HAFEN STADT MODELL

port city model

The PortCityModel is a description of processes that will used to (1) understand and visualize the current situation and (2) evaluate alternative scenarios potentially using user interaction in a touch-table.

Several stakeholders are currently running meetings to decide about physical interventions that may affect the Cruise Chain Process, and a new cruise terminal is planned to open to public in 2020. Moreover, one of the goals of optimizing the Central Station situation is to gain more time for people to visit the city and create a larger economic impact of the cruise business beyond the cruise operators. The effect of these scenarios should be portrayed by our models in order to eventually assess decision-making.

In order to simplify and optimize the performance of the model, it is intended to work in two scales; (1) human-scale in Central Station area and surroundings would evaluate current spatial issues and (2) city-scale considering the Central Station together with the terminals, not necessarily space-based but rather flow-based. Both models are complementing each other (i.e. people coming by train in model 1 will use several transport means in model 2 to arrive at the cruise terminals to depart in cruises, and people arriving in cruises in model 2 will take several transport means to arrive at the train station in model 1).

Both boarding and disembarkation processes are considered together on each model: people going from the train station to the terminals, and from the terminals to the train station. Furthermore, most of the transport means (bus shuttles, taxis, luggage sprinters) are turn-around: they travel back and forth from the Central Station to the cruise terminals.

Data about arrival times, transportation choice, time spent in the city, amount of pieces of luggage, etc. is provided by Cruise Gate Hamburg and Aida Cruises, which the model should use as first input.

The Prot City Model should represent the following situation: When people is ‘departing’, they arrive at the station by train with their luggage. Some of them proceed to a drop-off area, where they can check-in their luggage directly. Luggage is sent via sprinters (vans) to the cruise terminals. Once without luggage, people walk towards the bus station and take a private shuttle to the cruise terminal. The period in between dropping the luggage and taking the bus shuttle constitutes a potential visit to the city center, depending on the time window (to be on time to take the cruise).

People that decide not to drop-off the luggage in advance proceed directly to take the same bus shuttle to the cruise terminal and leave the luggage in the trunk. Depending on the cruise brand and the social organization of people (couples, families, small groups), they take taxis to the terminals when available. The price is cheaper than the bus shuttle, but their availability is limited. Taxis depart from the same parking as where the luggage drop-off area is located.

Taxis, bus shuttles and luggage sprinters are running from the station to the cruise terminals and vice-versa. They they drop ‘departing’ passengers on the terminals, they also pick ‘arriving’ passengers and take them back to the Central Station. These passengers travel together with their luggage from the cruise terminal the train station and take the train back home. People disembark the vessel between 7 and 10am, and board between 11:30am and 5pm. In those periods where the likeliness to have a round trip for a taxi driver is lower (early morning only arrival and late afternoon only departure), then their willingness to travel to the terminals decreases and the availability of taxis too. Luggage sprinters and bus shuttles run even when empty.

Each vessel has between 800 and 4500 people capacity, and up to 4 vessels can be operating at the same time in the 3 terminals (HafenCity terminal will be able to handle up to 2 mid-size vessels). That means that the model should be operate with minimum 1600 (one small-size vessel) and maximum 27000 (two large and two mid-size vessels) cruise passengers arriving/departing each day.

THE STAKEHOLDERS

B.A. MITTE
CRUISE NET HAMBURG
HH TOURISM
HPA
HADAG
ASSOCIATION ,,OPTIMIZATION OF BOARDING AND DISEMBARKATION”
POLICE (when events)
PORT AGENTS (PWL, S&B, etc.)

