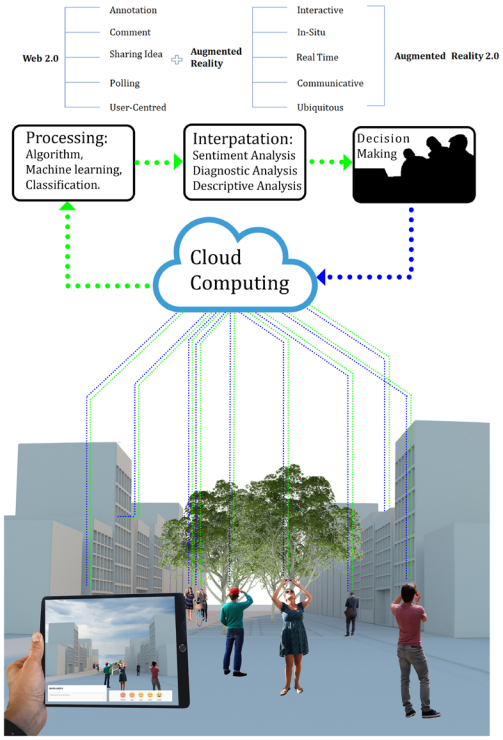
Comparison Between Two Smart City Models



Participation in urban and landscape planning in smart city

Augmented reality 2.0

Augmented reality 2.0 is an integrated tool composed of augmented reality and web 2.0 which is many advantages to engage people in the planning process.

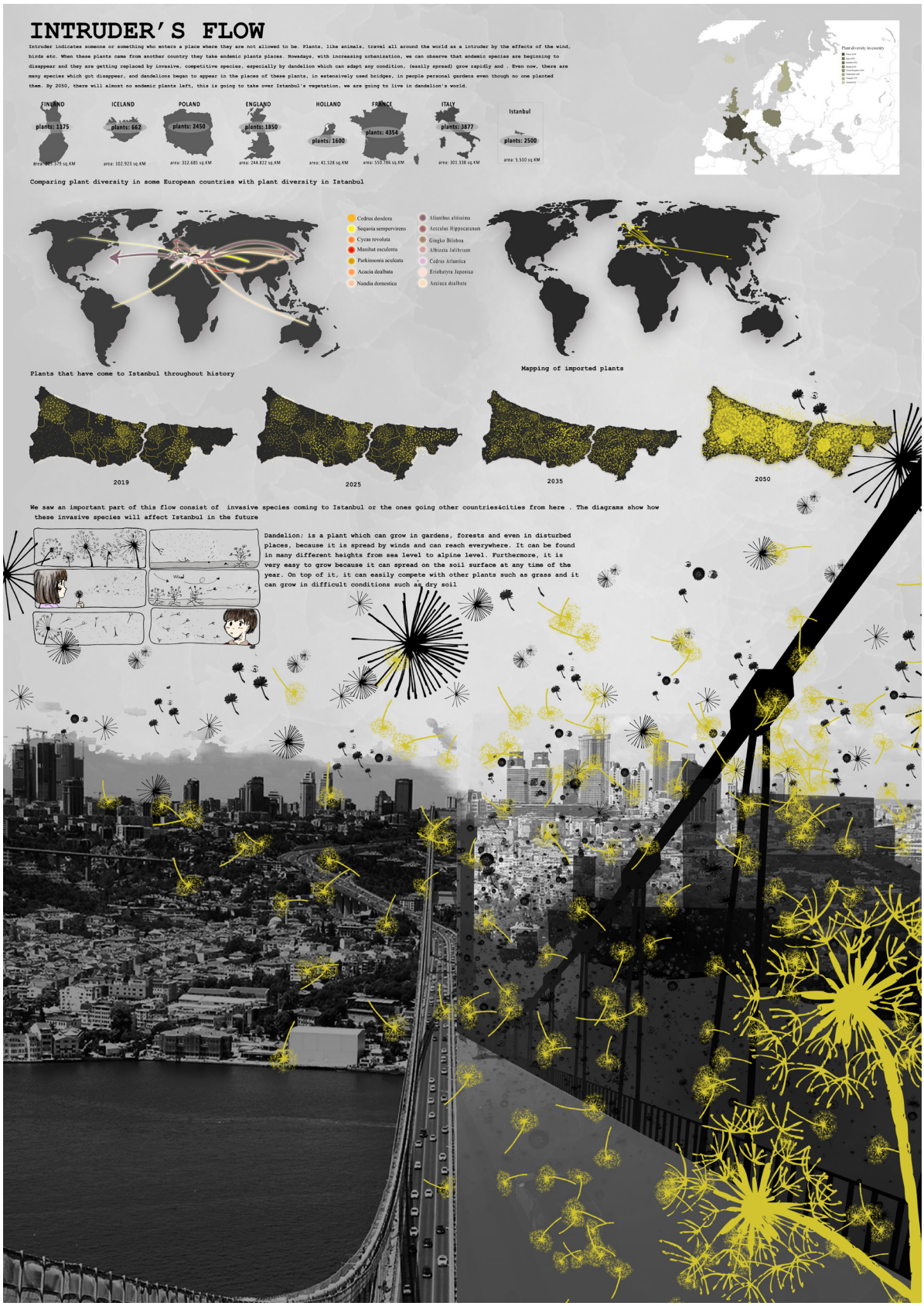


Augmented reality 2.0: A novel tool for participatory landscape architeture planning

Seyed Taher Khalilnezhad

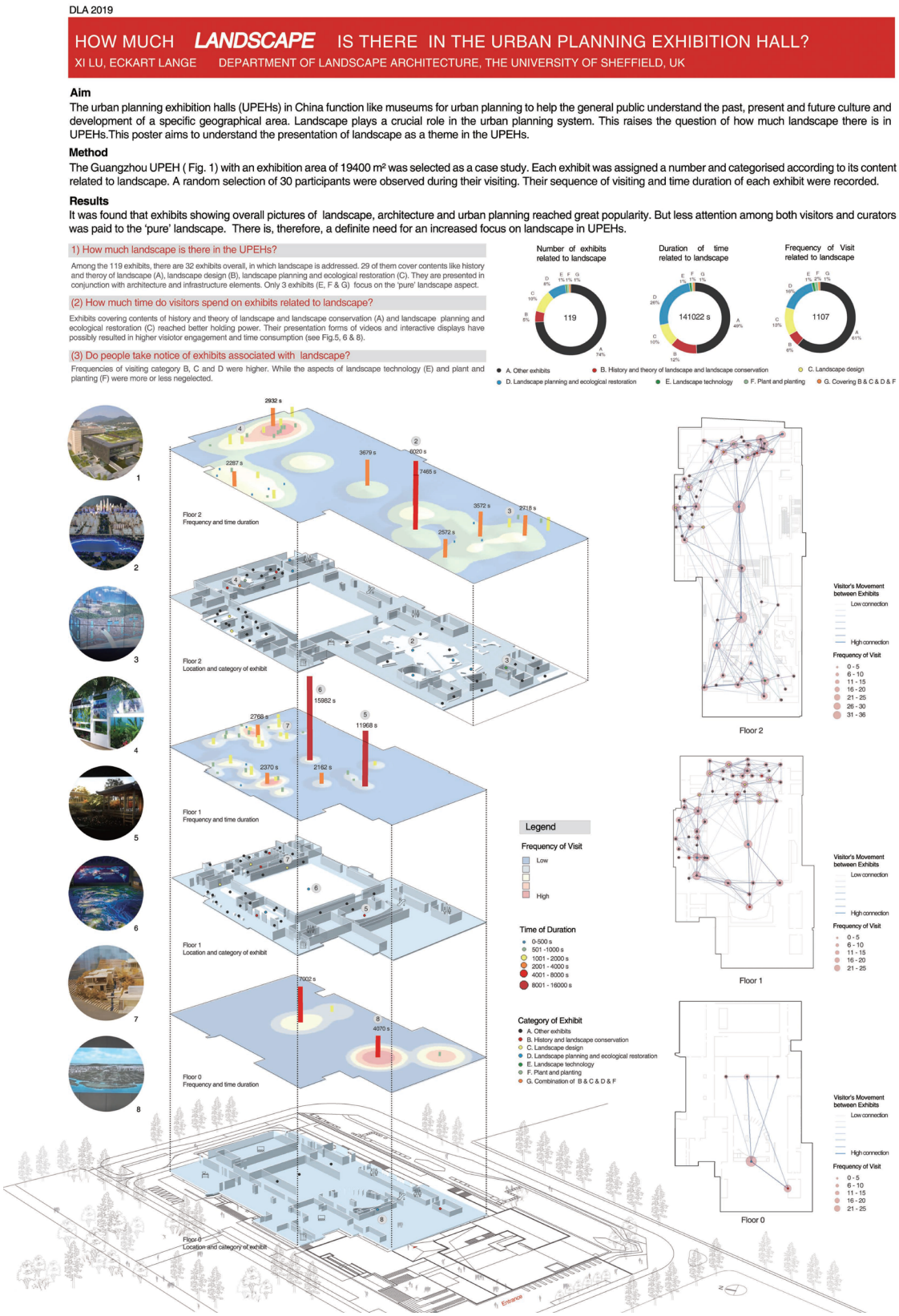
Technische Universität Kaiserslautern, Germany

