

DATA CLOUD

A Vertical Server Farm

Every google search increases our carbon footprint. Vast amounts of land are dedicated to the server farms that hold the large amount of data present. These server farms require a lot of power to function and as much as **%40** of the entire energy use is to cool the servers. This is when an entire building on a large piece of land is dedicated to only Facebook profile pictures.

As we, humans of the world, speed the destruction of the Earth, we need access to knowledge and data more than anytime to become aware and get this situation under control. How could this be when our own data centers contribute greatly to this destruction and mass extinction?

This project proposes to place an infrastructure for server farms in a highrise in an urban setting to try to solve some of the problems mentioned above.

Creative distruction, adaptation, and preservation are symbiotic systems. "We, the Navigators" proposes the construction of a data center, infrastructure for server farms that handle the internet traffic.

ENERGY USE

60 % - for powering the servers

40 % - for cooling the servers

LAND USE

182,000 Ha

of China's farmland is lost every year due to urban sprawl. That is the same size of Rhode Island or the size of two Hong Kongs!

WASTE HEAT

Server farms produce an extremely large amount of heat. Being built in a rural setting, this excess heat can have a huge negative impact on the imediate context and ecosystem. By placing these large server farms in the heart, or the industrial parts, of cities we can perhaps harvest this excess heat and recycle it. This energy can be used to heat buildings and courtyards.



Amin Yazdi
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Nancy Cheng



Structural Systems
+ Hierarchy

Building for Machine
(main function)

Building for people
(support)

