Content

1. Research Conclusions
2. Urban Strategy
3. Design Strategy
4. Program
5. Design Proposal
Chicago is the 3rd largest city in the USA.
2.7 Million of residents, but adding the metropolitan area the number is 9.5 Million.
The monocentricity of Chicago can be seen through its infrastructure.
Chicago’s Industrial History

In 1881, the North Chicago Rolling Mill Company opened a sister mill at the mouth of the Calumet River on Chicago’s South Side—the famous South Works.

In 1889, most of the large Chicago-area mills—including North Chicago, South Works, Union, and Joliet—combined to form a huge new entity, the Illinois Steel Company.

In 1901, New York banker J. P. Morgan engineered the creation of U.S. Steel, the world’s largest business enterprise, and Illinois Steel became part of this giant entity.

Beginning in the 1970s, the facility began downhill due to a shifting market for steel.

On 10 April 1992, the plant permanently shut down with fewer than 700 people employed at the time of its closing.
Rising Unemployment of 9%

Metropolitan unemployment rates 1990/2013

- Washington DC
- New York
- USA
- Chicago

Unemployment rates for various cities and the USA over the years 1990 to 2013.
Manufacturing industry suffers from:

- Lack of well educated workforce.
- Lack of innovations.

“Entrepreneurship is lagging behind”
RESEARCH
CONCLUSIONS
Midway Airport Connectivity

20 min
20 - 150 min
90 - 240 min
7 - 15 hrs

CHICAGO
ORD
MDW
LOOP

MID-WEST
MIN
DET
LOU
ST. L
KSC

USA
LAX
SF
SD
BUF
N.Y.C.
BOS
TOR
WDC
HOU
BIR
ST. L

GLOBAL
HON
PEK
MXC
AUH
LON
PAR
FRA
LAX
SF
SD
N.Y.C.
BOS
BUF
TOR
WDC
HOU
BIR
ST. L

Indirect connection High Speed train
Direct connection High Speed train
Indirect connection Air-travel
Direct connection Air-travel (O'Hare)
Internal Chicago City connection
HUB Connection intercontinental
Chicago’s Airports and The Loop

1. The Loop
2. Midway Airport
3. O’Hare Airport
Chicago’s Transport System Monocentricity

- radial disposition of Subway lines
- no connection for radial lines
Addition of Lime Line and Orange Line Extension

- Lime Line connects radial lines
- Provides quicker connection between Midway and O’Hare
- Extension of Orange Line provides connection between Midway Airport and The University of Chicago
Midway Airport Train Connections

Lime Line

Orange Line
New AMTRAK High Speed Rail

- High Speed in operation
- High Speed in development
- Incremental Speed
Midway Airport Surrounding’s

What it used to be

What it is now.
Midway Airport Annual International Operations

source: Federal Aviation Administration (FAA), Air Traffic Activity Data System (ATADS), January 2014
operations consist of arrivals and departures as reported by Air Traffic Control Towers (ATCTs). It does not include overnight
Since 2000

Passengers: +30%

Aircraft Operations: -16%
Currently there are 252,000 Operations in Midway which means there are approximately 25,000,000 passengers per year.
High-Speed train will get around **2,000,000 people** passing through Midway.
Problems vs. Strategies

**UNEMPLOYMENT**
- Attract investments to the area
- Potentially office headquarters of manufactures nearby

**SEGREGATION**
- Revitalize neighborhood identity
- Attract mix-race residents

**NO COMMUNITY**
- Public gathering space embedded in the platform buildings

**VACANT PROPERTIES**
- Attract new residents

**POOR AIRPORT ARRIVAL**
- Reorganize the airport entrance

**INSUFFICIENT STEM WORKFORCE**
- Implement STEM schools in the area

**AIRPORT | NEIGHBORHOOD DISCONNECTION**
- New Business Platform that links them together
Strategy Cycle

NEGATIVE CYCLE

HOW TO IMPROVE NEGATIVE CYCLE

INCREASE INVESTMENT

ATTRACT INVESTORS

GENERATE EMPLOYMENT

INCREASE INCOME
Master Plan Concept

- Hotel | Residences
- Transport Hub
- Park
- BUISNESS CLUSTER
- Offices | Headquarters
- Convention Center
- Public Spaces
PROGRAM CHOSEN.

PRIVATE SECTOR
(INVESTORS)
Generator of business

CONFERENCE HALL
LECTURE ROOMS
MEETING ROOMS
EXHIBITION HALL

CONVENTION CENTER

Merges both activities
Allows interaction and business opportunities.
Both investors and developers can come here.
Host exhibitions which attract people from many places with the possibility to transform Midway into a gathering spot for not only business but also leisure.