#11



Intruder's Flow

Sena Özant, Nevruz Kurt, Amine Yazar, Ecem Torun
Istanbul Technical University, Turkey

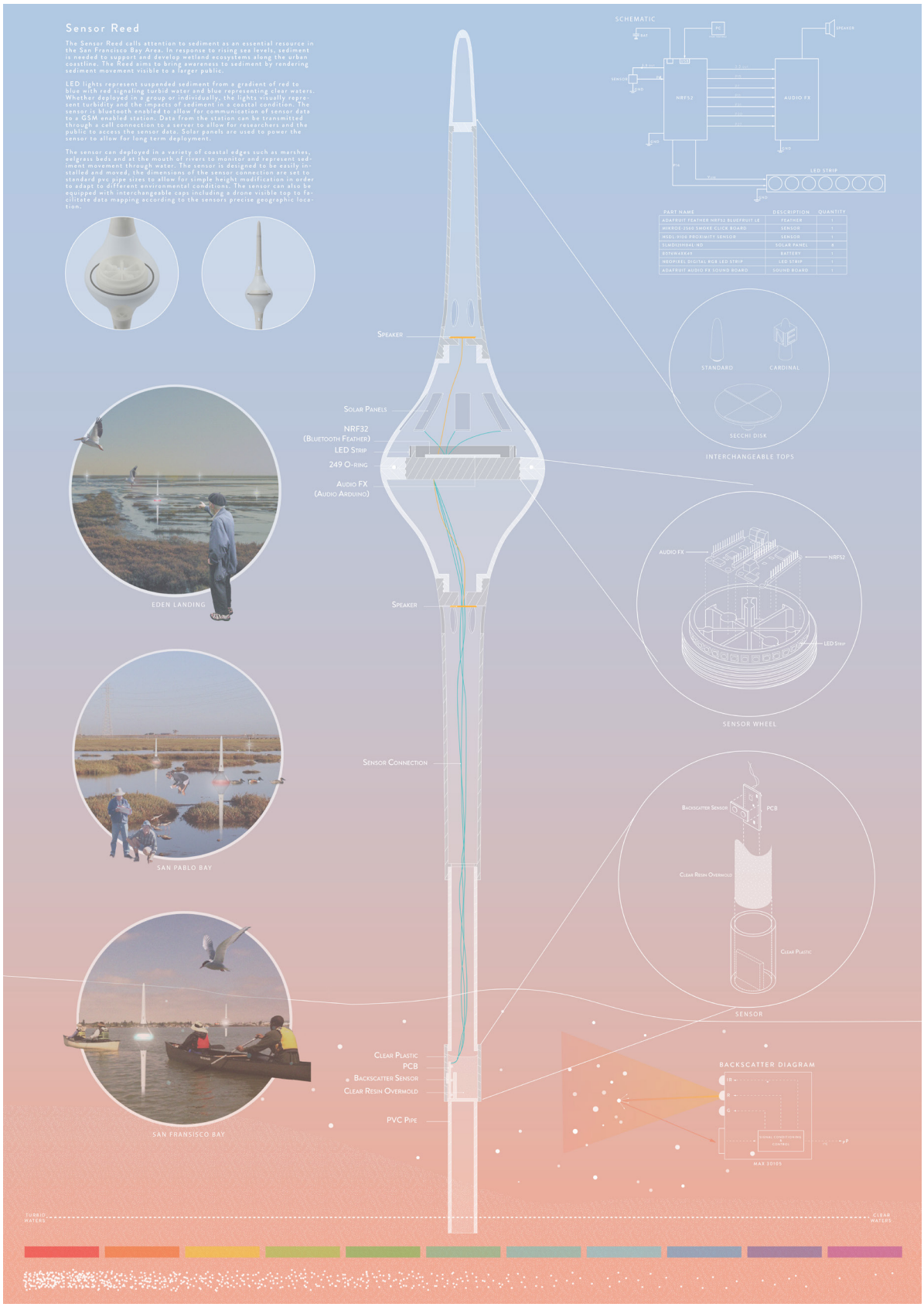


How much landscape is there in the urban planning exhibition hall

Xi Lu, Eckart Lange

The University of Sheffield, United Kingdom

#13



Sensor Reed

Hadi El-Shayeb, Peggy Wong, Lexi Kalman
University of Toronto, Canada

AR Technologies X Disaster Preparedness

Enhancing Awareness and Social Resiliency through Community Engagements

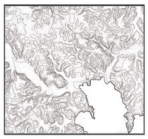
Chihiro Okajima, Kenya Endo, Tokyo, Japan

Digital Landscape Architecture Conference

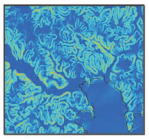
Ministry of Land, Infrastructure, Transport and Tourism 2006. "Current Status and Challenges of Coast" *http://www.mlit.go.jp/river/shinngikai_blog/kaigan_hozen/01/index.html (accessed April 30, 2019).*
Japan' s Disaster Photos, Credit: Kyodo/via REUTERS
Aerial / GIS data of Utatsu. Source; Google Earth, Geospatial Information Authority of Japan, Town of Minami Sanriku

Landslides, flooding (Kurashiki, Southwestern Japan in July, 2018) and Tsunami (Tohoku coastline in 2011)

Aerial Image

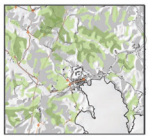


Topography (Contour 2.10m)



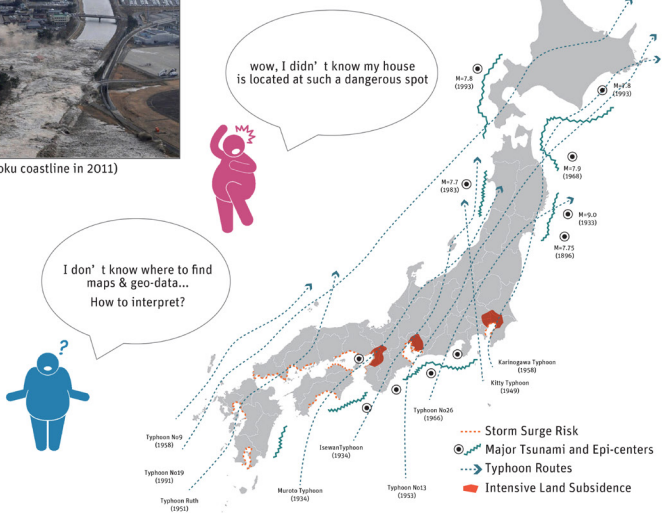
Slope

Hydrology



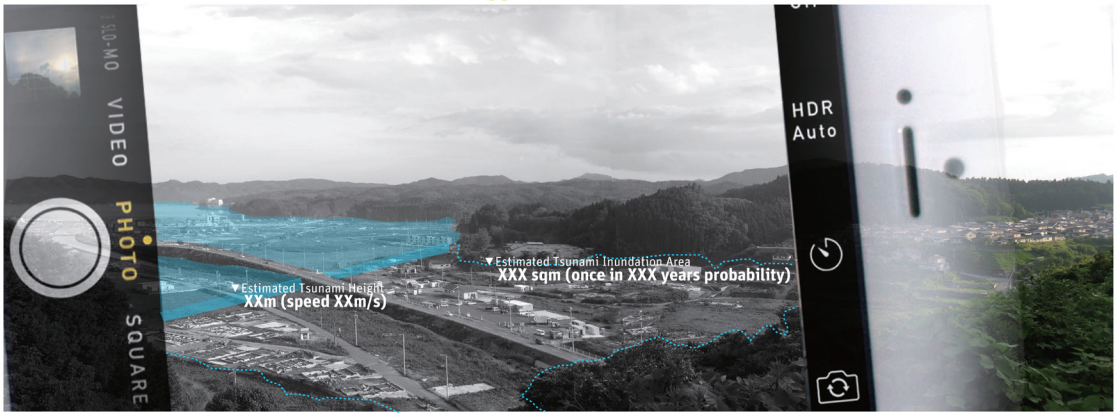
Landuse, Vegetation

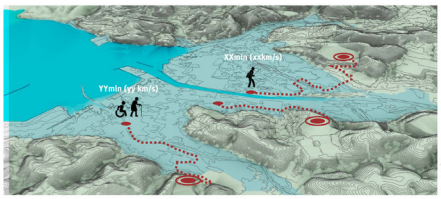
Hazard Map



Core of the project is to integratate **Augmented Reality** (AR) technology with **Landscape Planning**, to further expand the visibility, applicability and scalability of geo-spatial information.

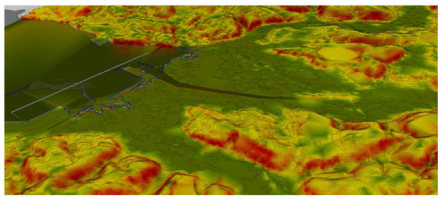
For example, AR can help us understand our surrounding environment more than ever from disaster preparedness point of view. Enhancing risk awareness will increase community' s social resiliency.





