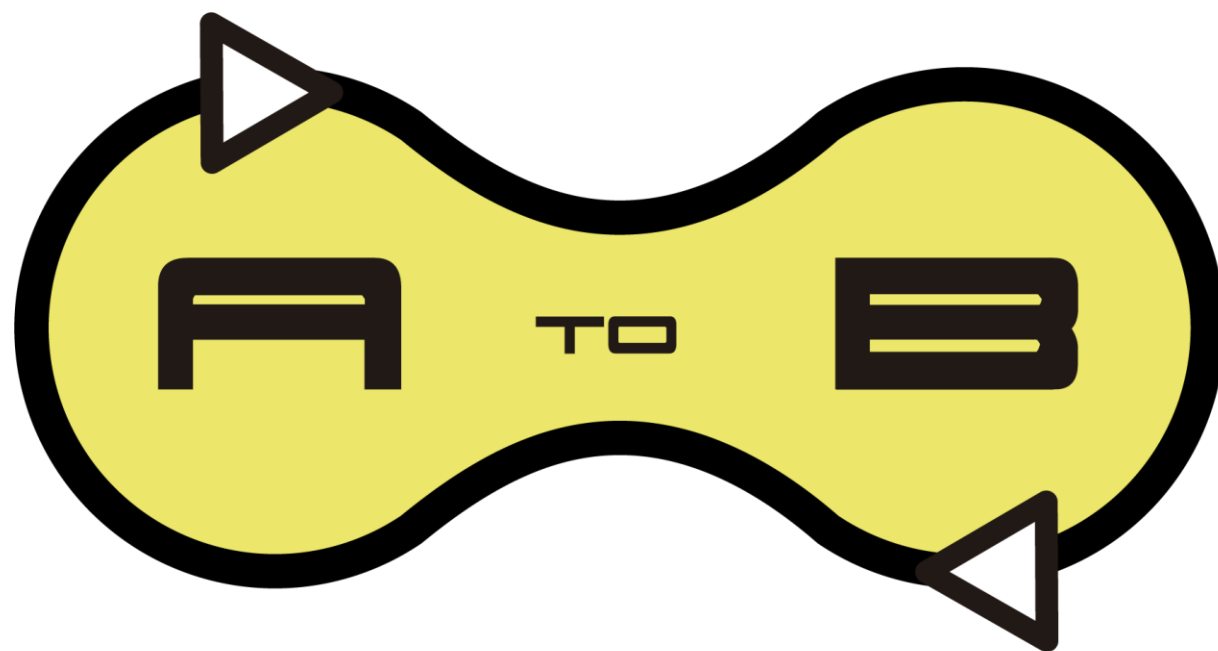


Rigoletti  
Casa de diseño

&

RODZ+  
design consulting

PRESENTS



**GLOBAL MOBILITY SYSTEM**

SPONSORED BY





expression



technology



vision



art



refinement



**Audi**

The Goal

THE AUDI

URBAN

FUTURE

INITIATIVE 2014



How to create cities that are free from cars, pollution, and traffic?

How to change transportation strategies within big cities?



The time has come to manage a dialogue among engineers, designers, architects, urban planners and researchers to create synergy among mobility, architecture, and urban development.





**Audi**

URBAN FUTURE INITIATIVE AWARD 2012

**Boston and the future of Mobility**





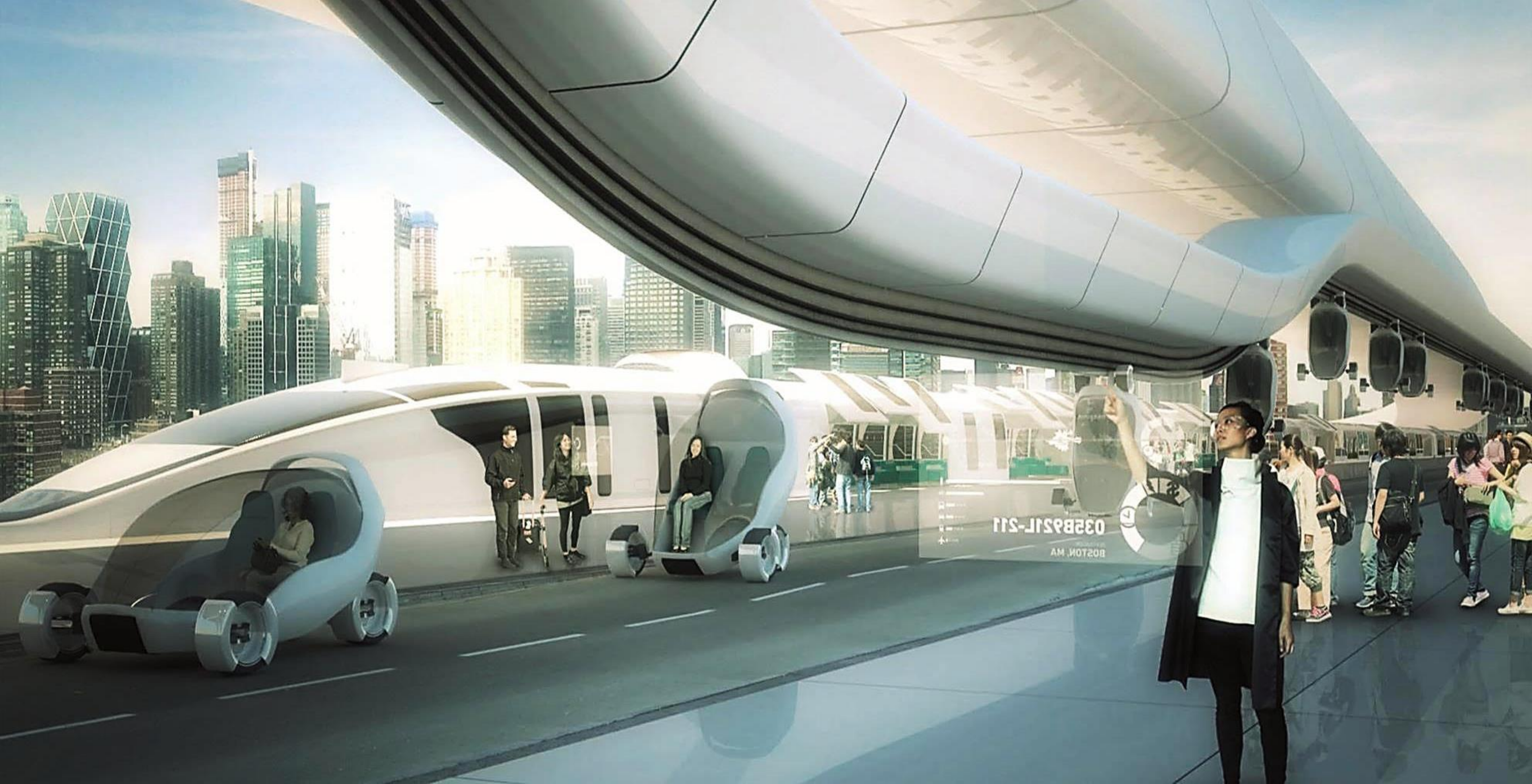


**SURFACE**  
**SUB-SURFACE**







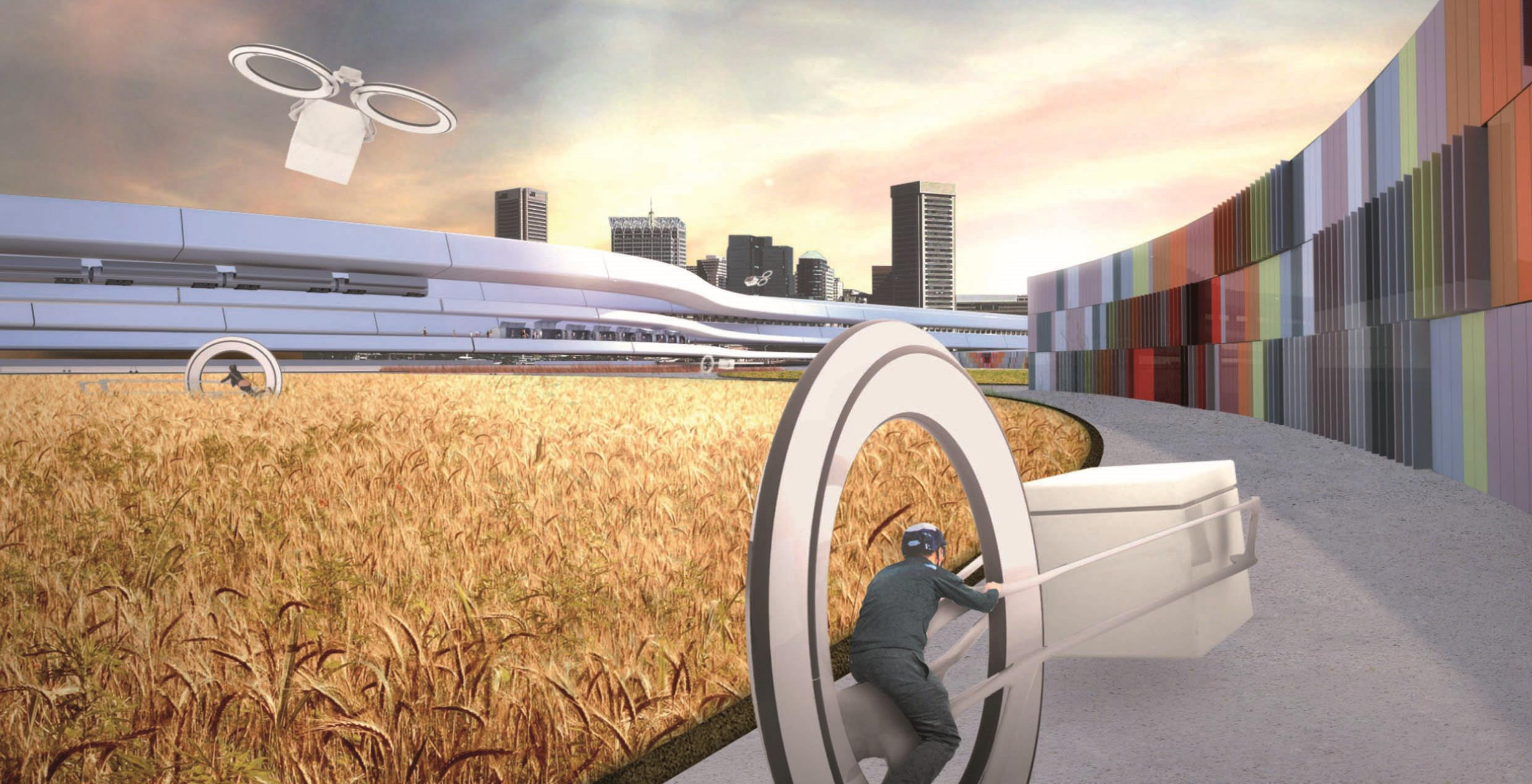


032B21L-511  
BOSTON, MA









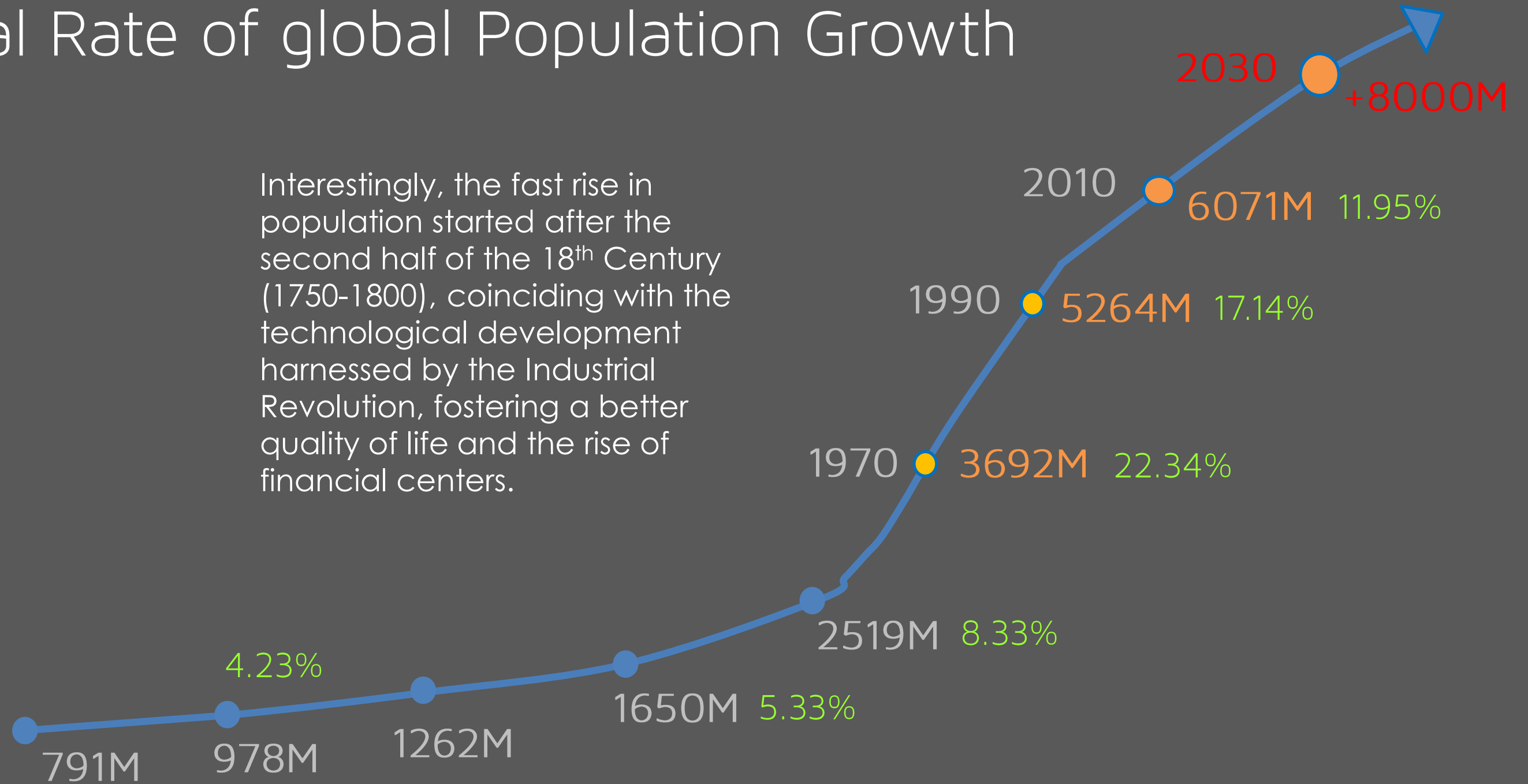




However, the **reality** we face today presents a **different scenario** in terms of mobility.

