



From Idea to Infrastructure:

The Archaeological Imagination

In Urban Futures



From Idea to Infrastructure:

Part I: The Problem

Part II: The Archaeological Imagination

Part III: Hybridized Urban Infrastructures (HUIs)



World Bank Urban Development Website



SECTOR:

[Sub-national PPP](#)

LANGUAGE:

[English](#)

REGION:

[Global](#)

NATURE:

[Website](#)

COUNTRY:

[Global / Non-Specific](#)

The official website of World Bank Urban Development.

Today, some 56% of the world's population – 4.4 billion inhabitants – live in cities. This trend is expected to continue, with the urban population more than doubling its current size by 2050, at which point nearly 7 of 10 people will live in cities.

With more than 80% of global GDP generated in cities, urbanization can contribute to sustainable growth through increased productivity and innovation if managed well.

Building cities that “work” – green, resilient and inclusive– requires intensive policy coordination and investment choices. National and local governments have an important role to play to act now, to shape the future of their development, and to create opportunities for all.

Links:

[World Bank Urban Development Website](#)

[PPPs by Topic](#)

[Innovative Revenues for Infrastructure \(IRI\)](#)

[Urban transport](#)

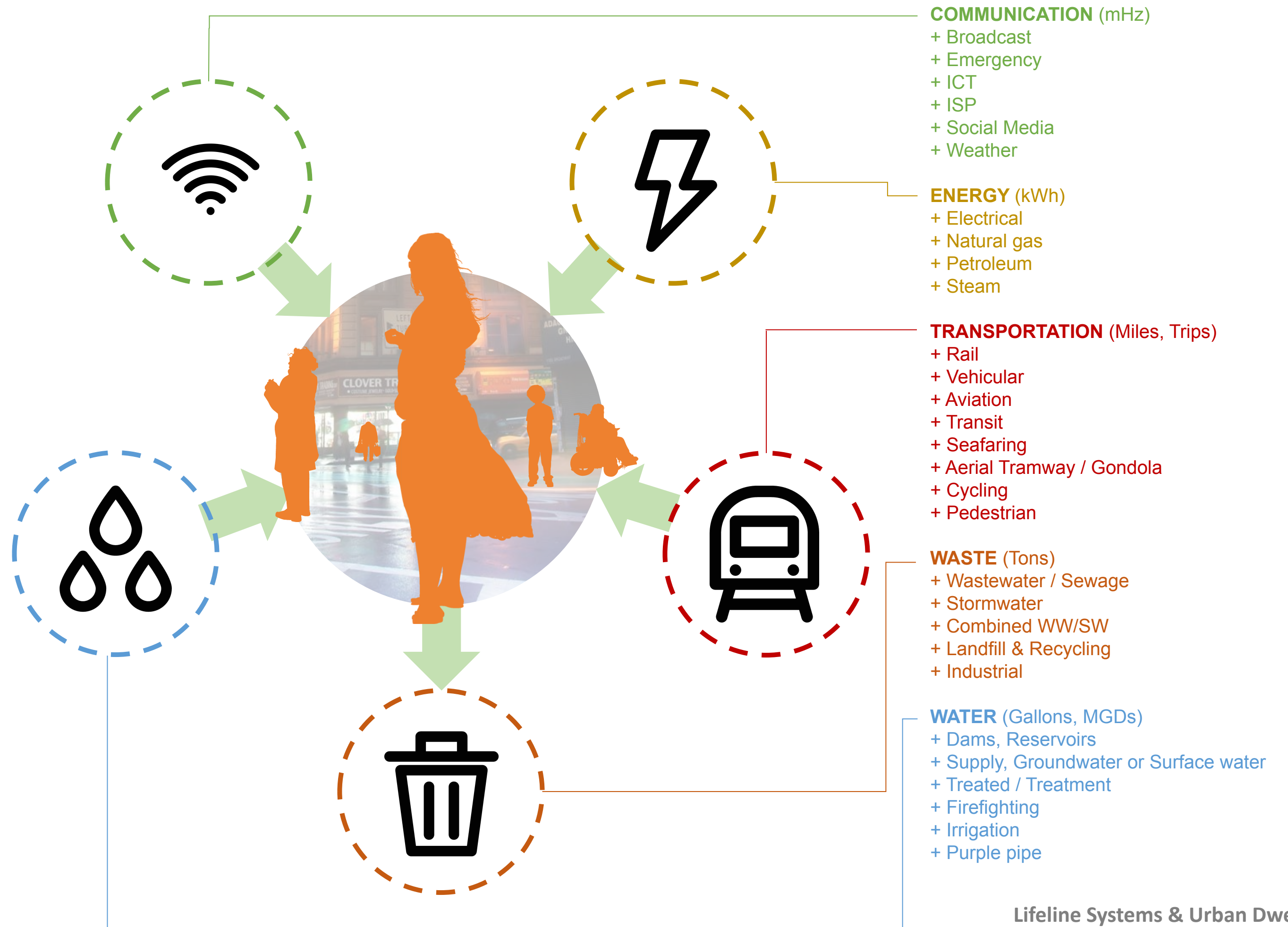
[Urban Water and Sanitation](#)

[Share](#)

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>56%

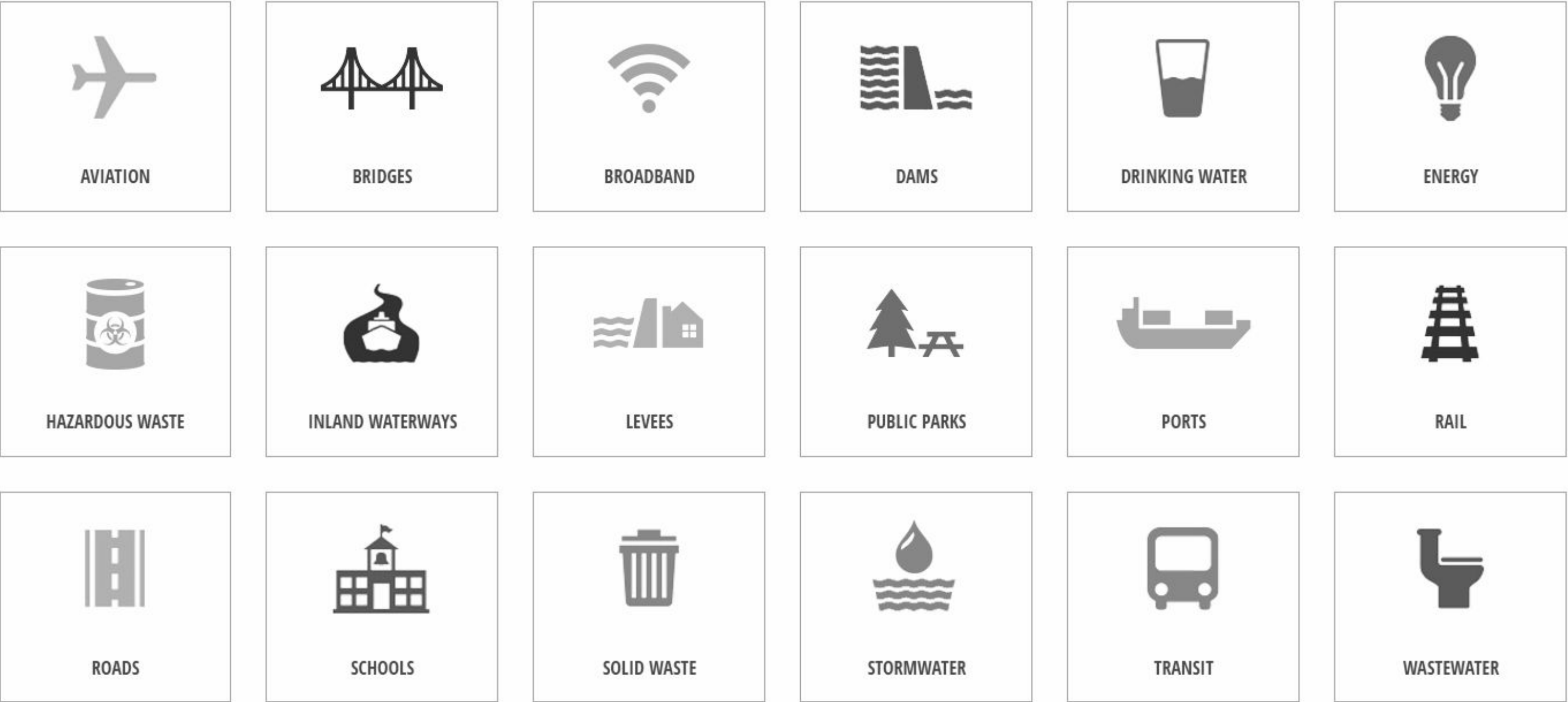
Percentage of world population who are “urban dwellers”
<https://www.worldbank.org/ext/en/topic/urban-development>



Lifeline Systems & Urban Dwellers

New York NY

Walk-through of expanded lifeline systems





AVIATION



BRIDGES



BROADBAND



DAMS



DRINKING WATER



ENERGY



HAZARDOUS WASTE



INLAND WATERWAYS



LEVEES



PUBLIC PARKS



PORTS



RAIL



ROADS



SCHOOLS



SOLID WASTE



STORMWATER



TRANSIT



WASTEWATER

COMMUNICATION


AVIATION


BRIDGES


BROADBAND


DAMS


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ENERGY


HAZARDOUS WASTE


INLAND WATERWAYS


LEVEES


PUBLIC PARKS


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COMMUNICATION
ENERGY


ROADS

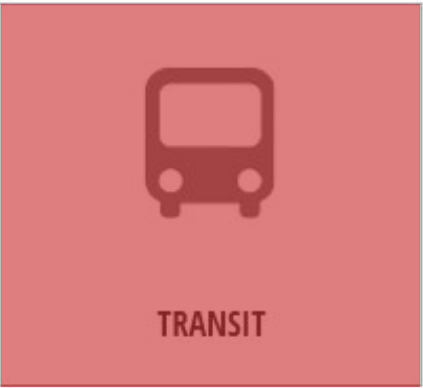
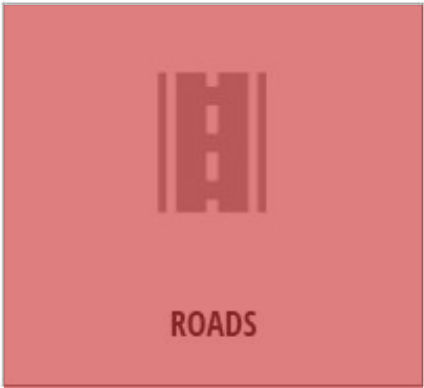
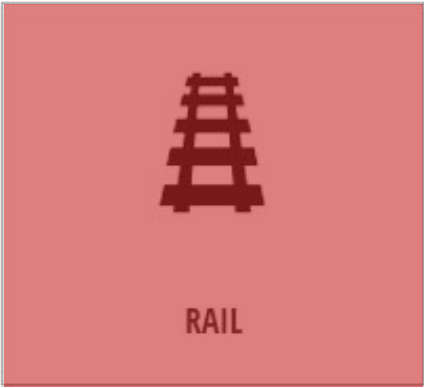
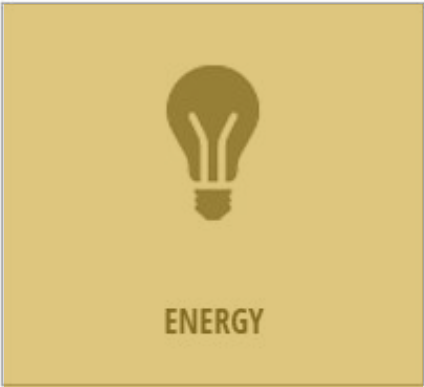
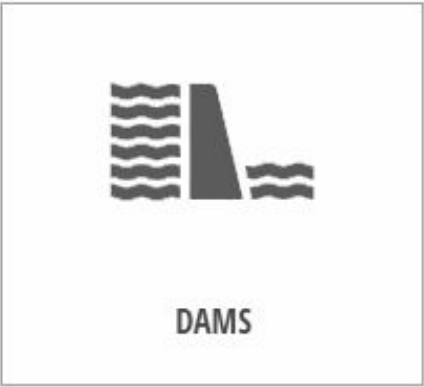
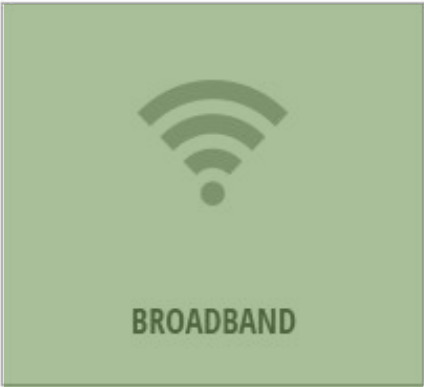
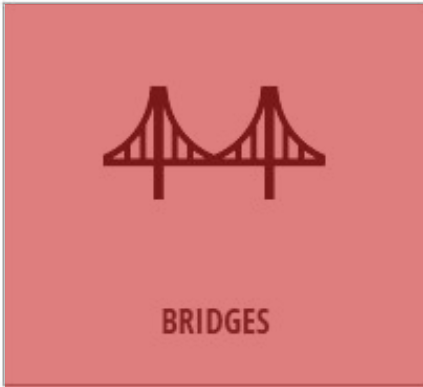
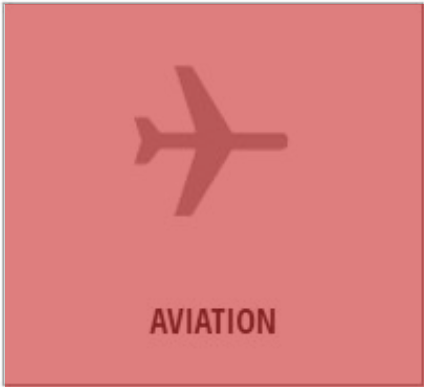