Evacuation Sites
Evacuation Route

Flooding and tsunami simulation can represent different water levels. Designated evacuation centers and their routes can be overlaid to the AR visualization to understand the evacuation process within the community.



Site topography analysis can identify steep sloped areas within the community, so that to understand landslide-prone areas. Overlay of city' s hazard map, vegetation and soil maps can enhance the accuracy of such risky areas.

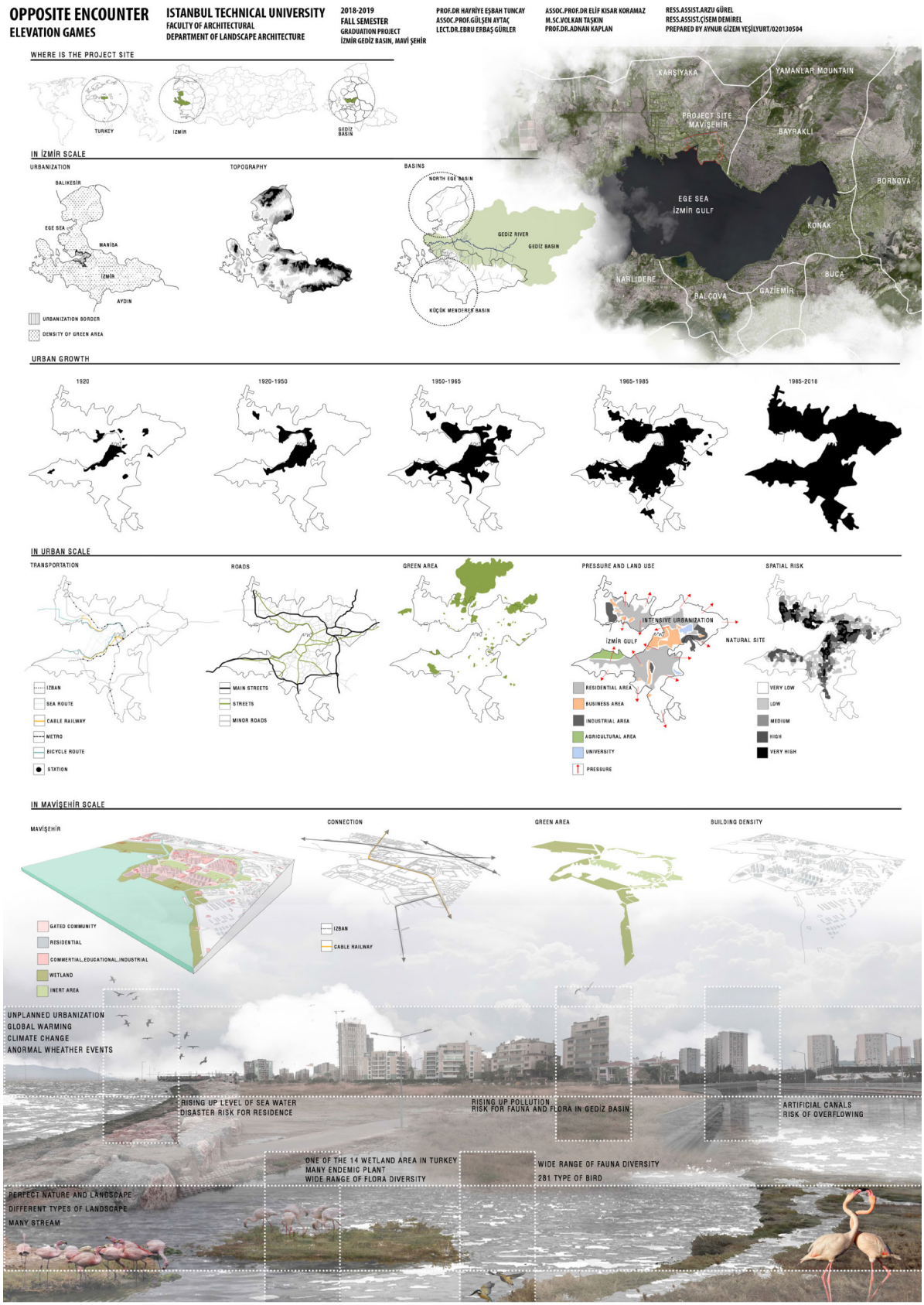
AR Technologies X Disaster Preparedness

Kenya Endo, Chihiro Okajima
Free-lance, Japan

#15

Training concept

Claudia Fasold, Ilona Brückner, Uta Stewering
Hochschule Osnabrück, Germany



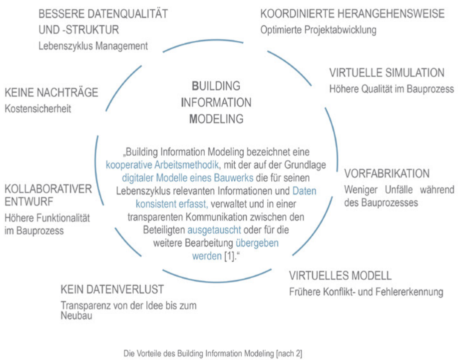
Opposite Encountre
Aynur Gizem yeşilyurt
Turkey

#17

ANFORDERUNGEN AN DEN BIM-REFERENZPROZESS FÜR FREIANLAGEN

HOCHSCHULE OSNABRÜCK
UNIVERSITY OF APPLIED SCIENCES

BIM - DEFINITION UND VORTEILE



BESSERE DATENQUALITÄT UND -STRUKTUR
Lebenszyklus Management
KOORDINIERTE HERANGEHENSWEISE
Optimierte Projektabwicklung
KEINE NACHTRÄGE
Kostensicherheit
BUILDING INFORMATION MODELING
VIRTUELLE SIMULATION
Höhere Qualität im Bauprozess
„Building Information Modeling bezeichnet eine kooperative Arbeitsmethodik, mit der auf der Grundlage digitaler Modelle eines Bauwerks die für seinen Lebenszyklus relevanten Informationen und Daten konsistent erfasst, verwaltet und in einer transparenten Kommunikation zwischen den Beteiligten ausgetauscht oder für die weitere Bearbeitung übergeben werden [1]."
KOLLABORATIVER ENTWURF
Höhere Funktionalität im Bauprozess
VORFABRIKATION
Weniger Unfälle während des Bauprozesses
KEIN DATENVERLUST
Transparenz von der Idee bis zum Neubau
VIRTUELLES MODELL
Frühere Konflikt- und Fehlererkennung

Die Vorteile des Building Information Modeling [nach 2]

PROBLEMSTELLUNG

! Nur 2,09 % von 186 befragten Landschaftsarchitekten planen den Umstieg auf BIM, rund 1,57 % haben BIM bereits in ihrem Unternehmen implementiert [3].

Ab 2020 werden deutschlandweit Großprojekte des Hochbaus ab einem Volumen von fünf Millionen Euro auf ihre BIM-Kompatibilität geprüft [4].

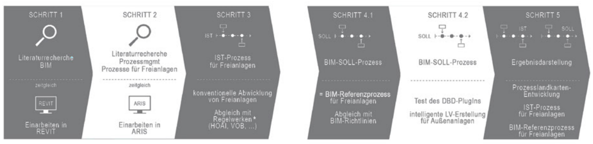
→ Es besteht die Gefahr, dass die Planung von Freianlagen von fachfremden Planern übernommen wird, die bereits Erfahrungen im Umgang mit BIM vorweisen können.

ZIELSETZUNG

- Erstellen eines Handlungsleitfadens für BIM-Prozesse bei der Abwicklung von Freianlagen
- Bedarf aufdecken, Forschungsfragen formulieren, groben Ablauf- bzw. Prozessplan aufstellen [Überblick für den Anwender]

Wer hat wann wem welche Informationen in welcher Detailtiefe und in welchem Dateiformat zu übergeben?

METHODIK



SCHRITT 1
Literaturrecherche BIM
zeitgleich
Bearbeiten in REVIT
SCHRITT 2
Literaturrecherche Prozessmgmt Prozesse für Freianlagen
zeitgleich
Bearbeiten in ARIS
SCHRITT 3
IST-Prozess für Freianlagen
konventionelle Abwicklung von Freianlagen
Abgleich mit Regelwerken* (HOAI, VOB, ...)
SCHRITT 4.1
BIM-SOLL-Prozess
BIM-Referenzprozess für Freianlagen
Abgleich mit BIM-Richtlinien
SCHRITT 4.2
BIM-SOLL-Prozess
Test des DBD-Plugins
intelligente LV-Erstellung für Außenanlagen
SCHRITT 5
Ergebnisdarstellung
Prozesslandkarten-Entwicklung
IST-Prozess für Freianlagen
BIM-Referenzprozess für Freianlagen

* zusätzliche Validierung durch Experteninterviews

ERGEBNIS: BIM-REFERENZPROZESS

Die zugrunde liegende Literatur umfasst sowohl nationale als auch unternehmenseigene Standards. Diese bilden eine Art Leitfaden zum Umgang mit der Methode BIM. Berücksichtigt wurden folgende Quellen:

- PAS 1192-2:2013 der British Standard Institution,
- Common BIM Requirements 2012 [Finnland],
- Singapore BIM Guide V2:2013,
- National BIM Standard 2015 [USA],
- DIN EN ISO 29481-1:2016,
- BIM Referenz-Bau-Prozesse für Deutschland 2017,
- Deutsche Bahn AG: Roadmap-BIM 2017 und
- Siemens Real Estate: BIM-Gesamtprozesslandkarte 2017.