# Annual Rate of global Population Growth

Interestingly, the fast rise in population started after the second half of the 18<sup>th</sup> Century (1750-1800), coinciding with the technological development harnessed by the Industrial Revolution, fostering a better quality of life and the rise of financial centers.







Saturation and Chaos

Lack of productivity

Health Decline

harmony and stress

Lack of Civic behavior

Violence and hysteria

However, reality has come to be much different from expected. The economic strategies from capitalist contexts, the growing population, and the utopian pursuit of the American dream, have dragged us into becoming an uncontrolled civilization.

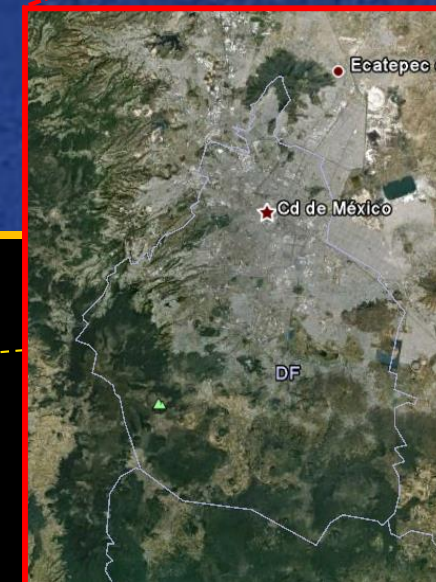
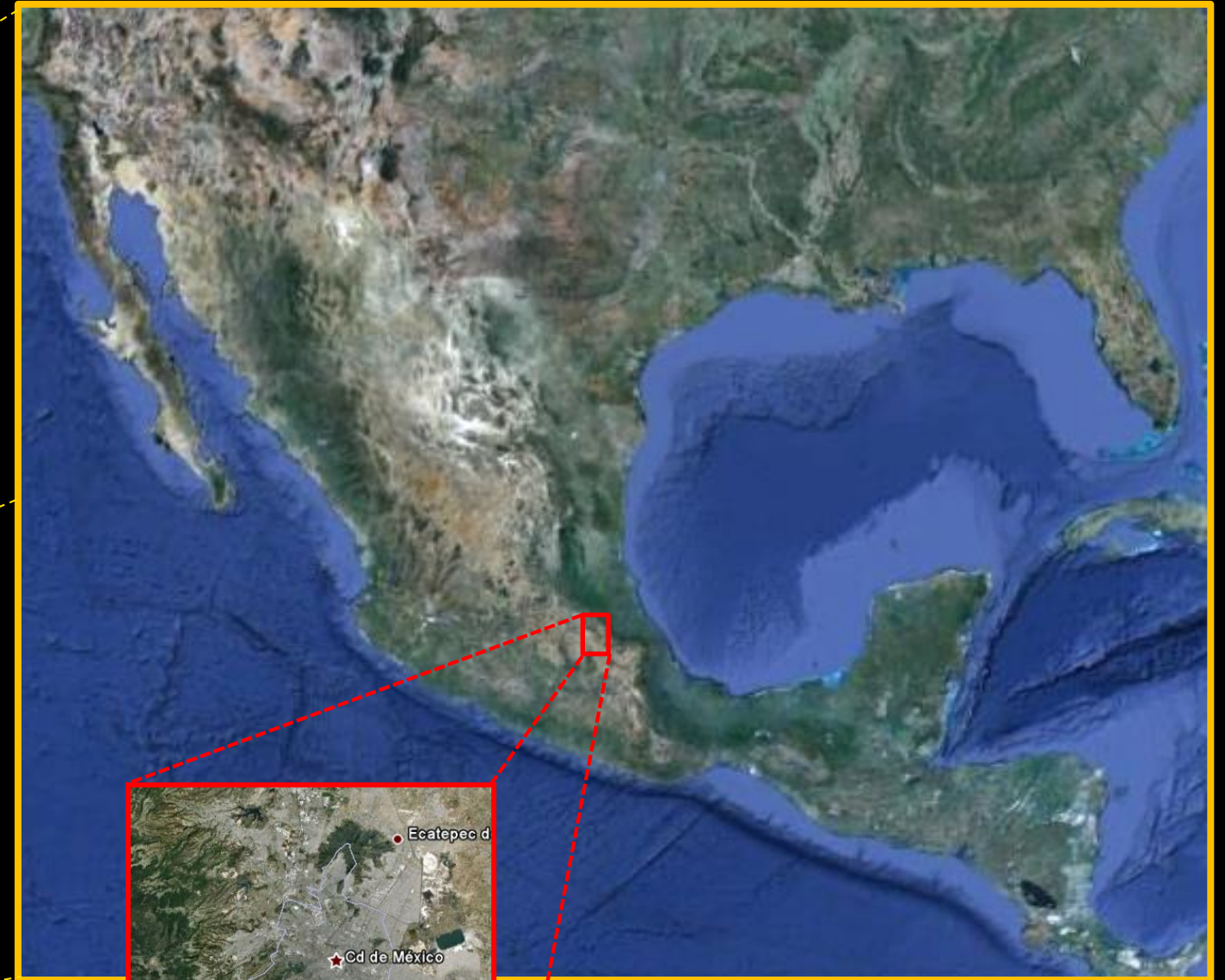


10,189 km of linear roadways

Alaska



Colombia



0.08%







# The Challenge



## FEDERAL DISTRICT, MÉXICO

Extent of Territory: **1485 Km<sup>2</sup>**  
Metropolitan Area : **7854 km<sup>2</sup>**



## MAIN BOSTON, E.U.A.

Extent of Territory : **242 Km<sup>2</sup>**  
Metropolitan Area : **9,638 km<sup>2</sup>**





## FEDERAL DISTRICT, MÉXICO

Population DF: 8,852,000p  
Metropolitan Area : 26,116,840p

13.5+ 5.8+



## MAIN BOSTON, E.U.A.

Population: 645,000p  
Metropolitan Area : 4,500,000p





## FEDERAL DISTRICT, MÉXICO

Densidad demográfica 7,960p x km<sup>2</sup>

Ingreso per cápita: \$9,817.00 USD



## MAIN BOSTON, E.U.A.

Densidad demográfica: 1,760p x km<sup>2</sup>

Área metropolitana: \$17,300.00 USD





# The Problems





Changes in **law regulation** for automobile transportation ● Persistent campaigns for the shift of **transportation** paradigms and **habits** ● Technologies improvements to increase engine efficiency ● Improvements in communication technologies ● Decentralization of business hubs ● ● ●





Opportunity areas  
detection

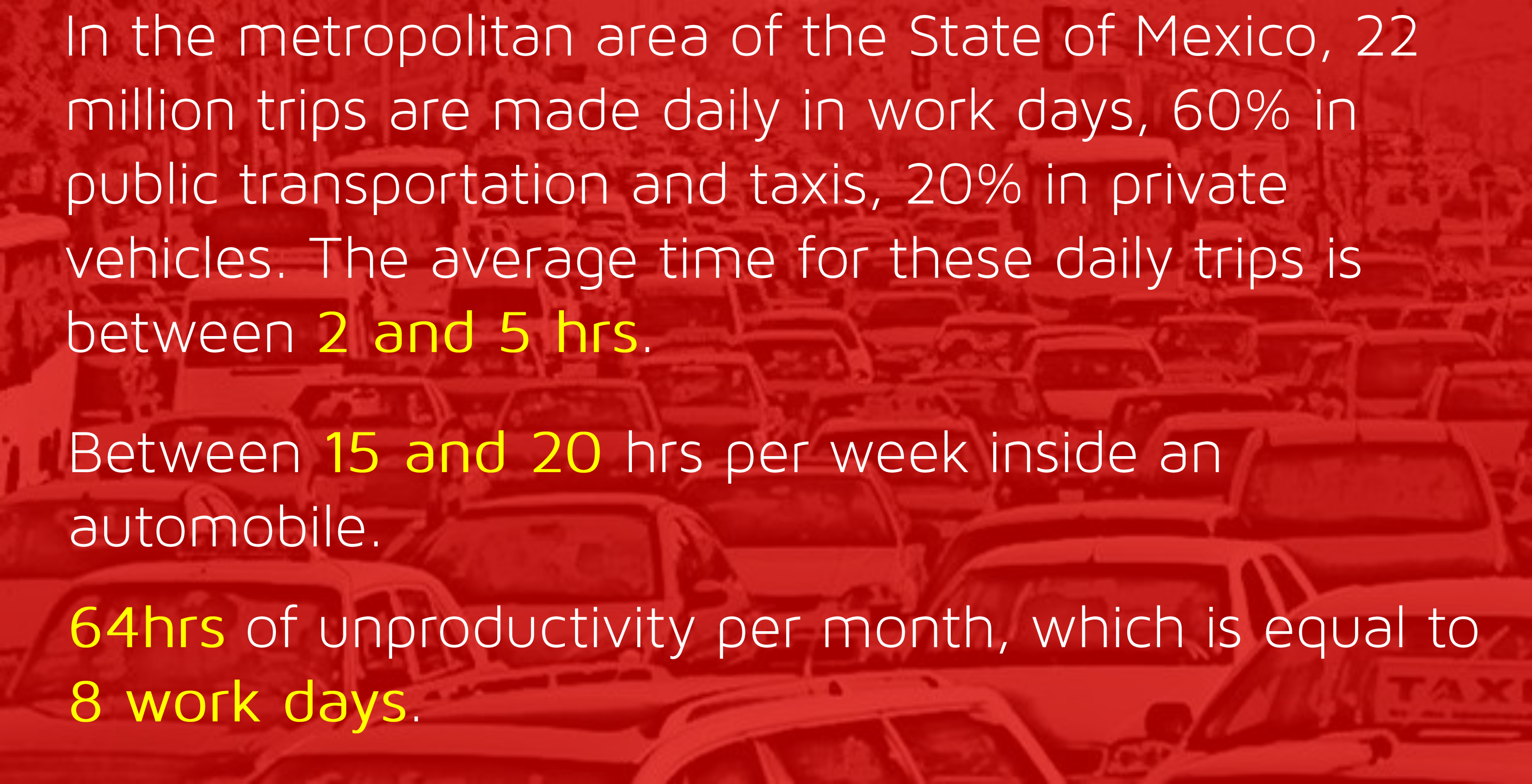


Extent of operation : **57km**  
from Metepec to Polanco



**Displacement time:** Between 1 y 2.5hrs.



The background of the slide is a photograph of a severe traffic jam, with numerous cars packed closely together. A semi-transparent red filter is applied over the entire image. The text is overlaid on this background.

In the metropolitan area of the State of Mexico, 22 million trips are made daily in work days, 60% in public transportation and taxis, 20% in private vehicles. The average time for these daily trips is between **2 and 5 hrs**.

Between **15 and 20** hrs per week inside an automobile.