SCHOOLS


SOLID WASTE

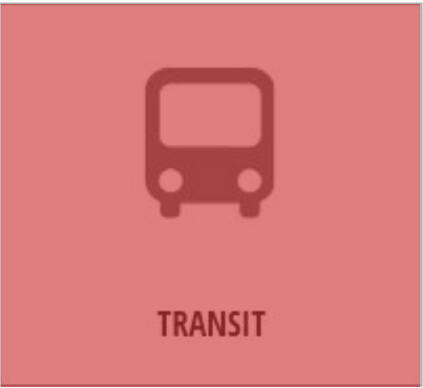
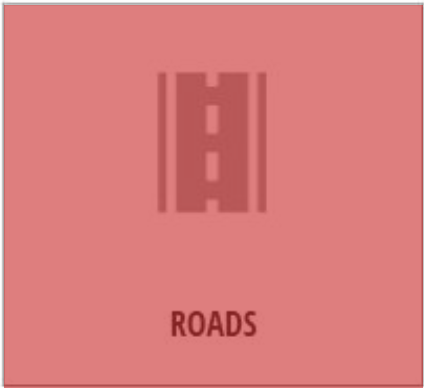
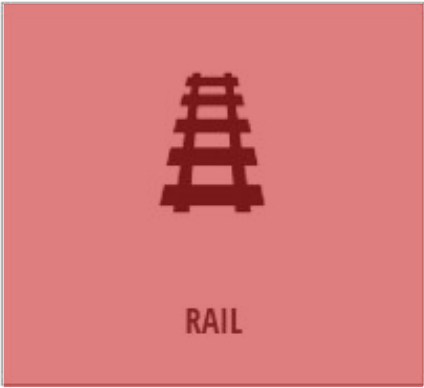
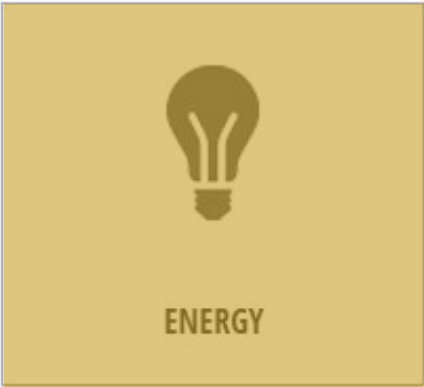
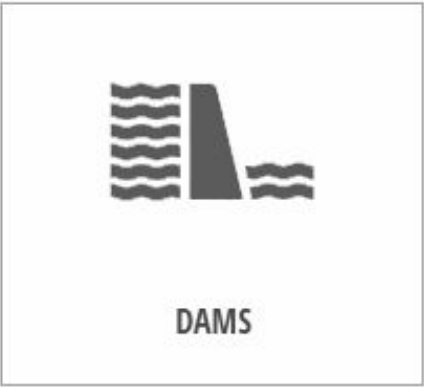
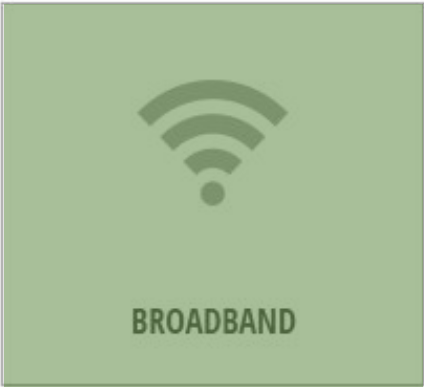
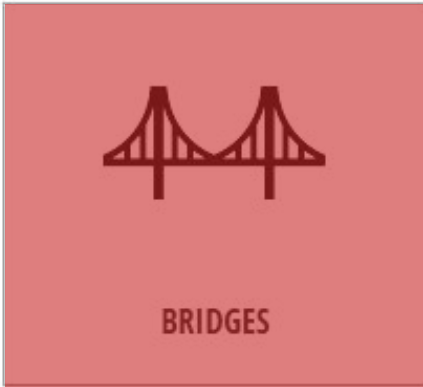
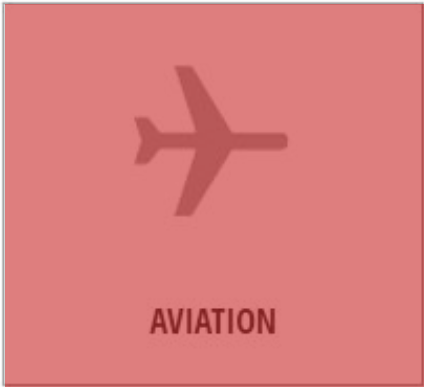

STORMWATER


TRANSIT


WASTEWATER



COMMUNICATION
ENERGY
TRANSPORTATION



COMMUNICATION
ENERGY
TRANSPORTATION
WASTE



COMMUNICATION
ENERGY
TRANSPORTATION
WASTE
WATER



Lava flow: 180503, Kilauea HI



Forging: 180925, San Francisco CA



Militarized attack: 221007, Crimea UKR



Mass Call Event: 181108, Paradise CA



Tectonic earthquake: 100227, Santiago Chile



Mixed materials: 180815, Genoa Italy



Anchor drag: 211001, Huntington Beach CA



Depleted water units: 140915, East Porterville CA



Fall: 190524, CO-145 CO



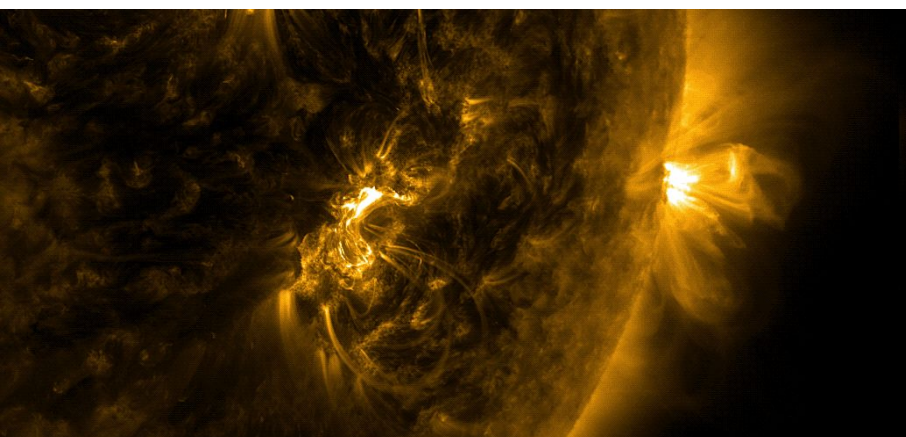
Automatic Protective Relay: 110823, Mineral VA



Labor strike: 230315, Paris France



Salinity intrusion: 221103, Plaquemines Parish LA



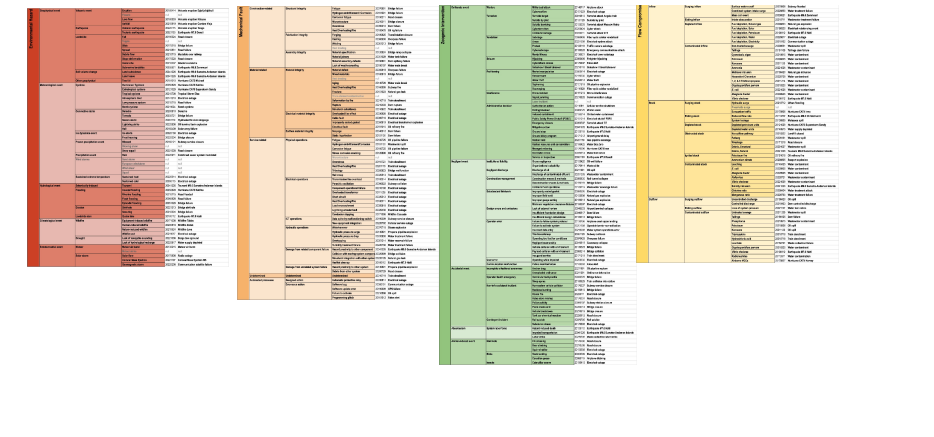
Solar flare: 170906, Puerto Rico



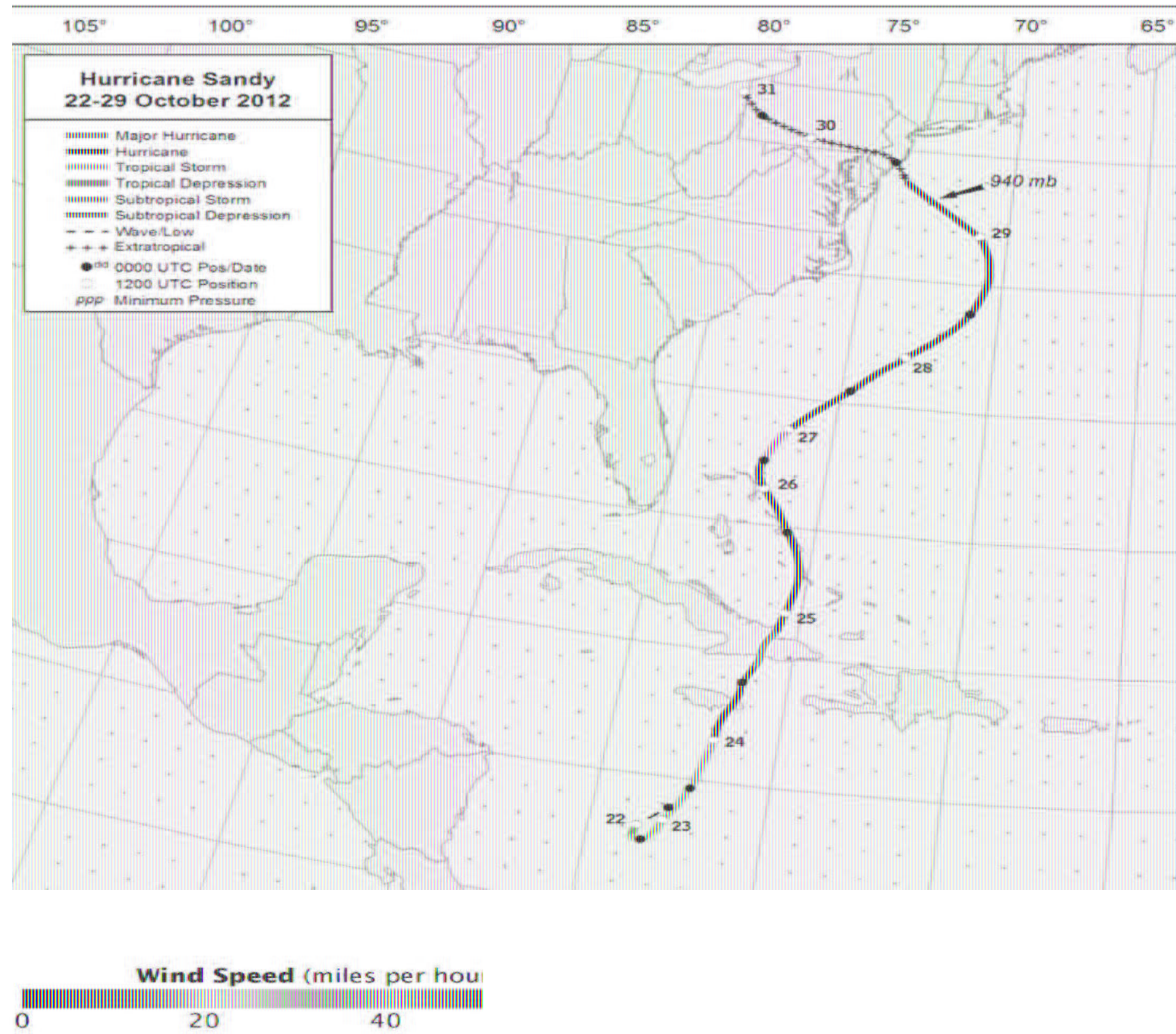
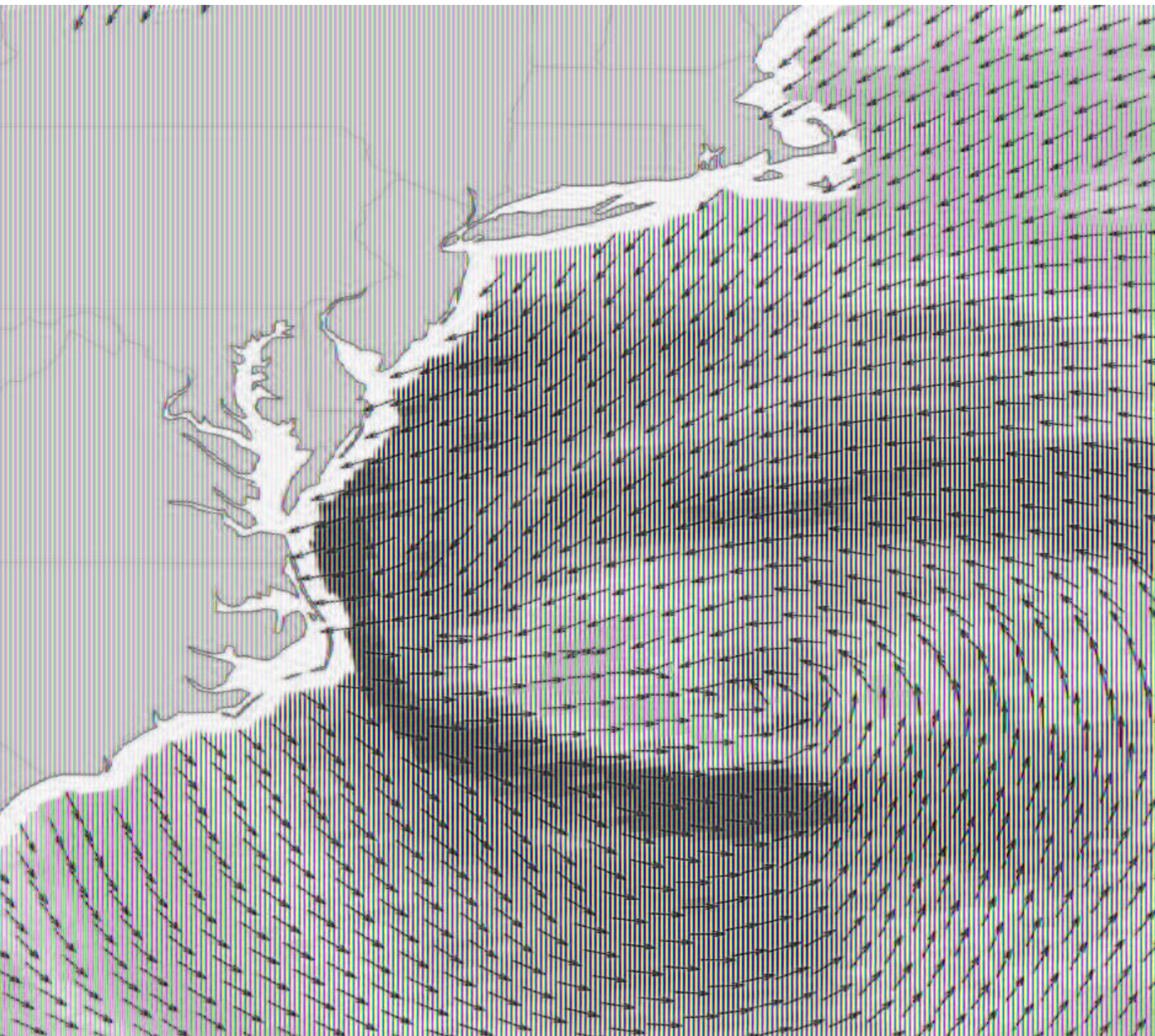
Fatigue: 070801, Minneapolis MN