THEIR GOALS

1. HAMBURG CRUISE NET:
CITY TOUR PRIOR TO BOARDING IN CRUISE

2. CRUISE AGENCIES:
ELIMINATE CHECK-IN CONUTERS
ELIMINATE GROUND TRANSPORTATION OF LUGGAGE
PEOPLE+LUGGAGE TOGETHER IN THE SAME BUS SHUTTLE
FROM HBF-ZOB TO CRUISE TERMINAL

3. B.A. MITTE:
CONVENIENT SPACE FOR LUGGAGE CHECK-IN IN HBF-ZOB

OUR AIM

1. DESCRIPTION OF THE PROCESS:
BE CAPABLE OF EVALUATING CAPACITIS AND
PAIN POINTS

2. CREATE ALTERNATIVE SCENARIOS AND SEE EFFECT:
REAL-TIME USER INTERACTION
ALTERNATIVE ROUTES, NODES AND CAPACITIES

SCENARIOS

1. CURRENT SITUATION
2. SHIFT TO OTHER TRAIN STATION
3. CITY TOUR PRIOR TO BOARDING IN CRUISE
4. HADAG: NEW FERRY LINE TO CRUISE TERMINAL
5. PROPOSAL B.A. INTERVENTION IN HBF-ZOB
(relocation of sprinters and minimizing taxis)

GENERAL DATA

950,000 CRUISE TOURISTS IN HAMBURG IN 2018
90% IS TURNAROUND BUSINESS
CRUISE SEASON: APRIL-NOVEMBER
250 AVAILABLE TAXIS IN THE CITY OF HAMBURG
200-300 PEOPLE ARRIVE ON EACH TRAIN IN HBF

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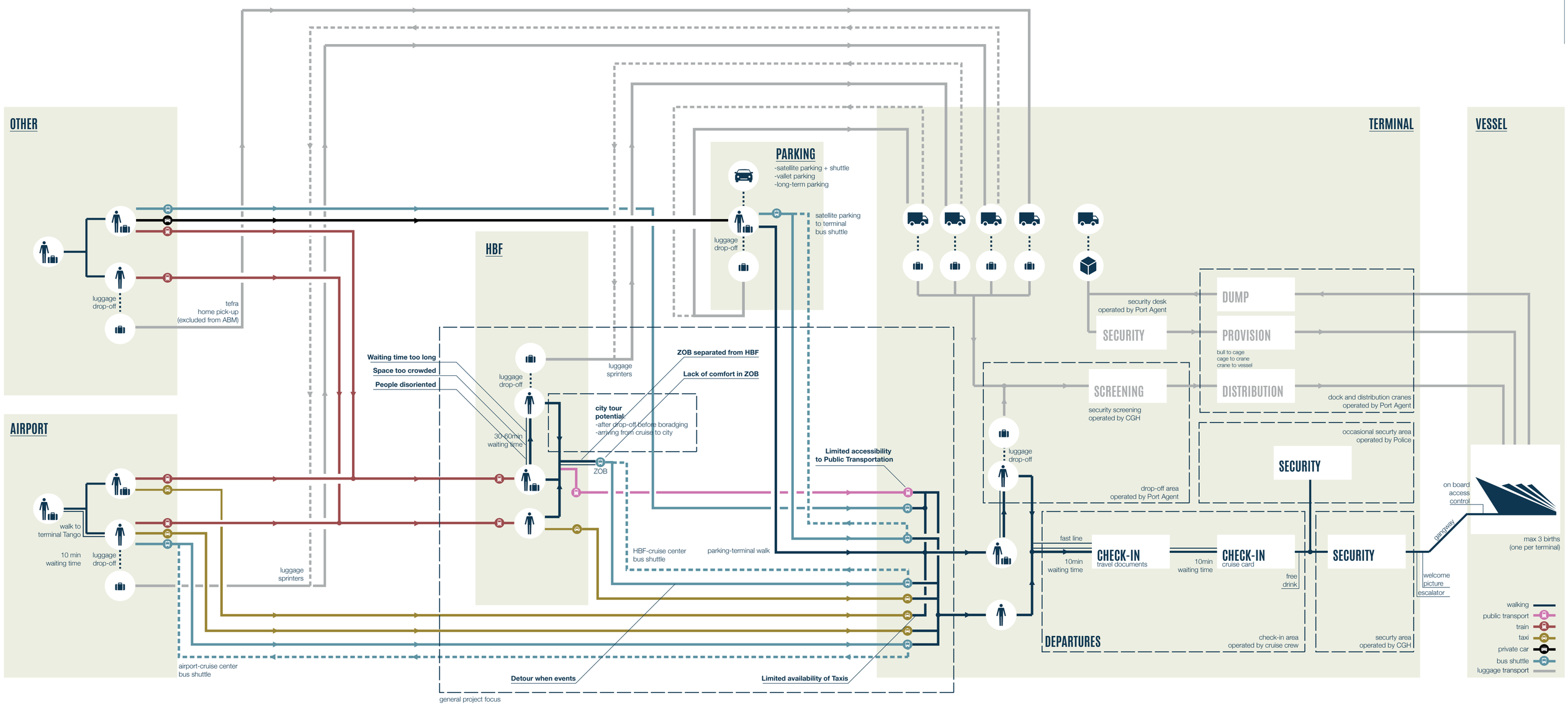
HAFEN STADT MODELL port city model