Der entwickelte BIM-Referenzprozess bezieht sich auf ein öffentliches Bauvorhaben mit unterschiedlichen Akteuren [Auftraggeber, BIM-Manager, BIM-Koordinator, Landschaftsarchitekt, Fachplaner, Unternehmer und Lieferanten/Hersteller].

Um die vollen Möglichkeiten des BIM-Prozesses aufzeigen zu können, ist ein big open BIM-Anwendungsfall dargestellt. Dies ermöglicht es jedem Fachplaner, in einer auf seine Bedürfnisse angepassten Software zu arbeiten. Die Herausforderung dieses Anwendungsfalles besteht im barrierefreien Austausch der Modellinhalte.

Die Aufgaben der an der Abwicklung von Freianlagen beteiligten Akteure werden im BIM-Referenzprozess in sogenannten Swim-Lanes [horizontal] dargestellt. Sie sind im Projektverlauf des BIM-Prozesses an die Leistungsphasen der HOAI [vertikal] angelehnt.

Zu den üblichen Beteiligten kommen beim BIM-Referenzprozess der BIM-Manager und der BIM-Koordinator hinzu. Der Manager ist hauptsächlich für das Kommunikationsmanagement zuständig. Der Koordinator ist für die technische Umsetzung der Planungsleistungen im Modell verantwortlich.

Auftraggeber-Informations-Anforderungen [AIA]

Bei der Zusammenstellung der AIA ist die Softwarelandschaft des Auftraggebers maßgebend. Daher kann hier nur eine Übersicht der Inhalte gegeben werden, die in den AIA zu berücksichtigen sind. Zudem kann die Definition der AIA „je nach Phase, beteiligten Akteuren, Anzahl der Teilprozesse etc. sehr aufwendig sein", somit „ist es sinnvoll, diese gemeinsam [mit den Akteuren, Anm. d. Verf.] zu erstellen, zu teilen und wiederzuverwenden" [5].

AUSSCHNITT LEISTUNGSPHASE 6 UND 7

Zur Validierung des BIM-Referenzprozesses wurde schwerpunktmäßig ein Leistungsverzeichnis aus dem digitalen Modell abgeleitet [s. Exkurs]. Es sind die Leistungsphasen 6 und 7 zu betrachten [s. Abb. 1], in denen die Vergabeunterlagen aus dem Modell generiert werden.

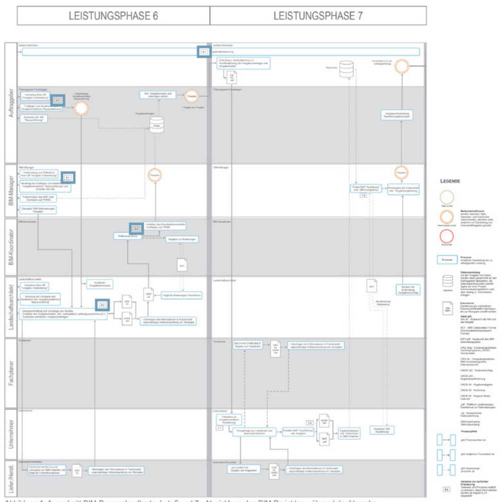


Abbildung 1: Ausschnitt BIM-Prozesslandkarte, Lph 6 und 7 - Abwicklung des BIM-Projektes während der Vergabe

TEXTLICHE ERLÄUTERUNG: BEISPIEL LPH 6

Die Planungsmethode BIM ermöglicht folgende Prozesse in der Abwicklung der Vergabe von Freianlagen:

6.1 Zur Vorbereitung der Vergabe wird das Vergabeverfahren der Bauausführung festgelegt. Ebenso werden AIA vorbereitet. Der Auftraggeber wird dabei von der Vergabestelle und dem BIM-Manager unterstützt.

6.2 Aus dem Ausführungsmodell wird basierend auf der Verknüpfung von Objekten mit dynamischen Baudaten ein intelligentes Kurztext-LV erstellt. Dies wird durch zusätzliche Software möglich. Das Kurztext-LV wird exportiert und mit Hilfe einer Branchensoftware vervollständigt [s. Exkurs].

6.3 Bei der Kollisionsprüfung prüft der BIM-Koordinator das Modell auf die Vergabefähigkeit. Hier erfolgt gemeinsam mit dem Auftraggeber die Entscheidung, ob das Modell zur Vergabe freigegeben wird. Andernfalls werden 2D-Pläne zur Vergabe aus dem Modell abgeleitet.

FORSCHUNGSBEREICHE

Zur weiteren Validierung des BIM-Referenzprozesses in den Leistungsphasen 6 und 7 sind folgende Forschungsfragen näher zu betrachten:

- Welche Vorgaben/Informationen muss das Modell zur Vergabe bereitstellen?
- Was ändert sich konkret durch den BIM-Vergabeprozess im Vergleich zur konventionellen Vergabe?
- Welche BIM-Kompetenz müssen die Akteure bei der Vergabe nachweisen?
- ...?

FAZIT: BIM-REFERENZPROZESS

- Der erarbeitete BIM-Referenzprozess gibt Fachplanern einen Überblick zu BIM-Prozessen für Freianlagen.
- Durch eindeutige Definition der Übergabemodi bieten sich Potenziale, Prozesse zu verschlanken und damit die Wirtschaftlichkeit eines Unternehmens zu beeinflussen.
- Problematisch für Unternehmen sind hohe Schulungs- und Implementationskosten. Daher muss die Planungsmethode BIM fester Bestandteil in der Lehre werden.
- Um die Anwendung der Planungsmethode durchgängig zu gewährleisten, sind weitere Untersuchungen erforderlich.

EXKURS: TESTLAUF DBD-BIM PLUG-IN

Das DBD-BIM Plug-In der f:data GmbH wird auf die Andwendbarkeit für Freianlagen getestet. Hierbei soll überprüft werden, ob verschiedene Objekte problemlos bemustert und in einem Kurztext-LV in einer Branchensoftware weiterbearbeitet werden können.

Vorgehen:

1. Überprüfen der Objekte auf ihre IFC-Übertragbarkeit mit einem IFC-Viewer
2. Mapping oder manuelles Verknüpfen der Objekte mit Dynamischen Bau-Daten [DBD] - Bemusterung [Abb. 2]
3. Aufstellen der Baukosten nach Leistungsbereich oder nach DIN 276
4. Automatisierte Prüfung der bemusterten Objekte auf Vollständigkeit und Logik
5. Daten übernehmen, Objekte markieren und ins GAEB-Format exportieren
6. Überprüfen der übertragenen Daten auf Vollständigkeit und Anwendbarkeit

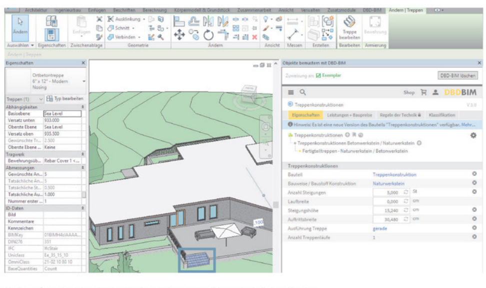


Abbildung 2: Automatisches Ableiten von Bauteilinformationen „Treppe" durch direktes Mapping

FAZIT: TESTLAUF DBD-BIM PLUG-IN

Das DBD-BIM Plug-In der f:data GmbH für Revit ist eine nutzerfreundliche Erweiterung der Software-Landschaft für die konsistente Anwendung der Methode BIM.

Neben der einfachen Anwendung unterstützen ausgearbeitete Funktionen das Erstellen eines LVs auf der Basis von 3D-Objekten.

