contents

an algorithmic end to homelessness

ProximityOutreach Centers

Because millions can be left homeless when disaster strikes, kynamatrix is planning sustainable and collaborative environments for the homeless to reintegrate into society. Our goal is to research, design, and document a scalable, emergency urban environment plan by creating a fractal-like recursive algorithm. The plans should handle from 1,000 to 100,000 people per instance and to be rapidly deployable across the nation.

key points:
provides job opportunities
database verification system
provides communication technologies
provides innovative transportation
scalable from 1k to over 180k per instance
provides family housing
provides computer access 24x7
provides necessary tools to reintegrate
provides access to education 24x7

In a perfect world, what would it look like?
Work toward that ideal

Conceptual Draft 2010|02

kynamatrix
Research Network

analysis: numbers

homeless in the usa / wa state / puget sound

United States of America

671,859*

Washington State

23,379*

Puget Sound

2675 + 84**

*2007 National Alliance to End Homelessness
**2010 Seattle/ King County Coalition on Homelessness

11 year span
King County:

2685 - 2009

2631 - 2008

2159 - 2007

1946 - 2006

2631 - 2005

2216 - 2004

1899 - 2003

2040 - 2002

1454 - 2001

1085 - 2000

0983 - 1999

"...the shelter was full..."

"At this time of historic economic crisis, the issues of hunger and homelessness in America are more prevalent than ever. "

"Haiti in Frantic Race to Erect Tent Cities
As Death Toll Soars, Tent Shortage Latest Challenge in Keeping Homeless Survivors Alive"

CBS News, Jan 25, 2010

correlation: everyone needs the basics in both situations

Testing the system we are building with current homeless populus provides close victim counts for small- to medium-sized disasters.

Emergency preparedness requires complete care for a multitude of survivors.

Chronic homelessness is not limited to one persona. With a variety of needs to fullfill from just-lost-a-job to special needs, the system becomes prepared for every possible known need.

Chronically homeless individuals will be challenged mentally and physically, addicts and those recently released from prison.

A disaster does not discriminate.

Every type of individual from infant to elderly, from able-bodied to physically challenged. From looters to neighborly individuals, the same list applies to the homeless.

	House Fire	Local flood	Snow Storm	Windstorm	Forest Fire	Hurricane	Earthquake
Disaster Homeless	individuals	families	elderly	addicts	challenged	pets	

	Foreclosure	County #	State #	Country #
Currently Homeless	individuals	families	elderly	addicts	challenged	pets
	5	2,670	23,379	672,000

5	2,778	27,478	250,000	3,000,000	

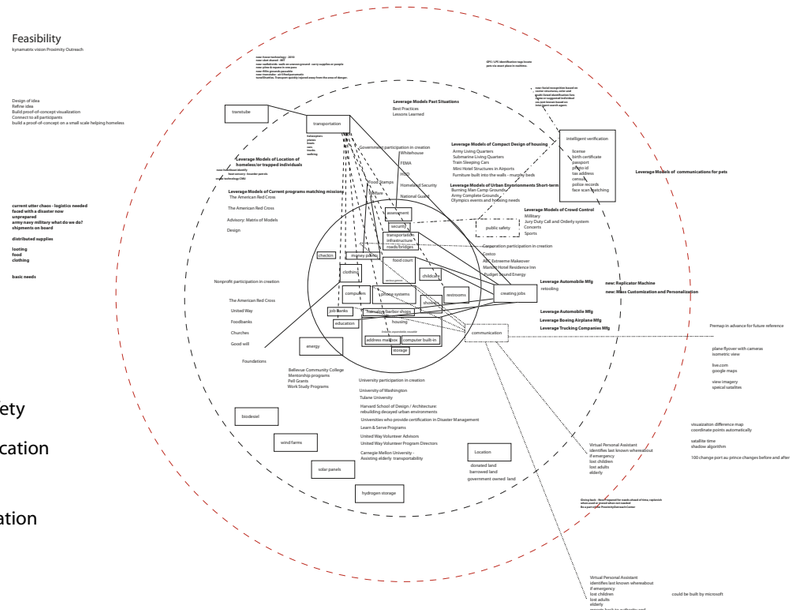
Similar quantites of homelessness. Both situations end in people needing help to reintegrate.

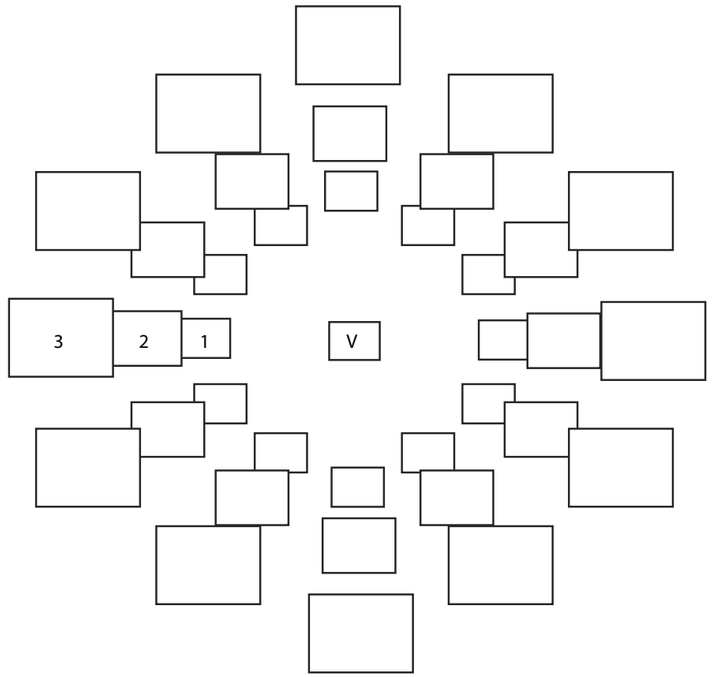
Tent cities - thousands
Chronic Homeless
Foreclosures
Divorce
Death of breadwinner

analysis: needs

defined persona provides a comprehensive resource list

Understanding family needs via persona links





We are building an interactive matrix to identify the homeless, and their basic needs.

Building a list of basic needs provides an understanding of the quantity of resources necessary to meet large demands.

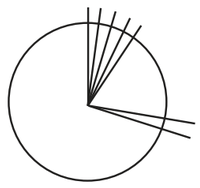
From a central point of view - the victim/homeless, three circles can be defined: 1) immediate needs, 2) service providers, and 3) proximity to daily accessibility.

duration to regain respect

Time it takes to change from “homeless” to “respectable” - viewed as an individual in our society, looking for a job or a new career path.

3hours 23minutes

Retain freedom, gain respect and the tools to make choices



20 min	30 min	30 min	20 min	1 hr 40 min	3 min
Check-in	Food/water	Hot showers	Change into new clothing	Haircut/Style	Handed a key

Caught in a cycle of missing links, the homeless need a stepping stone system to reintegrate into society

analysis: service organizations

identify current systems missions, limitations, & goals

---

services

Understand the mission and goals of current service providers.