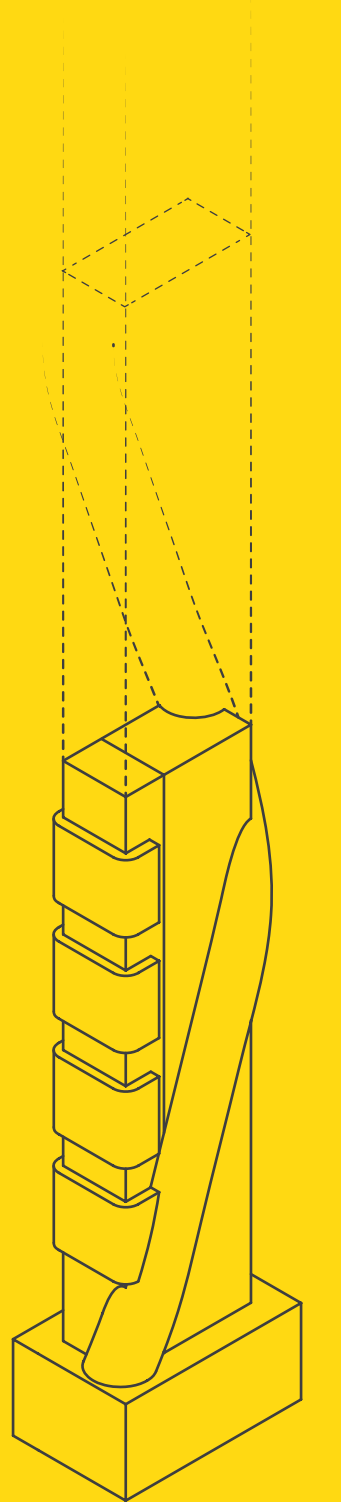
Connector
+ Balancing Growth

0101 - A

GROWTH - DECAY

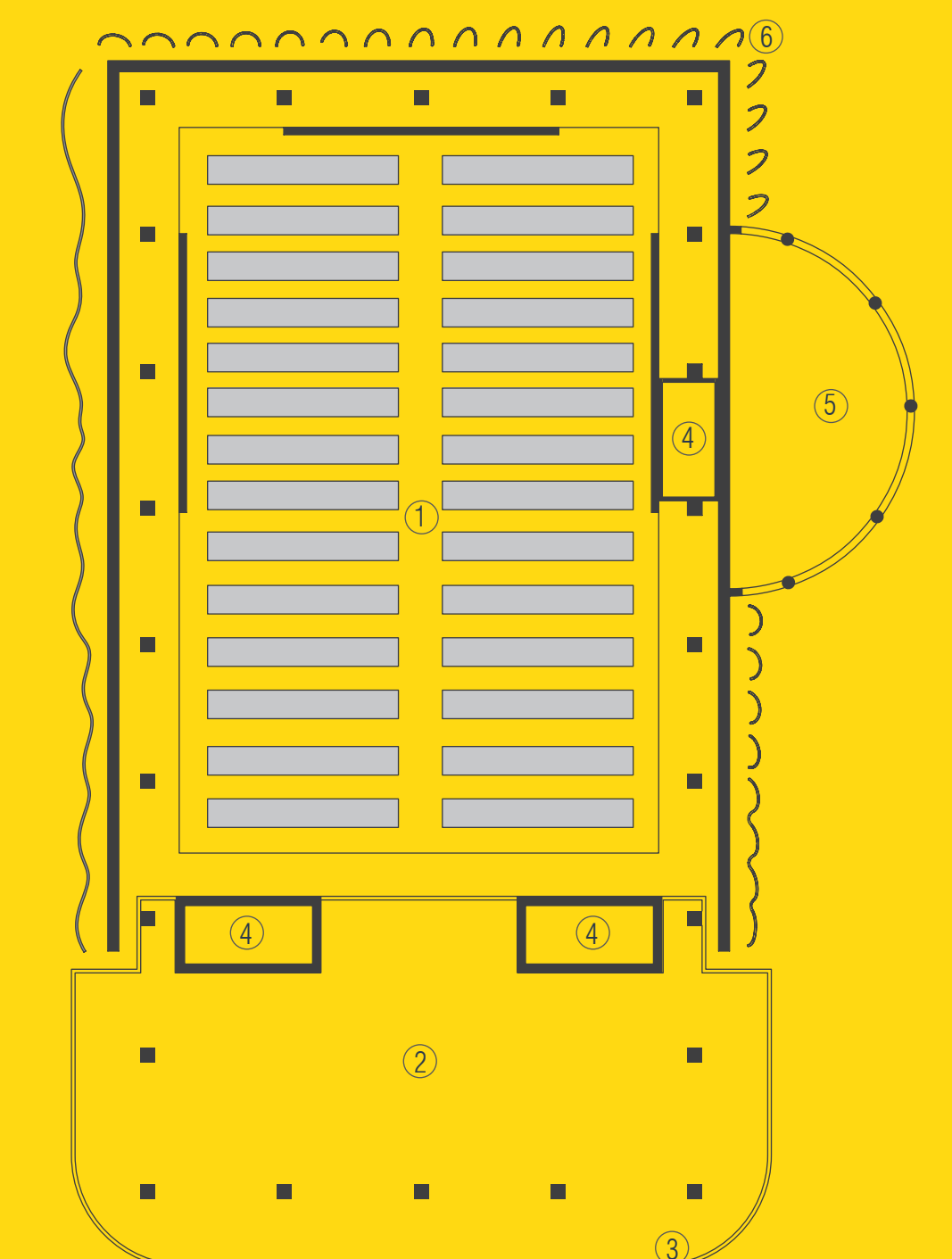
The data farm is a modular skyscraper. It can grow taller as the demand for more space goes higher to house more servers and data. It can also shrink and be disassembled once the technology allows us to store our data more efficiently requiring less space and energy.