**64hrs** of unproductivity per month, which is equal to **8 work days**.

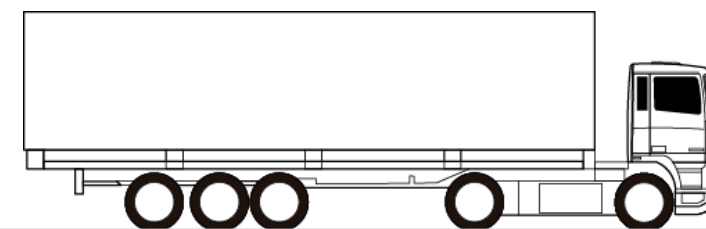
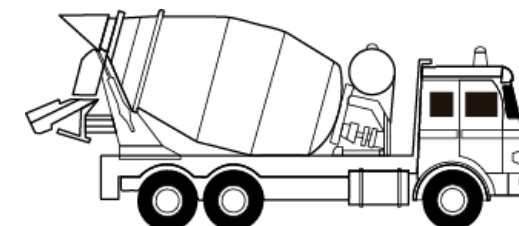
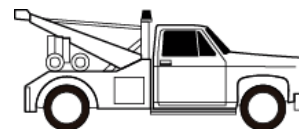
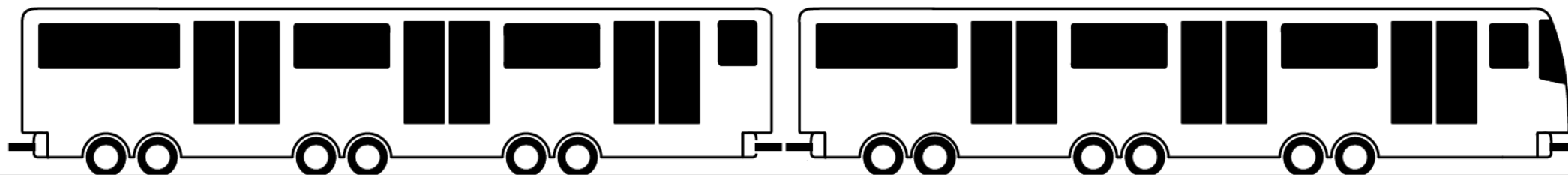
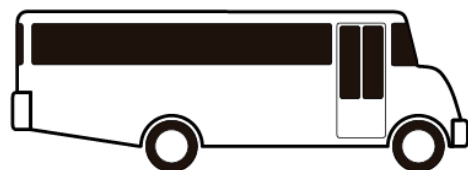
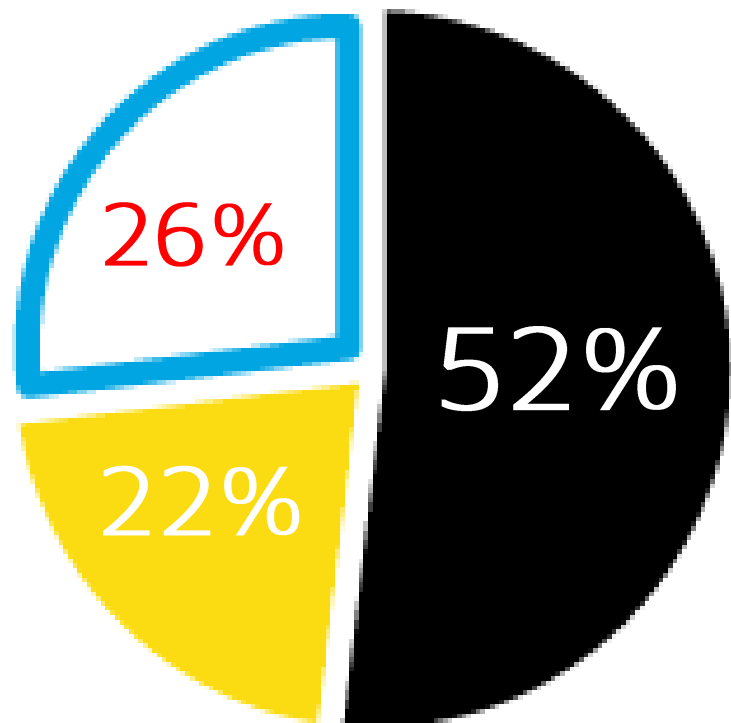
The time spent in displacement amounts to 22% less time for socializing, amusement, reading, study, and sport.



In average, there are **1.5 passengers** for each private automobile

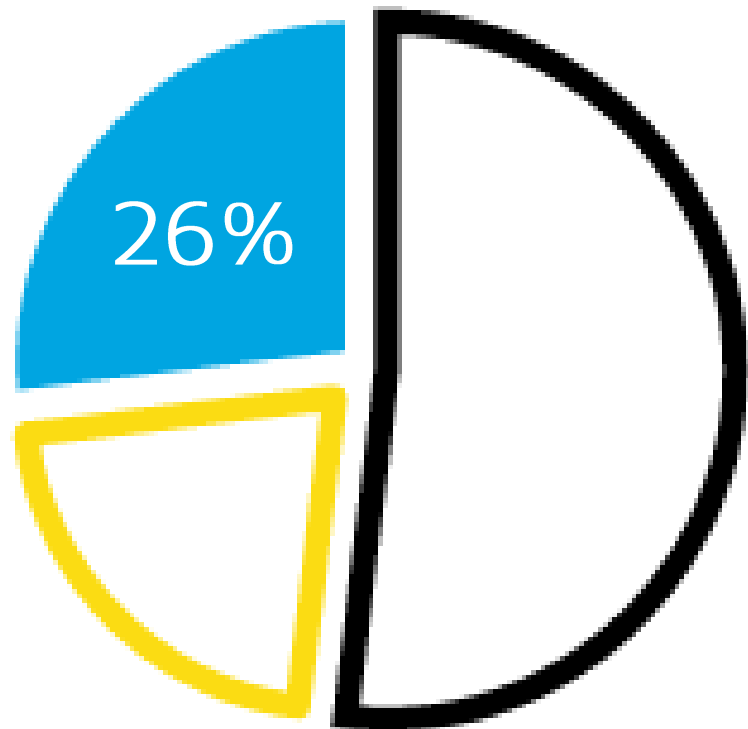






Collective

Utilitarian





19%

81%

26%

Currently, **3.3 million work-hours** are lost in daily trips in Federal District, and it is estimated that traffic costs amount reach to \$233, 160, 000 USD each year.

19%

26%

81%

It is estimated that **85%**  
of the main roadways  
have an average speed  
below **30km/h** in light  
traffic and speeds  
between **7 and 15 km/h**  
during rush hour.



19%

81%

26%

There is a saturation of  
**353 automobiles per  
km<sup>2</sup>** in Federal District's  
roadways, which makes it  
the city with the **highest  
vehicular density** in the  
American continent





In the metropolitan area of the State of Mexico, **22 million trips** are made daily in work days, 60% in public transportation and taxis, 20% in private vehicles.

Private vehicles take up **94%** of the parking lot, **80% of the roadway space**, and only account for 20% of daily trips per person.





Transportation vehicles in the Mexico's city metropolitan area **consume 57%** of the gasoline used in the country and are **responsible for emitting 52%** of CO<sub>2</sub>, 33% NO, and 21% of sulfur dioxide.



In 2012, an average of \$5000 Million of USD in subsidy were destined to gasoline. Any way its price follow increasing day by day.



*"This is how I feel every time I fill my car with fuel"*





Selected Model: Average SUV

Average engine power: 150hp

Average weight with fuel: 1840kg

Passenger capacity: 5 passengers x 75kg each = 375kg

Dead weight capacity: 35kg x 5people=175kgs

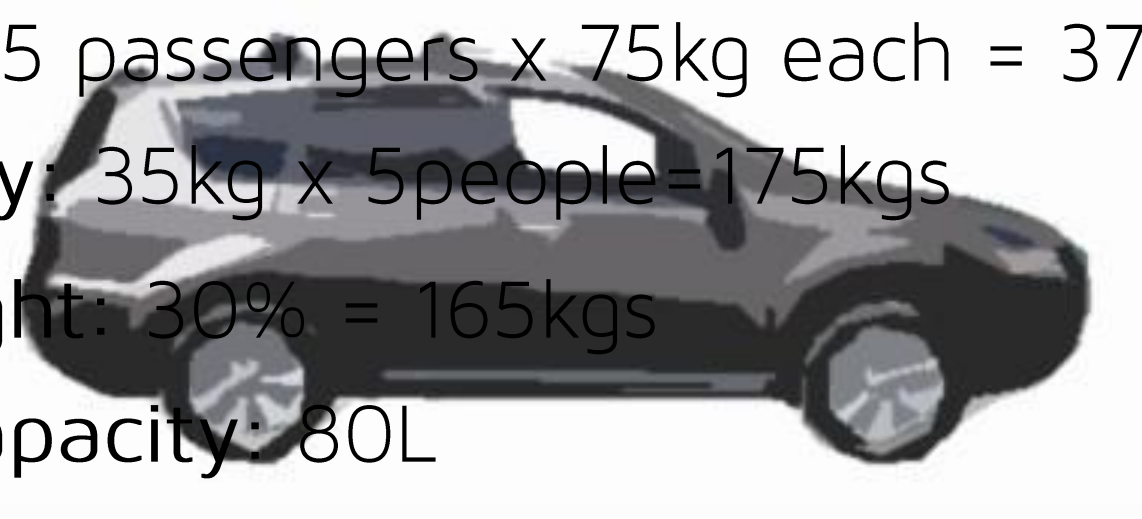
Safety factor in weight: 30% = 165kgs

Average fuel tank capacity: 80L

Useful load capacity for best operation = 550kg

Total vehicular weight without overload: 2390kg

Average fuel consumption: 14km/L





**100% Hp Motor**

**2390kgs**

**150km/h**

**14km/Lt**

**23.1% Hp Motor**

**550kg** useful load for 100% of vehicle capacity

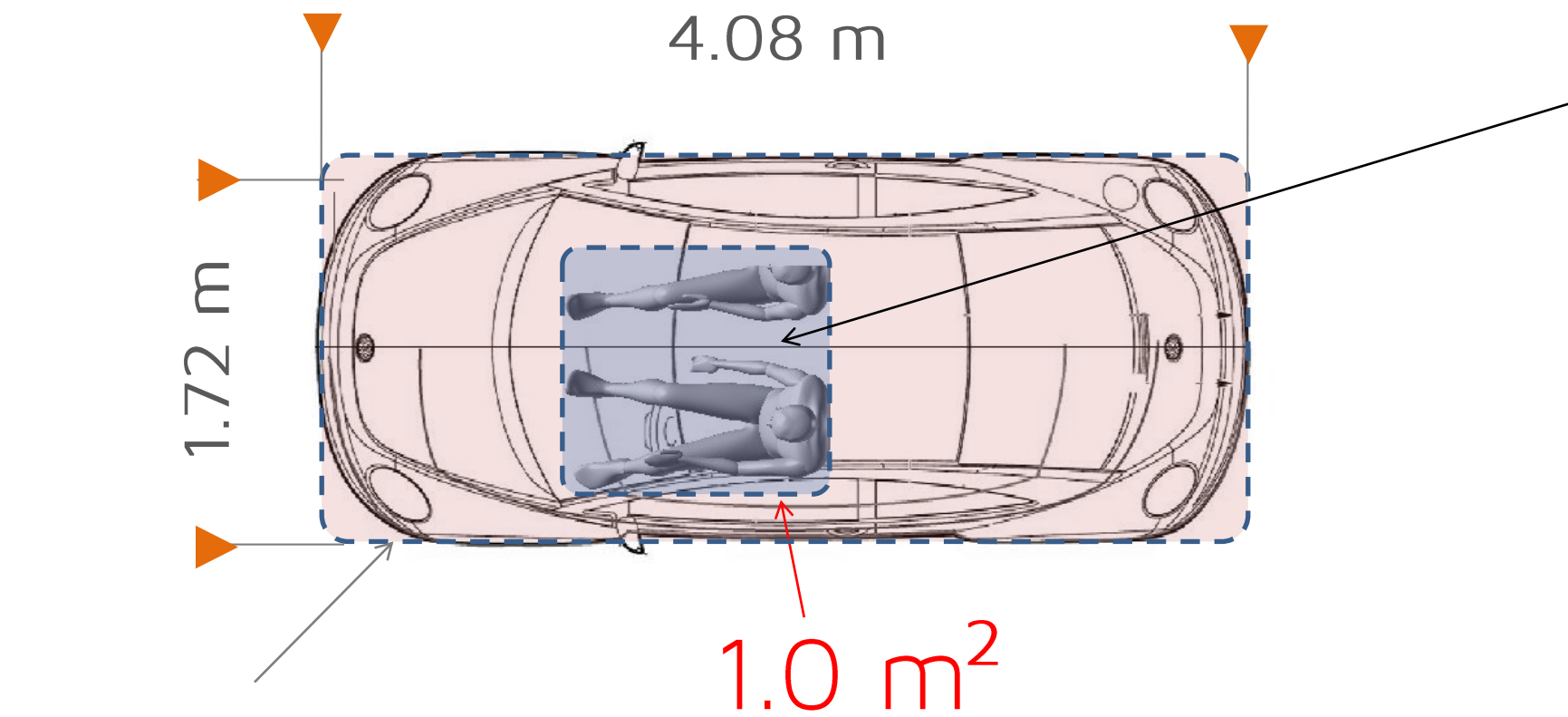
**6.9% Hp Motor**

**165kgs**, average vehicle load of 80% of private vehicles

**Only 6.9% of fuel is used to move 1.5 passengers**

Hypothetically, for every \$100 pesos of fuel, we only use \$6.60 pesos to move our weight. **What happens with the other \$93.40 pesos?**