Envision a perfect working scenario and work toward achieving that goal.

missions gaps overlaps

issues

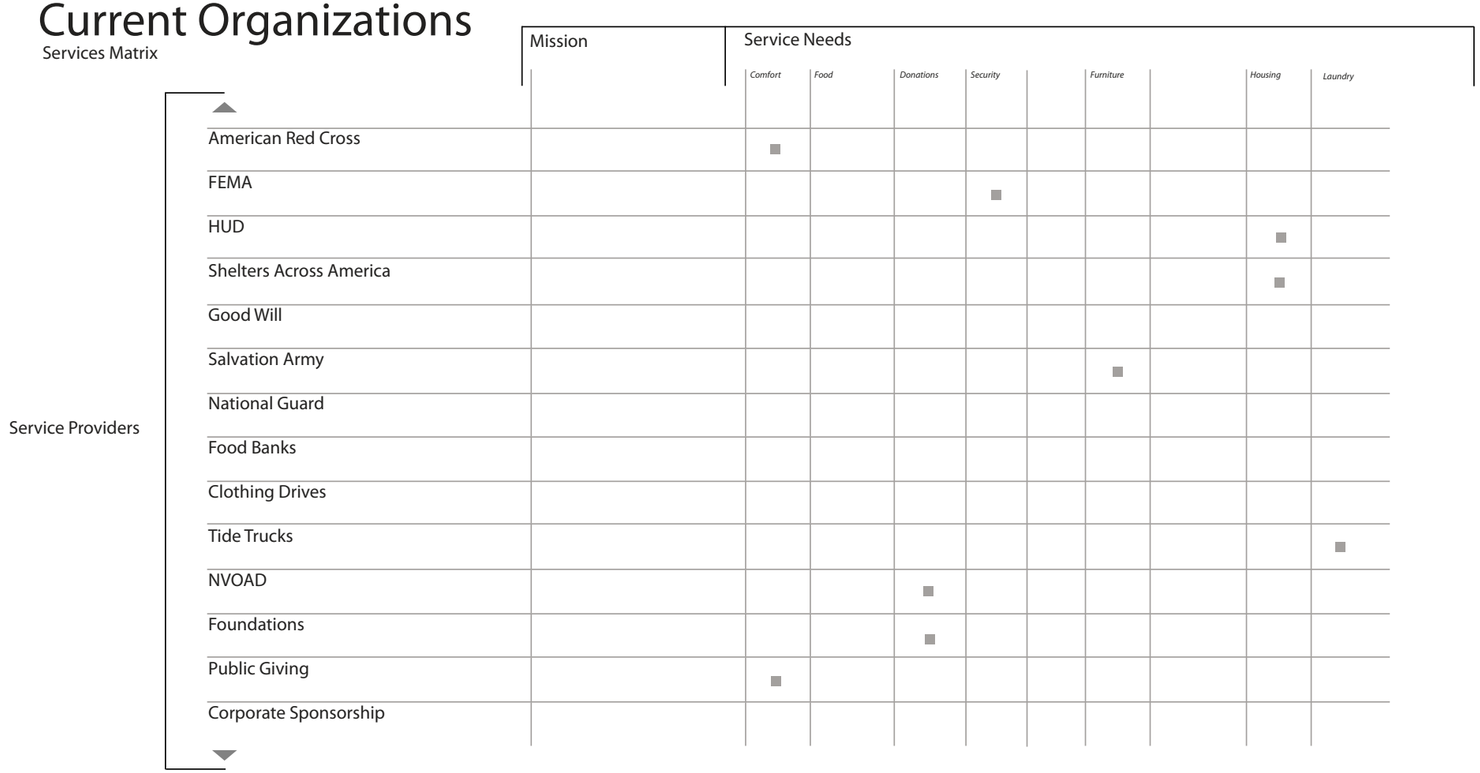
missions

goals

cross reference overlaps and gaps to assistance

Current Organizations

Services Matrix



We are building an interactive matrix to identify service providers, their locations, missions, and longterm goals.

Building a system of collaborative efforts requires under-standing how groups contribute.

algorithm overview

scalable, repeatable, flexible

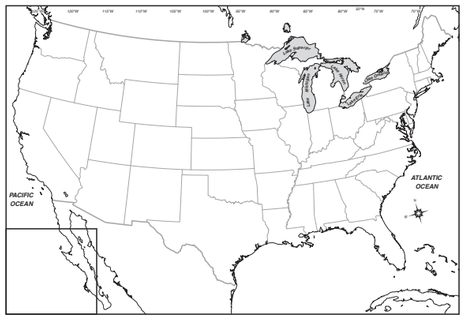
Control Center Administration

Steps defined for Emergency Urban Environment
Easily deployable across the nation

ProximityCenter: **King County**

Deployment Phases

United States of America



Geographic Area Assessment & Deployment

Parameter analysis adjusts ongoing resources to meet dynamically changing needs.

Master Manual

Manuals of infrastructure, needs assessment reports, deployment instructions, real-time monitoring of activity, open communications with field offices.

ProximityCenter: **King County**

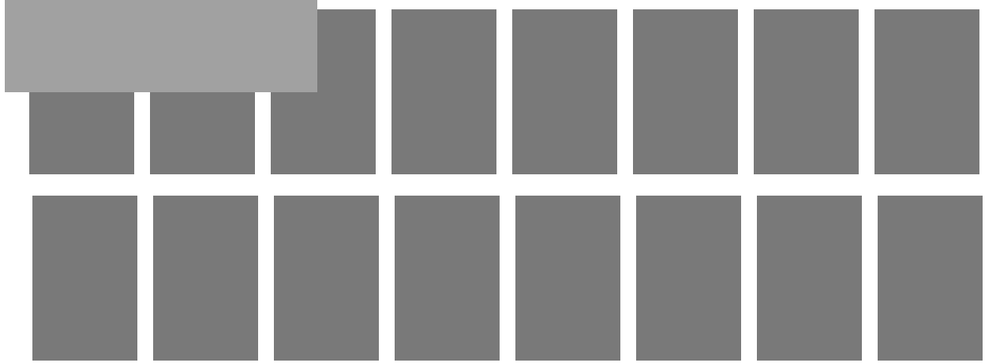
United States of America

number & type of rescue teams

	small	medium	large
Men	225	456	402
Women	248	489	377
Children	**625**	**256**	**672**

Infants = 278
bottles = 12,878
diapers = 44,333

Smart technology individual needs assessment

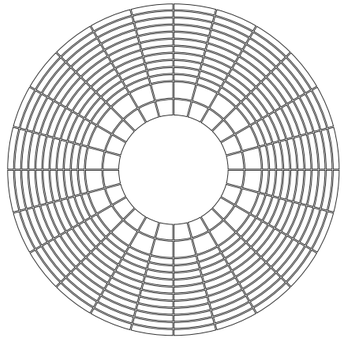


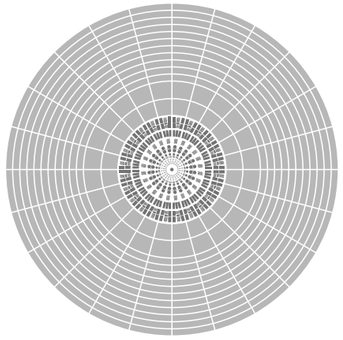
Subsection infrastructure manuals

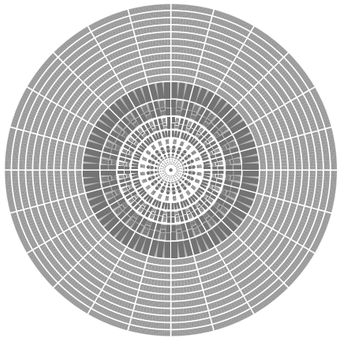
Automatic data retrieval and correleation of information built into a software application.

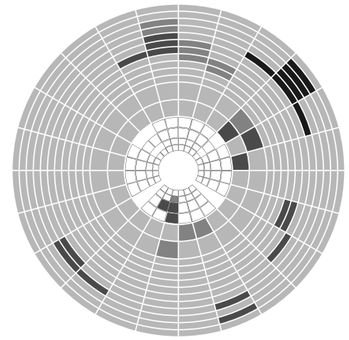
As soon as a disaster is identified, the effected area is geographically analyzed: family counts from current census, voting registration databases, dirvers license databases, pet license registration databases. Results are automatically compiled into a comprehensive needs identification list.