general scheme of access to the vessel
by arrival time and transportation mode



TIMELINE

- 6:00 VESSEL ARRIVES
- 7:00 START DISEMBARKATION
  BUS SHUTTLES START RUNNING
- 8:00
- 9:00 SPRINTERS START RUNNING
- 10:00 END DISEMBARKATION
- 11:00
- START BOARDING
- 12:00 START BOARDING PEAK
- 13:00
- 14:00 END BOARDING PEAK
  END LATE DISEMBARKATION
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- 16:00
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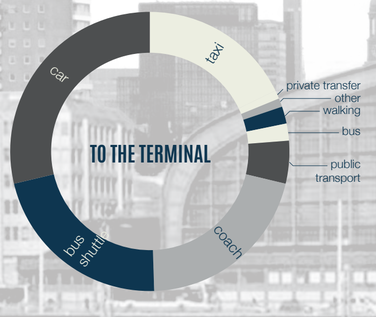
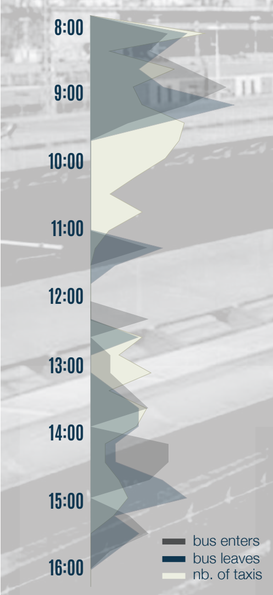
- 18:00 VESSEL DEPARTS

MOBILITY BEHAVIOR



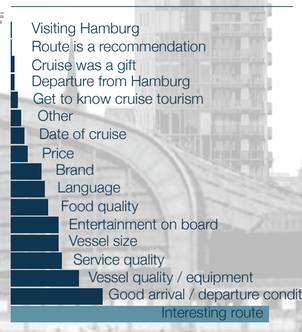


CITY BEHAVIOR

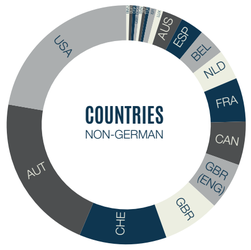
30-60 MIN WAITING TIME - CHECK-IN IN HBF AND DEPARTURE FROM ZOB
B.A. MITTE: HFB TOO CROWDED
DB: TERING DOWN SHOPS ON PLATFORMS
PORT AGENTS: COMPETITION AND MINIMAL COOPERATION
EVENTS: LIMITED ACCESS TO HBF: BUS DETOUR (AGREED WITH POLICE)
CRUISE LINES AIM TO REDUCE COSTS
HH TOURISM: PEOPLE NOT SPENDING TIME IN THE CITY
SUNDAYS: NOT ENOUGH TAXIS FROM TERMINAL TO CITY
TERMINAL TANGO TO BE DEMOLISHED IN 5 YEARS
PEOPLE DISORIENTED FROM HBF TO SPRINTER AND TO ZOB