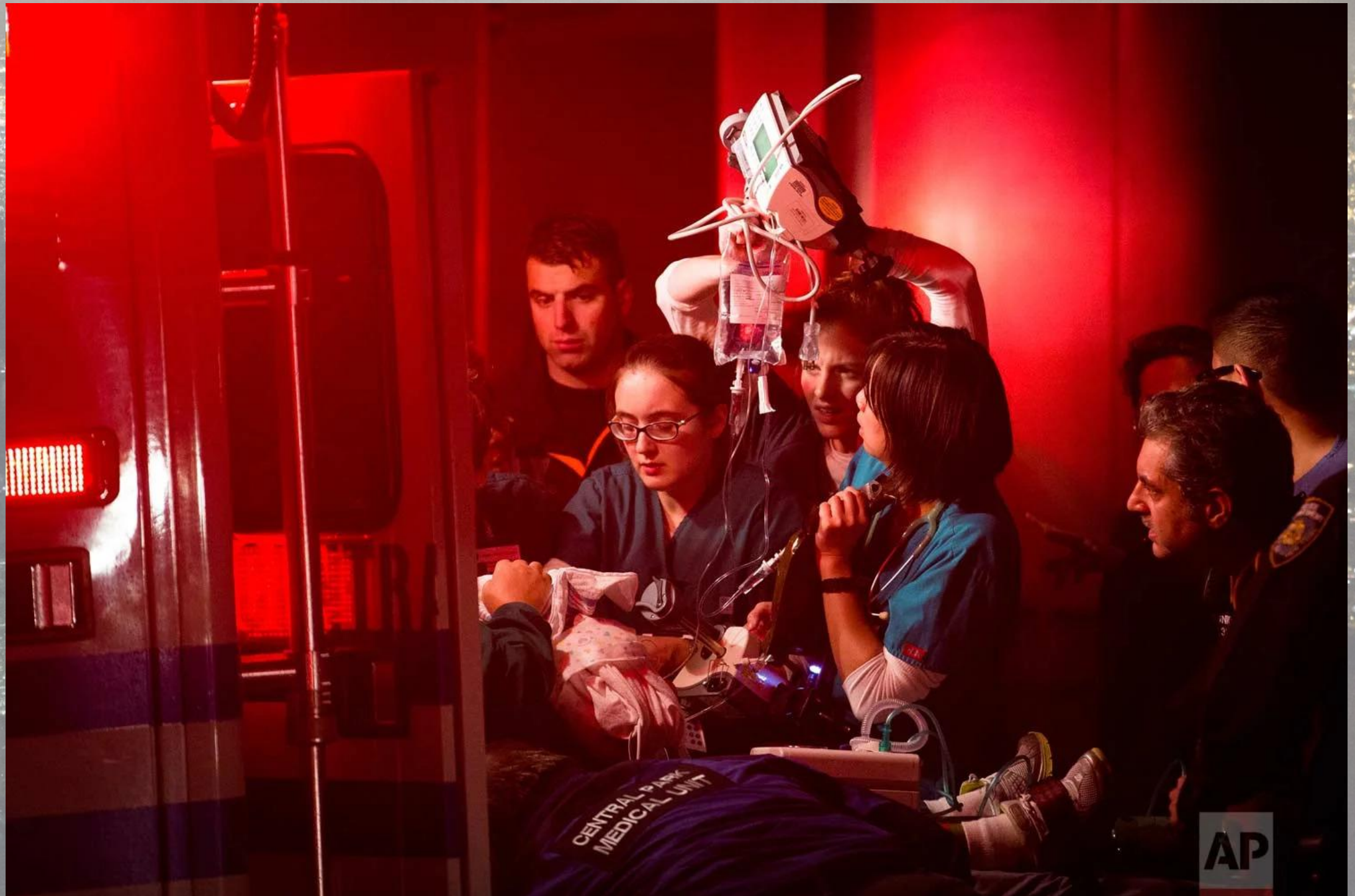
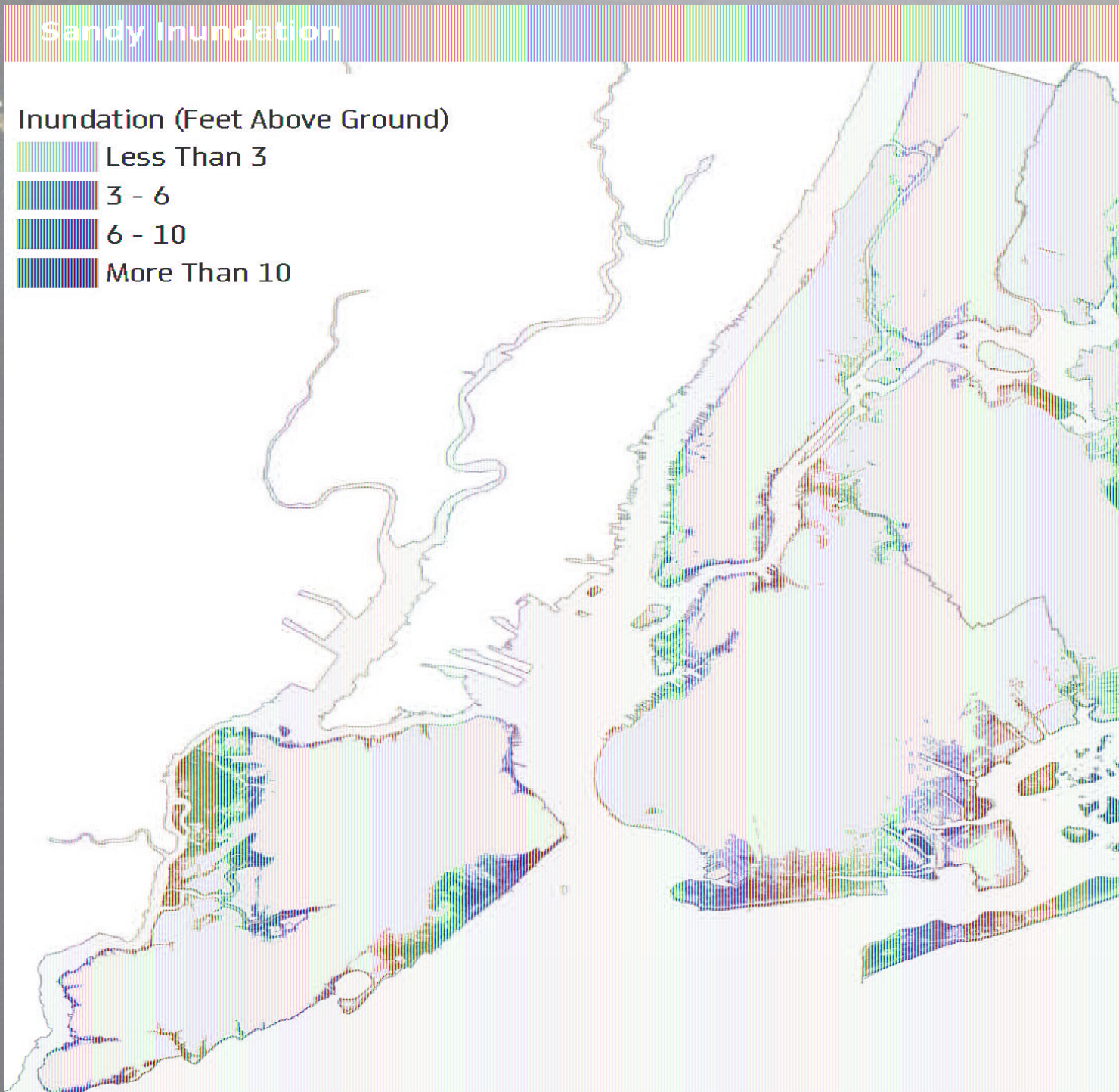
Caterpillar swarm: 150415, Eastern TX



Lifeline Failure Incidents
January 01 2000 – December 31, 2025
An aetiology of critical infrastructure “loss of use”







121029: Hurricane CAT0 Superstorm Sandy
West 26th Street, looking north (Images: Iwan Baan)
New York City, NY



COMMUNICATION (mHz)

- + Broadcast
- + Emergency
- + ICT
- + ISP
- + Social Media
- + Weather





COMMUNICATION (mHz)

- + Broadcast
- + Emergency
- + ICT
- + ISP
- + Social Media
- + Weather

ENERGY (kWh)

- + Electrical
- + Natural gas
- + Petroleum
- + Steam





COMMUNICATION (mHz)

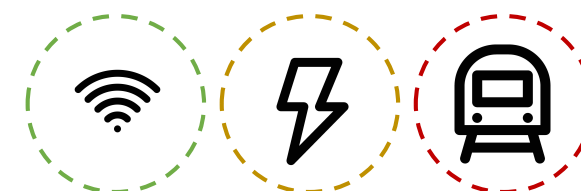
- + Broadcast
- + Emergency
- + ICT
- + ISP
- + Social Media
- + Weather

ENERGY (kWh)

- + Electrical
- + Natural gas
- + Petroleum
- + Steam

TRANSPORTATION (Miles, Trips)

- + Rail
- + Vehicular
- + Aviation
- + Transit
- + Seafaring
- + Aerial Tramway / Gondola
- + Cycling
- + Pedestrian





COMMUNICATION (mHz)

- + Broadcast
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- + Pedestrian

WASTE (Tons)

- + Wastewater / Sewage
- + Stormwater
- + Combined WW/SW
- + Landfill & Recycling
- + Industrial





COMMUNICATION (mHz)

- + Broadcast
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- + Aerial Tramway / Gondola
- + Cycling
- + Pedestrian

WASTE (Tons)

- + Wastewater / Sewage
- + Stormwater
- + Combined WW/SW
- + Landfill & Recycling
- + Industrial