The system assesses how many rescue workers are needed for deployment and alerts are sent via a communications network.









four primary structural layers

1

Emergency environment structures *need to be non-polluting, reusable, quick to assemble, light weight to transport, and scalable to handle the capacities of a wide-spread disaster.*

The public's comfort level *should be sufficient for survival but not comfortable enough to become dependent.*

The first layer is the framework or footprint of the overall plan.

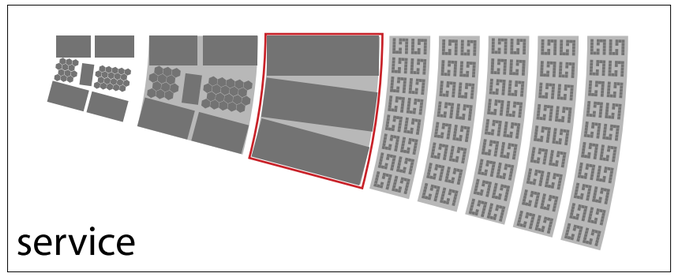
2

The second layer is the infrastructure which includes definitions for core support needs such energy, water, sewer, communications, materials storage, and temporary manufacturing systems. Most of the large infrastructural elements are positioned toward the core of the city.

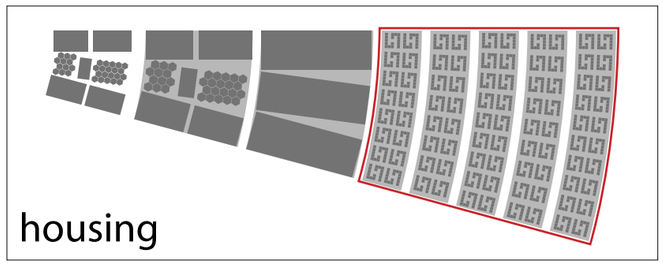
3

The third layer includes the architectural plans for distributed resource centers and secure compartmentalized housing.

The distributed resource centers *are larger structures and provide a focal point for groups to gather and assist others in need.*



The compartmentalized **housing** *structures are smaller linkable structures. We are exploring innovative materials, building plans, rendering techniques, green architecture, integrated furniture, and small, collapsible building structures.*



4

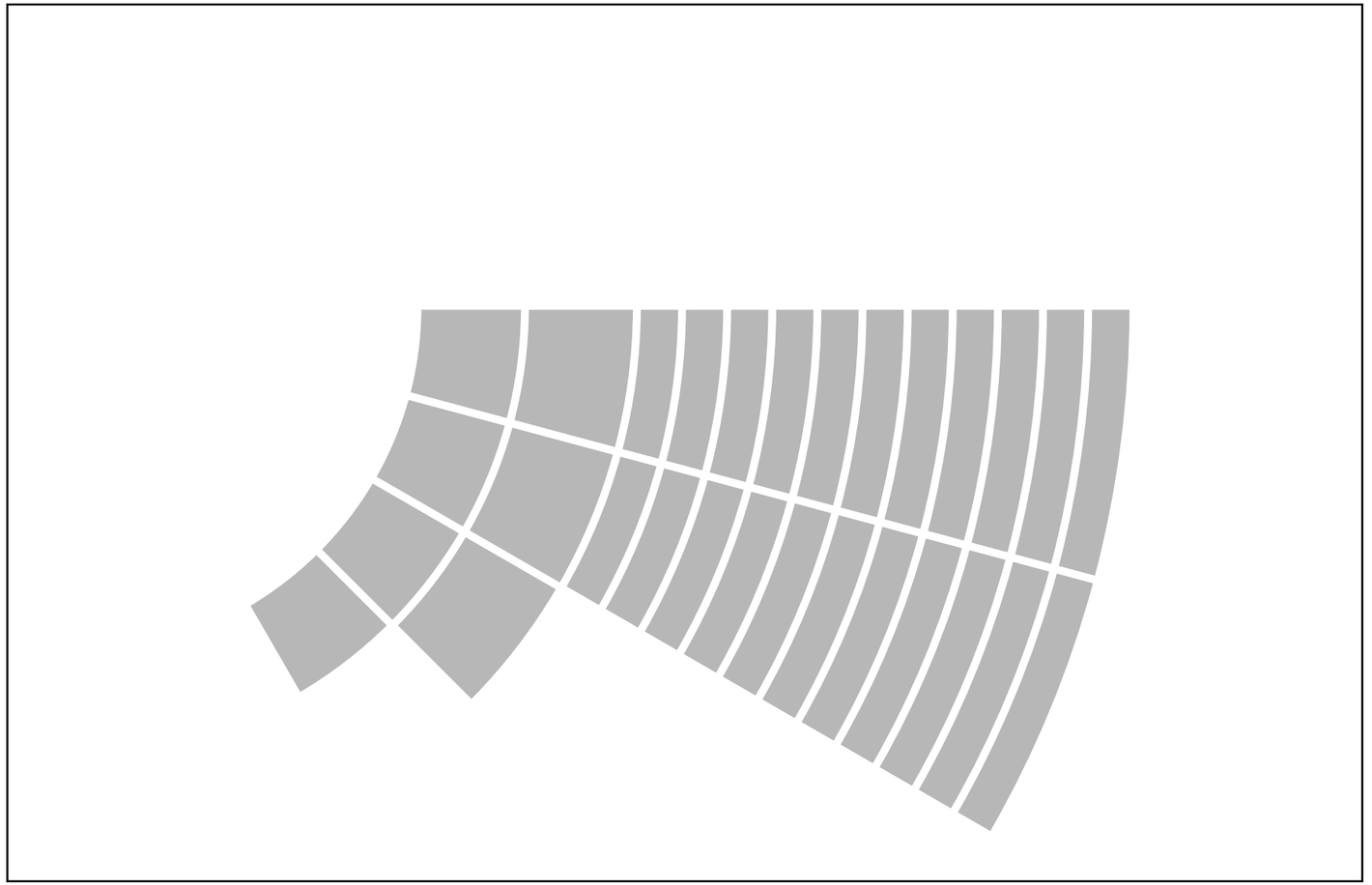
The fourth layer is the management system.

Management is augmented by a distributed knowledge system built on collective intelligence, data mining, and visualization technologies.