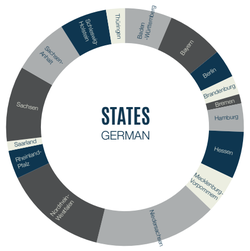
ACTIVITIES IN THE CITY

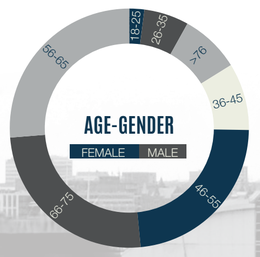
WHY BOOKING

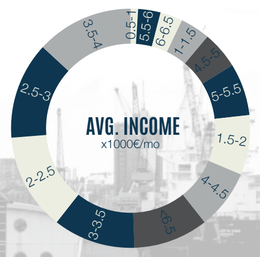


SOCIODEMOGRAPHICS

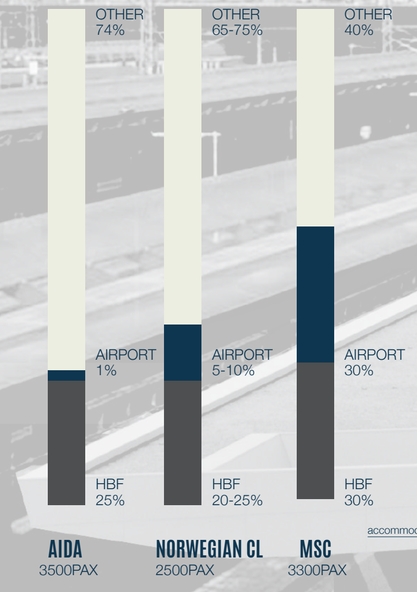


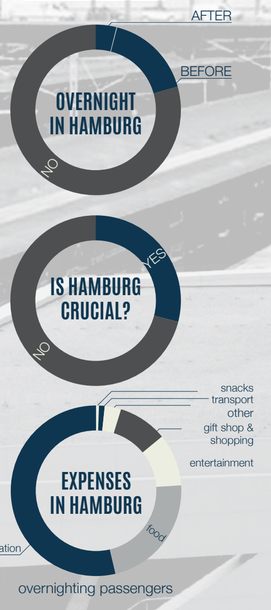






CHECK-IN / OUT BALANCE

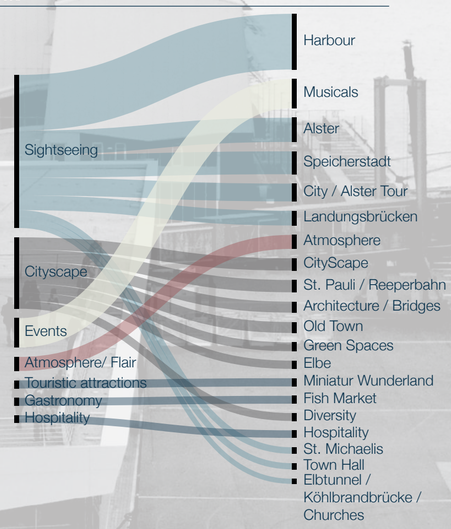




MAIN COMPLAINTS

No WiFi	ALL TERMINALS
Bad orientation, no international signage	ALL TERMINALS
Waiting areas are not nice	ALTONA + STEINWERDER
Bad acustics / Too noisy	HAFENCITY + STEINWERDER
Almost no gastronomy nearby	ALL TERMINALS
Not enough chairs (especially outside)	ALL TERMINALS
No sanitation facilities	STEINWERDERS
No place to put the luggage	HAFENCITY + STEINWERDER
No gift shop	ALTONA
No shuttle to the city	STEINWERDER
Bad organization/ to much waiting times	HAFENCITY + STEINWERDER
Difficult to reach	STEINWERDER