WATER (Gallons, MGDs)

- + Dams, Reservoirs
- + Supply, Groundwater or Surface water
- + Treated / Treatment
- + Firefighting
- + Irrigation
- + Purple pipe

121029: Hurricane CAT0 Superstorm Sandy
Failures to Lifeline Systems
Water





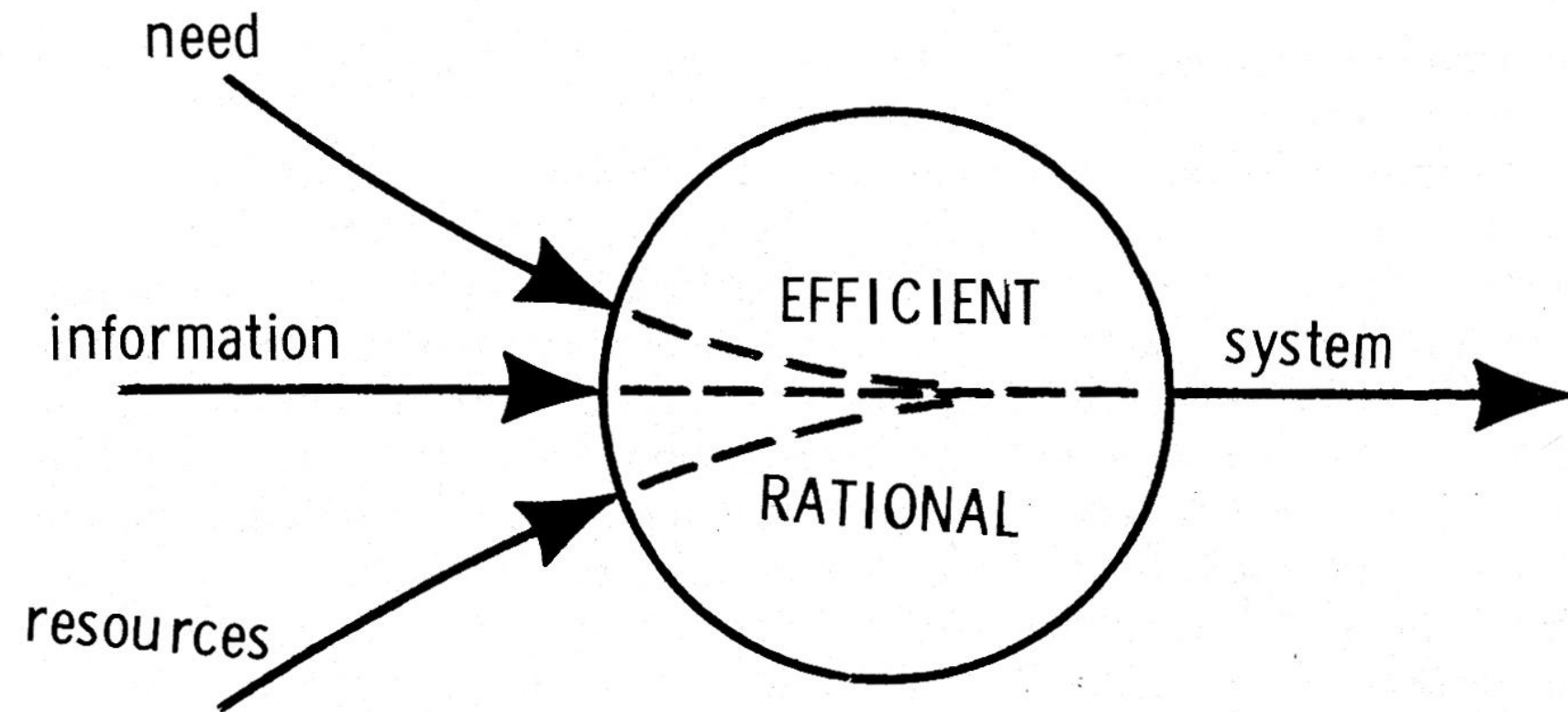
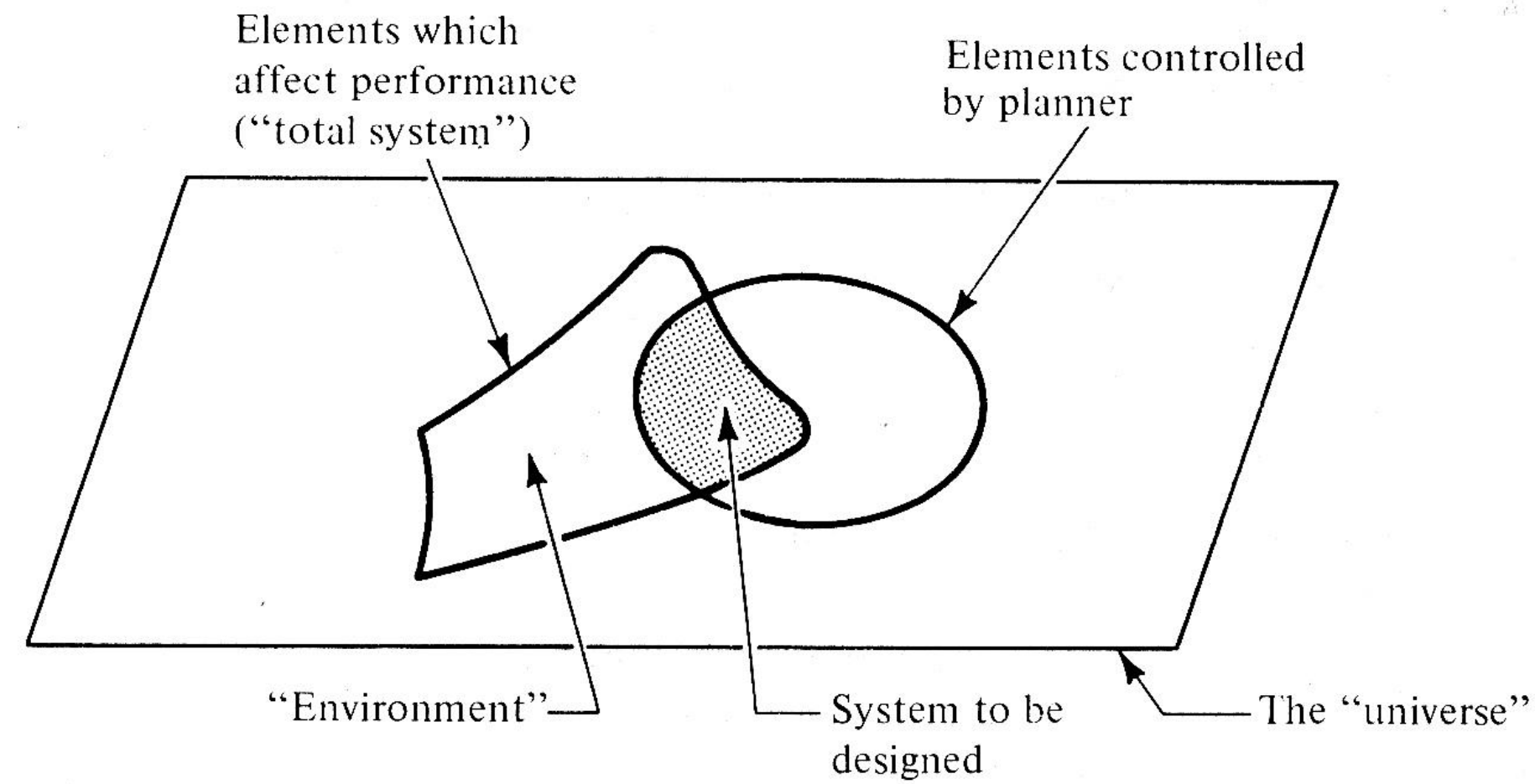
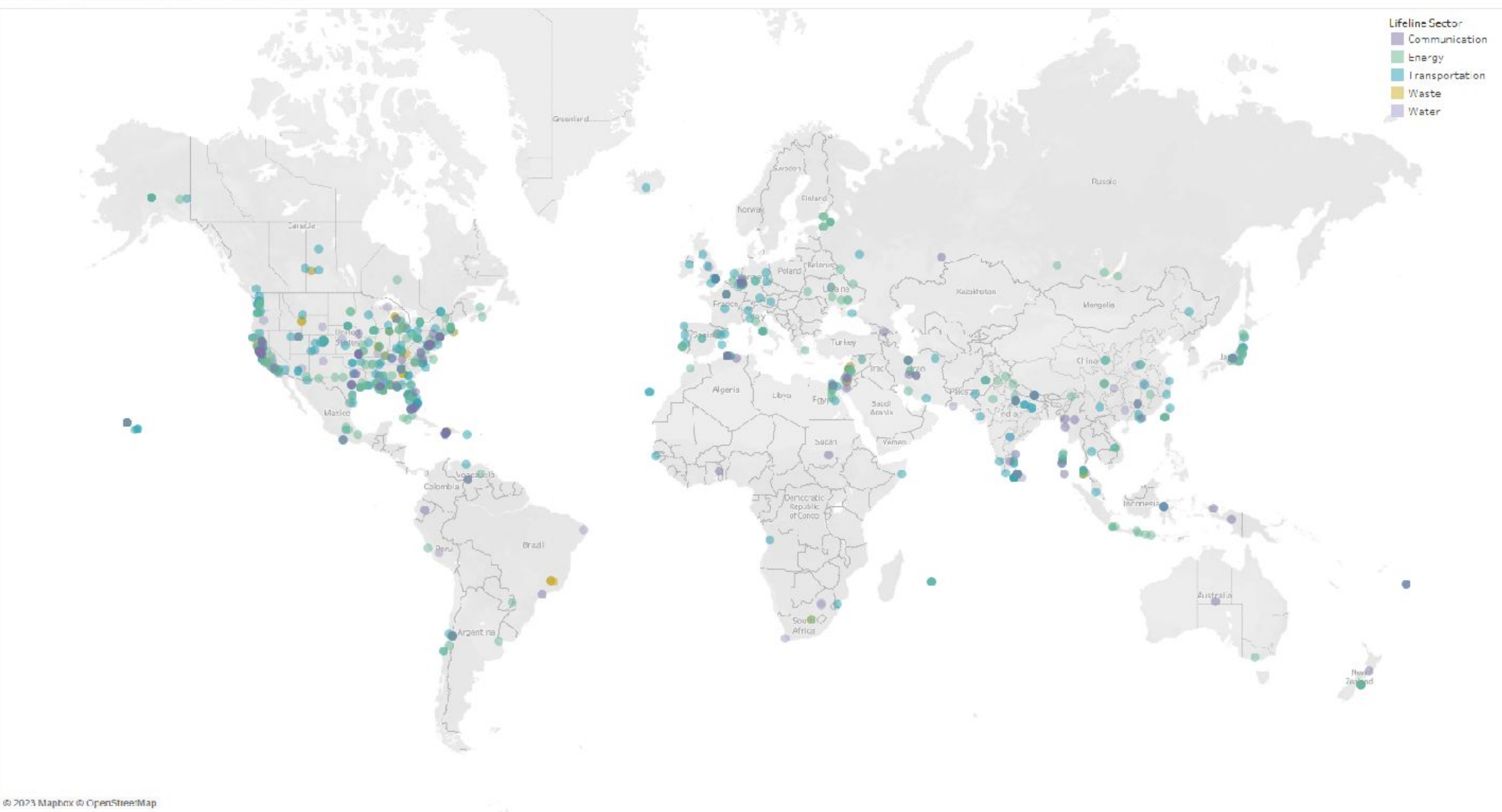