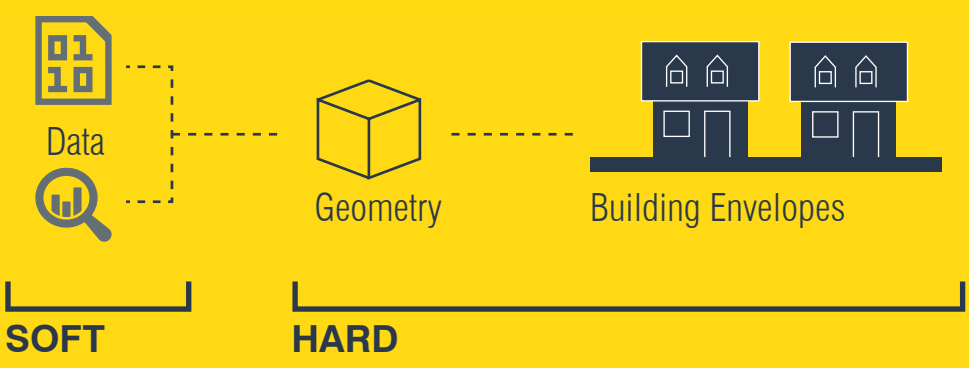
The idea is that the building is always moving. It is always in the construction phase. Whether disassembling itself to a shorter tower or growing itself taller than ever, the building is always changing and is responding to its context.



PLAN

- 1 - Server farms
- 2 - Control rooms
- 3 - Data envelope
- 4 - Vertical circulation / Structural cores
- 5 - Connector capsule
- 6 - Wind screen

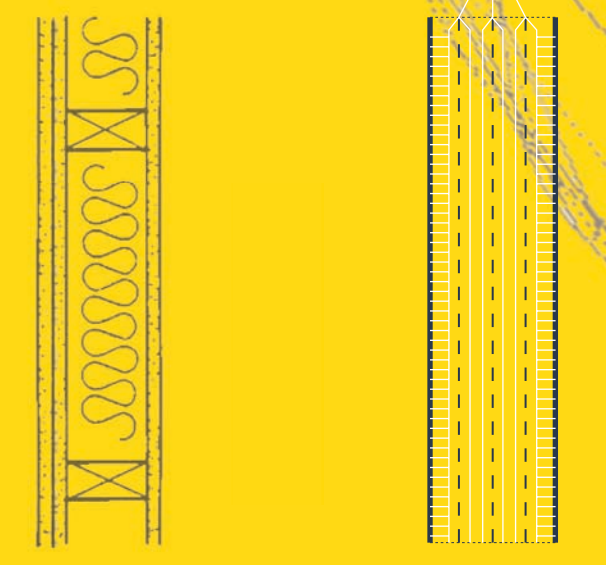




Can we create building envelopes that respond and adapt based on interior and exterior changes?

The idea of a data wall or simply just a building envelope system controlled by data is similar to the old cathedrals. There were paintings and images on the glazings to tell a story and carry the traditions to people who were not able to read. What could a system like that look like in the 21st century? Can we communicate data and transform it into knowledge? and more importantly, can we create a responsive building envelope without the use of our traditional hundred-year-old building methods?