1.5 of passenger

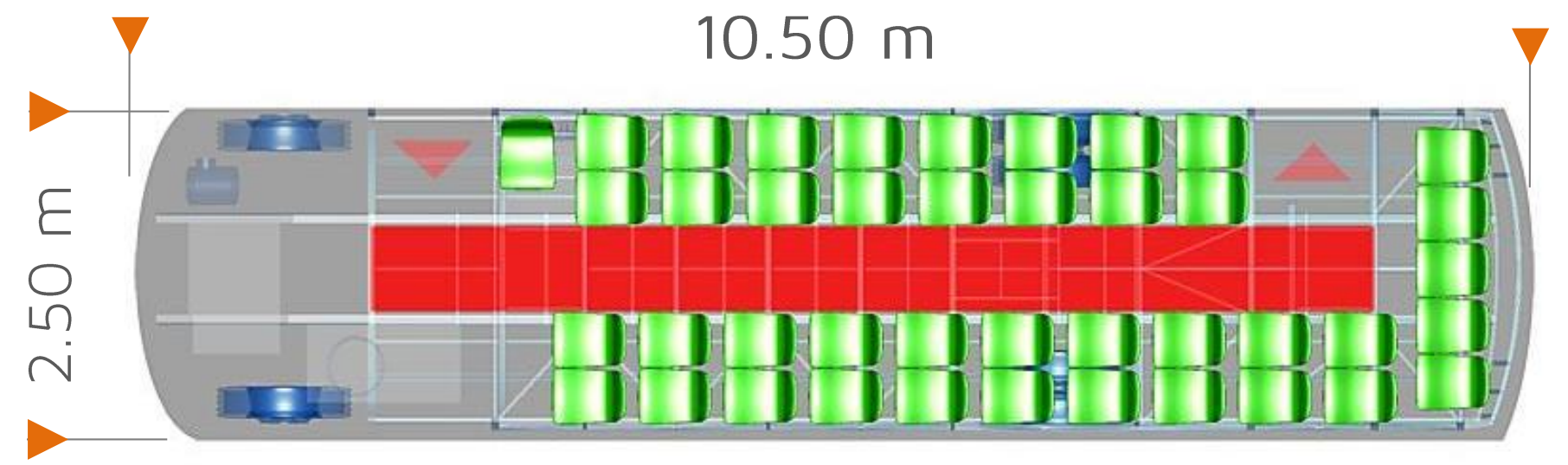
TRADITIONAL ARRANGEMENT

60

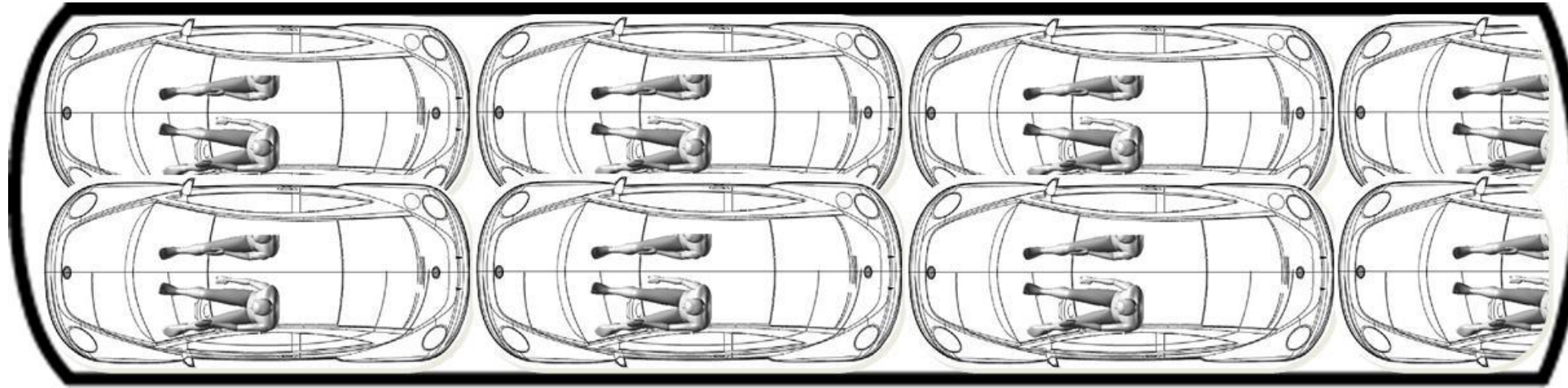
SEATS = 42  
 STANDING PEOPLE (5 PERSONS X M2) = 23  
 TOTAL BUS CAPACITY = 65

SEATING AREA  
 STANDING AREA

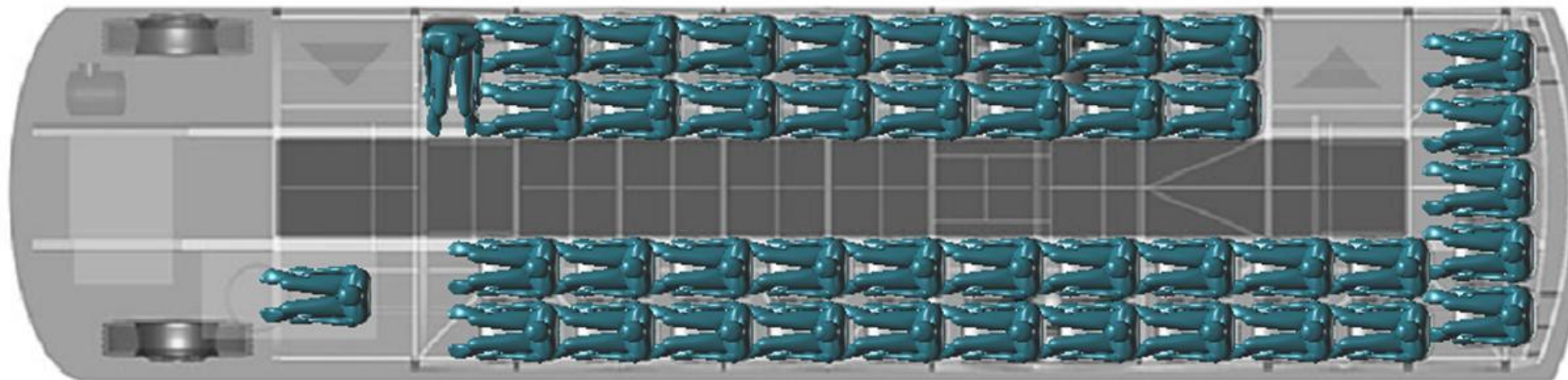
26.30 m<sup>2</sup>







**9** seated passengers  
 $26.30\text{m}^2$



**43** seated passengers  
 $26.30\text{m}^2$

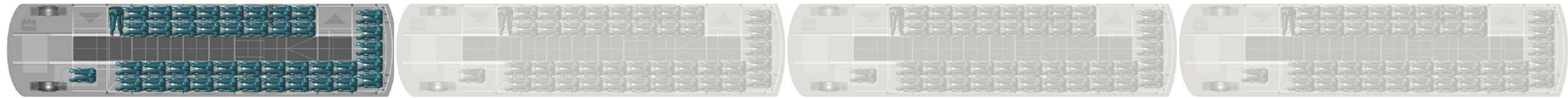
**75** passengers at full capacity



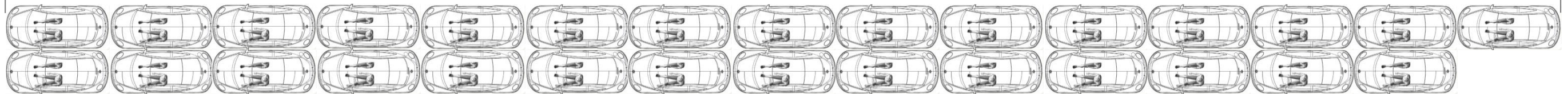
# 1:6

**43p** - 26.30m<sup>2</sup>

**172p** seated passengers



61.20 m



**43p** seated passengers  
153.00m<sup>2</sup>



The background of the image is a close-up, high-contrast photograph of a dark-colored jigsaw puzzle. The puzzle pieces are interlocked, creating a complex, repeating pattern of ridges and grooves. In the center of the image, there is a single missing piece, which reveals a lighter, off-white surface underneath. The lighting is dramatic, with strong highlights and deep shadows that emphasize the three-dimensional texture of the puzzle pieces.

An answer for now...





**multimodal****mobility**







But, before we begin, we  
must continue to  
understand...