PUBLIC
(RESIDENTS OF THE AREA)

THEATER
RESTAURANT
PUBLIC FOYERS
PUBLIC EXHIBITION AREAS
BALLROOM | WEDDINGS
URBAN  STRATEGY
Midway Airport Train Connections
Lime Line Stops at Hotel and Convention Center.
Masterplan Accessibility
Masterplan Accessibility - Major Streets, Airport Entrance
Masterplan Accessibility - Secondary Roads
Masterplan Accessibility - Pedestrian Platform
Building Program
Building Program - Park
Building Program - Platform
Building Program - Transit Hub
Building Program - Midway Airport
Building Program - Offices
Building Program - Retail
Building Program - Convention Centre
Schiphol Business District

- 167,600m² Offices (42%)
- 45,000m² Hotels (12%)
- 65,000m² Convention Center (15%)
- 85,000m² Constructed Parking (21%)
- 8,400m² Transit Hub (3%)
- 30,000m² Retail (7.5%)
Midway Business Hub

- 158,000m² Offices (48%)
- 21,600m² Hotels (8%)
- 31,500m² Convention Center (10%)
- 75,000m² Constructed Parking (24%)
- 10,500m² Transit Hub (4%)
- 18,500m² Retail (6%)
DESIGN STRATEGY
Inspiration
Aerial view to Downtown Area (Loop)
Visual Connection to the loop and surroundings
Also becomes the point of attraction to Midway. A new landmark that announces you are at Midway.
CONCEPT

Facade | Public Wraping element. Can become a Cultural Billboard.
Concept: Integrating public spaces through the outside with the facade, and from the inside with the views.

View of the plane take offs and landings

CONVENTION CENTER

Connection to the residential neighborhood

Visual and pedestrian connection to the park next to it

Visual connection to the offices platform.
ENTRANCES AND TAXI DROP OFF
CAR AND TRUCK ENTRANCE
Approach from train hub station
PROGRAM
Convention Center Typologies.
Convention Center Typologies.
Dalian Convention Center
Comparison Program Bar

Irving Convention Center

Exhibition Public
GFA 3805 m²
Exhibition Private
GFA 4630 m²
Meeting Rooms
GFA 2100 m²
Ballroom
GFA 3300 m²
Support
GFA 5608 m²
Administration
GFA 840 m²
Circulation
GFA 5217 m²
TOTAL BUILDING  25500m²

Basel Convention Center

Exhibition Public
GFA 15659 m²
Exhibition Private
GFA 31819 m²
Ballroom
GFA 12990 m²
Support
GFA 3998 m²
Administration
GFA 3998 m²
Circulation
GFA 17441 m²
TOTAL BUILDING  83297m²

Harpa Convention Center

Exhibition Public
GFA 4208 m²
Exhibition Private
GFA 3600 m²
Meeting Rooms
GFA 2950 m²
Theater 2000 pp
GFA 3950 m²
Ballroom
GFA 2500 m²
Support
GFA 4728 m²
Administration
GFA 950 m²
Circulation
GFA 5264 m²
TOTAL BUILDING  28000m²
# Program Bar

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<th>Area</th>
<th>Percentage</th>
<th>GFA</th>
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<tr>
<td>Exhibition Public</td>
<td>16.89%</td>
<td>3928 m2</td>
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<tr>
<td>Exhibition Private</td>
<td>8.60%</td>
<td>2120 m2</td>
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<td>Meeting Rooms</td>
<td>10.32%</td>
<td>2400 m2</td>
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<tr>
<td>Theater 2000 pp</td>
<td>12.21%</td>
<td>2840 m2</td>
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<tr>
<td>Ballroom</td>
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<tr>
<td>Support</td>
<td>16.46%</td>
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<td>Administration</td>
<td>3.23%</td>
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<td>Circulation</td>
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<td><strong>TOTAL BUILDING</strong></td>
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<td><strong>23250 m2</strong></td>
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- **Lobby / GFA 1500 m2**
- **Registration Desk / GFA 140 m2**
- **Right Lobby Auditorium / GFA 700 m2**
- **Left Lobby Auditorium / GFA 700 m2**
- **Right Wing Exhibition / GFA 1060 m2**
- **Left Wing Exhibition / GFA 1060 m2**
- **Auditorium / GFA 1380 m2**
- **Balcony / GFA 680 m2**
- **Stage - Back of House / GFA 780 m2**
- **Ballroom / GFA 1800 m2**
- **Kitchen / GFA 640 m2**
- **Foyer / GFA 720 m2**
- **Logistics / GFA 580 m2**
- **Coat Room / GFA 420 m2**
- **Storage Area Service rooms / GFA 840 m2**
- **Bathrooms / GFA 600 m2**
- **Administration offices / GFA 520 m2**
- **Vertical Core Circulation / GFA 1192 m2**
- **Vertical free scalators / GFA 960 m2**
- **Horizontal Circulation / GFA 2390 m2**
DESIGN PROPOSAL
Different options models tryouts.
Program Strategy

Entrance coming from south of the neighborhood

This cut responds to the water axis of the master plan visual connection to the Hotel at the end of this axis

Meeting Rooms looking to the Gallery / exhibition lobby (main foyer) The visual tension is directed inside the building and towards the master plan axis

Second element | auditorium looking to south Chicago. The foyer becomes this expanded spaces with a view of the surroundings.