MAIN ATTRACTIONS



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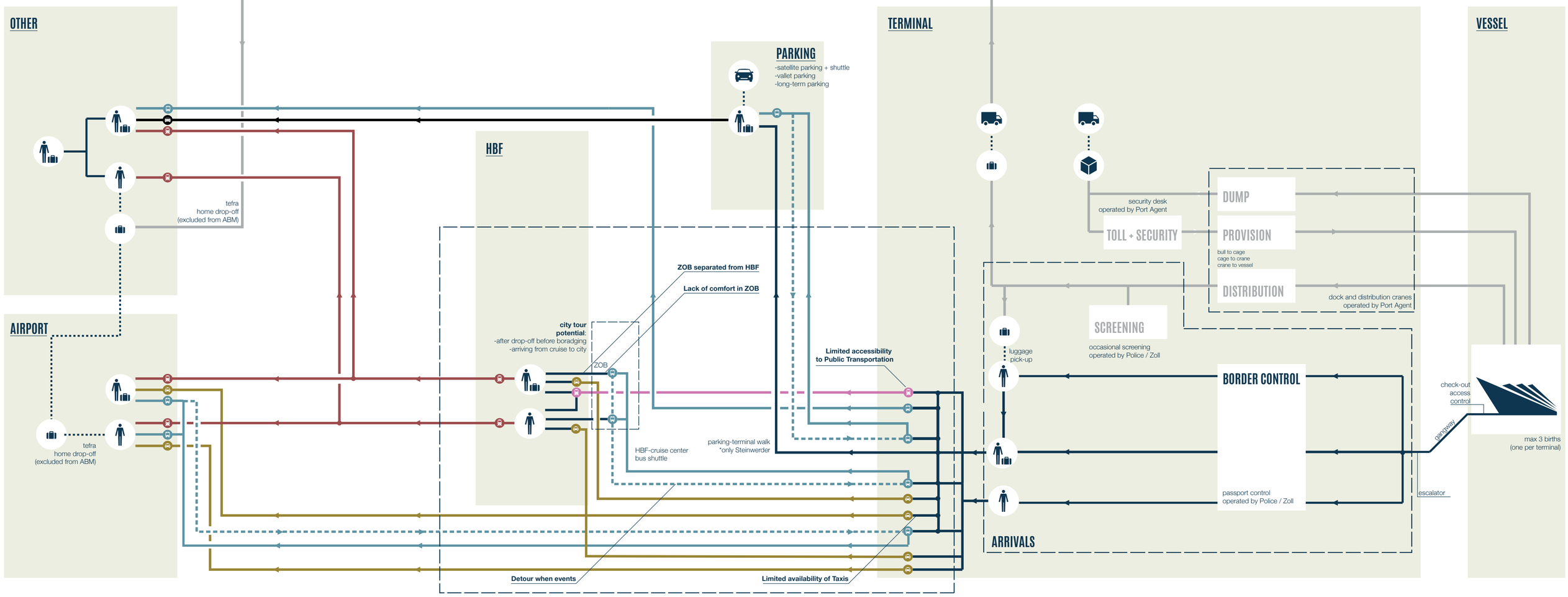
HAFEN STADT MODELL port city model

general scheme of disembarkation from the vessel
by departure time and transportation mode



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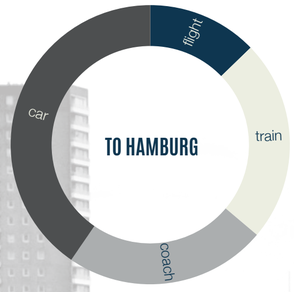

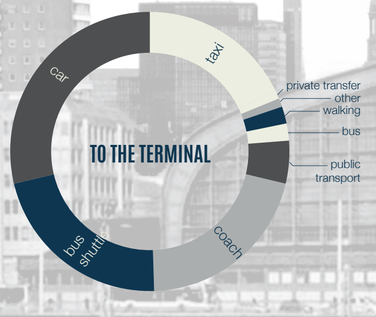

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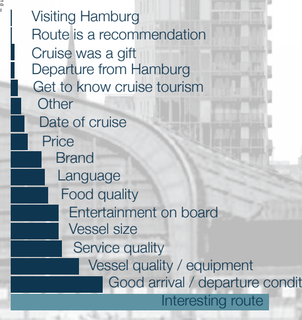