# Global Mega Trends



Urbanization

Society thinking

Economy  
behavior

Technology  
horizons

Energy  
saving

Intelligent  
infrastructure

Business trend

Health and well  
being

Smart  
manufacturing

Mobility

Communication

Sustainability

Globalization  
forces



Local  
Conditions

Context

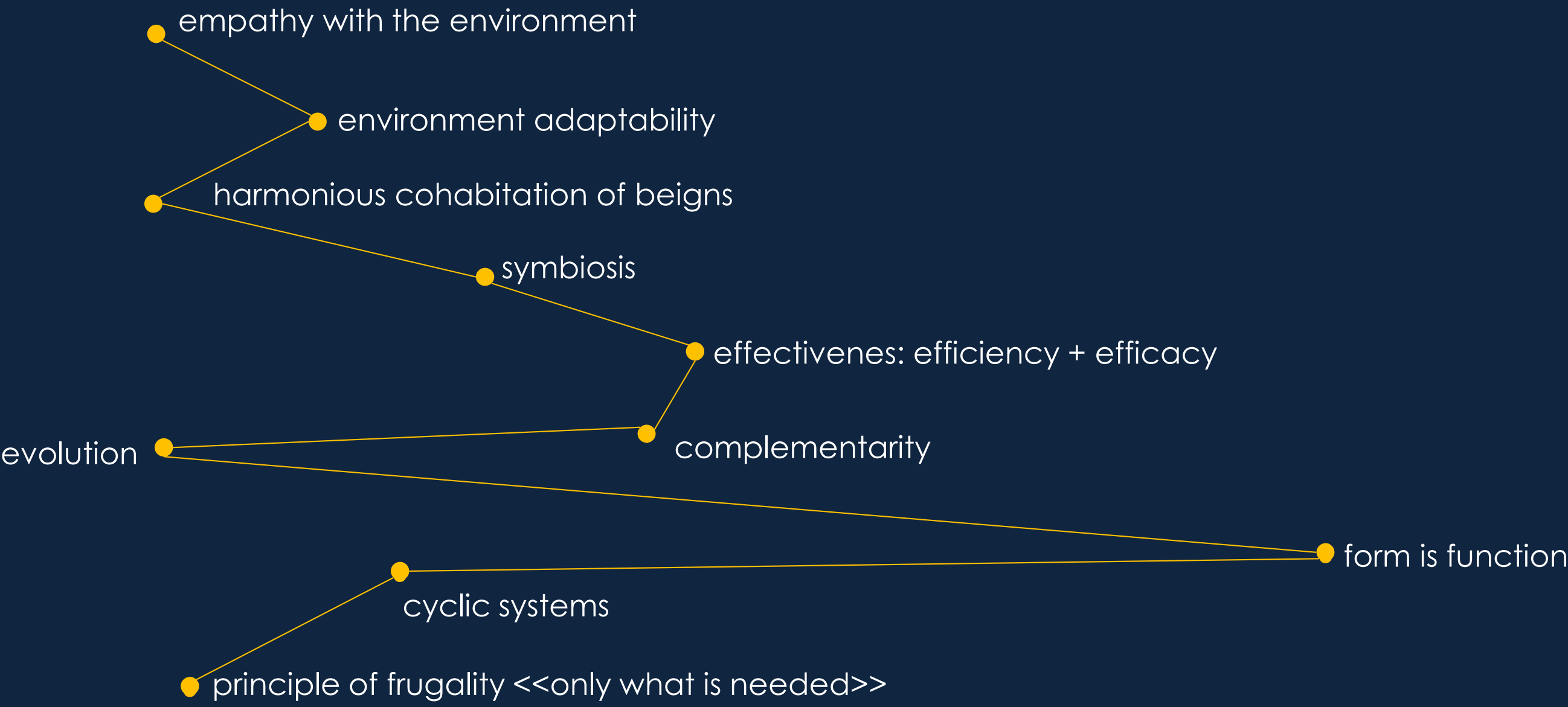
Identity

Interaction



# Analogy for the design of the system .

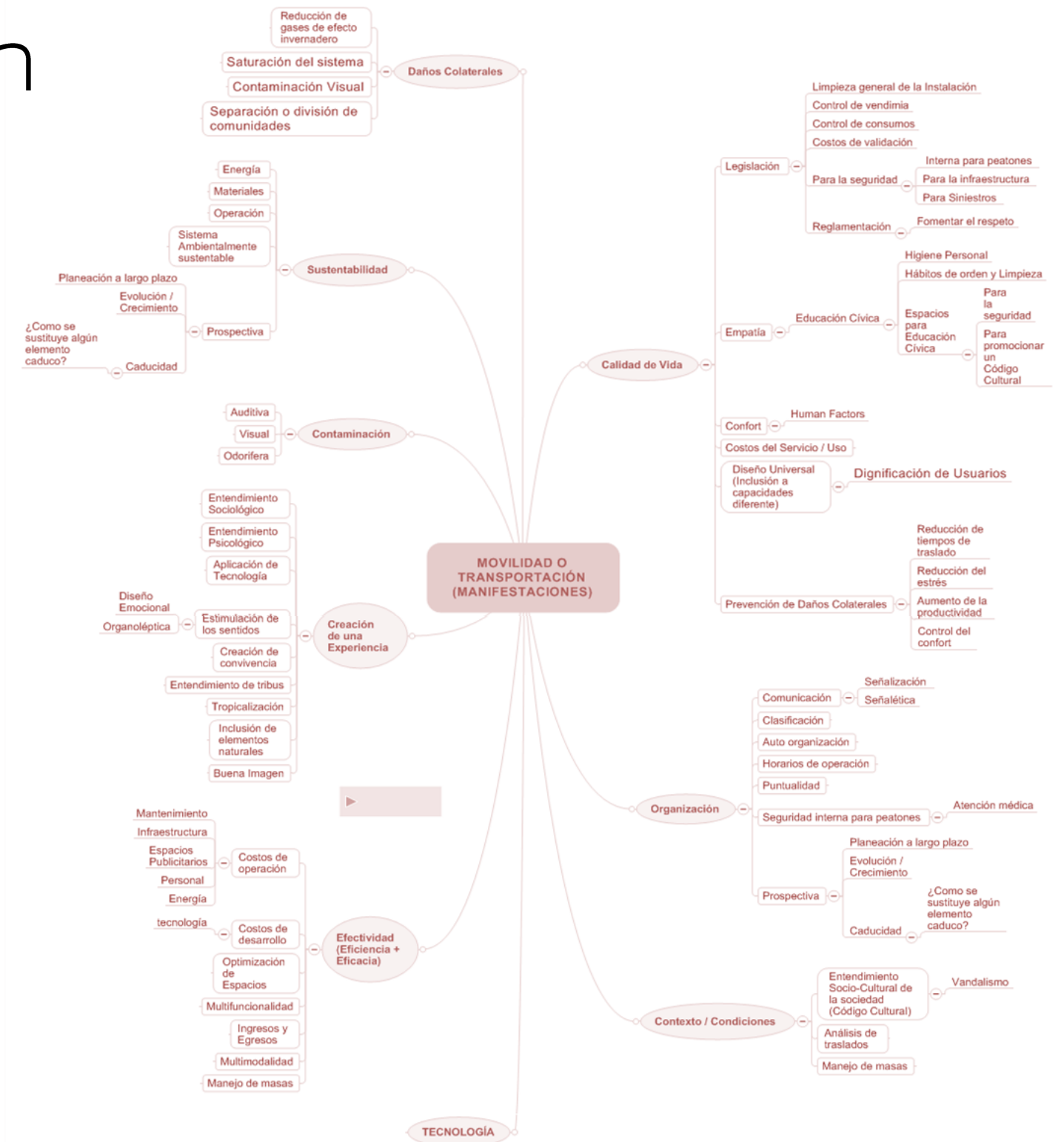
An inspiration from mother nature



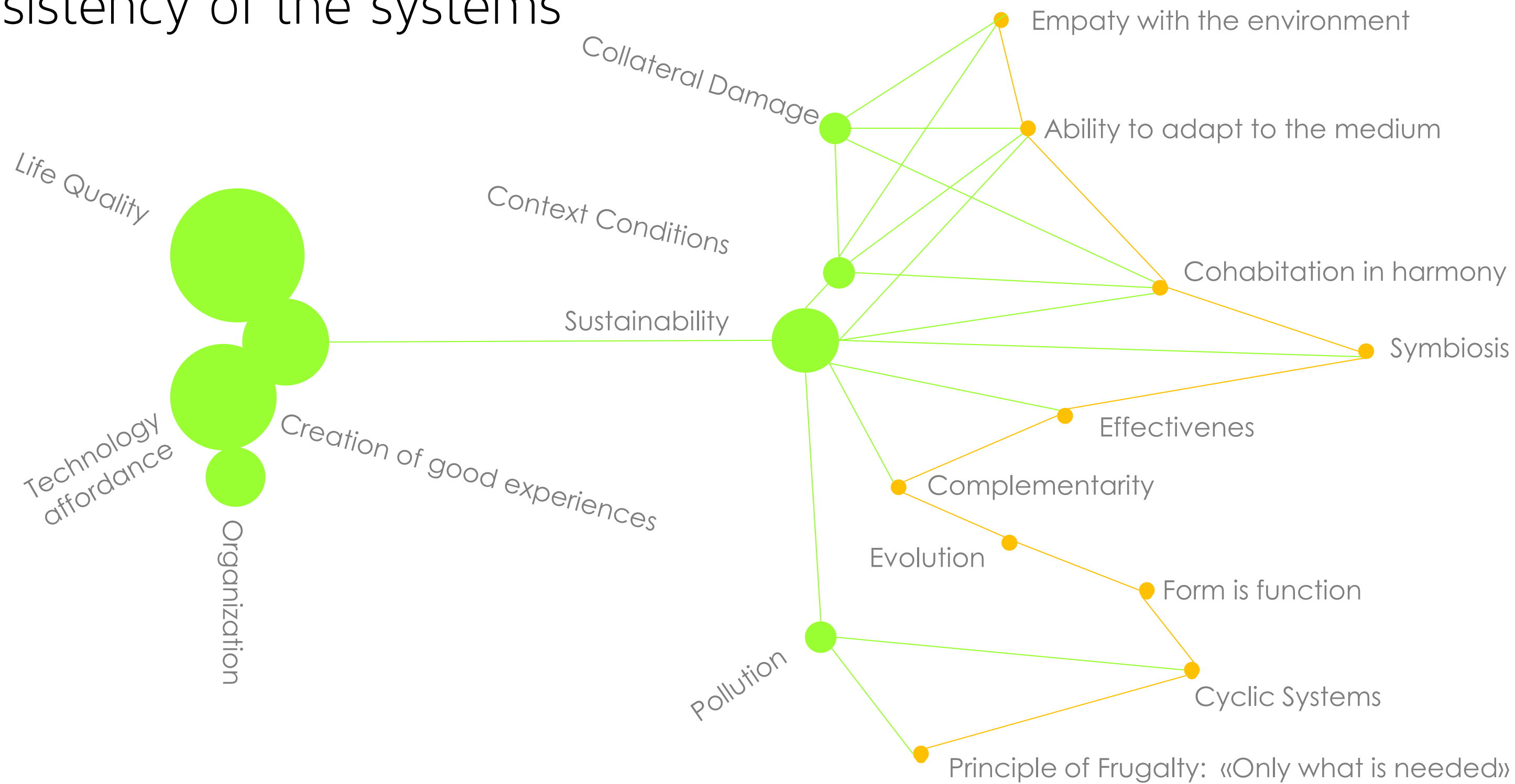


# Phenomenon Manifestation

- Collateral damage
- Application Sustainability principles
- Life Quality growth
- Pollution affections
- The need for creation of good experiences
- Lack of organization
- Addaptability to the context conditions
- Technology affordance

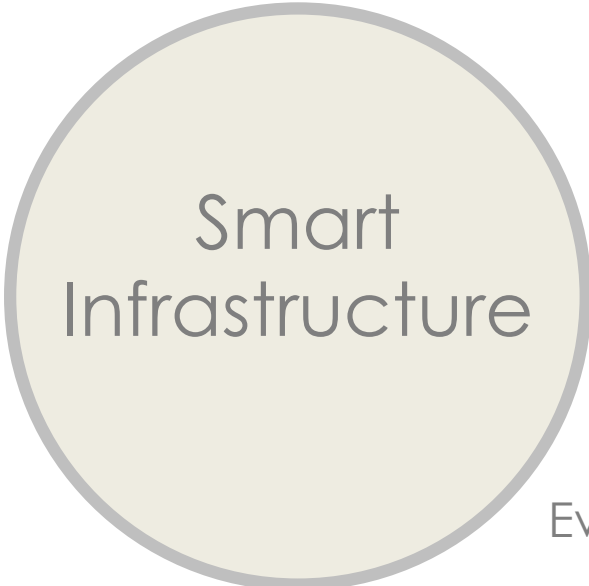
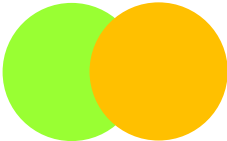


# Consistency of the systems



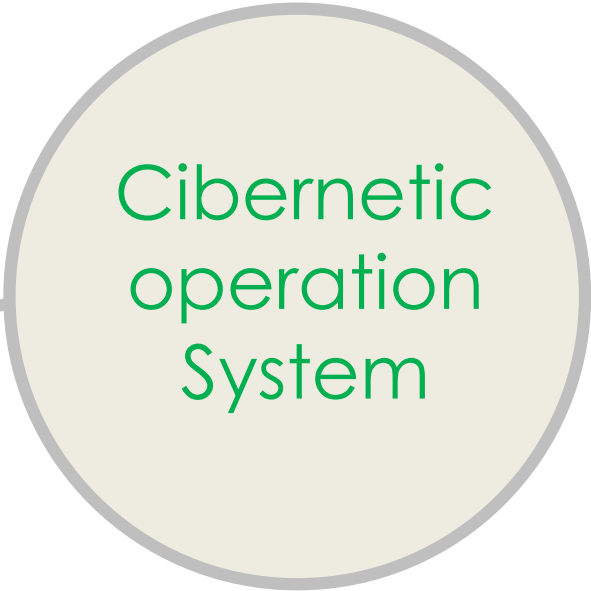


Adaptable to Context



Appends to existing  
urban infrastructure

Evoluteive Architecture



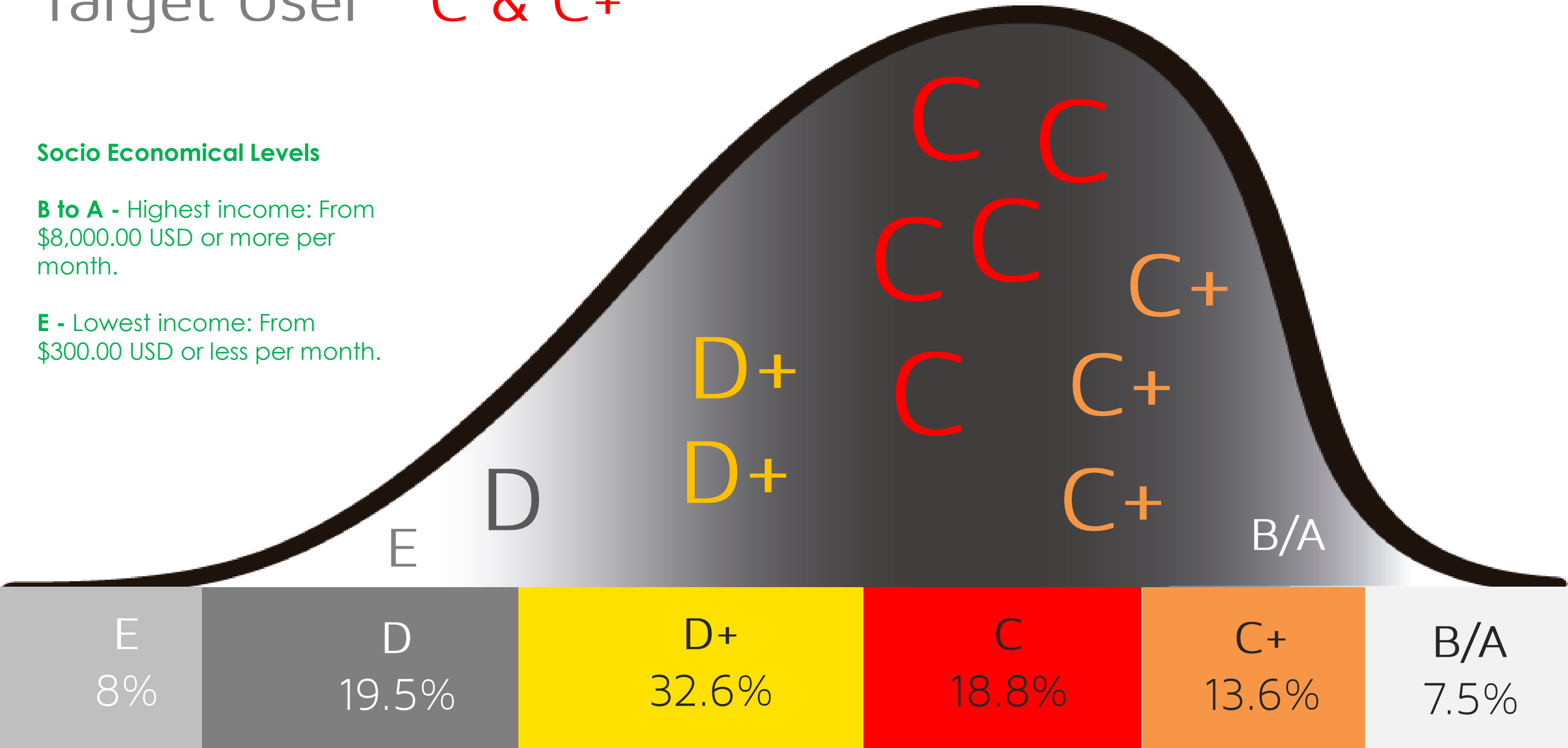
programming and  
payment of  
Transportation services  
via mulimedia

# Target User C & C+

## Socio Economical Levels

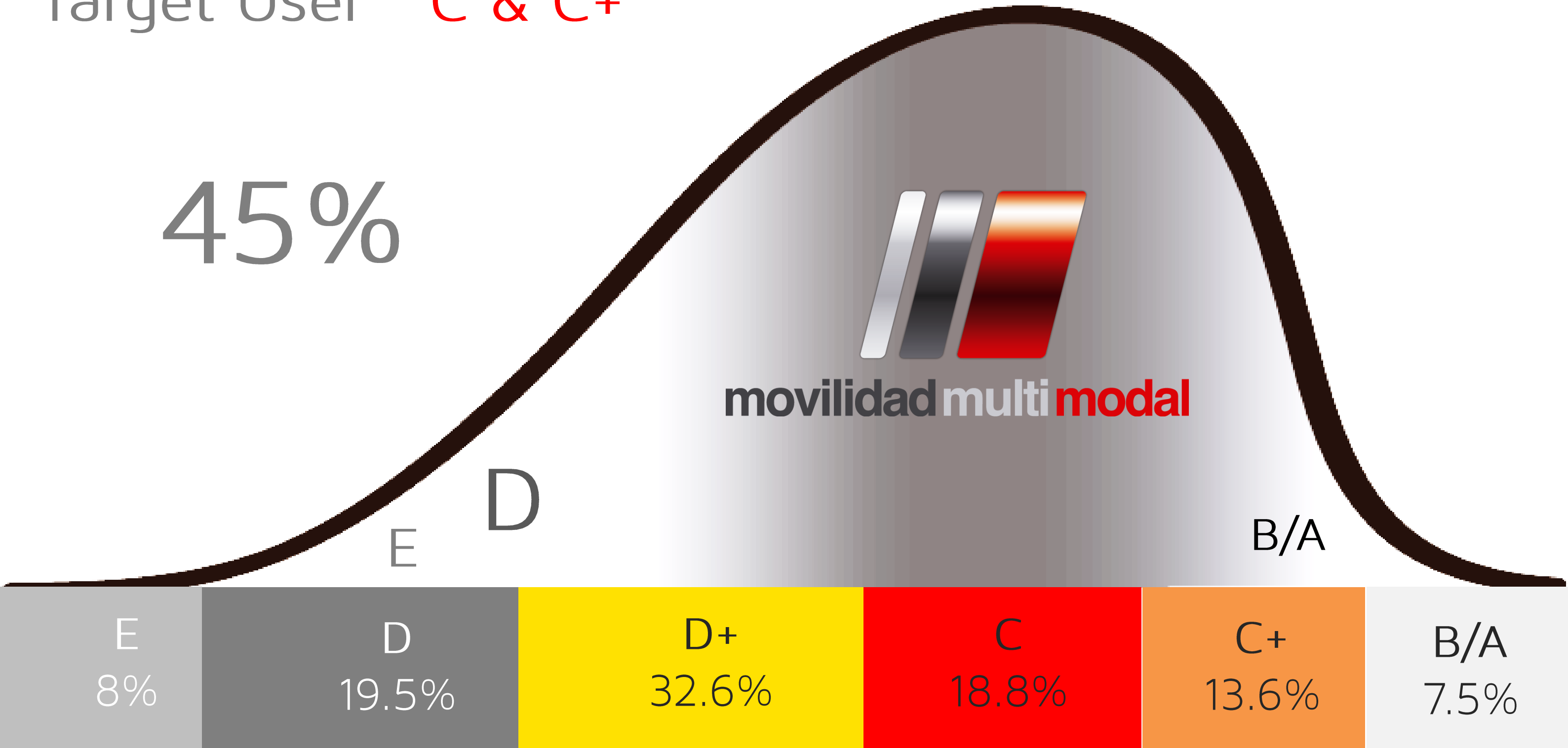
**B to A** - Highest income: From \$8,000.00 USD or more per month.