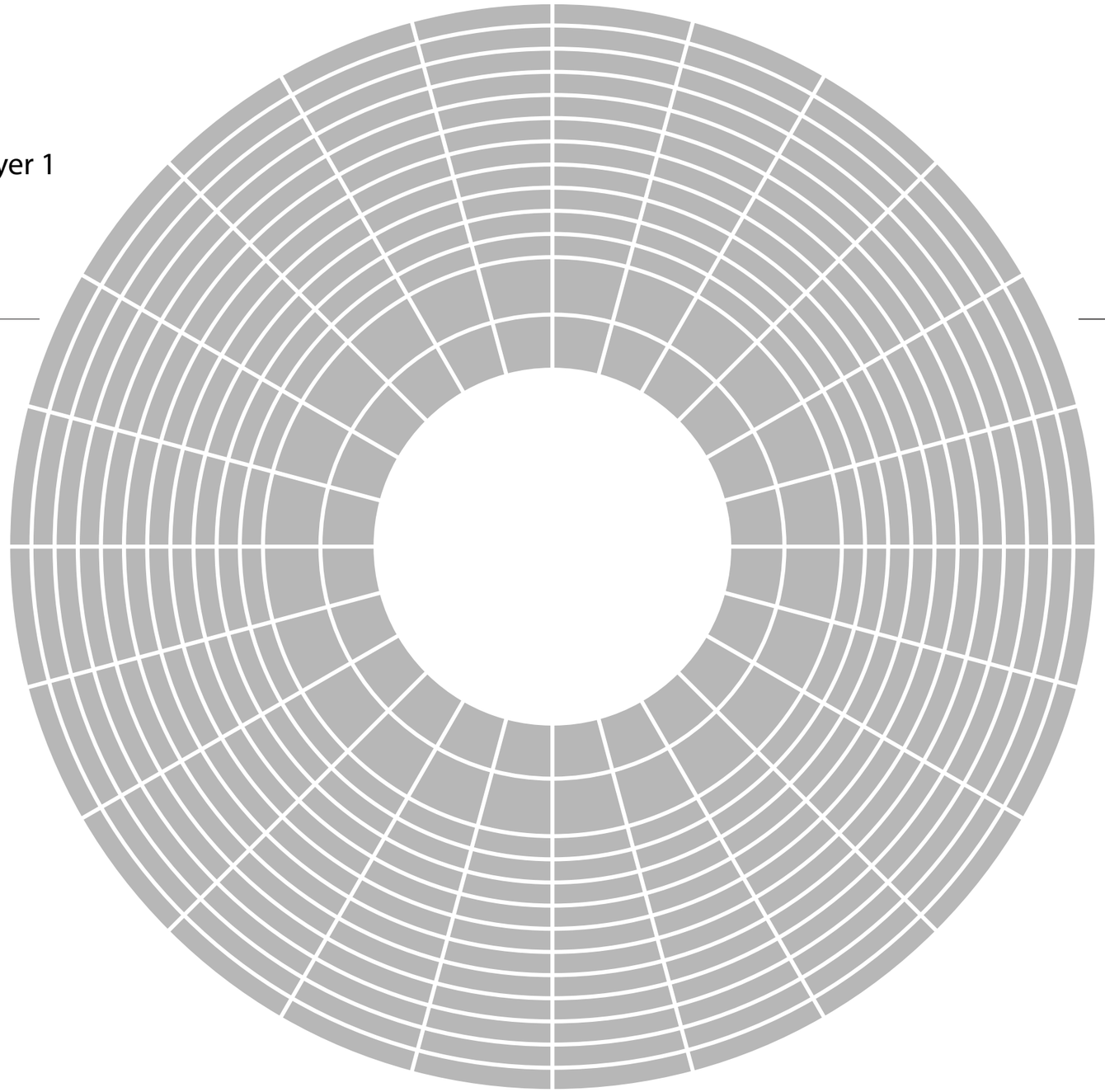
algorithm framework

algorithm layer 1

The first layer is the framework or footprint including elemental factors such as urban policy; master plan; site feasibility and costs; and climatic considerations. Furthermore, the plan defines parcel layout, roads, modular expansion options, and zoning. The plans defines the process of laying out a 15 degree slice a circular temporary city, expandable to 24 slices and capable of supporting over 180,000 victims.



algorithm layer 1



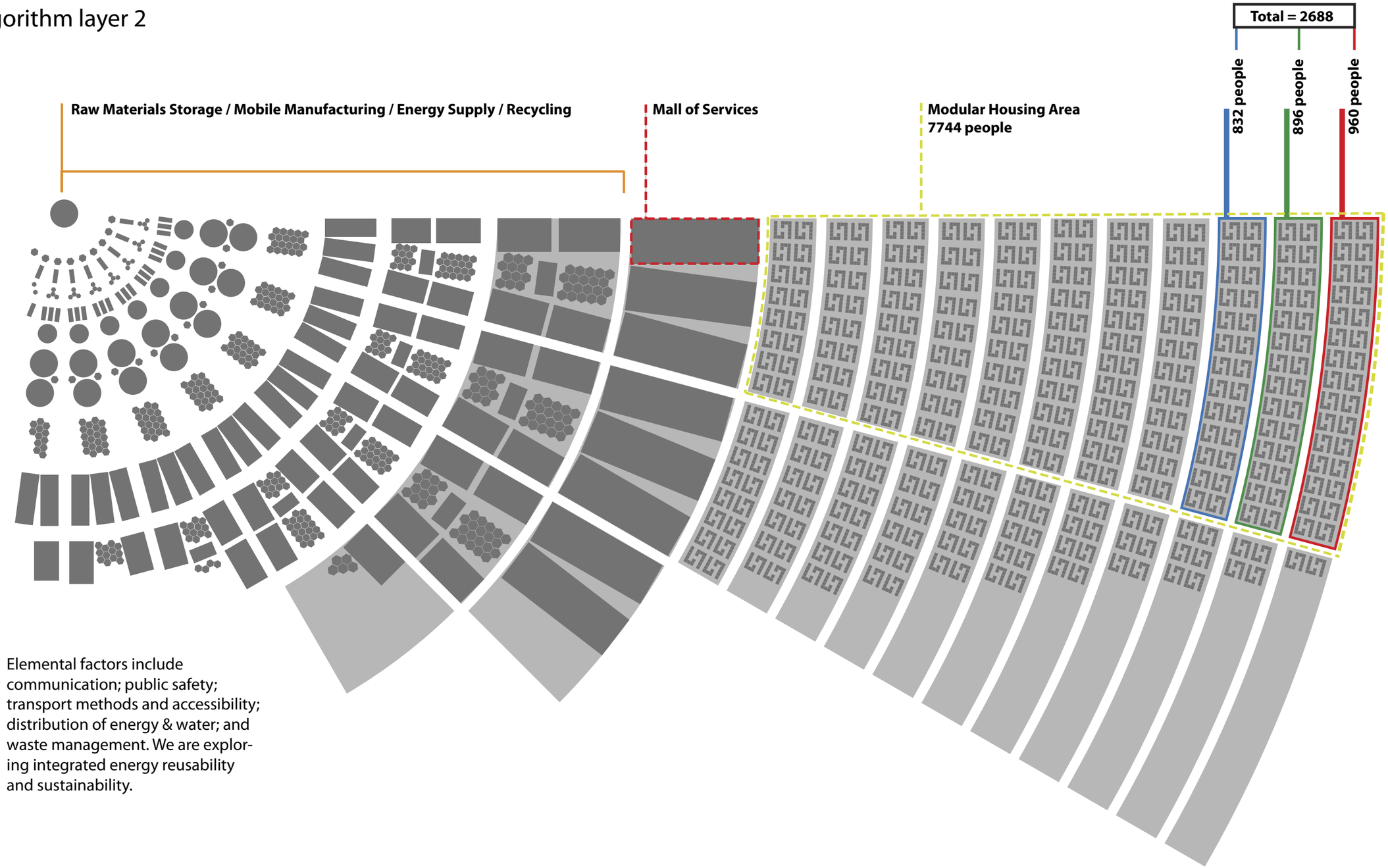
5000'

Base structure blueprint
for allocation of space.