Trotzdem besteht Handlungsbedarf:

- Erweiterung der Datenbank des Plug-Ins [insb. Vegetation]
- Übertragen der Funktion der „Abzugsmengen" von vertikalen auf horizontale Flächen für die Anwendbarkeit von Übermessungsregeln

QUELLEN
[1] [illegible]
[2] [illegible]
[3] [illegible]
[4] [illegible]
[5] [illegible]

Maike A. Wozniak, M.Eng.
Anforderungen an den BIM-Referenzprozess für Freianlagen, 06/2018
Masterthesis Hochschule Osnabrück, 2018. Betreuung: Dr. Ilona Brückner, Prof. Martin Thieme-Hack
Hochschule Osnabrück, Oldenburger Landstraße 24, 49090 Osnabrück

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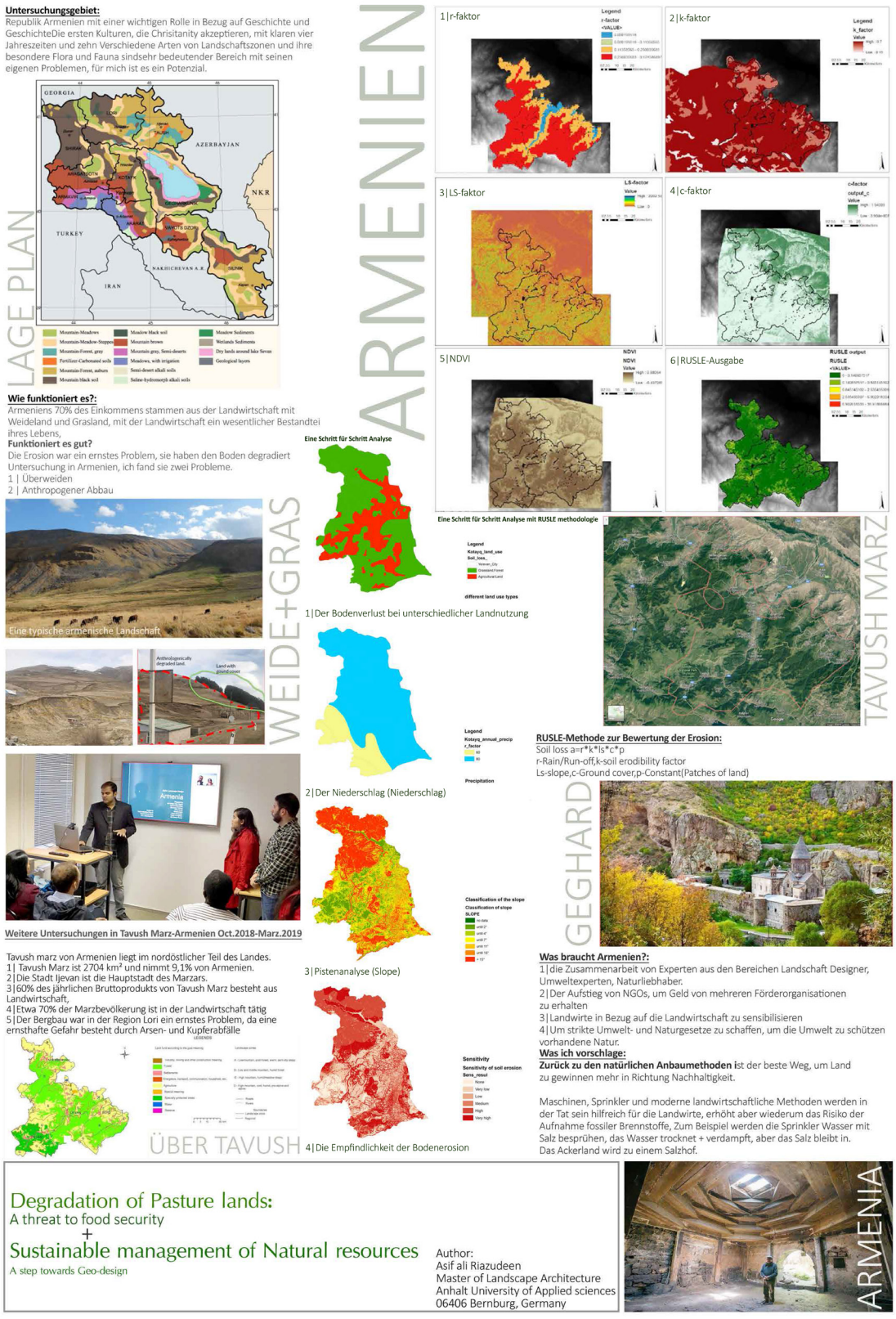
Anforderungen an den BIM-Referenzprozess für Freianlagen

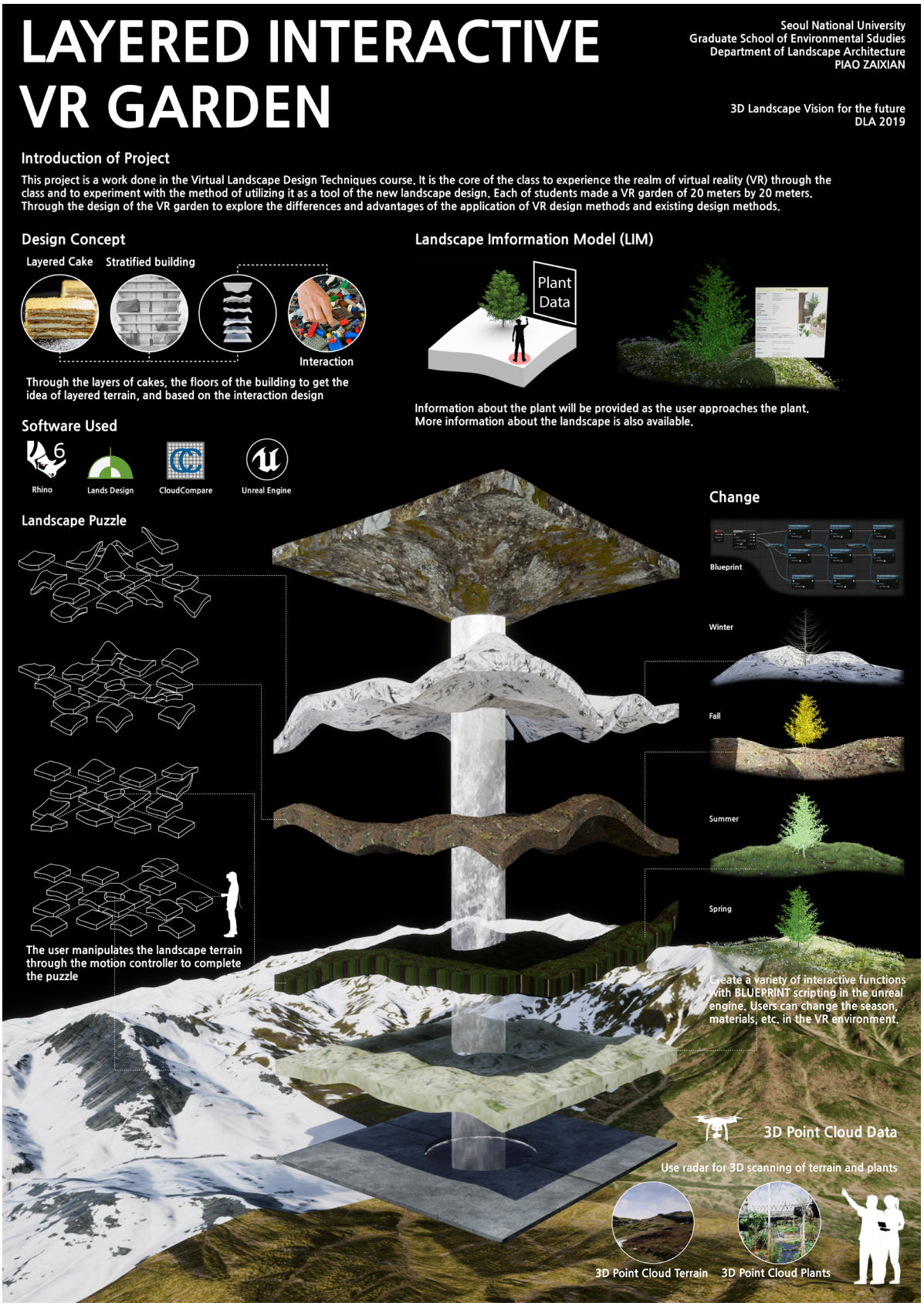
Ilona Brückner, Maike Wozniak, Martin Thieme-Hack
Hochschule Osnabrück, Germany



Degradation of Pasture lands: A threat to food security+ Sustainable Management of natural resources

Asif Ali Riazudeen
Hochschule Anhalt, Germany

#19



Layered Interactive VR Garden - Poster competition

Zaixian Piao

Seoul National University, South Korea

A Mixed-Methods Approach to Evaluating Participant Experience in Real and Virtual Environments

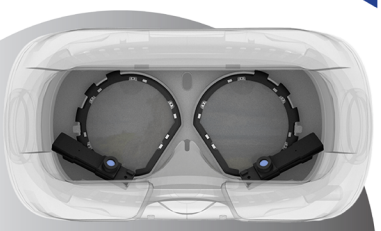
Evan Gill, Mark Lindquist

SEAS SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY
UNIVERSITY OF MICHIGAN

Abstract

Successful remediation and design interventions for a landscape require the buy-in of stakeholders and future users of that landscape in order to have long-term sustainability. 3D visualizations are a powerful tool to help establish a sense of place to a diverse user group. Research suggests that visualizations combined with additional sensory stimulation can result in a higher sense of presence and understanding of these 3D visualizations. To create a more immersive visual experience, it is first essential to understand how users perceive and observe landscapes. This research will use empirical methods to evaluate the effect on gaze direction of auditory stimuli comparing a virtual and real landscape. The working hypothesis is that perceived realism, presence and understanding of a virtual landscape can be enhanced using auditory stimuli. This research will utilize head mount display (HMD) virtual reality technology, Eye-tracking Metrics (ETM), and biosensors (galvanic skin response (GSR) and EEG) to collect physiological data that can be compared to participants perceptions of landscapes.