**E** - Lowest income: From \$300.00 USD or less per month.





Target User C & C+

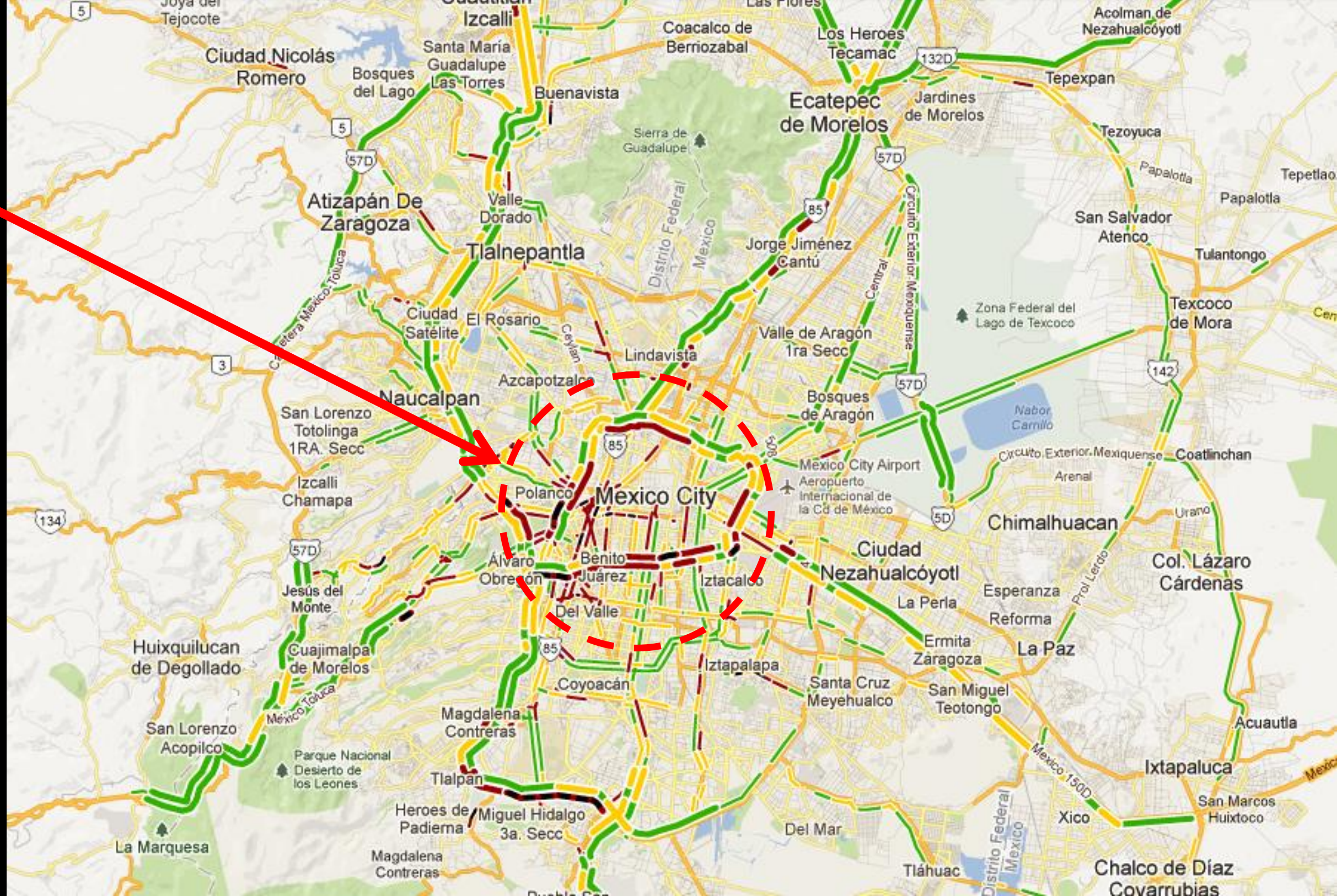




5:47 pm







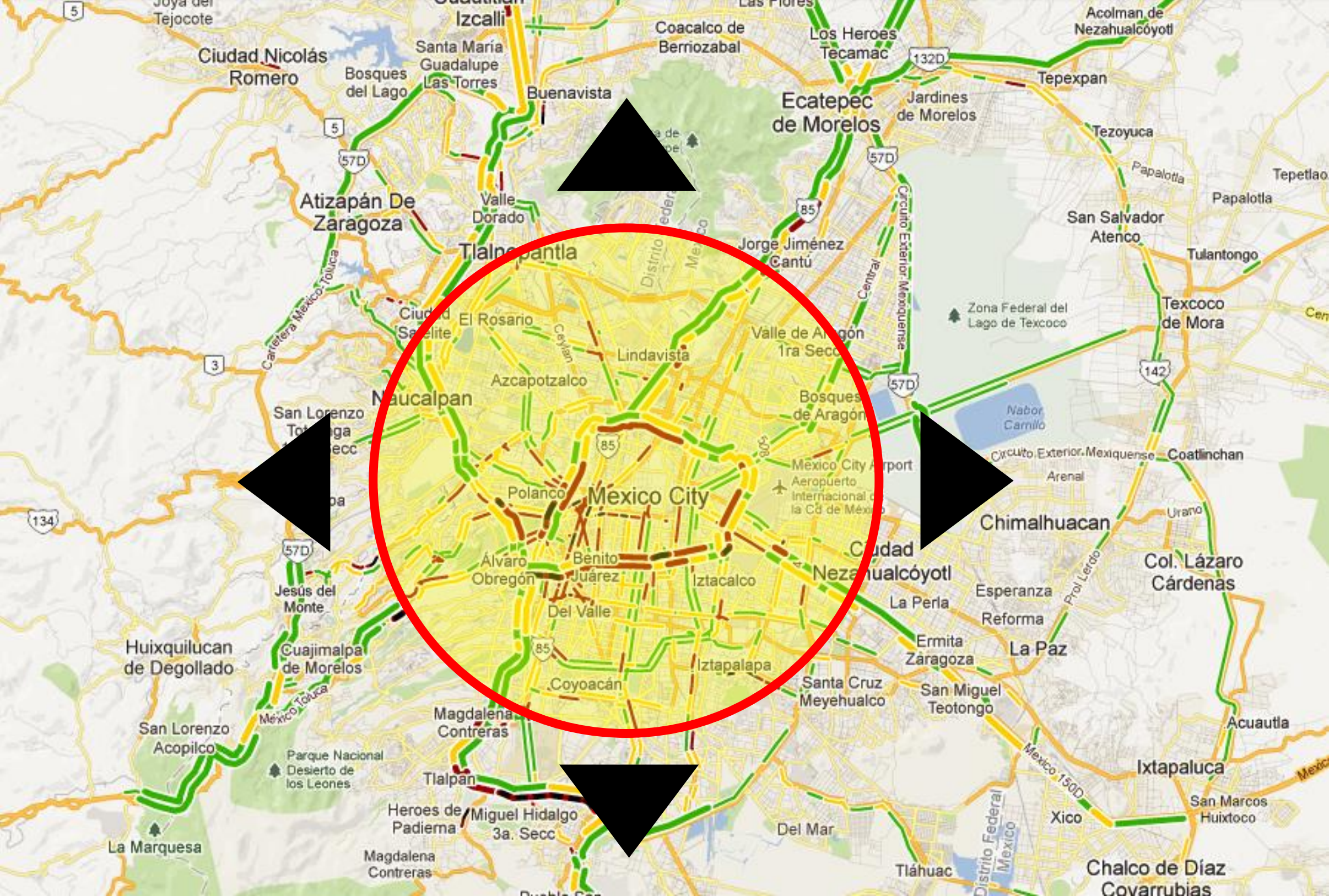


# City's hard attack at rush hour

Traffic Status  
5:47 pm

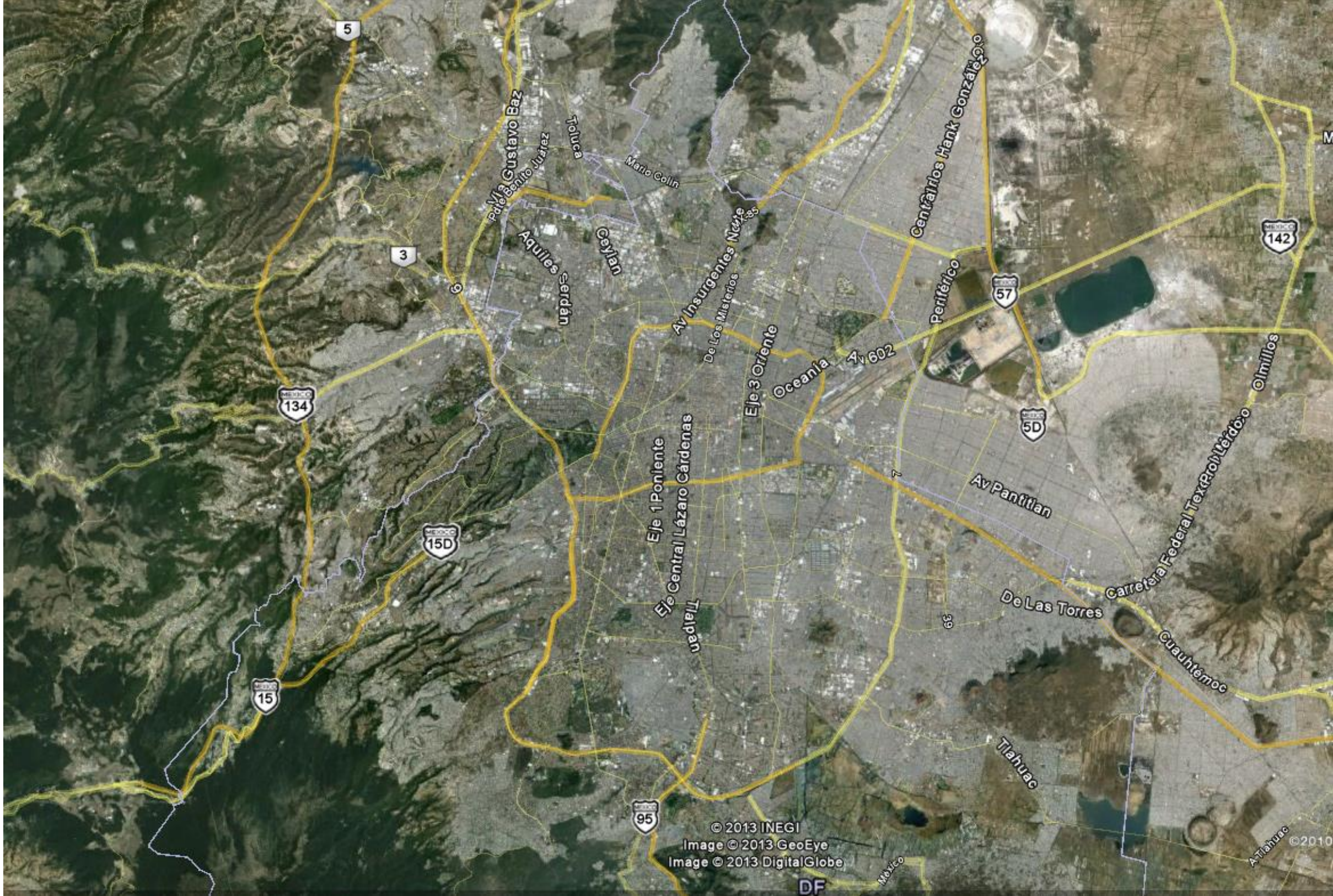
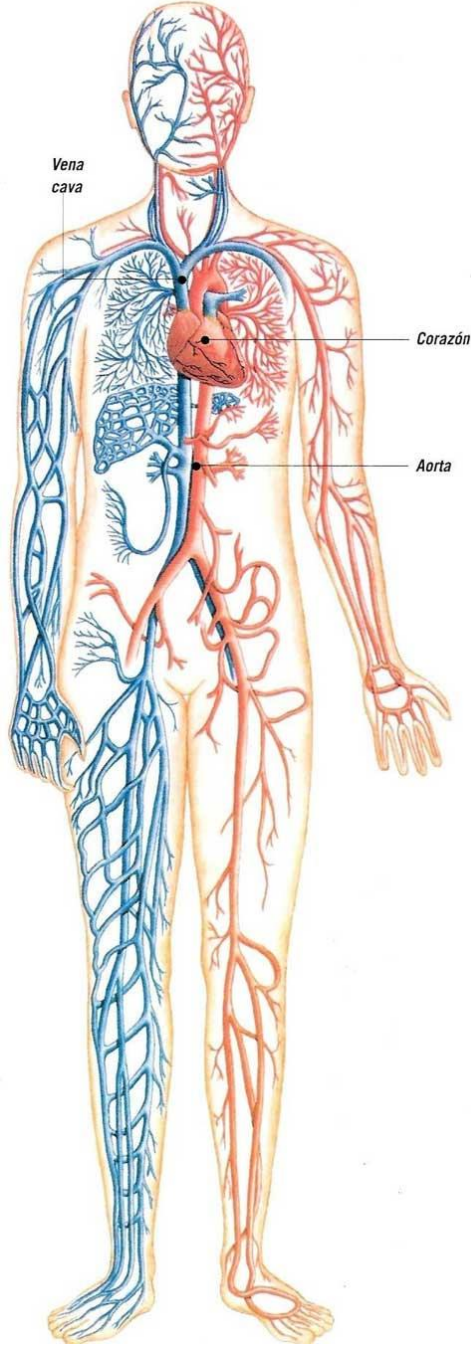
Halted traffic