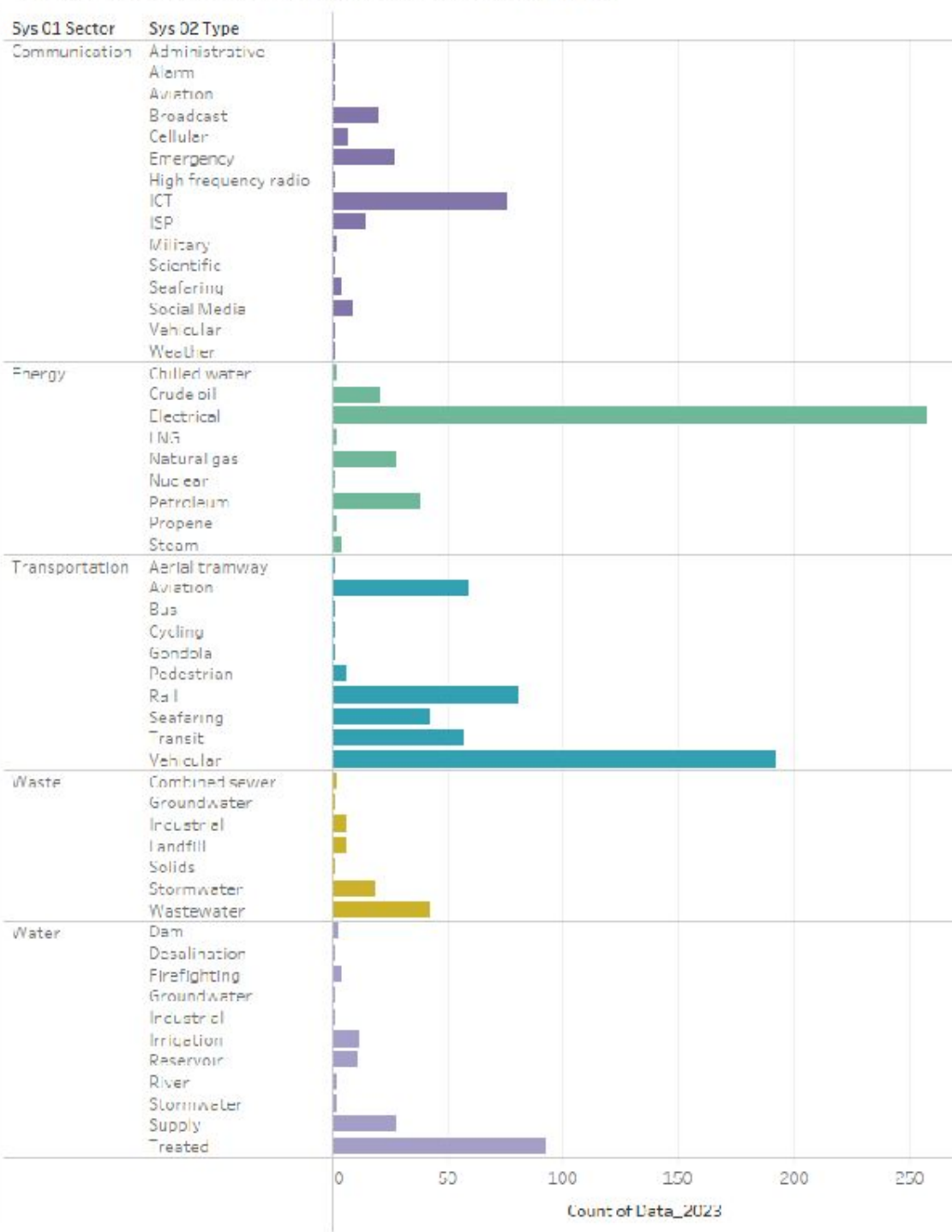
Figure 1-3. The Systems Approach—A Process



Global Map of Lifeline System Types



Global Count of Lifeline System Sectors & Types



Count of Lifeline System Sectors by Country

[illegible]

Count of Lifeline Systems by Sector





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The Archaeological Imagination

“Archaeologists work with what remains.”



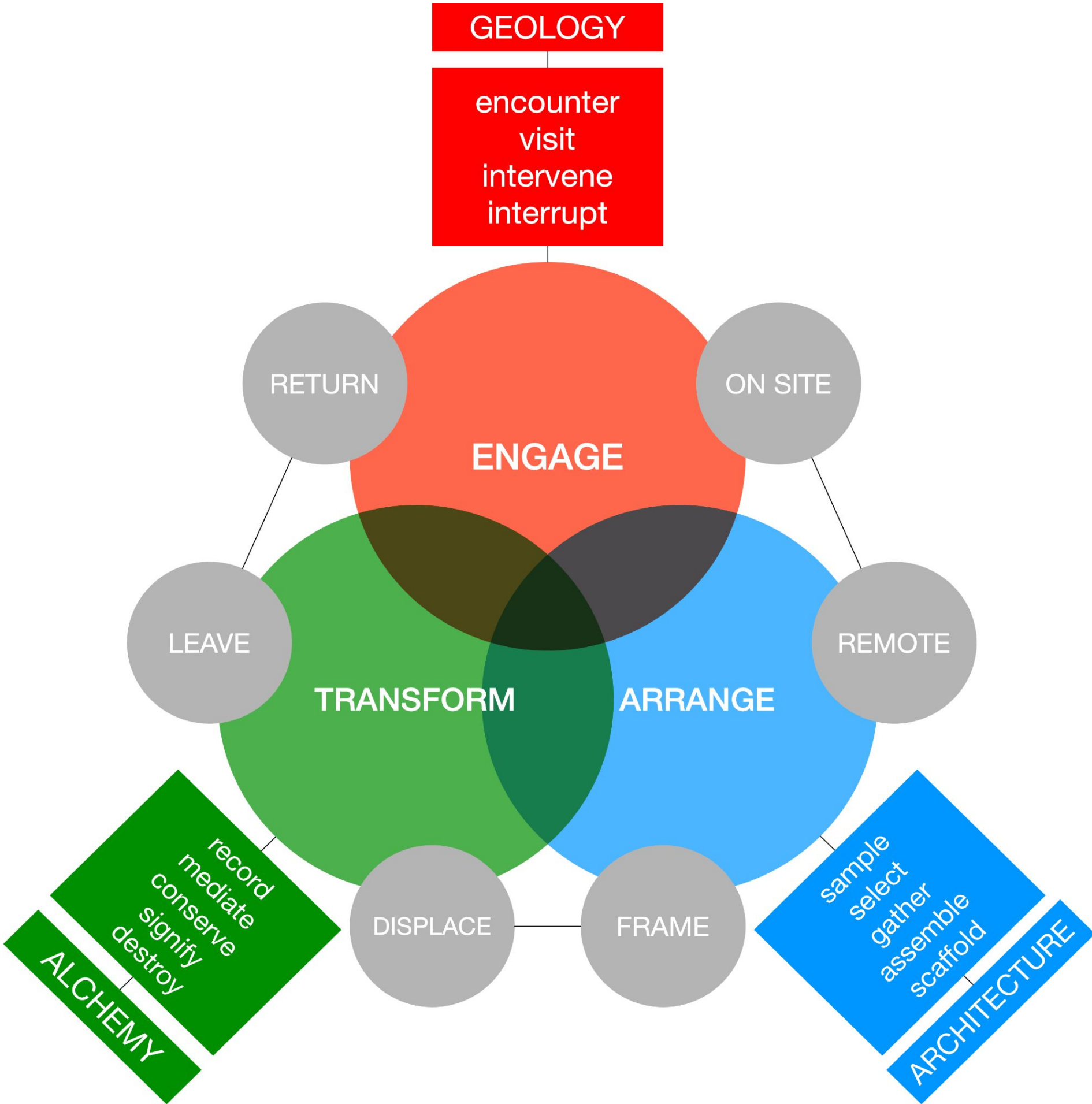
Crossrail London
Archaeology in infrastructural development

Working with what remains
Archaeology is not the discovery of the past
Engage · Arrange · Transform

Archaeologists do not discover the past.
We work with what remains.

Duration — the persistence of things beyond their moment.
Encounter — meeting those persistent things in the present.

*The archaeological imagination: the conjectural faculty that
pieces fragments into meaningful form.*



Infrastructure is archive and instrument

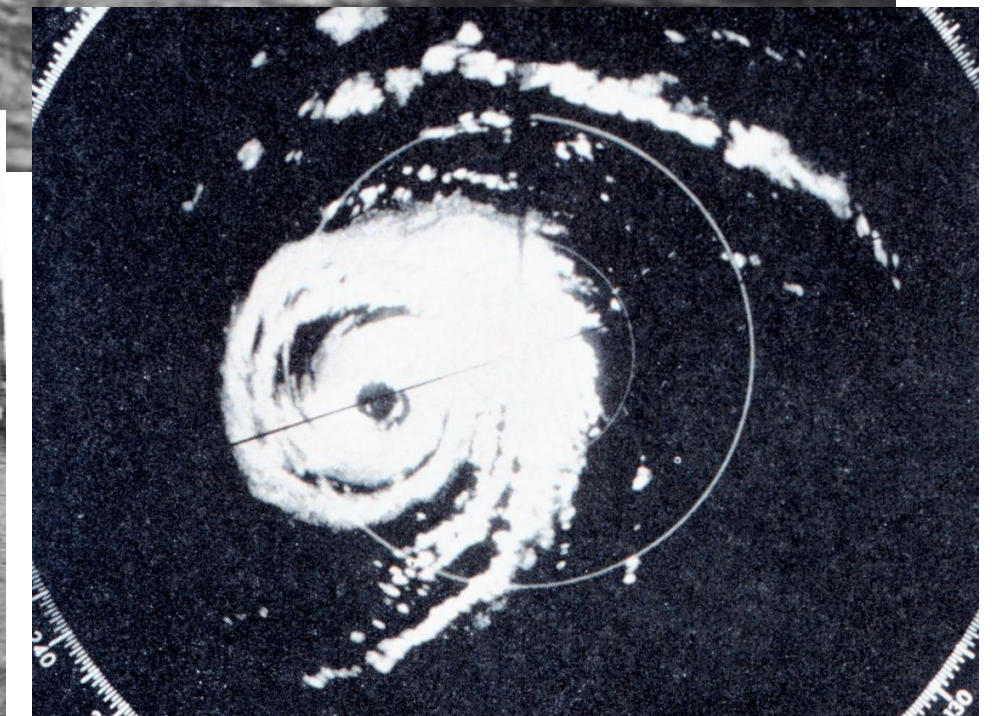
The urban present as palimpsest

New York NY — the Donna high-water mark, 1960

Every city is what remains.

Every pipe, cable, regulation and corridor carries forward earlier decisions — earlier imaginaries of governance, risk, and collective life.

Sandy overtopping the Donna-height seawalls was not a failure of engineering. It was a failure of temporal imagination.



Hurricane Donna 1960

The city is performed, not built

Re-articulation, never invention from nothing

**A city is something people do,
generation after generation.**

No city was ever invented from nothing. The Graeco-Roman city itself was a re-articulation of inherited forms — a recombination that gave us politics.

*Not “what shall we build?” but: what do we have, and
what new combination is latent within it?*



Emperor Diocletian's Palace still present in modern Split, Croatia

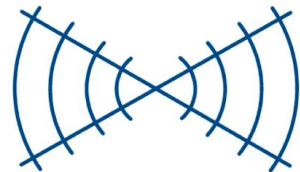
Reconstructing past lifeworlds and designing future ones are the same operation:
disciplined, materially anchored speculation — run in two temporal directions.

Backcasting is excavation in reverse.
The Janus cone looks as far back as it looks forward.
The Janus Maneuver -
<https://mshanks.com/2026/06/06/some-archaeological-notes-on-futures-studies/>



JANUS CONES

Janus Cones looks backwards and forwards in time to identify the timing of historical events and how timing affects potential future events.



WHEN TO USE IT

- To become a fast expert of your topic's background
- To discern a possible pattern of relationships among many related (and even unrelated) events

WHY IT'S HELPFUL

History is often told by the winners, who present one view of an event. There are always other views. The Janus Cones method overcomes the limits of a survivor's bias by helping you see multiple events that have converged to the dominant understanding in the present time.

The center of two cones marks today. The left cone faces the past. The further back in time you go, the fuzzier human memory becomes. The right cone faces forward in time, equally murky and unknowable the further out in time you go—what futurists like to call a “cone of uncertainty”.

Future patterns often reflect, but do not necessarily repeat, past patterns. However, only in hindsight do (most) patterns become clear. Many events, which may not seem related, can influence one another.

WHAT YOU GET

Janus Cones lets you release the strict linear assumptions of events, allowing to view multiple, overlapping, and intersecting events in a single shared framework at once. Each vertical marker denotes a specific time period, such as 5 or 10 years, going incrementally backwards or forwards.

The city is performed, not built
Re-articulation, never invention from nothing

Sensibility — the attunement: attention to traces, temporal depth, what persists, what is missing.

Imagination — the articulation: re-arranging what remains into new constellations.

Creative pragmatics — the means: learnable skills and competencies that mobilize both.

Each addressed to
Aspects of urban process



Urban process-relations - a performance model

The design studio as laboratory

Where the archaeological imagination is put to work

**These are skills and competencies —
they can be taught, practised, learned.**

*The studio: a laboratory for infrastructural
prototyping.*



London, Crossrail archaeology - medieval housing

The background image is a blurred photograph of a transit station. In the foreground, a man in a grey hoodie is looking at a fruit display. The display consists of several metal frames filled with various fruits like lemons, oranges, and apples. To the right, there are rows of grey lockers. In the background, other people are walking, and the station's architecture with its high ceiling and windows is visible.