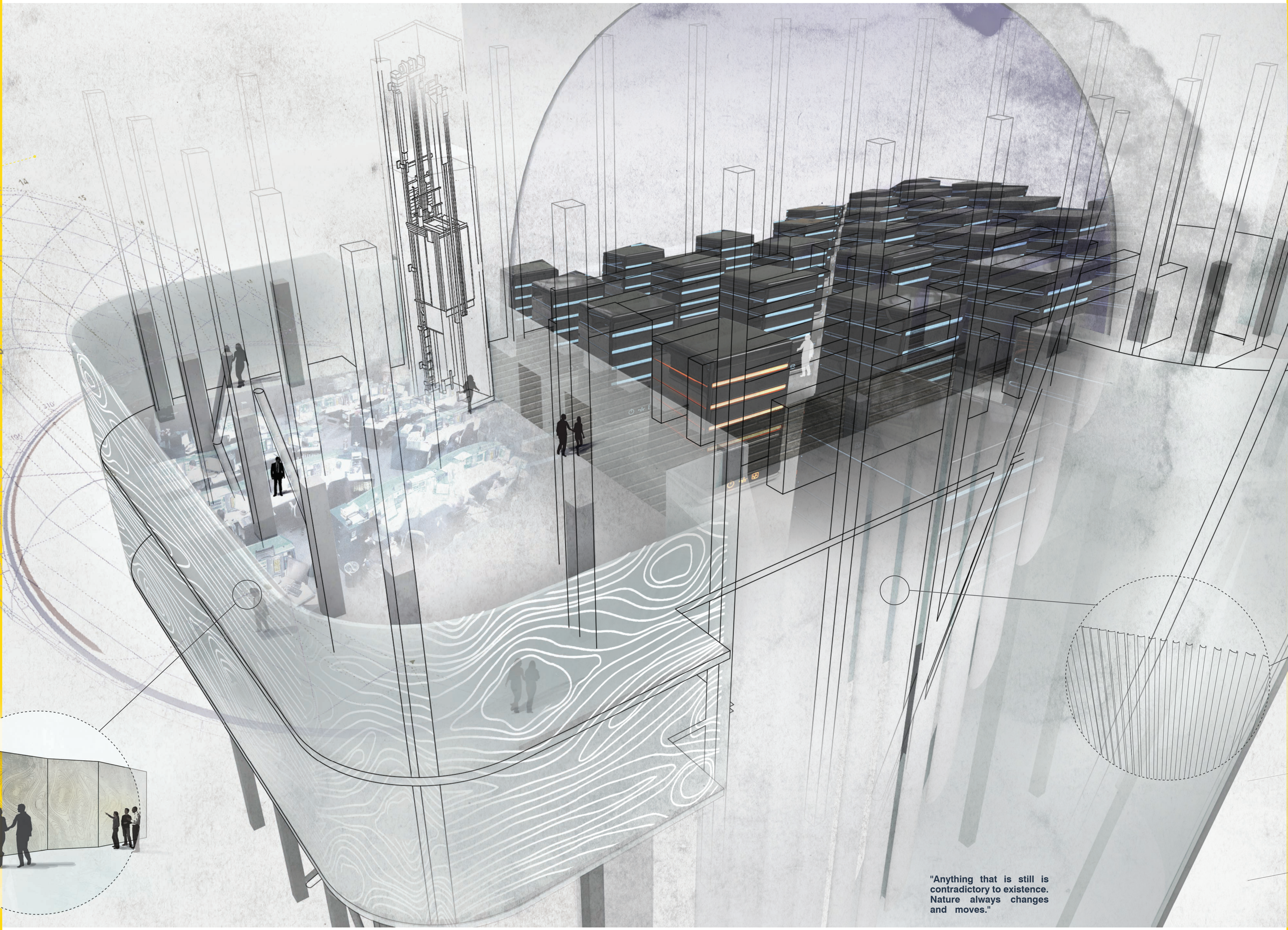
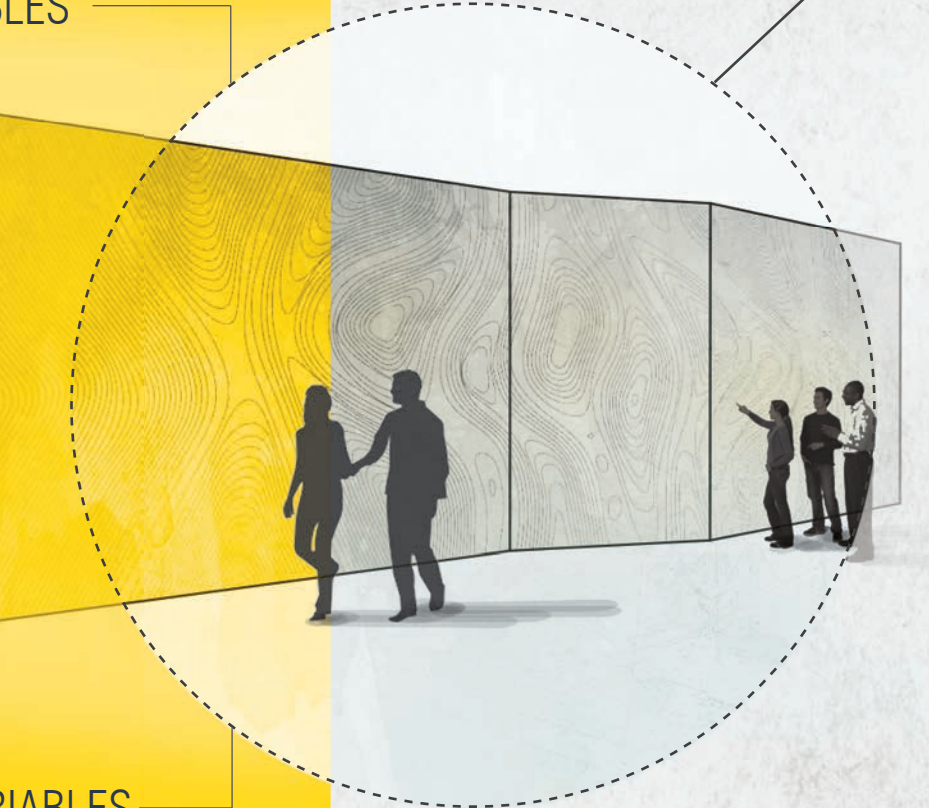
Can the wall go extinct?
Can our buildings become our computers and friends?