Fluid traffic



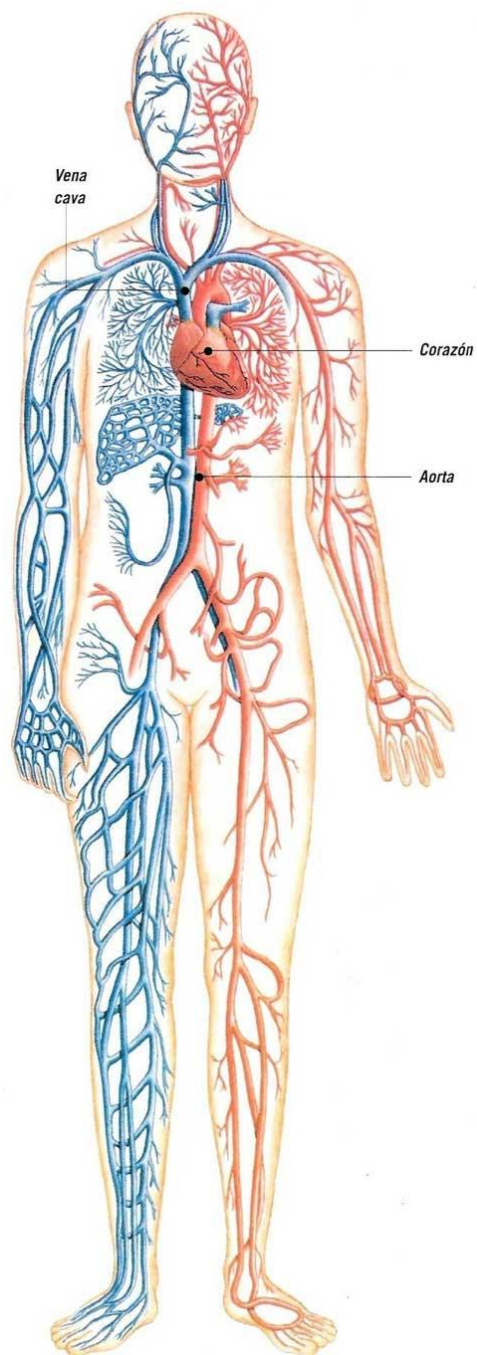


# Analogy





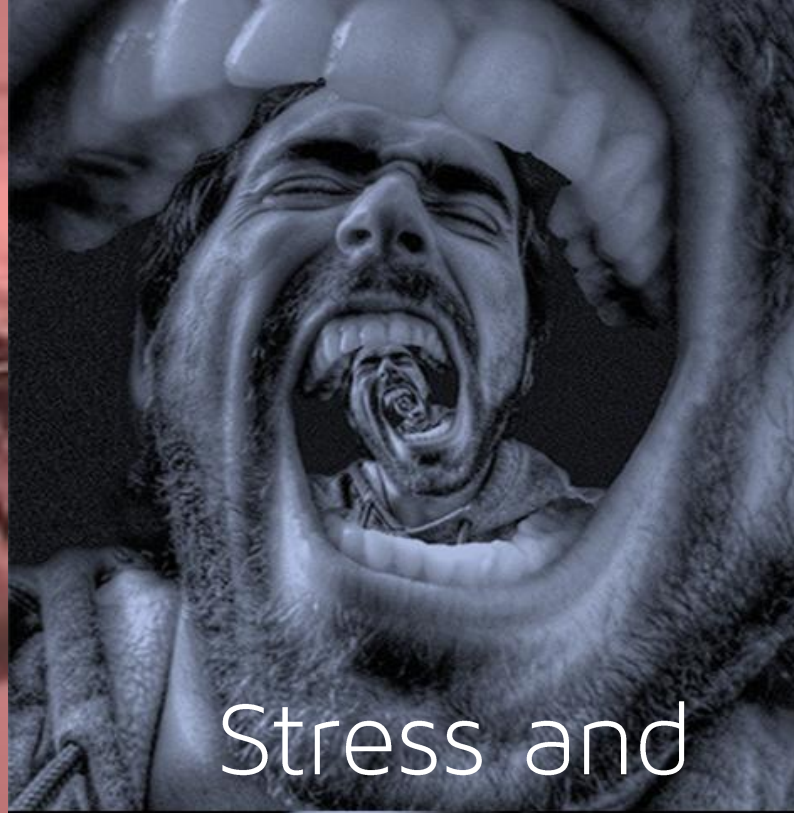
# Analogy







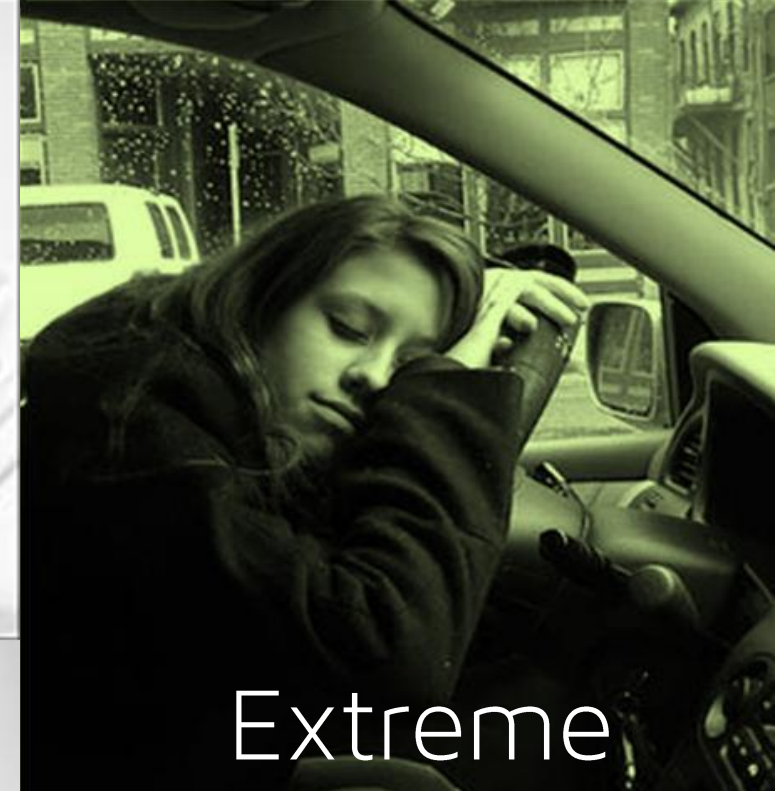
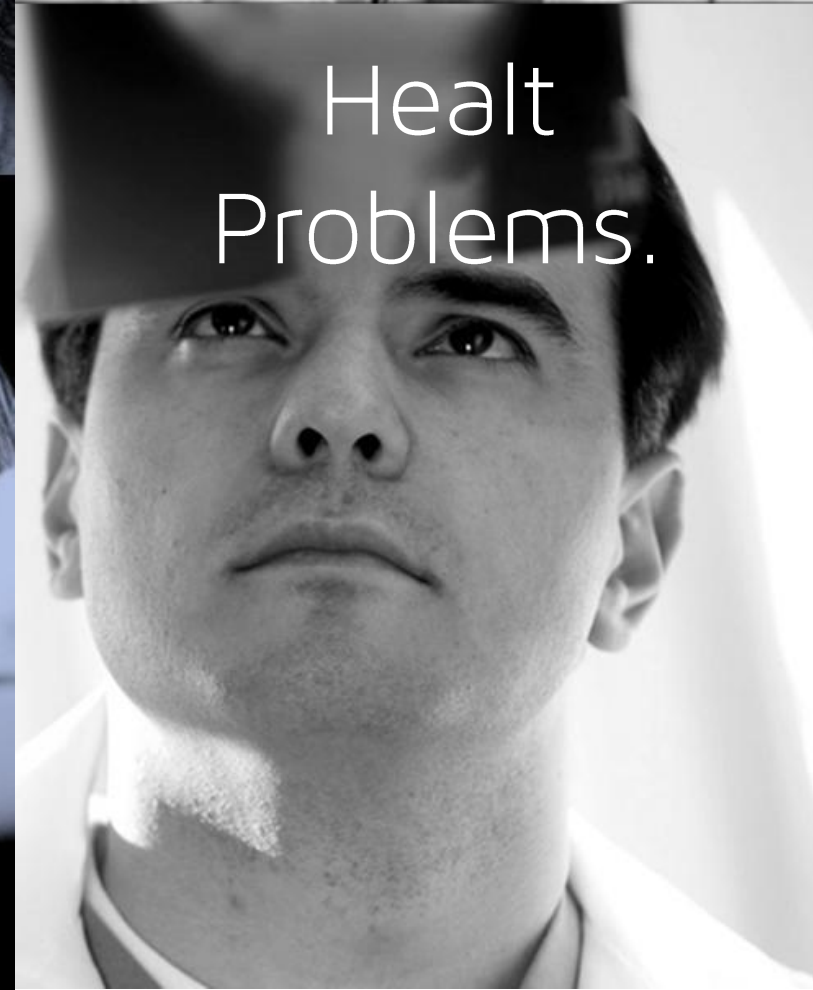
Waste of  
resources.



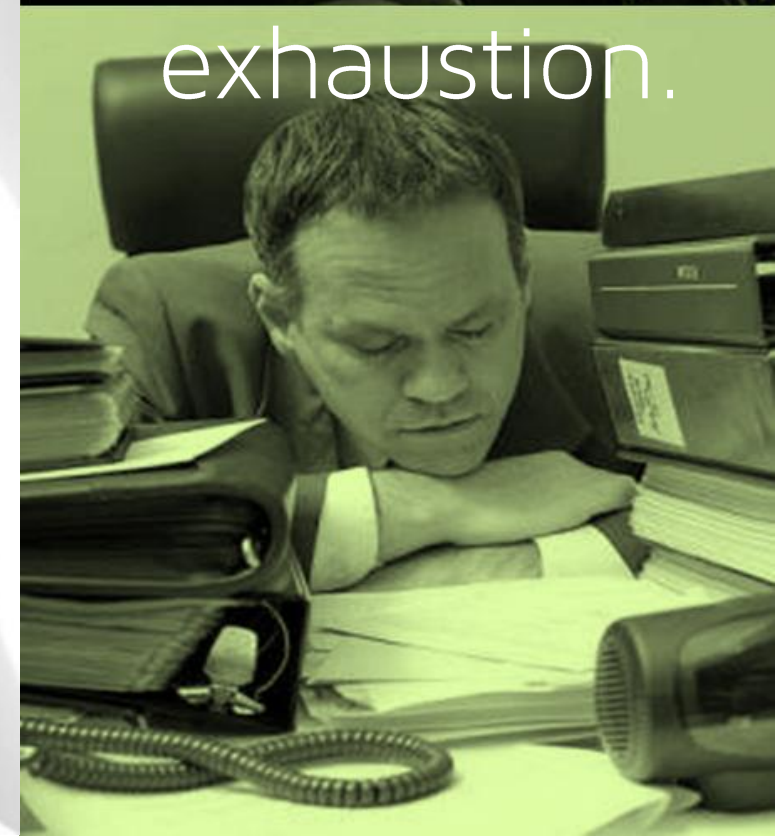
Stress and  
hysteria.



Healt  
Problems.

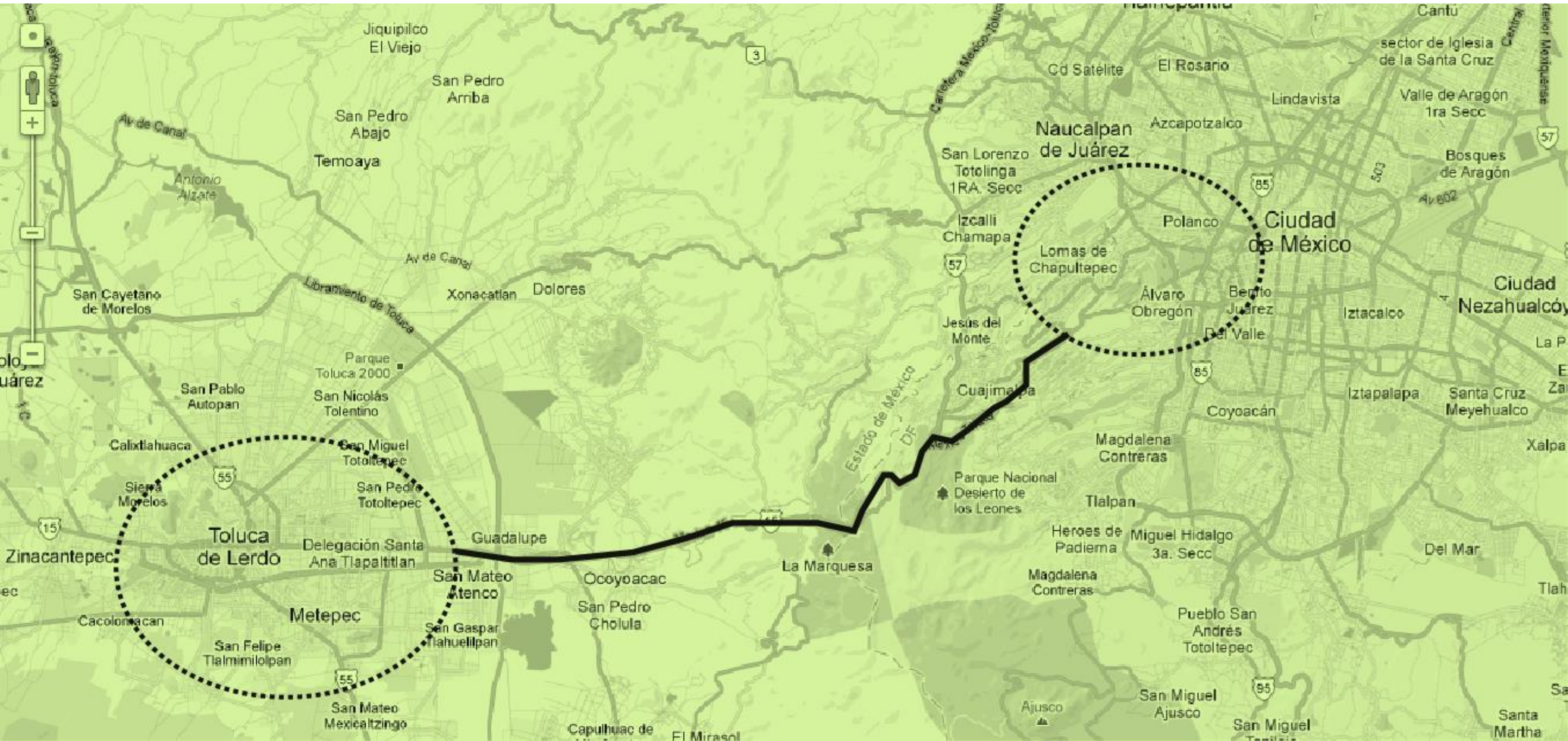


Extreme  
exhaustion.