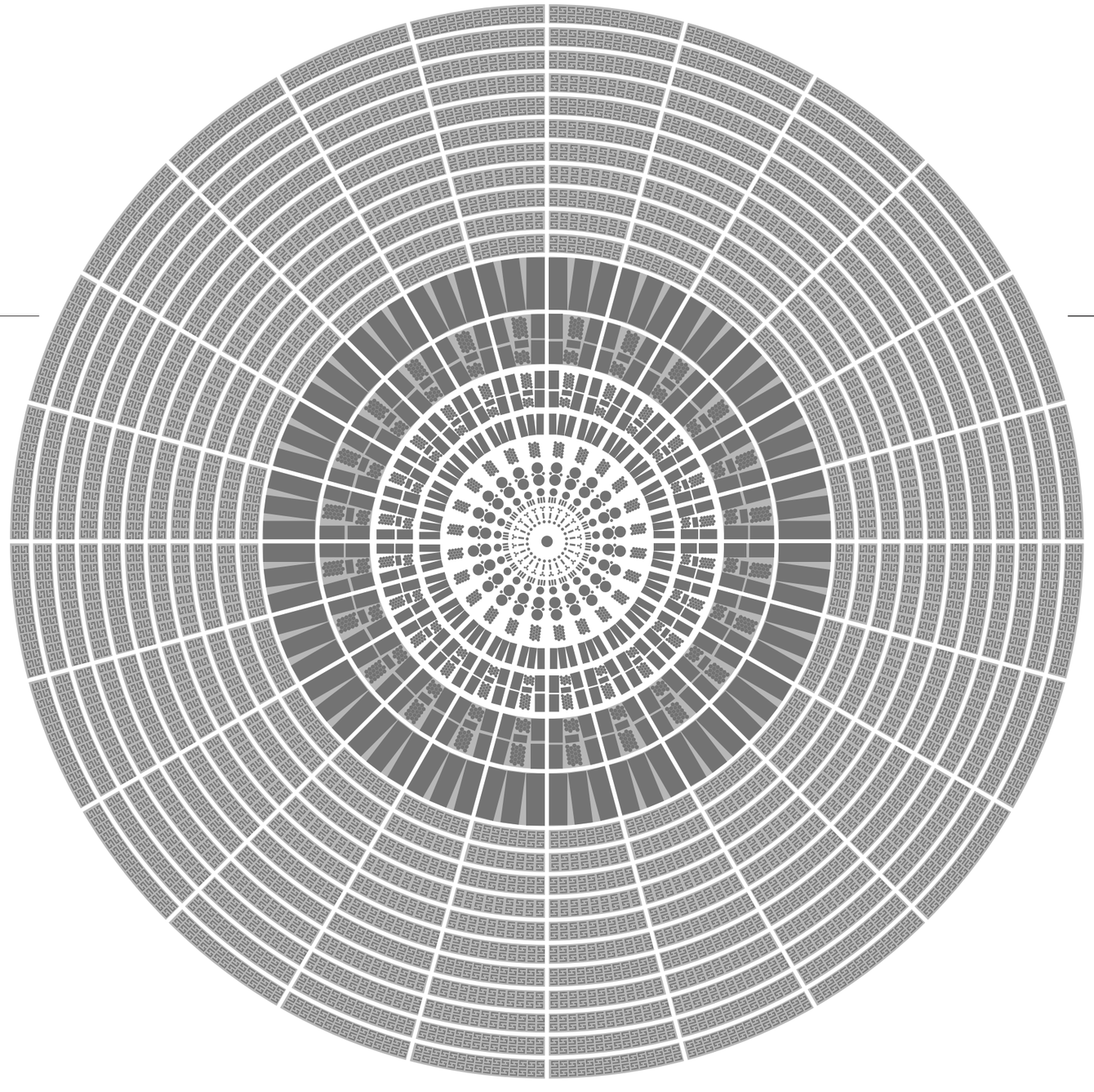
First step to ordered
distribution of services
and housing configuration.

infrastructure

algorithm layer 2



Elemental factors include communication; public safety; transport methods and accessibility; distribution of energy & water; and waste management. We are exploring integrated energy reusability and sustainability.

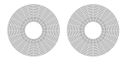


1582 acres

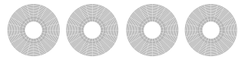
scalable

1 system accomodates 185,856 individuals.