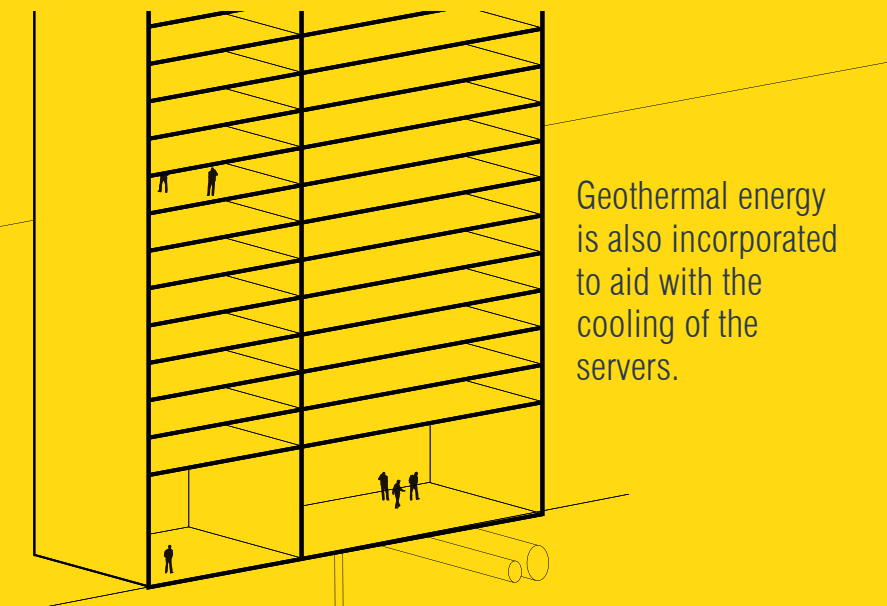
size | color | reflect. | layers | depth
FIXED VARIABLES

Environmental Conditions
Urban Conditions
Building Envelope
Programmatic Requirements
Desires and Demands of Users

DYNAMIC VARIABLES
density | rate | freq. | sens.



The adjustable wind screens on 3 sides of the building will harvest the wind from any direction to help cool the servers.



Geothermal energy is also incorporated to aid with the cooling of the servers.

"Anything that is still is contradictory to existence. Nature always changes and moves."