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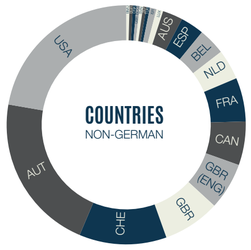

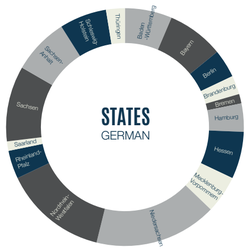

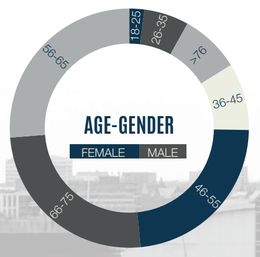

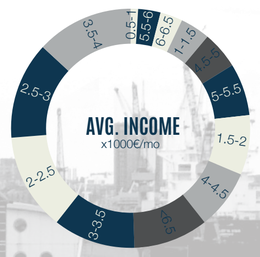

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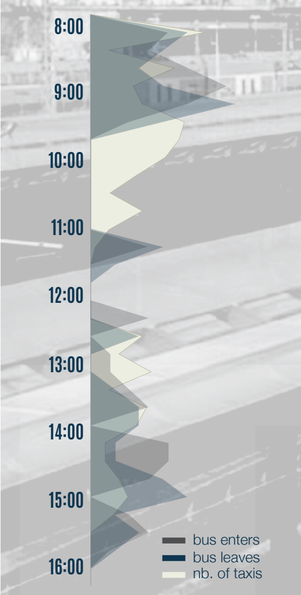

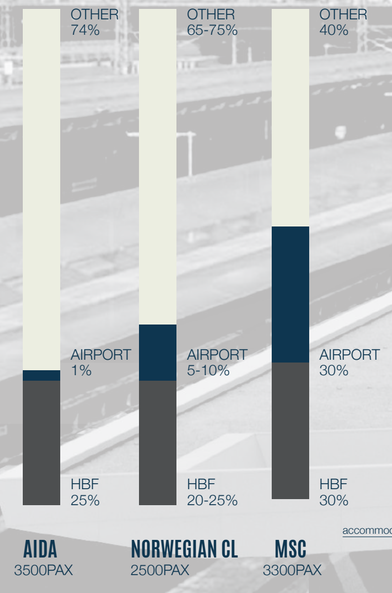

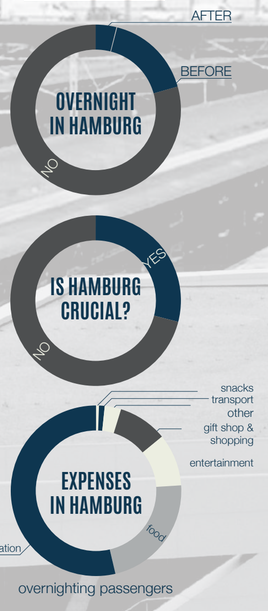

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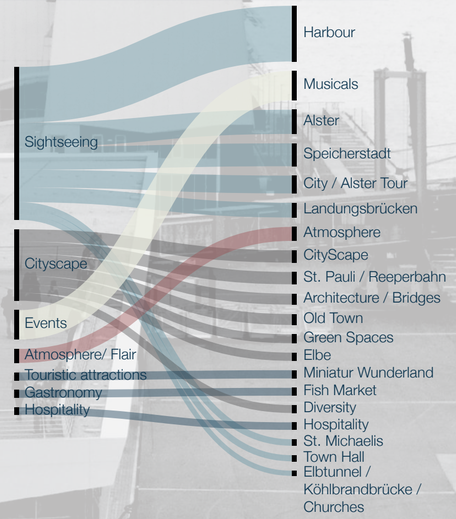