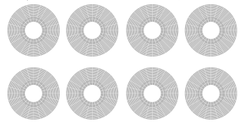
2 systems accomodate 371,712



4 systems accomodate 743,424

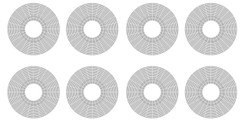


8 systems accomodate 1,486,848



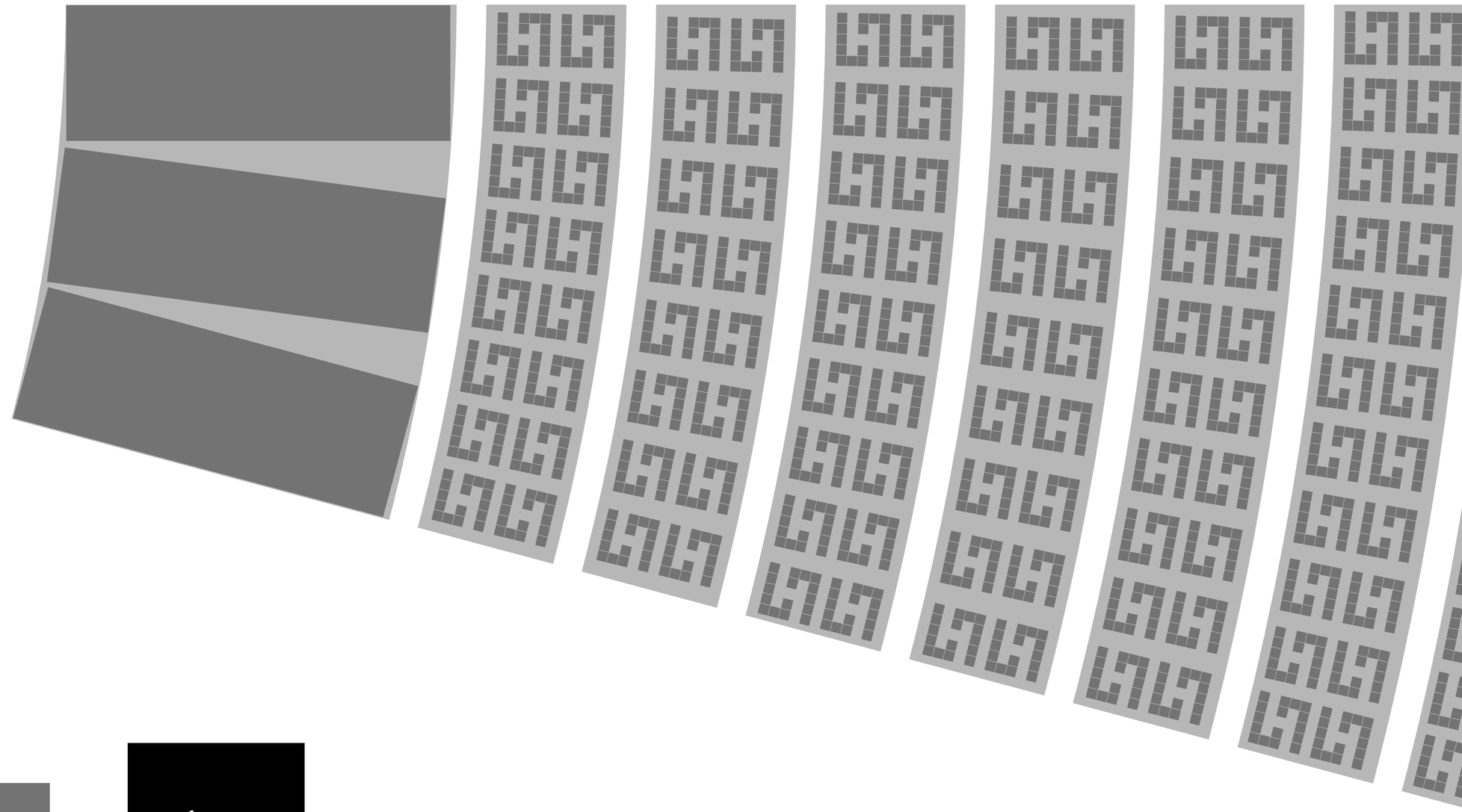
high density option

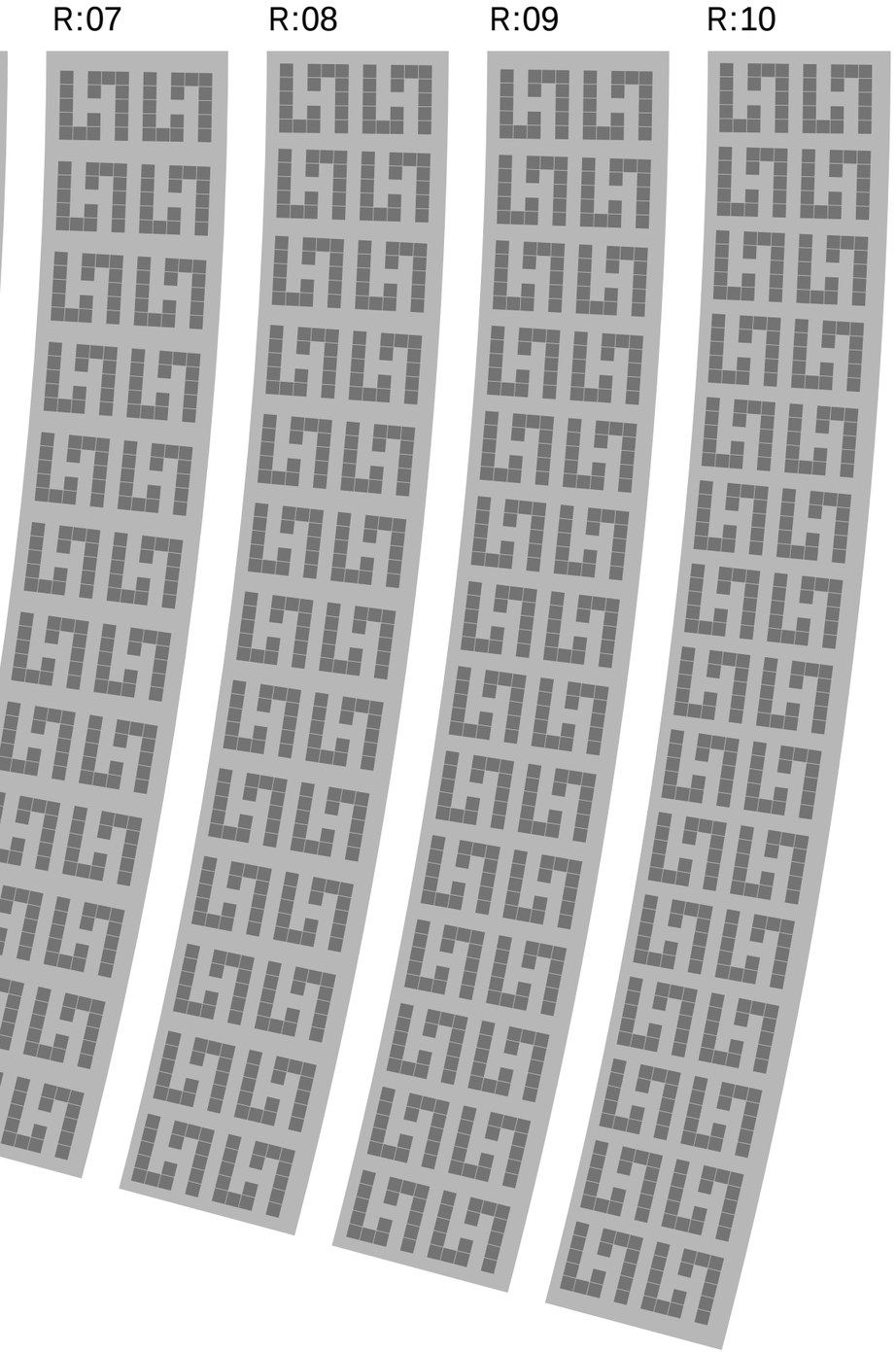
8 systems accomodate 2,323,200

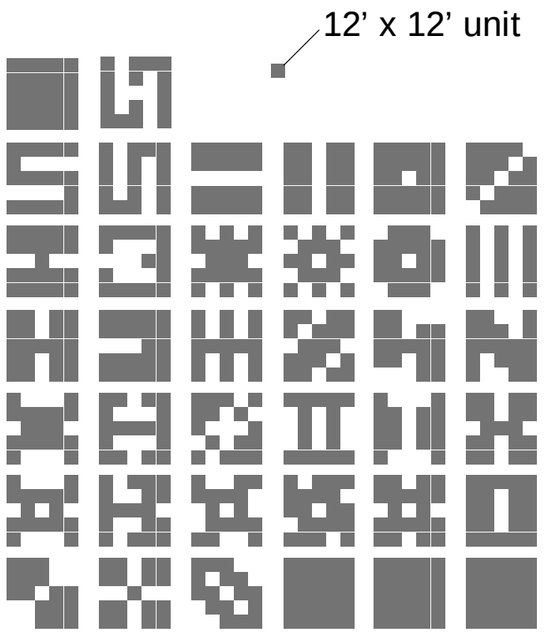


detail

expanded view / comparison

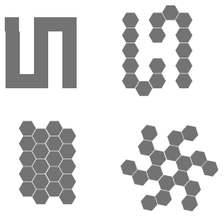




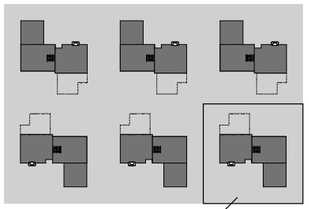


experimental housing
module configurations

square area=144
hex area=146.14



alternative trial
configurations



2000sqft tri-level home
on a 7745 sqft lot

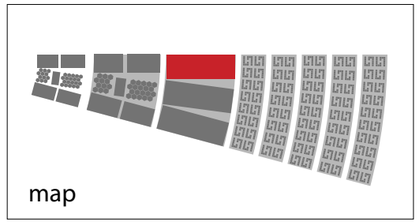
R:10	30 x 16 x 2 = 960 persons	x 24 = 23,040 persons
R:09	28 x 16 x 2 =	
R:08	26 x 16 x 2 =	
R:07	24 x 16 x 2 =	
R:06	24 x 16 x 2 =	
R:05	22 x 16 x 2 = 704 persons	x 24 = 16,896 persons
R:04	20 x 16 x 2 =	
R:03	18 x 16 x 2 =	
R:02	18 x 16 x 2 =	
R:01	16 x 16 x 2 =	
R:00	16 x 16 x 2 = 512 persons	x 24 = 12,288 persons