Pupil Labs Eye-Tracker with World Camera



HTC VIVE with Pupil Labs Eye-Tracker

Research Questions

1. Is landscape subjective preference altered by the addition of audio stimuli?
2. Is the sense of presence of a real landscape comparable to that of a virtual 3D model?
3. Can Eye-Tracking data be used to determine the sense of presence and realism of a 3D and 4D-virtual model?
4. Do physiological indicators corroborate self-reported measures of landscape experience and cognition in real and virtual environments?

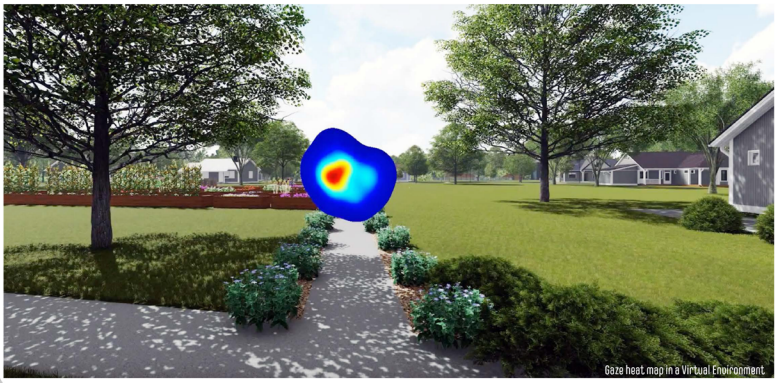
VR Immersion Tests

Research Design

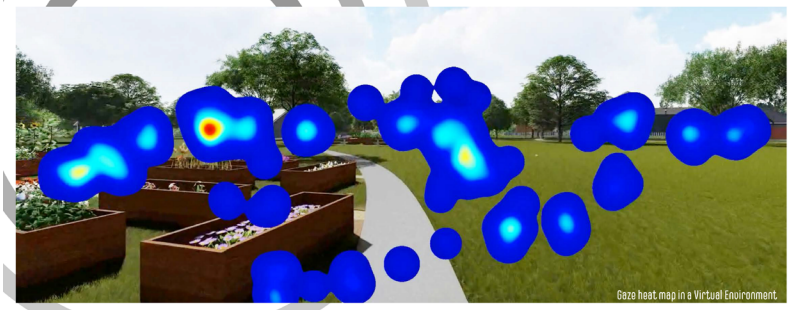
Proposed Research Design: The research will use an experiment to evaluate how altering soundscapes contributes to subjective and objective landscape experience in virtual environments

Main Goals:

1. Investigate and validate the use of physiological variables as measures of perception, immersion, and presence
2. Investigate how the manipulation of a soundscape impacts the effectiveness of the virtual environment



Gaze heat map in a Virtual Environment.



Gaze heat map in a Virtual Environment.

Key References

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- Sanchez-Vives, M. V., & Slater, M. (2005, May). From presence to consciousness through virtual. Nature Reviews Neuroscience volume, 6(4), 332-339. Doi:10.1038/nrn1651

Programs Used:

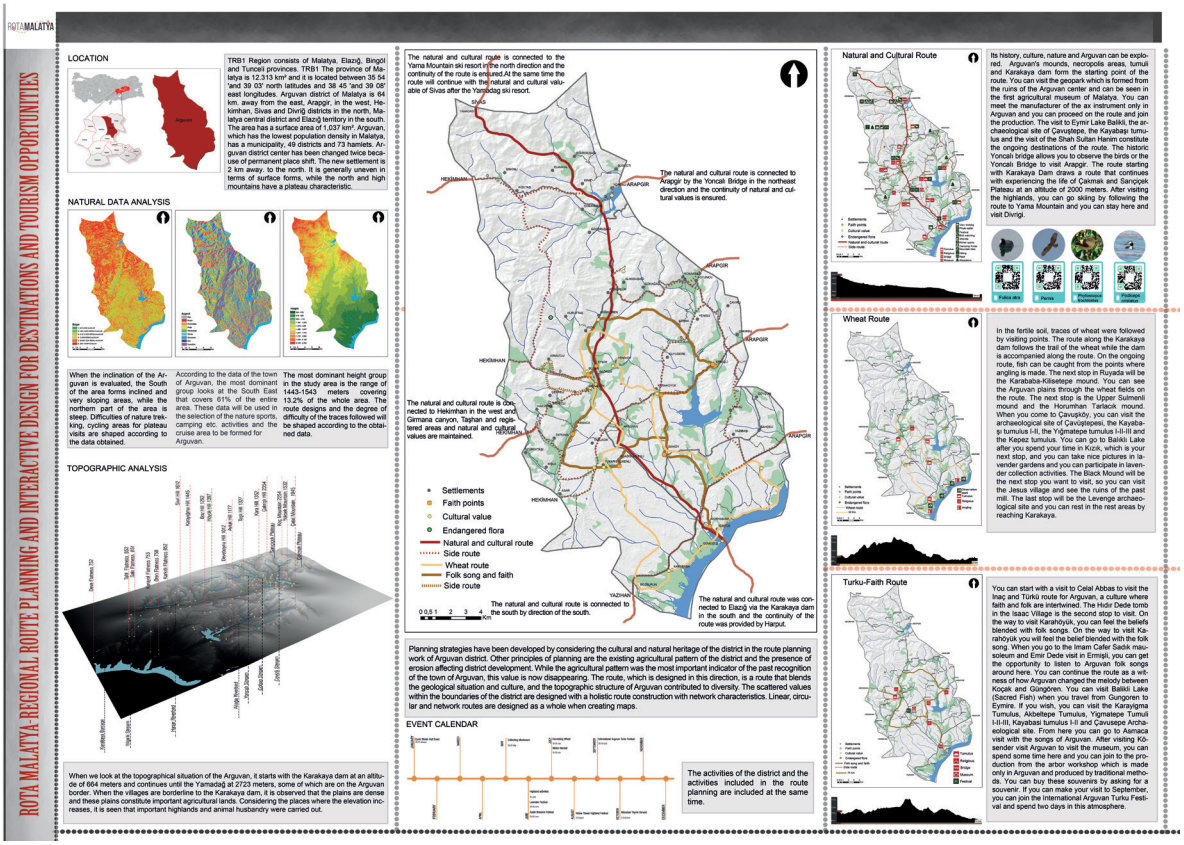
- AutoDesk Infraworks 360
- Pupil Labs Suite
- Unity Game Engine

A Mixed-Methods Approach to Evaluating Participant Experience in Real and Virtual Environments