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No sanitation facilities	STEINWERDERS
No place to put the luggage	HAFENCITY + STEINWERDER
No gift shop	ALTONA
No shuttle to the city	STEINWERDER
Bad organization/ to much waiting times	HAFENCITY + STEINWERDER
Difficult to reach	STEINWERDER

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HAFEN STADT MODELL
port city model

key nodes
in transportation network

HAMBURT CENTRAL STATION
HAUPTBAHNHOF (HBF)

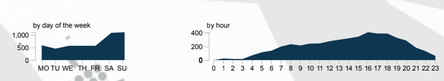
BUS STATION
ZOB

activity level on Instagram

TERMINAL
ALTONA

max 1 vessel / any size
no parking available

drop-off parking



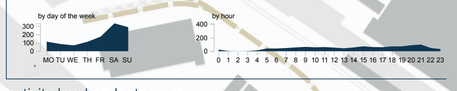
activity level on Instagram

TERMINAL
HAFENCITY

open to public in 2020
max 2 mid-size vessels

customer parking

drop-off parking (underground)



activity level on Instagram

TERMINAL
STEINWERDER

max 1 vessel / any size
no access by public transport
satellite (private) parkings available nearby
cateferia service

drop-off parking

drop-off parking

customer parking

activity level on Instagram

walking
public transport
train
taxi
private car
bus shuttle
luggage transport

0 250 500 750 1000 m

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HAFEN STADT MODELL port city model

key connections
in transportation network

FROM HAMBURG

FROM OTHER CITIES

FROM AIRPORT

FROM HOME

walking
public transport
train
taxi
private car
bus shuttle
luggage transport

0 250 500 750 1000 m

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HAFEN STADT MODELL
port city model

extended connections
in transportation network

FROM HAMBURG

FROM OTHER CITIES

FROM AIRPORT

FROM HOME

walking
public transport
train
taxi
private car
bus shuttle
luggage transport

0 250 500 750 1000 m

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HAFEN STADT MODELL
port city model

ABM model 1
spatial // human-scale // including HBF and ZOB

INPUT:
TRAIN SCHEDULES
CRUISE PASSENGERS ARRIVING BY TRAIN
AMOUNT OF PEOPLE (NOT CRUISE TOURISTS) INSIDE
AMOUNT OF PEOPLE (NOT CRUISE TOURISTS ARRIVING
by train, S-bahn and U-bahn
AMOUNT OF PEOPLE (NOT CRUISE TOURISTS) PASSING BY
crossing east-west

MEASUREMENTS:
TIME SPENT DISORIENTED
LEVEL OF DISORIENTATION
AMOUNT OF PEOPLE INSIDE

INPUT:
NUMBER OF SPRINTERS
CRUISE PASSENGERS USING SPRINTERS
CRUISE PASSENGERS TAKING TAXIS
INITIAL NUMBER OF TAXIS AVAILABLE

MEASUREMENTS:
NUMBER OF PEOPLE QUEUING
WAITING TIME
NUMBER OF TAXIS AVAILABLE

TAXI AND SPRINTER DROP-OFF AREA
*2D SHAPE

HAMBURG CENTRAL STATION (HBF)
*3D MODEL
several floor levels

INPUT:
BUS SHUTTLE SCHEDULES
CRUISE PASSENGERS TAKING BUS

MEASUREMENTS:
NUMBER OF PEOPLE QUEUING
w/ AND w/o LUGGAGE
WAITING TIME

BUS STATION (ZOB)
*3D MODEL
only ground level

INNER BEHAVIOR:
PEOPLE IN 'DEPARTURE' MODE ARRIVE BY TRAIN
INTERACT WITH ENVIRONMENT:
follow other cruise passengers
walk in groups (couples, families, students, etc.)
are generally disoriented
are atracted to shops
inverse to closeness to cruise depart hour
walking speed
proportional to closeness to cruise depart hour
inverse to amount of luggage and age
SOME SEARCH (WANDER) FOR LUGGAGE DROP-OFF AREA
SOME WALK DIRECTLY TO ZOB
SOME TAKE TAXI
PEOPLE IN 'ARRIVAL' MODE WALK IN AND TAKE TRAINS HOME