service module

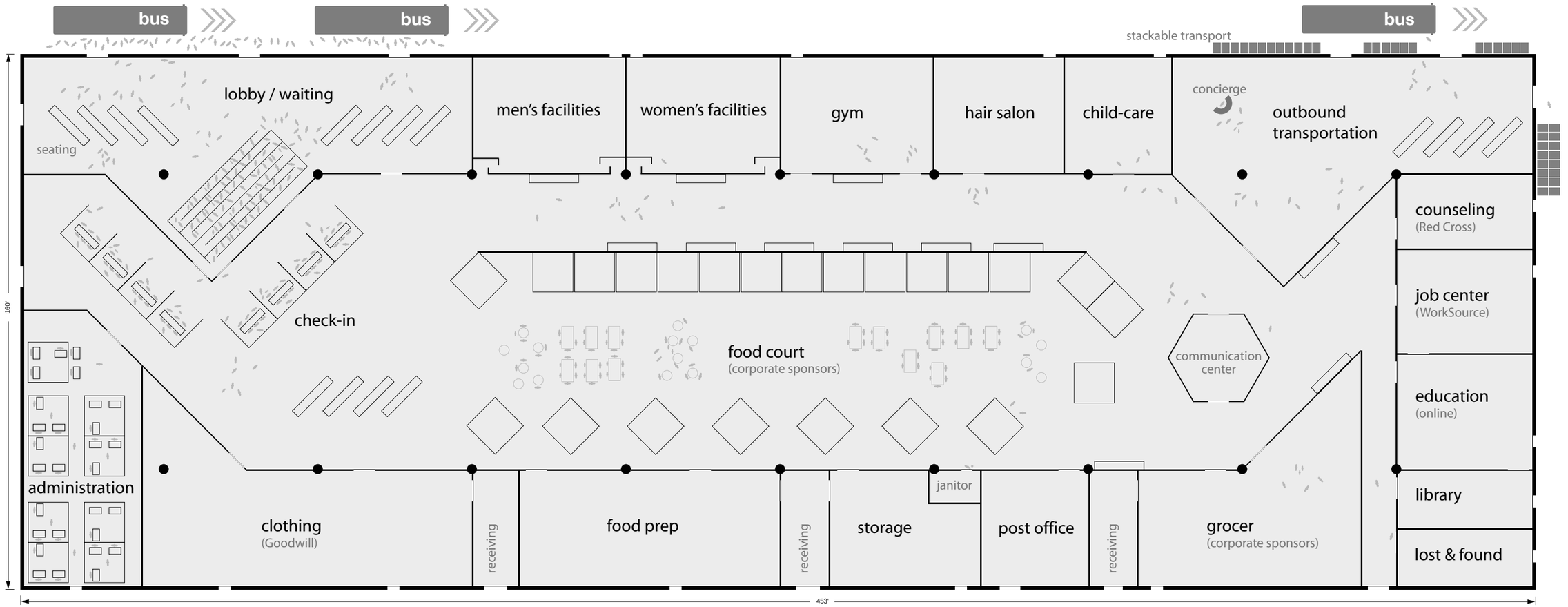
flexible floor plan

ultra-fast assembly
modular outer walls
tensile fiberglass roof
configurable spaces

total covered area = 72,464 sqft
Average CostCo = 144,000 sqft
1 acre = 43,556 sqft
football field = 57,600 sqft
average bus 40' x 8.5'



Tensile fiberglass roof in use at
Denver International Airport

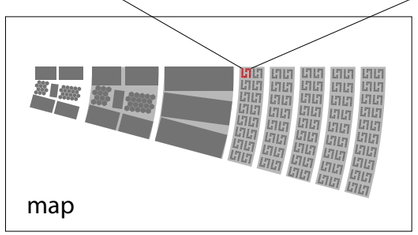


The resource center plans include additional community services such as computer access points, postal services and mailboxes, high-definition communication centers, and exercise facilities. Medical and veterinary services are also provided in adjacent modules.

housing module

minimalistic and smart

16-unit linked modules for 32 people



Based on a 12′ by 12′ floorplan, these modular units can be quickly manufactured and assembled on-site. All components are recyclable and non-polluting.

When arranged in the formation as indicated here, a community courtyard effect is created.

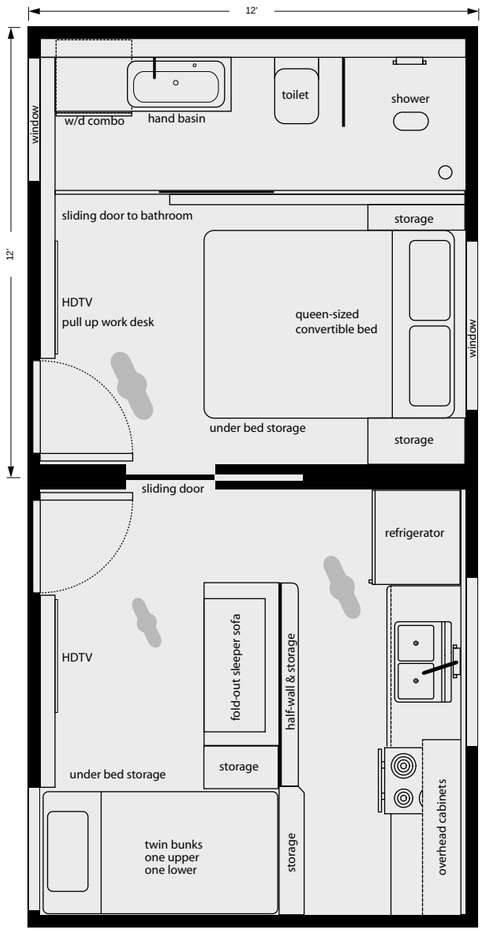
Single/Double occupancy unit

Washer/dryer combo unit can be fitted in the bathroom.

The queen-sized bed deploys to a couch arrangement at the touch of a button, with pillows and cushions for lounging. Bedside tables are designed to accommodate hand luggage with stowage below.

Built-in flat screen HDTVs allows for 2-way communication for information and an online educational resource 24x7.

Optional sliding door to a family expansion unit which includes a complete kitchen and room to comfortable sleep three children.



Family expansion unit

The bathroom includes overhead rain shower, a hand shower, mirror and towels .

Bedside charging points, personal lighting, dimming control and bed deployment switch allows work or relaxation without moving from the comfort of the bed.

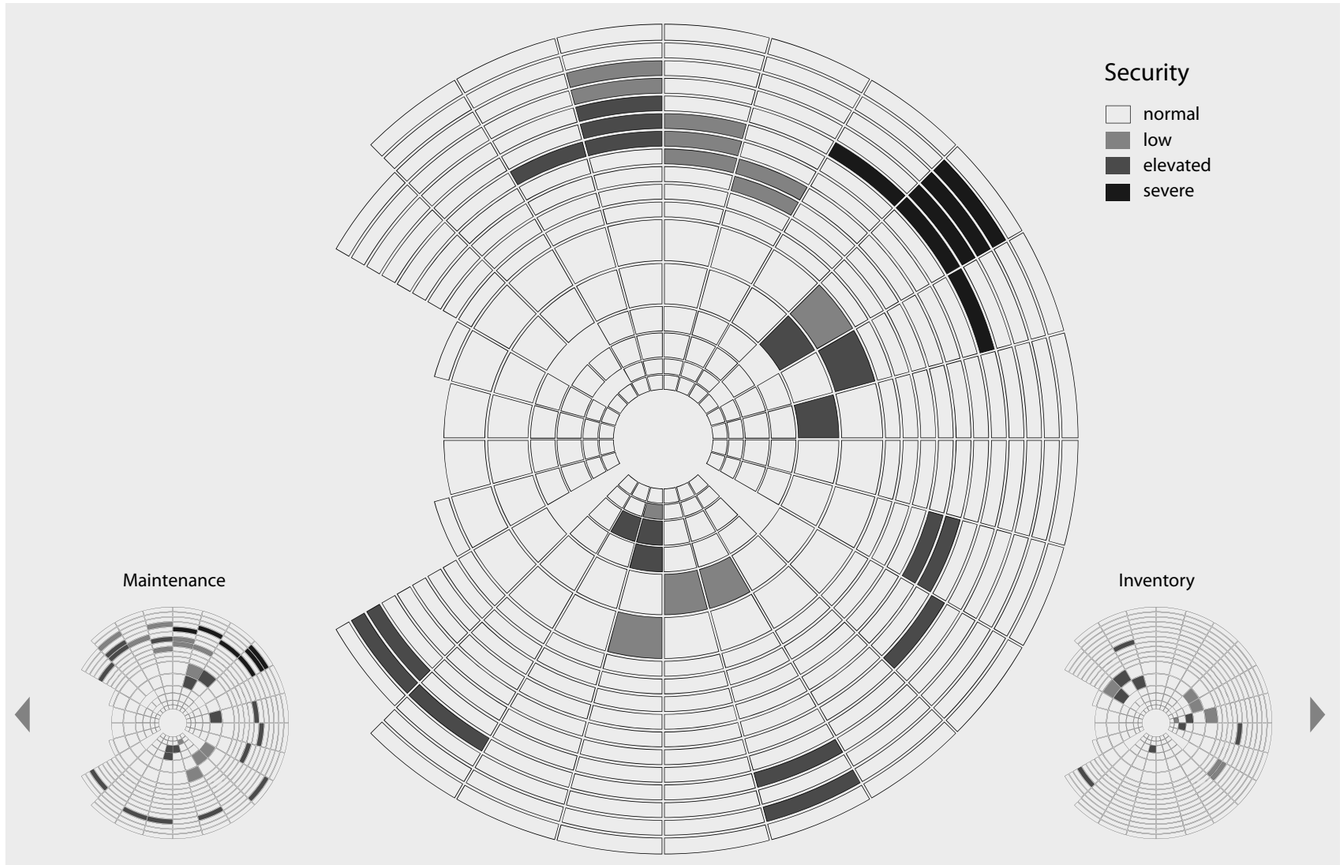
A retractable storage area is provided below the bed for stowage. The study desk folds out of the wall with its own stowable chair and a complete range of power and connectivity including free internet access and local lighting. Suit and dress hanging and storage provide a place for everything.