From Idea to Infrastructure:

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GREEN MILES [1-40: 386-388]

THE HIGHWAY BETWEEN QASSEM AND E-FUEL'S

World's Fair Park
Christies The Firm

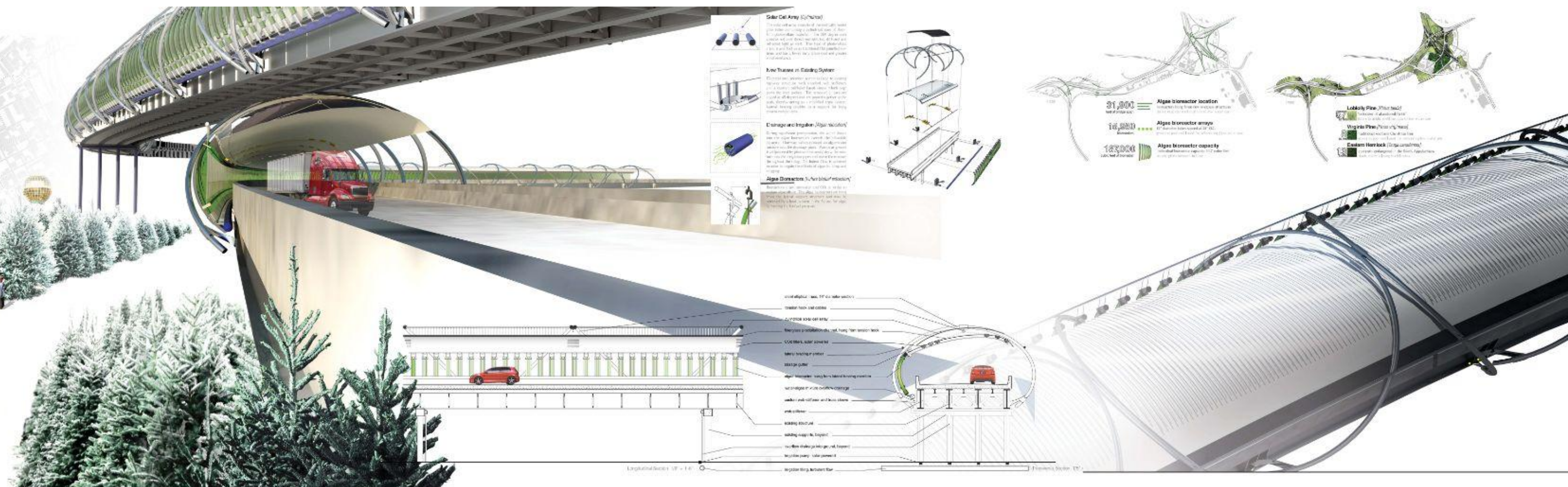
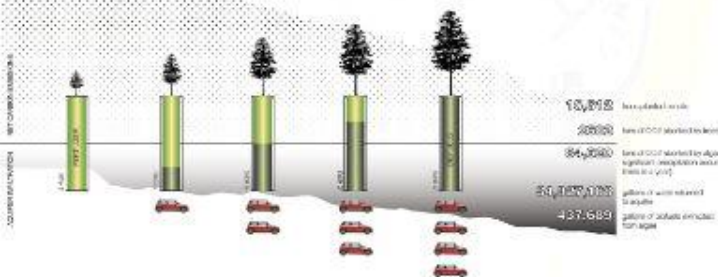
8 total units
Total World's Fair Park

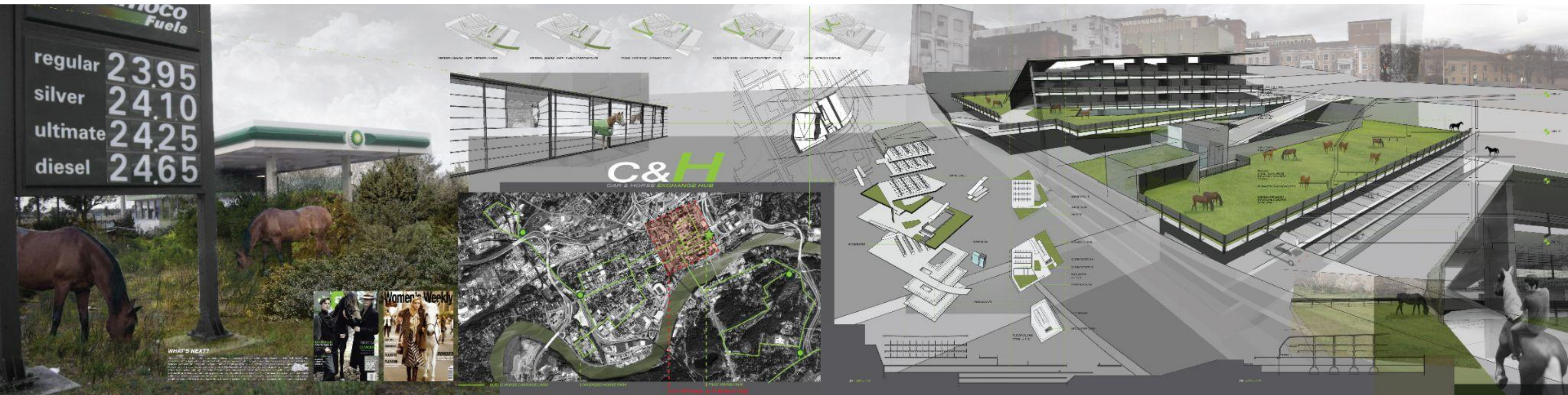
5449 total units
100% leased

4 new shopping centers & shops
100% leased, average height of 27.5 feet

1362 stores for sale with 1997
avg. \$200,000 retail

\$300,000 general inventory items
for sale

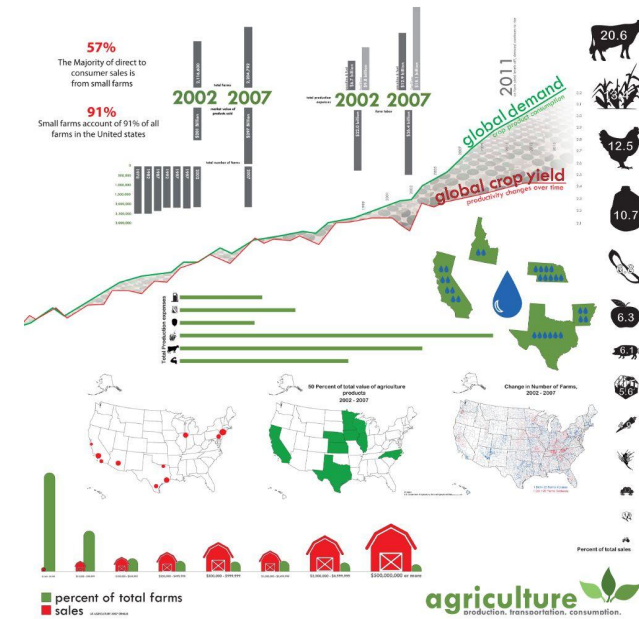
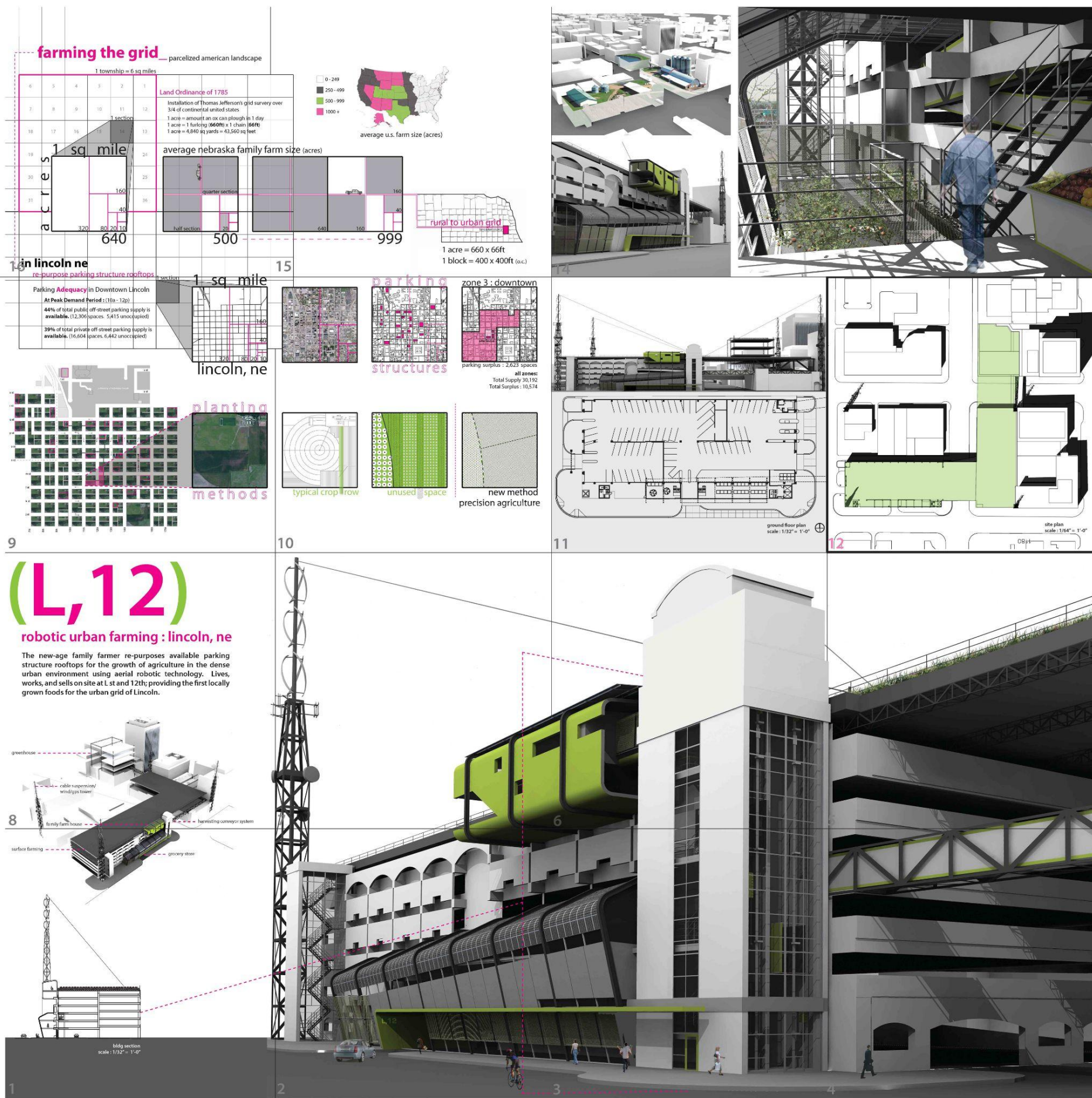