Evan Gill, Mark Lindquist

University of Michigan, United States

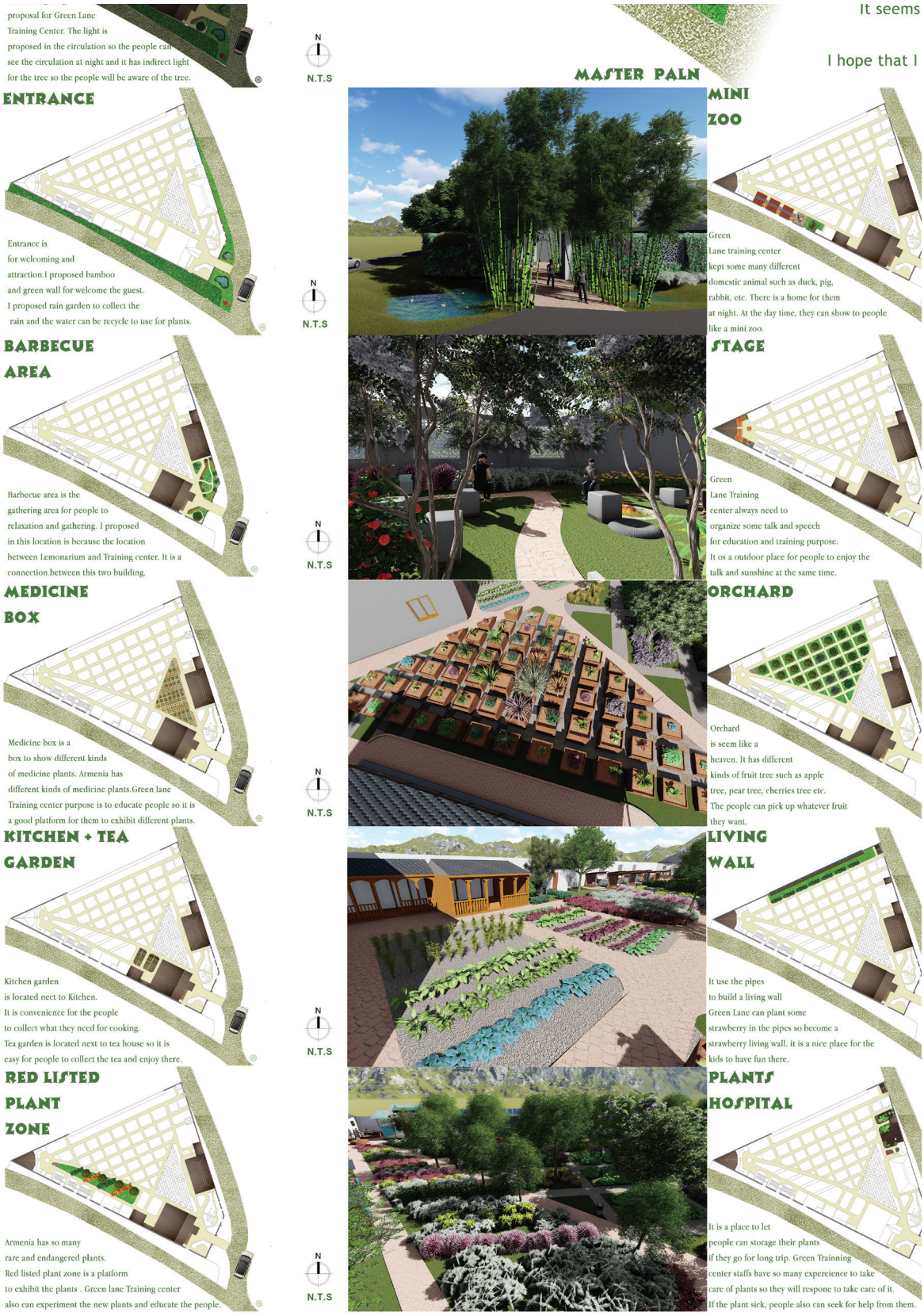
#21



Analog ve Dijital Peyzaj Mimarlığı

Elif Oktay, Sevgi Görmüş

Turkey



Lead to Green Lane

Wing Yan Ho
Hochschule Anhalt, Germany

No 86

Landscape as a social change generating tool. Imagining new scenarios in difficult contexts. Healing Garden in Irak

Juanita Leal Ochoa
Colombia

THE HYDROPHONE

By: Aaron Hernandez & Devin Tepleski

Software: Autodesk Fusion 360, Autodesk Eagle, Max/MSP/Jitter, ArcGIS Pro, Rhino 3D, Adobe Creative Suite

Developed for a studio entitled "Longitudinal Landscapes: Mud, Monitoring, and Mobilization" working within the Autodesk Resident program, The Hydrophone is a custom sensor technology that monitors sediment bed load in fluvial systems and has potential for public interaction through the amplification and visualization of underwater sound. The studio focused on identifying sites and strategies for design that support reconnecting the San Francisco Bay Area's tributaries to its baylands (the marshes and mudflats that host important ecologies, retain carbon, and protect communities along the bay) through innovative use of inexpensive and accessible technologies for the design of novel monitoring infrastructure.
The device uses hydrodynamic force to hug the bottom of the river, reading the vibrations of sediment particles as they pass over its surface through a piezo microphone installed in the device. As a proof of concept, it is a fully functional hydrophone with an optional Arduino-controlled depth sensor component. The prototype was exhibited in an interactive display at Autodesk Toronto where visitors were able to release particles atop an abstracted landscape model. The released 'sediment' would trigger visualizations programmed in Max/MSP/Jitter in real-time as it passed over the device.

Next steps are to calibrate a Max/MSP/Jitter FFT script that gates the frequencies of real-time audio based on the premise that the audio profiles can be used to identify particle sizes. Similar studies by Mathieu Marineau et al[1,2,3,4,5,6] of the USGS show promise for the technology and may have implications on the way we manage riverine landscapes.

1. Marineau, M.D., Minear, J.T., and Wright, S.A., 2015, "Using Hydrophones as a Surrogate Monitoring Technique to Detect Spatial and Temporal Variations in Sediment Transport", proceedings of the 10th Federal Interagency Sedimentation Conference, Reno Nevada, April 19-23, 12 p.
2. Marineau, M.D., Wright, S.A., Lopez, J.V., 2016, Sediment Transport in Tributary Creeks of the San Joaquin River, poster abstract, presented at the San Joaquin River Restoration Program (SJRRP) Science Meeting, Fresno, California, August 17-19, 2016.
3. Marineau, M.D., Wright, S.A., Minear, J.T., 2015, Sediment-transport monitoring using hydrophones on the San Joaquin River and tributaries, poster abstract presented at the San Joaquin River Restoration Program (SJRRP) Science Meeting, Los Banos, California, June 11-12, 2015
4. Marineau, M.D., Gendaszek, A.S., Magirl, C.S., Czuba, C.R., and Czuba, J.S., 2012, Surrogate bedload monitoring using hydrophones in the gravel-bedded Cedar River, Washington. In Proceedings of the ASCE Hydraulic Measurements and Methods conference, Snowbird, Utah, USA, August 13-15, 2012.
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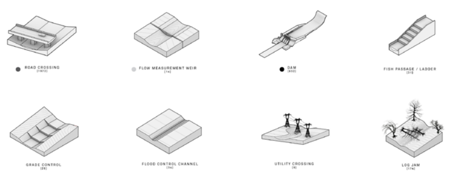
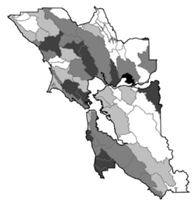
6. Gray, J.R., Laronne, J.B., and Marr, J.D.G., 2010, Bedload-surrogate monitoring technologies. U.S. Geological Survey Scientific Investigations Report 2010-5091, 37p.