12′ x 8.5′ unit at Yotel in London

management

algorithm layer 4

The entire system status can be monitored and managed with ease including deployment; setup; maintenance; provisioning (such as food, clothing, counseling, childcare, education, transportation, health & policing services); teardown leaving no trace; and cleaning & storage of the system components between uses.



maintaining the system

Every section of the algorithm will provide instructions; from set up, distribution, and restocking to teardown. The Master Manual encompasses all activities.

These resources will be accessible interactively online, or in audio and printed format.

Check in:
Verification Databases

Drivers License: WA
County Records
Census
Divorce Records
Marriage Records
Passport Records
Birth Records
School Registry
Pets Registered

content auto fill
# of children

Assigned Resource Count

Food, Clothing Sizes, Special diets and needs are placed in the appropriate lists to bring in the correct supplies. An infant has different core needs than a teenage football player.

Assigned Housing Modules

Modules are marked unavailable as allocated

ProximityOutreachKingCounty

Parents	Smith, Raymond Smith, Billie-Jo	Resources 7
Dependents	Smith, Jusitna Smith, Eileen Smith, Veronica Smith, William Smith, Anna	
Pet(s)	Cat: Charlie-marbles #22008976kcls	Pet 1

Data Checked 8

Modules F104 - F105 - F106

Master Manual

Food | Clothing | Security | Childcare

Smart ID Cards

The Smart Allocation System provides orderly distribution of resources. The computer counts use needs for inventory ordering in advance and reorders as supplies deplete. Identifier Smart Cards are distributed to families to remove the concern for looting and theft.

Password protected and easy stop use if stolen. Unauthorized user could show their location if the tracking is turned on from security.

next steps

identify models

The more individuals who contribute to the vision with thoughts and ideas, the closer we are to a workable plan.

Wishlist of Participants.
Corporation Participation for example:
- Costco
- Safeway
- Marriott Residence Inn
- ABC Extreme Makeover Foundation Participation
- McDonalds
- Burger King

Non-profit Collaborative
Victims of Disaster
Current Homeless
Case Workers
Government Individuals interested in ending homelessness
Spokesperson Suggestions
Volunteers

Services Websites:
FEMA
HUD
National Guard
Good Will
Salvation Army
American Red Cross
United Way
211
National Alliance to End Homelessness
National Volunteer Organizations Assisting In Disasters

Researching Models:
- Submarine Quarters for Compartmentalized Housing
- Good Will Shops - orderly distribution of clothing
- American Red Cross - Compassionate Empathy at Check-in
- Concert Security Systems for Crowd Control
- Army facilities for transportation of complete on-site housing needs
- Wearable technologies
- Database Collective Intelligence Verification Software
- Large Scale Architectural Firms

World-wide participation & Expert Advice
Architectural sustainable energy
Civil Engineering
Urban Planning
Zoning
Emergency Relief Best Practices

faq

vision

innovative

wearable technologies for identification

mass customization

collective intelligence database matrix system

Public Safety

ordered distribution removing the need for looting

models of compartmentalized housing system like submarine/train/airlines

automation for building

Communication

HD two way built in technology for communication sources 24/7

Renewable Energy

Reliable energy during an emergency
A major component of any emergency services system must include an energy plan. In a disaster, transmission lines may be compromised, power plants may be inoperable or inaccessible, fuel supplies can be interrupted. A terrorist attack on a nation's electric power grid could cause widespread damage requiring months to fix. In such cases distributed, independent power systems with uninterruptable sources of fuel would be necessary. Renewable energy systems such as wind turbines, photovoltaic and thermal solar collectors, geothermal plants and other systems not relying on imported or difficult to obtain fuel for [illegible] potentially be more robust in an emergency than gas, coal-fired or nuclear power plants. And while in some cases the energy produced is intermittent (in the case of wind and solar), it is not unpredictable, nor is it in danger of running out. This last fact is significant as we explore ways to energize the LifeLine Proximity Outreach projects. For several years now the United States has seen a tremendous increase [illegible] turbine installations, in almost [illegible] state of the country. This trend is exp[illegible]ntiti[illegible] thous[illegible] megawa[illegible] of wi[illegible]power coming online each ye[illegible] Solar [illegible] though totaling [illegible] less installed capacity than wi[illegible] arms, [illegible] also been growing at high rat[illegible] as part o[illegible] the pro[illegible] will explore how these distributed systems can be exploited during an emergency, and combined with some sort of energy storage system (e.g., pumpi[illegible] to a res[illegible] for later use as [illegible] power) [illegible] to balance out th[illegible] ergy supply [illegible] eet the demand. This [illegible] enormous [illegible] one that our scientists, [illegible] [illegible] Americans are struggling to [illegible] on a national level, but it needs attentio[illegible] many levels.

energy efficiency
solar powered
wind powered
grid free

longevity

mass quantities

affordability

maintain

location

architectural schools
Learn & Serve programs
foundation collaboratives
United Way volunteers
donated segments from corporate sponsors
volunteer experts
government
integration of the service programs

feasibility

Transportation

William Mitchell and Ryan Chin propose an attractive alternative to the carbon-belching, gas-guzzling autos clogging our thoroughfares, a vision that is as much about transforming cities as about remaking cars. The City Car, a tiny, electric-powered, foldable, stackable vehicle, is their solution to freeing urban centers of paralyzing, polluting traffic, and the nightmare of parking.

With its tiny footprint and lack of tailpipe emissions, the City Car comes [illegible]ed with an onboard operating system that allows the car to communicate with the rest of the fleet, and omni-directional robot wheels that turn (all the way around) on a dime. Chin enthuses about the car as a "highly personalizable, customizable object" whose intelligence will allow it to be [illegible]omically configured for each driver and whose exterior may reflect the [illegible]or or even political [illegible] the driver through organic LEDs.

MIT stack transport system test bed

world expertise

online educational sources

creative + scientific

connecting resources in new ways to form something extraordinary

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Special Thanks to
Steve Clark
J William Dunn
Ruth Marsh
and volunteers nationwide

2010|02