FROM IDEA TO INFRASTRUCTURE

HUIs: Hybridized Urban Infrastructures
Knoxville, TN
Tyson Fiscus



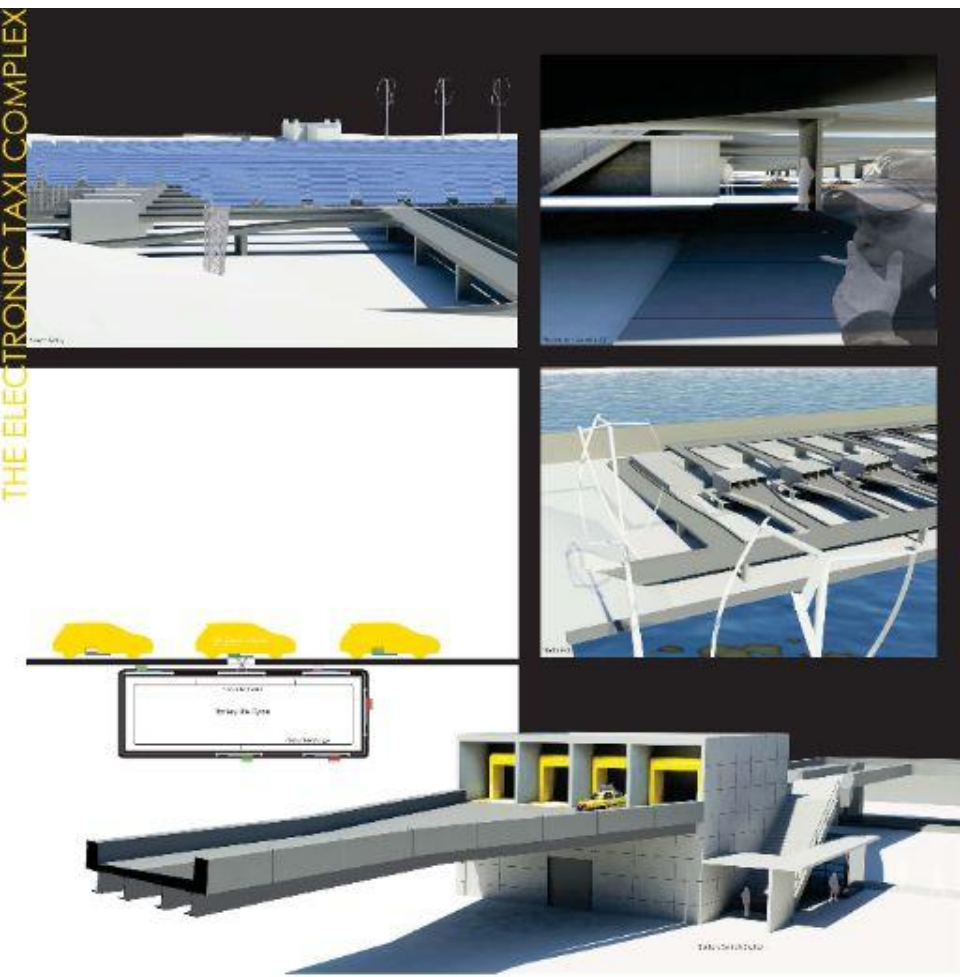
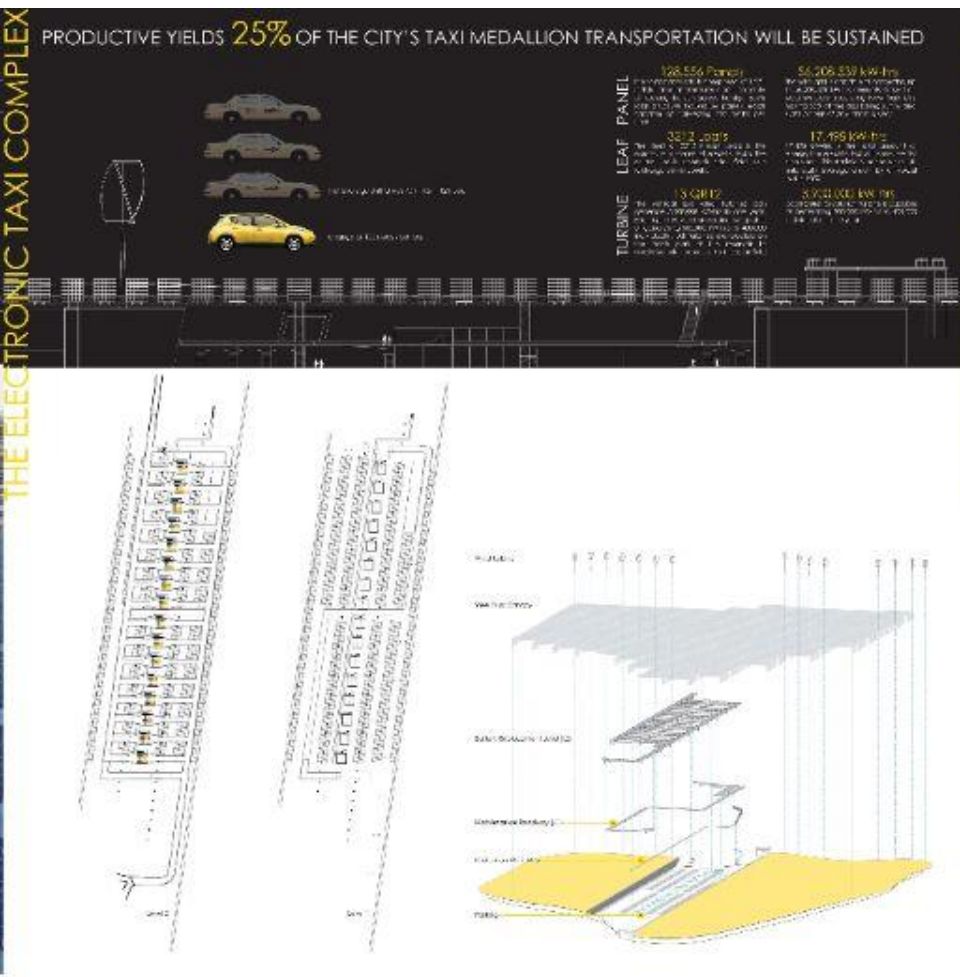
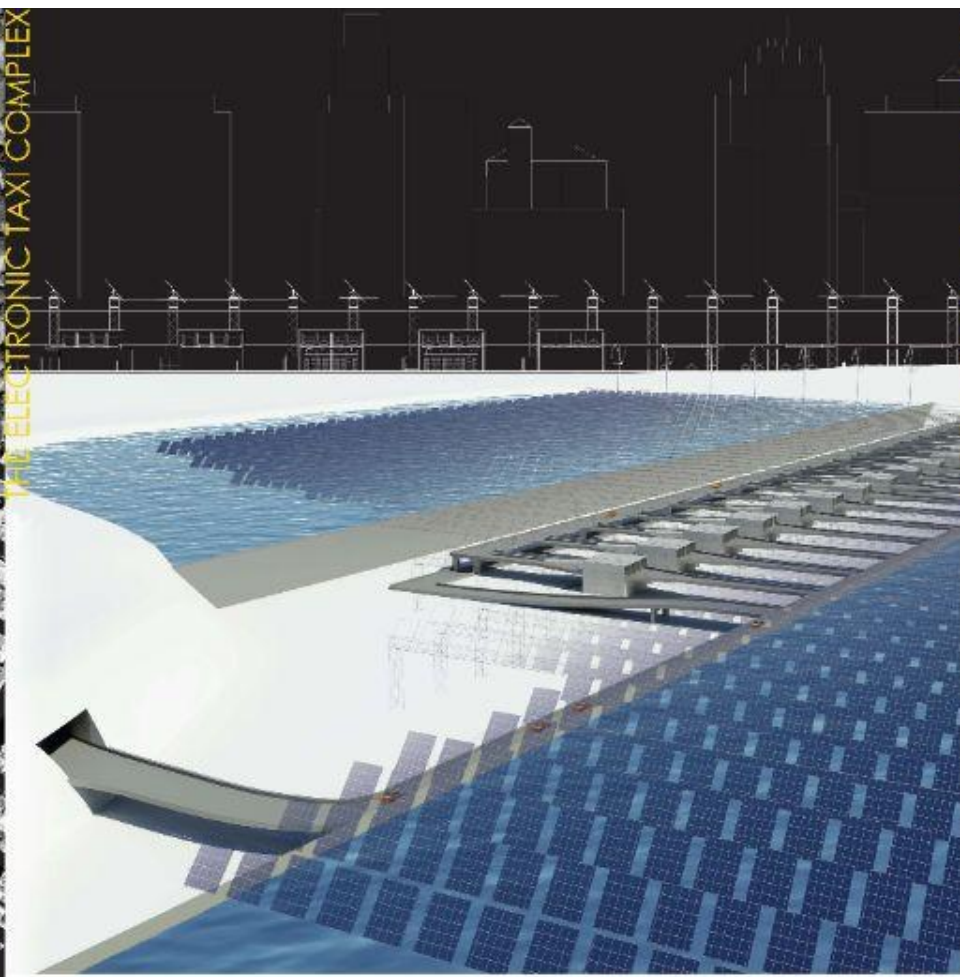