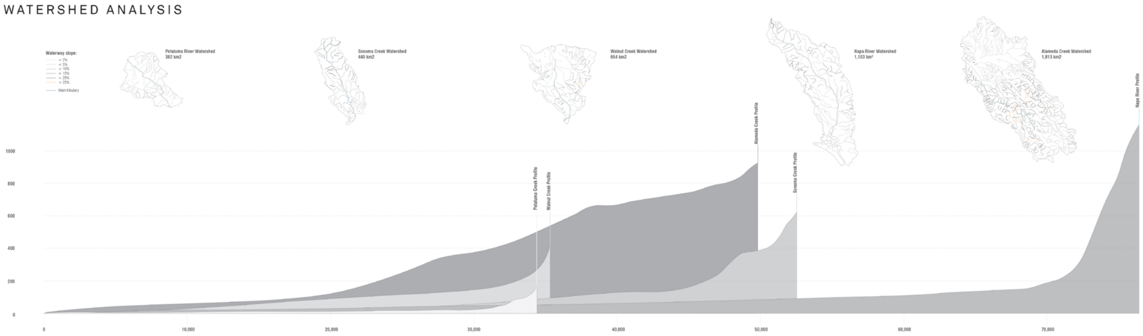
SAN FRANCISCO BAY AREA UPPER FLUVIAL OBSTRUCTION INDEX



WATERSHEDS WITH MOST OBSTRUCTIONS PER AREA UNIT

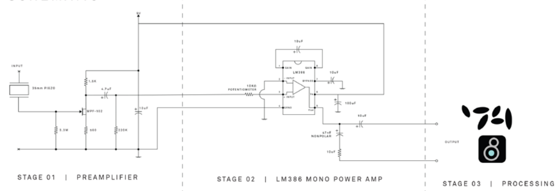


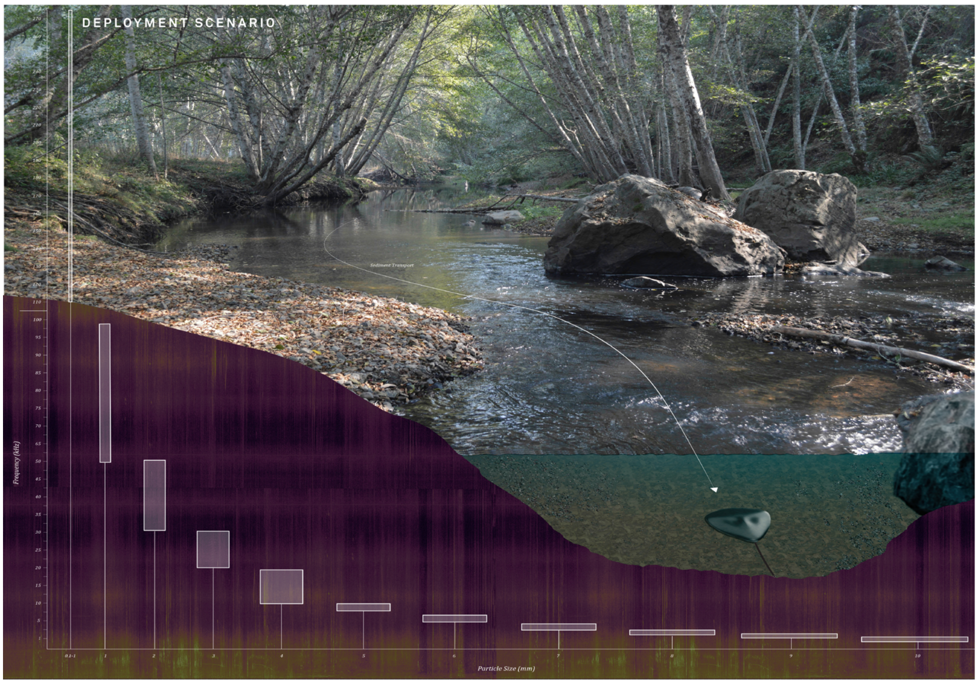
WATERSHED ANALYSIS

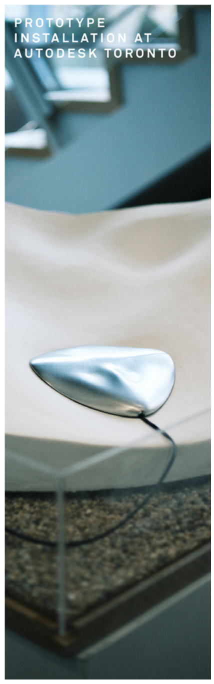


DETAIL DRAWINGS OF DEVICE

SCHEMATIC



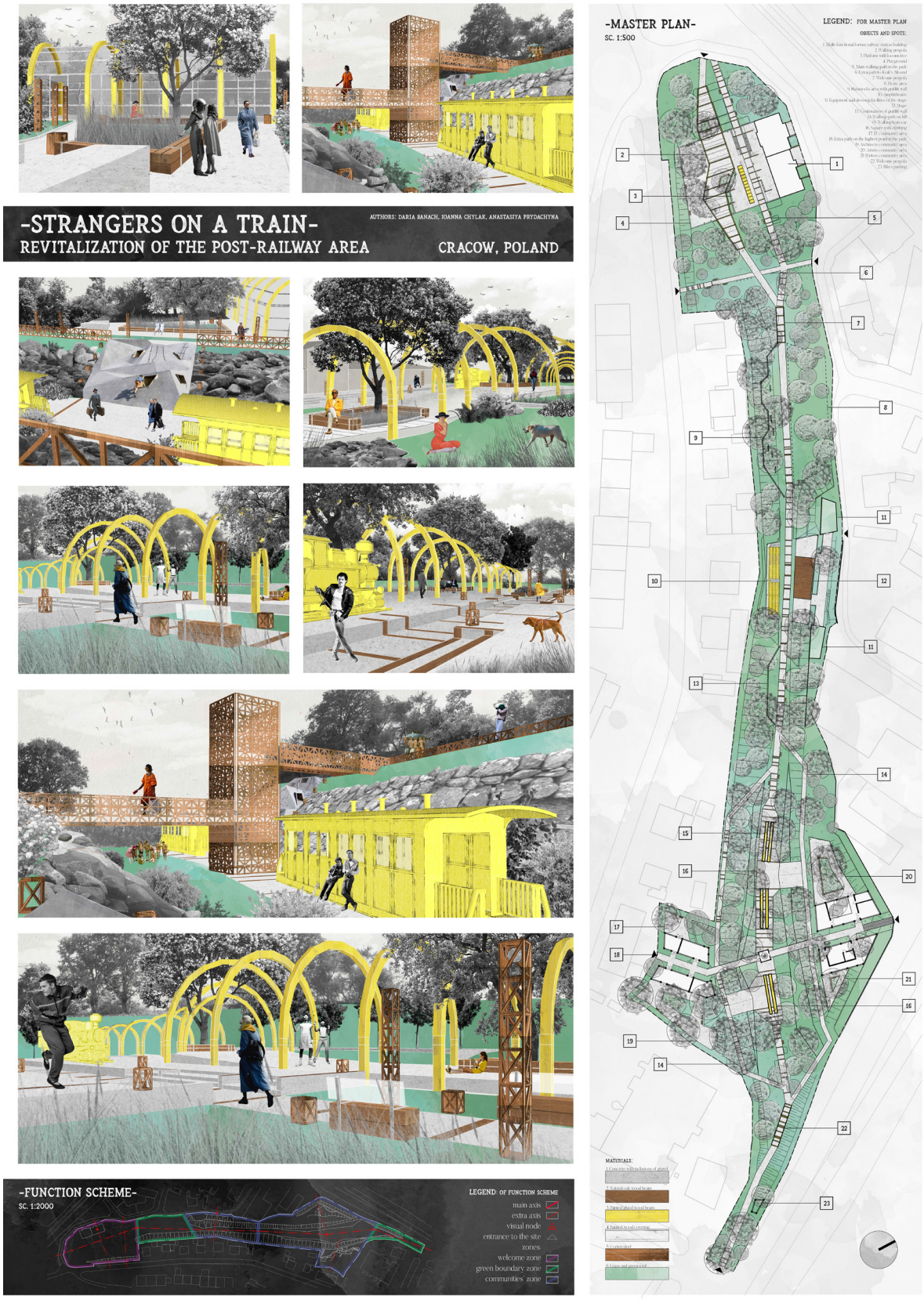




The Hydrophone

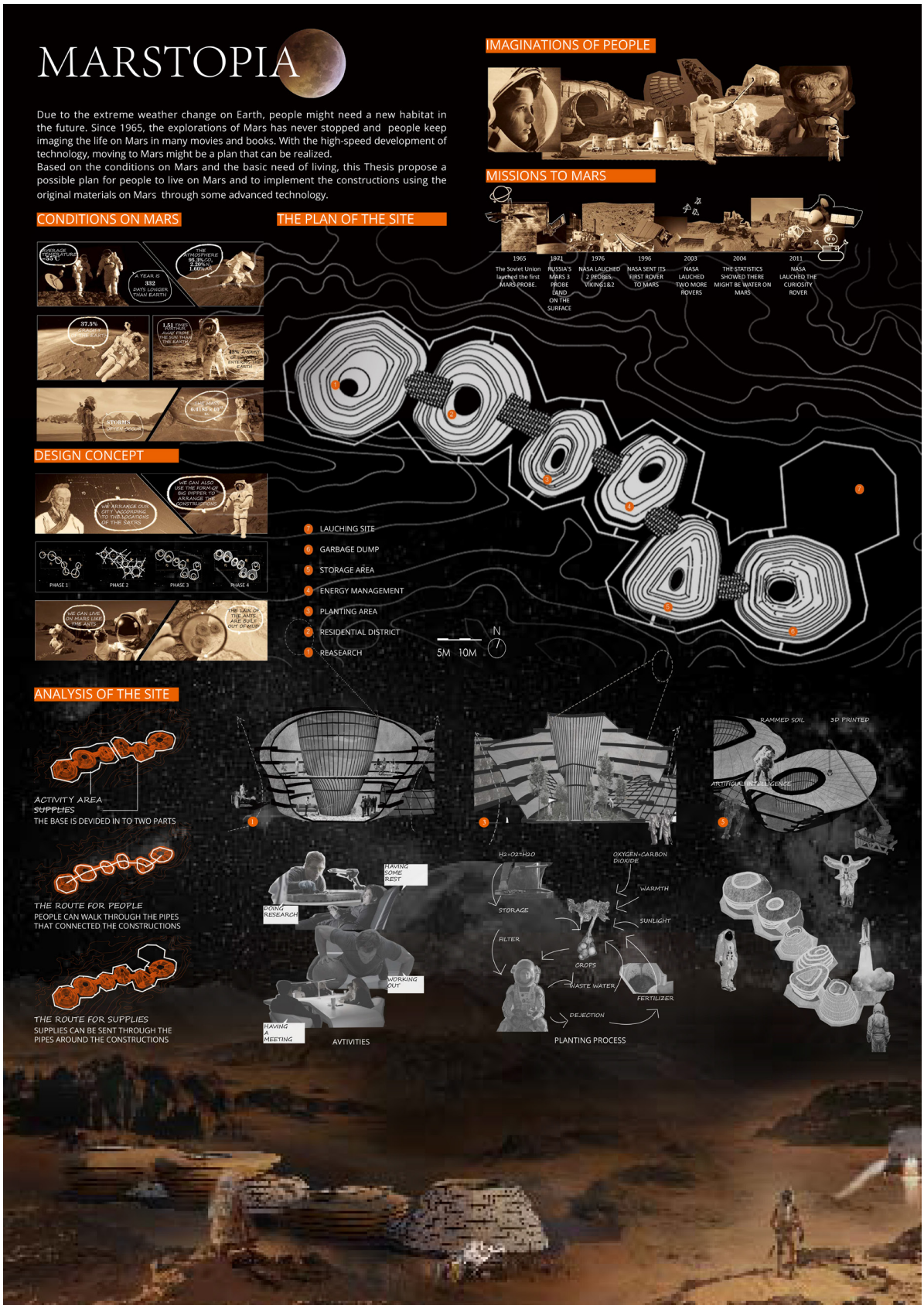
Aaron Hernandez, Devin Tepleski
University of Toronto, Canada

No 109



“Strangers on a train” - Revalorization of the Post-Industrial Area

Joanna Chylak, Daria Banach, Anastasiya Prydachyna
Politechnika Krakowska im. Tadeusza Kościuszki, Poland



Marstopia *(not in the Exhibition)*
Chuxuan Zhang
China

Hochschule Anhalt
Anhalt University of Applied Sciences