INNER BEHAVIOR:
TAXI:
TAXIS DISTRIBUTED IN ROWS
people take the first taxi in the row
people wait for available taxis
only groups up to 4 people take taxis
LUGGAGE DROP-OFF:
PEOPLE QUEUE WAITING FOR THEIR TURN
PEOPLE LEAVE LUGGAGE
LUGAGGE IS LOADED INTO SPRINTERS (VAN)
SPRINTERS RUN TO THE TERMINAL WHEN FULL
they unload the luggage in the terminals
they come back when they're empty
PEOPLE WITHOUT LUGGAGE:
some walk directly to ZOB
some visit the city and then wak to ZOB

INNER BEHAVIOR:
PEOPLE ARRIVE WALKING
PEOPLE WAIT FOR THE BUS SHUTTLE
SOME PEOPLE HAS STILL LUGGAGE
they store luggage in the trunk and take shuttle
SOME PEOPLE HAS NOT LUGGAGE
they take shuttle directly
SHUTTLE BUSES DEPART WHEN SCHEDULED
they run to the terminals
they leave people in 'departing' mode
they pick up people in 'arrival' mod with luggage
they run back to ZOB
PEOPLE IN 'ARRIVAL' MODE GET OFF THE SHUTTLE
they pick up the luggage fro the trunk
they walk to the central station

INPUT:
TRANSPORTATION DATA AND SCHEDULES
of trains, bus shuttles, taxis and sprinter vans
AMOUNT OF PEOPLE ARRIVING
ARRIVAL MODE DATA (OUTPUT FROM MODEL 2)

OUTPUT:
WHEN, HOW MANY, AND HOW
people leave the station and go to the Terminals

0 250 500 750 1000 m

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ABM model 2
city-scale // including cruise terminals, HBF and ZOB

INPUT:
PARAMETERS AND GEOMETRIES
ABLE TO BE MODIFIED INTERACTIVELY

INPUT (OUTPUT FROM MODEL 1):
WHEN, HOW MANY, AND HOW
people leave the station and go to the Terminals

INPUT:
VESSEL SCHEDULES
AMOUNT OF PEOPLE ARRIVING=AMOUNT DEPARTING
TRANSPORTATION DATA
SHUTTLE SCHEDULES

MEASUREMENTS:
NUMBER OF PEOPLE QUEUING
WAITING TIME
NUMBER OF TAXIS AVAILABLE
NUMBER OF PEOLPE IN ARRIVAL AND DEPARTURE MODE

OUTPUT:
WHEN, HOW MANY, AND HOW
people leave the terminals to go to the station

INNER BEHAVIOR (DEPARTURE MODE):
PEOPLE ARRIVE IN TRANSPORT MEAN
(output from model 1)
PEOPLE WITH LUGGAGE:
walk in the lugagge drop-off area
leave luggage
walk in the check-in area
PEOPLE WITHOUT LUGGAGE:
walk in the check-in area
PEOPLE TRAVELING BY CAR
leave the car in the parking lot
walk in the lugagge drop-off area
leave luggage
walk in the check-in area
cars stay in the parking lot until people come back (4 days)

INNER BEHAVIOR (ARRIVAL MODE):
PEOPLE DISEMBARK THE VESSEL
PEOPLE WITH LUGGAGE TAKE TRANSPORT MEAN
CAR: they take they own car and drive home
TAXI: taxis wait in lin. people take taxi when available
BUS SHUTTLE:
Departs when scheduled.
Arrives in the terminal, unloads people in 'departure mode'
Loads people in 'arrival mode'
Runs back to the train station.
PUBLIC TRANSPORT: behavior not considered

0 250 500 750 1000 m

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