Third element | Ballroom looking to downtown Chicago

Ground Floor and First Floor view focus on exhibition

Visual experience of people in the building

Upper Floors view of Chicago and Neighborhood similar from a watchtower

View to the loop

View to the airport

Exhibition

View to the neighborhood

Programmatic Concept Organization
FIRST LEVEL | Circulation

Vertical Circulation from cores. Fire escape Circulation

Circulation Entrance from Platform

Circulation Main Entrance
SECOND LEVEL | Circulation

Vertical Circulation from cores. Fire scape Circulation
THIRD LEVEL | Program

Auditorium
1200 persons

Multipurpose Foyer

Service Core

Multipurpose Foyer
THIRD LEVEL | Circulation

Vertical Circulation from cores. Fire scape Circulation
FOUR LEVEL | Program

Service Core

Auditorium
FOUR LEVEL | Circulation

Vertical Circulation from cores. Fire scape Circulation
FIFTH LEVEL | Program

Service Core

Administration Offices

Auditorium
Balcony
800 persons
FIFTH LEVEL | Circulation

Vertical Circulation from cores. Fire scape Circulation
View from Main Entrance
Axonometry | First level
MULTIPLICITY OF SPACES IN MEETING ROOMS
MULTIPLICITY OF SPACES IN AXONOMETRY
Axonometry | Auditorium second level
VIEW FROM THE MULTIPURPOSE LOBBY
EMPTY SPACE WHEN THE THEATER IS BEING USED
VIEW OF THE FOYER TOWARDS CIRCULATION
View of the Ballroom
Structure Concept

Concrete Cores

Columns at the core axis

Metallic Trusses (150cm height), connecting vertical structure

Auxiliary Beams (Y Axis) 30cm high, support the collocation to the floor

Concrete

Metal Deck

Bridging Truss

Main Truss

*Fig. 25*

*Fig. 26*
Materiality
Construction Details | Double Skin Facade - Media Facade
1. Ventilatiion Cavity, air inlet through aluminium louvres
2. Single glazing, extra clear glass 10mm
3. Insulation glazing, extra clear glass 7mm+13mm cavity+7mm
4. Aluminium double glazing profile
5. Wood finished floor
6. Steel angle 100x100x10mm
7. Box with a aluminum clap to control the entrance of air
8. Grating
9. IPE 180MM Steel Beam
10. Top/Bottom Attachment Bracket
11. Condition CW HHCS with Washers & Nuts
12. LED
13. Roof Detail
1. Ventilation Cavity, air inlet through aluminium louvres
2. Single glazing, extra clear glass 10mm
3. Insulation glazing, extra clear glass 7mm+13mm cavity+7mm
4. Aluminium double glazing profile
5. Wood finished floor
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Shadow Analysis South Facade

Climate analysis

Winter
-2 to -10 degrees °C

Summer
26 to 33 °C
Shadow Analysis South Facade
Climate Concept | Principles

**PV cells in Roof**
Photo-voltaic cells in the roof to supply energy for the building.

**Rain Water Collector**
Photovoltaic cells to collect sun energy and power the LED lights.

**Sunshade Louvers**
To reduce direct inside of light while maintaining a comfortable temperature and view.

**Ventilation Grill**
Motorized louvers for air intake. Allow natural ventilation in meeting rooms.

**Pond Evaporation and Cooling**
Humified or dehumified the air.

**Mini PV cells in Facade**
Photo-voltaic cells to collect sun energy and power the LED lights.

**Temperature and CO2 sensors**
To regulate and extract the excess of CO2 or to maintain a regulated temperature in the meeting rooms.

**Double Skin Facade**
Enclosed wrapping box to improve insulation.

**Heat Pump**
Absorbs the heat from the pond, or the geothermal.

**Climate Ceiling**
Satisfy heating & cooling needs of the Rooms and tempering of the incoming air.

**Geothermal Heat Exchanger**
For passive tempering of incoming fresh air to shaft and low radiant ceiling and wall heating system, by transferring energy from the earth to the Heat Exchanger.

**Geothermal Wells**
Drill under the parking lot, allow the building to be 50% more efficient.

**Geothermal Tank**

**Rain Water Storage Tank**
Supplies water's and irrigation of trees and plants. Excess of water goes to the Pond.
MIDWAY CONVENTION CENTER