FROM IDEA TO INFRASTRUCTURE

HUIs: Hybridized Urban Infrastructures

Lincoln, NE

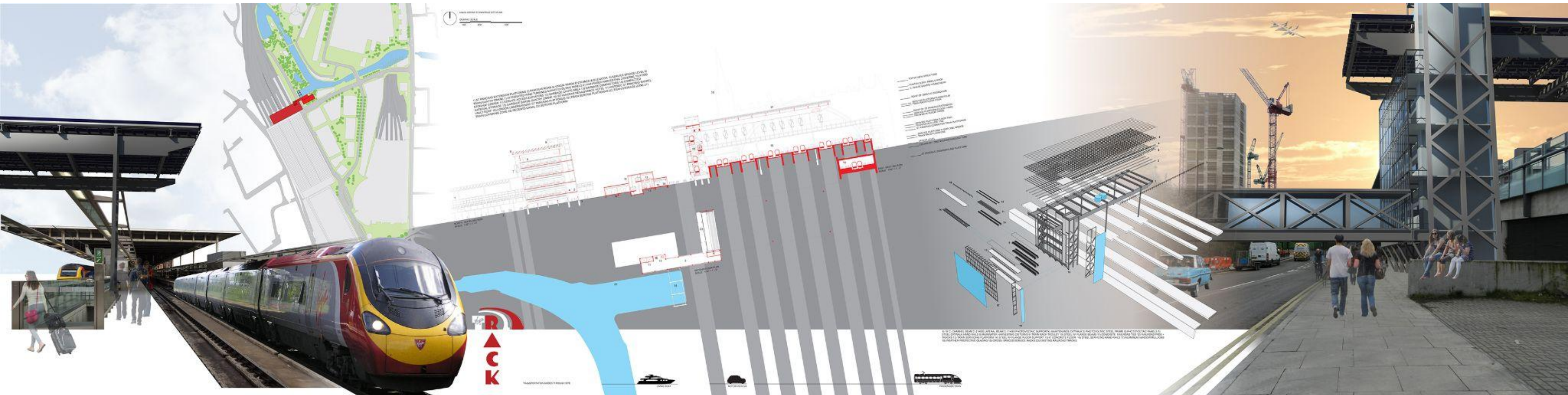
Steven Dix



FROM IDEA TO INFRASTRUCTURE

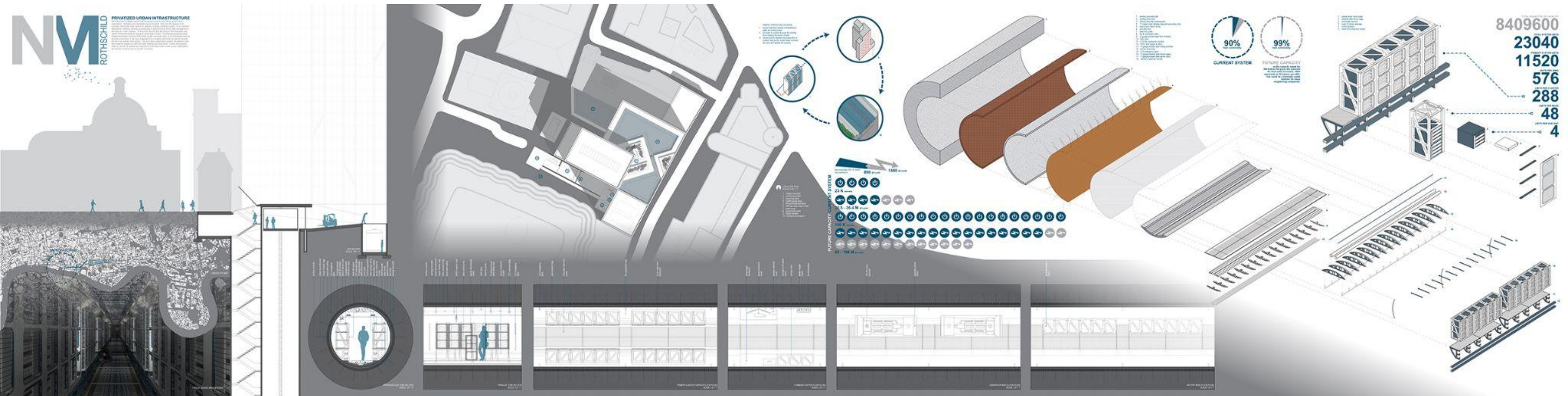
HUIs: Hybridized Urban Infrastructures

New York, NY
Trent Hinze



FROM IDEA TO INFRASTRUCTURE

HUIs: Hybridized Urban Infrastructures
London, UK
 Shane Labenz



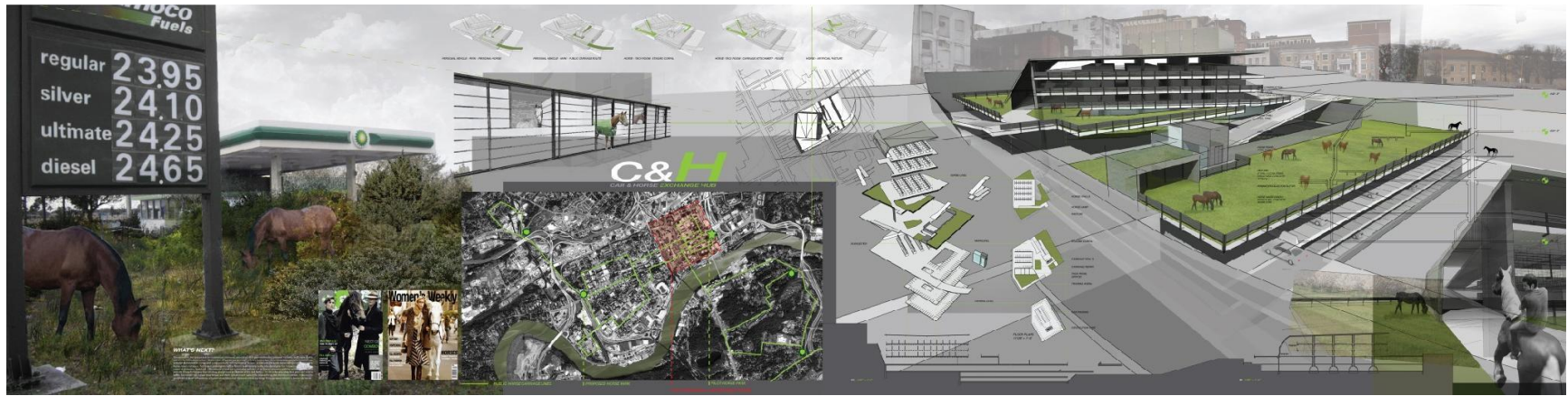
FROM IDEA TO INFRASTRUCTURE

HUIs: Hybridized Urban Infrastructures

London, UK
Chris Rokahr



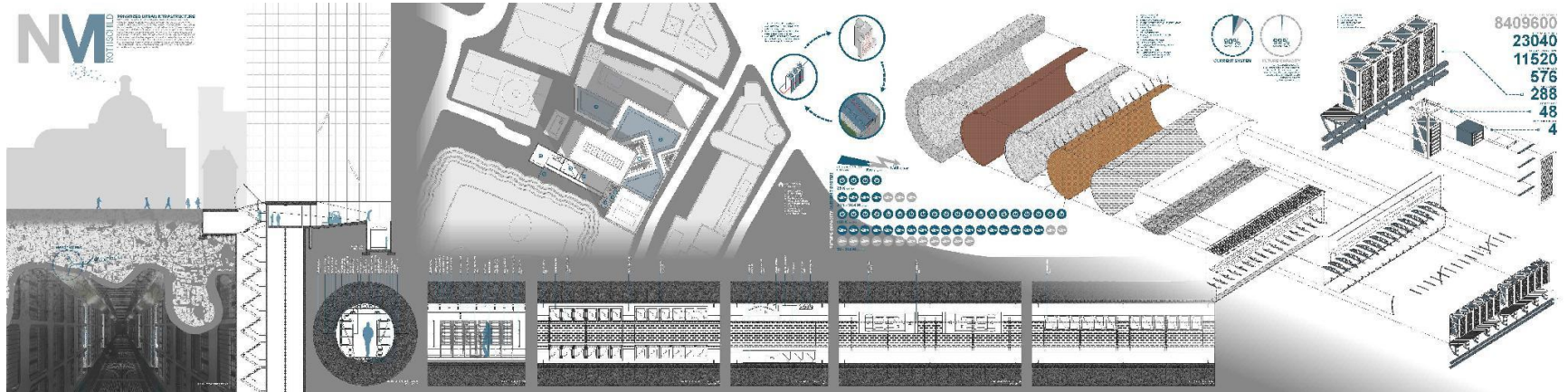
HUI: Knoxville TN; Kate Ankenbauer Hier



HUI: Knoxville TN; Tyson Fiscus



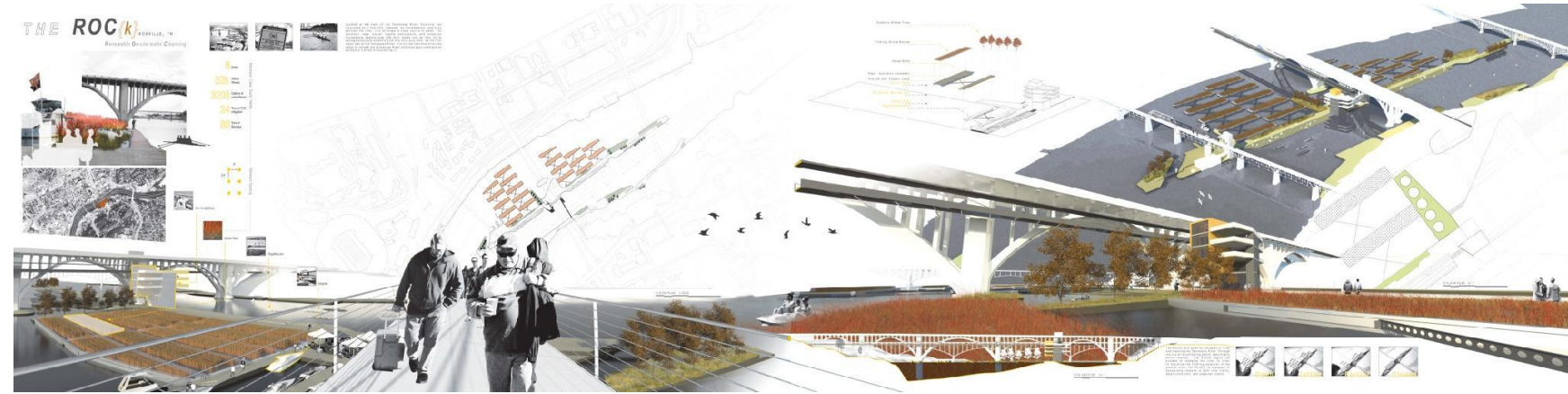
HUI: New York NY; Ryan Ferguson



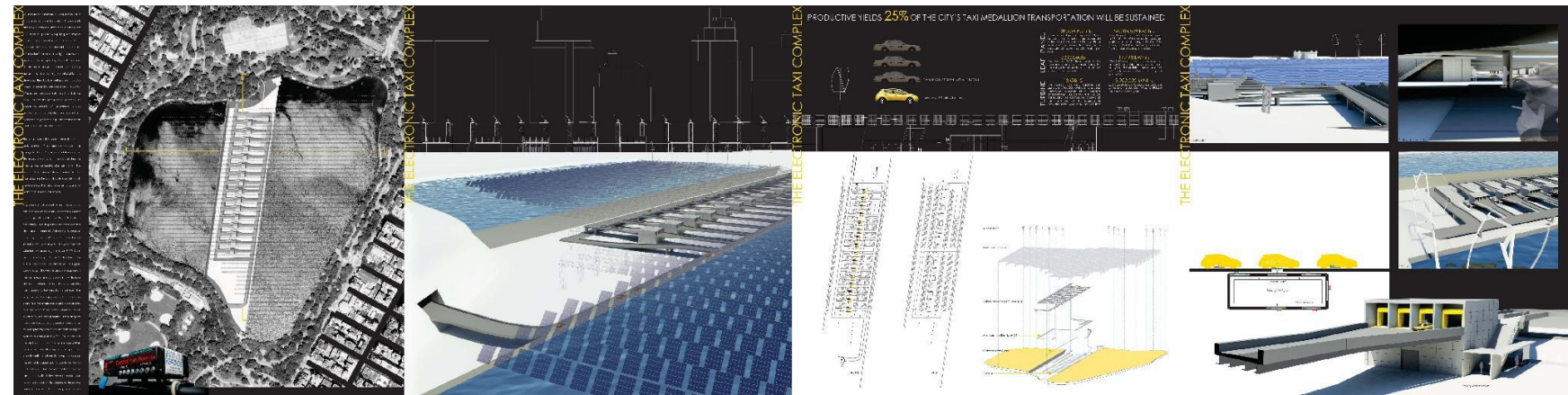
HUI: London UK; Chris Rokahr



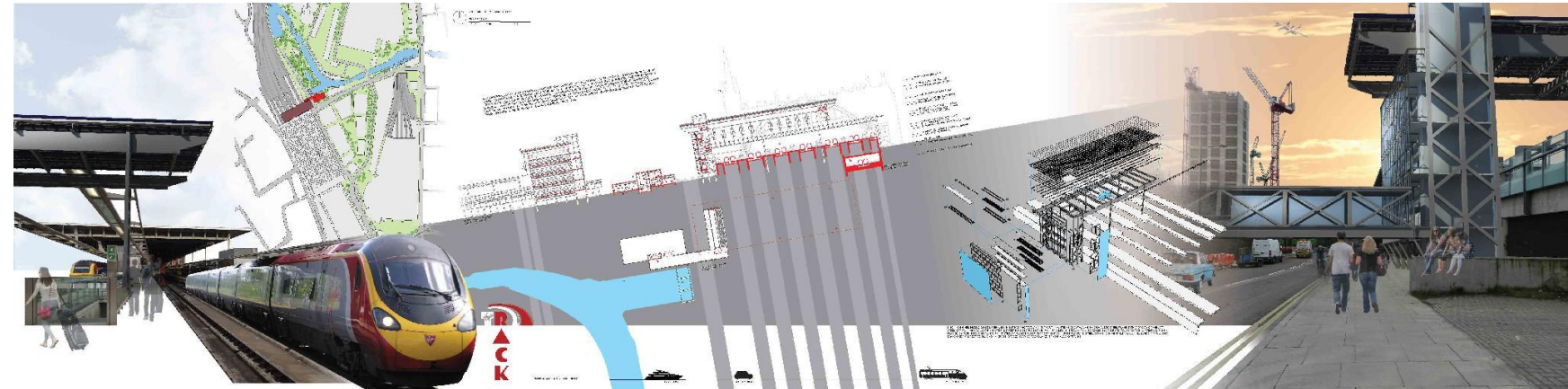
HUI: Lincoln NE; Taylor Nielsen



HUI: Knoxville TN; Adam Post



HUI: New York NY; Trenton Hinze



HUI: London UK; Shane Labenz

FROM IDEA TO INFRASTRUCTURE



exploring the archaeological imagination

MICHAEL SHANKS ~ ARCHAEOLOGIST

POSTS ABOUT CONSULTING | TALKS PROJECTS ARCHAEOLOGY DESIGN FORESIGHT

POSTS



WELSH MEMORIES IN A CRETAN LANDSCAPE

JULY 5, 2026

I am on a short visit to Crete. Elounda, Lasithi. Out east. Past the prehistoric ruins of Malia, to where Chris (Witmore) and I drove in the Renault convertible on an impromptu photo shoot. It's been twenty five years since. Another visit now to liquid commingling times. A dappled landscape I look out over a...



TRANS-NATION CO-CREATION

JUNE 8, 2026

Studio Michael Shanks Stanford This week I am off to join Sabine (Remdisch) and colleagues as part of our collaboration — Trans-nation Co-creation. Here's a kind of prospectus. TNCC Tour and Dialogues: A Week of Innovation, Leadership, and Foresight From June 13 to 19, 2026, the Institute for Performance Management at Leuphana University Lüneburg holds a...



HERITAGE — MAKING FUTURES

JUNE 7, 2026

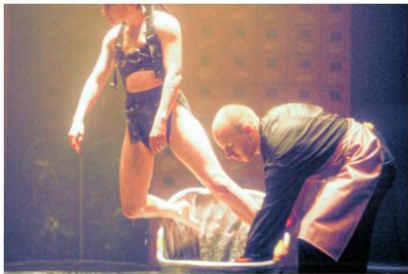
A critical-heritage complement to the Janus Maneuver — [Link] More notes on futures studies. A second component to the same conclusion: that working with the past is a way of making futures. Convergence — the "Janus Maneuver" and heritage futures In a recent post I made the case for "The Janus Maneuver" [Link] — that...



SOME ARCHAEOLOGICAL NOTES ON FUTURES STUDIES

JUNE 6, 2026

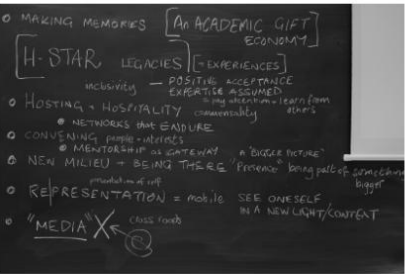
The Janus Maneuver Hindsight, foresight, and futures studies Everyone, it seems, is a futurist now. Here are some loosely gathered thoughts on why an archaeology of design may be a missing foundation. These are notes — so expect inaccuracies and mistakes of memory (hopefully minor). After Janus — the divine principle of looking both back...



NEWSLETTER — STANFORD ARCHAEOLOGY CENTER

JUNE 1, 2026

Prospective reflections on 2025-26 Acting with nature — prehistory My new book Archaeologies of Nature: Activating the Archive, written with Gabriella Giannachi, University of Exeter and Turin, is now complete and in production. Open Access — it will be available as PDF in June 2026. We use an archaeology of artworks to probe human relationships...



AI AND COLLABORATION — LESSONS FROM STANFORD

MAY 31, 2026

Here is the keynote I presented at our reunion last week in Odense, of Danish alumni of the Stanford H-Star fellowship program (2010 to 2015). Keith Devlin (H-Star director emeritus) and Connie Svabo of the STEM Education Research Center — FNUG at University of Southern Denmark [Link], were our hosts. The program enabled about 50...

INFRA-X

HOME

ACTIVITY

TEACHING

PUBLICATIONS

LOGIN

INFRA-X

THE MISSION OF **INFRA-X** IS TO ENHANCE THE OPERATIONAL PERFORMANCE OF INFRA-SYSTEMS, STRUCTURES, AND COMPONENTS USED BY THE URBAN DWELLER.

The research trajectory of Infra-X is motivated by human-centered empathy in acknowledging the demonstrated and special needs of urban dwellers. These needs are contested by a range of 21st-century threats and hazards to which urban dwellers are particularly vulnerable. This urban risk is observable and documentable, and serves as the basis for conducting original research and contributing to the shared body of knowledge across built environment disciplines.

Infra-X is inquiry-led, and establishes rigor by constraining overall methodological possibility to better pursue design-actionable research outcomes. Its research action includes cataloging operational failures to lifeline infrastructure systems impacting urban populations, documenting the scalability of urban risk between community resilience and national security, and designing hybridized infra-structures with multi-regenerative capabilities.

Infra-X is an interdisciplinary group whose work bridges the Design and Engineering domains. Specifically, Infra-X is a graduate-level design research lab based in Palo Alto, California.



Chris Ford, PhD, AIA is the principal investigator of Infra-X. Chris is a design professional, design educator, and design researcher in the areas of both Architecture and Infrastructure design. He is a registered architect, full member of the AIA, and an inaugural committee member of the Infrastructure Resilience Division of the ASCE. He is also a co-founder of "Technology | Architecture + Design" (TAD Journal), a peer-review journal published by the Association of Collegiate Schools of Architecture (ACSA) and printed by Taylor & Francis (Routledge). Chris has a PhD in Mechanical Engineering and a PhD Minor in Civil & Environmental Engineering from Stanford University, where he was also a Stanford Interdisciplinary Graduate Fellow (SIGF).

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