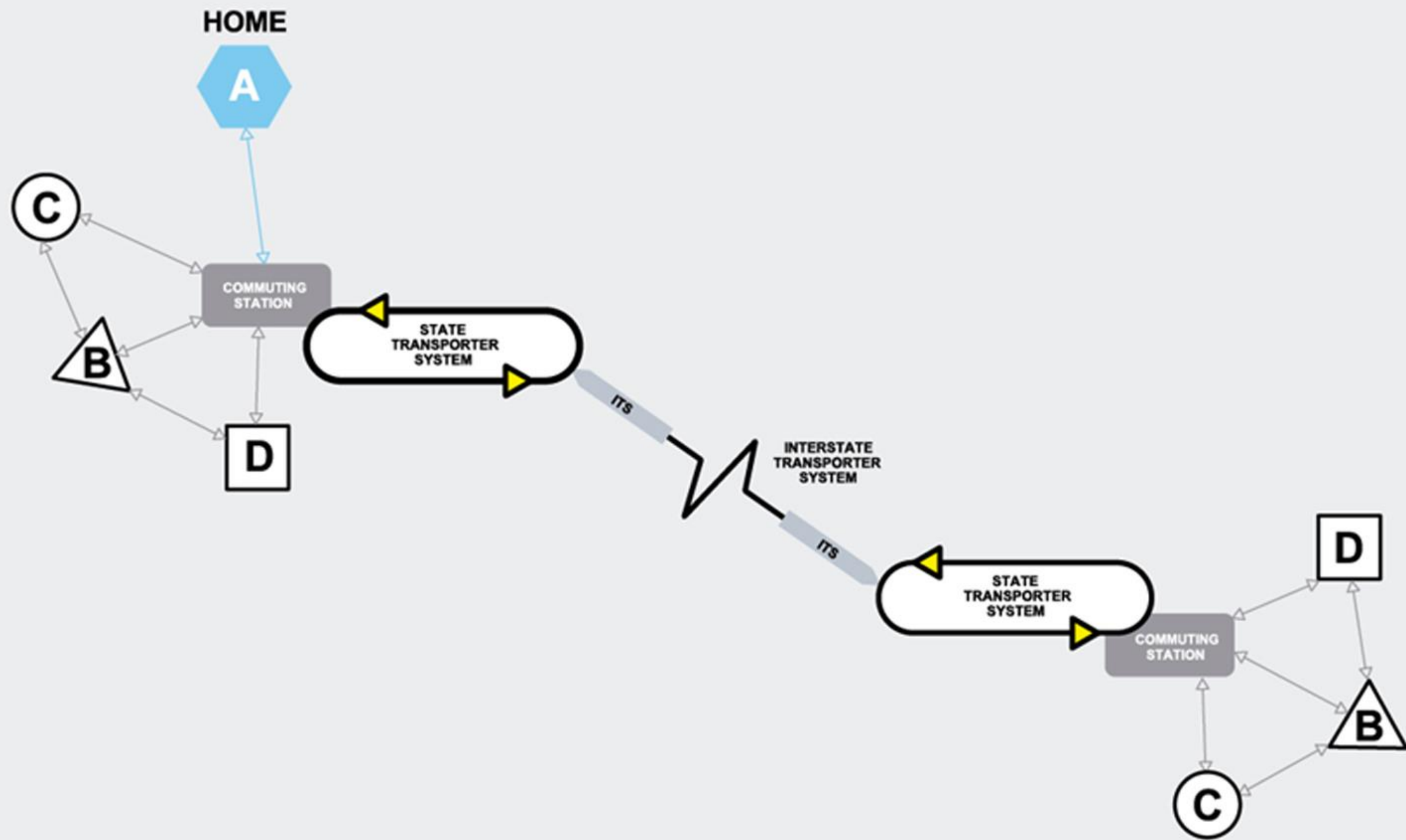
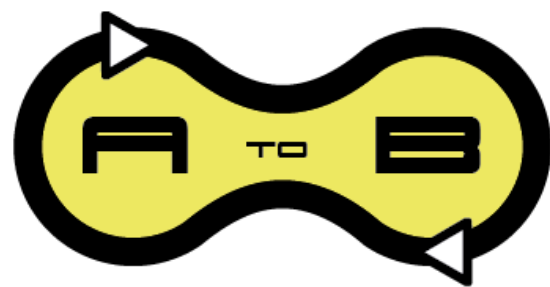




# SELECTED CONTEXT TO SET THE STUDY CASE













# Rutas en Toluca de Lerdo

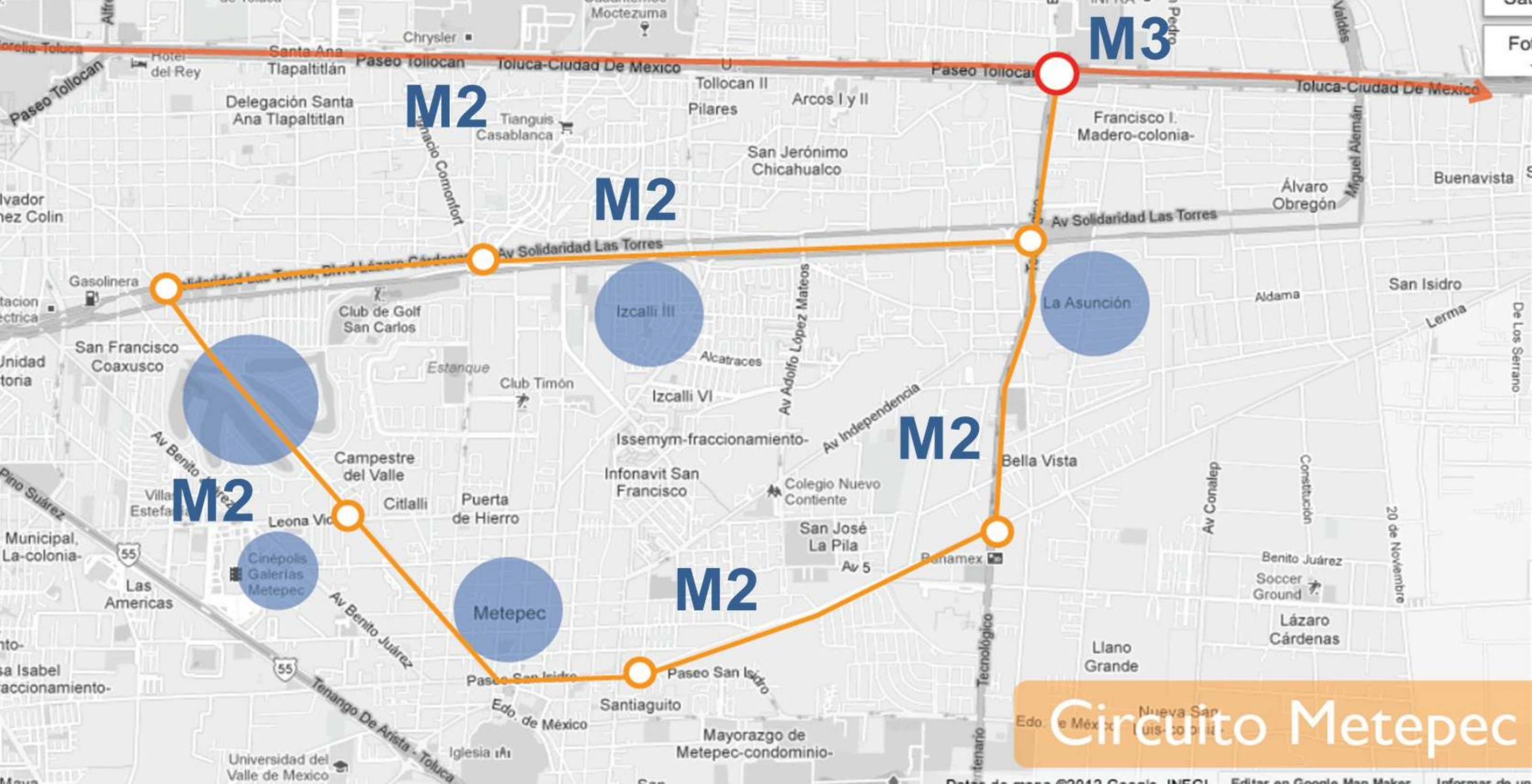


Satélite

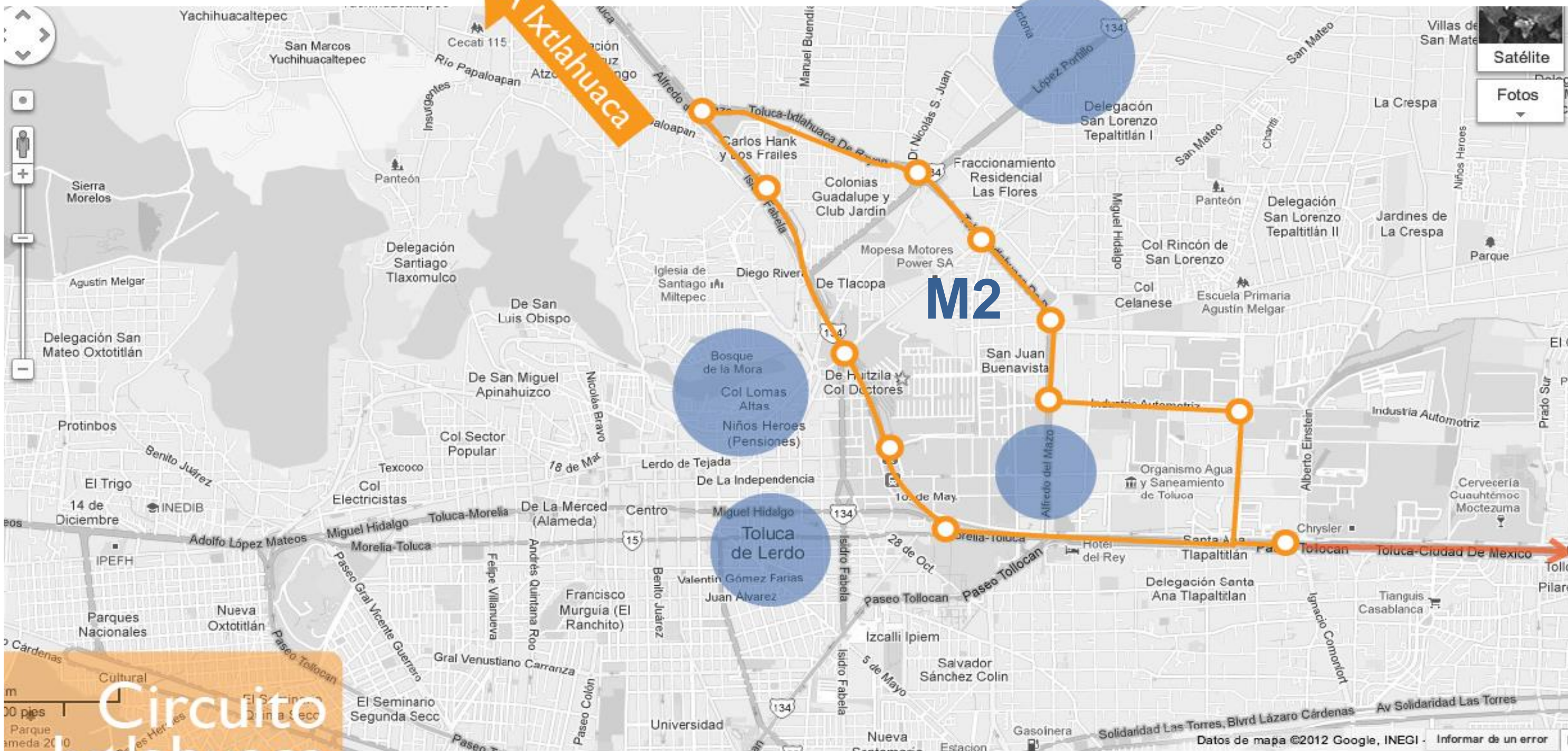
Fotos

AI DF



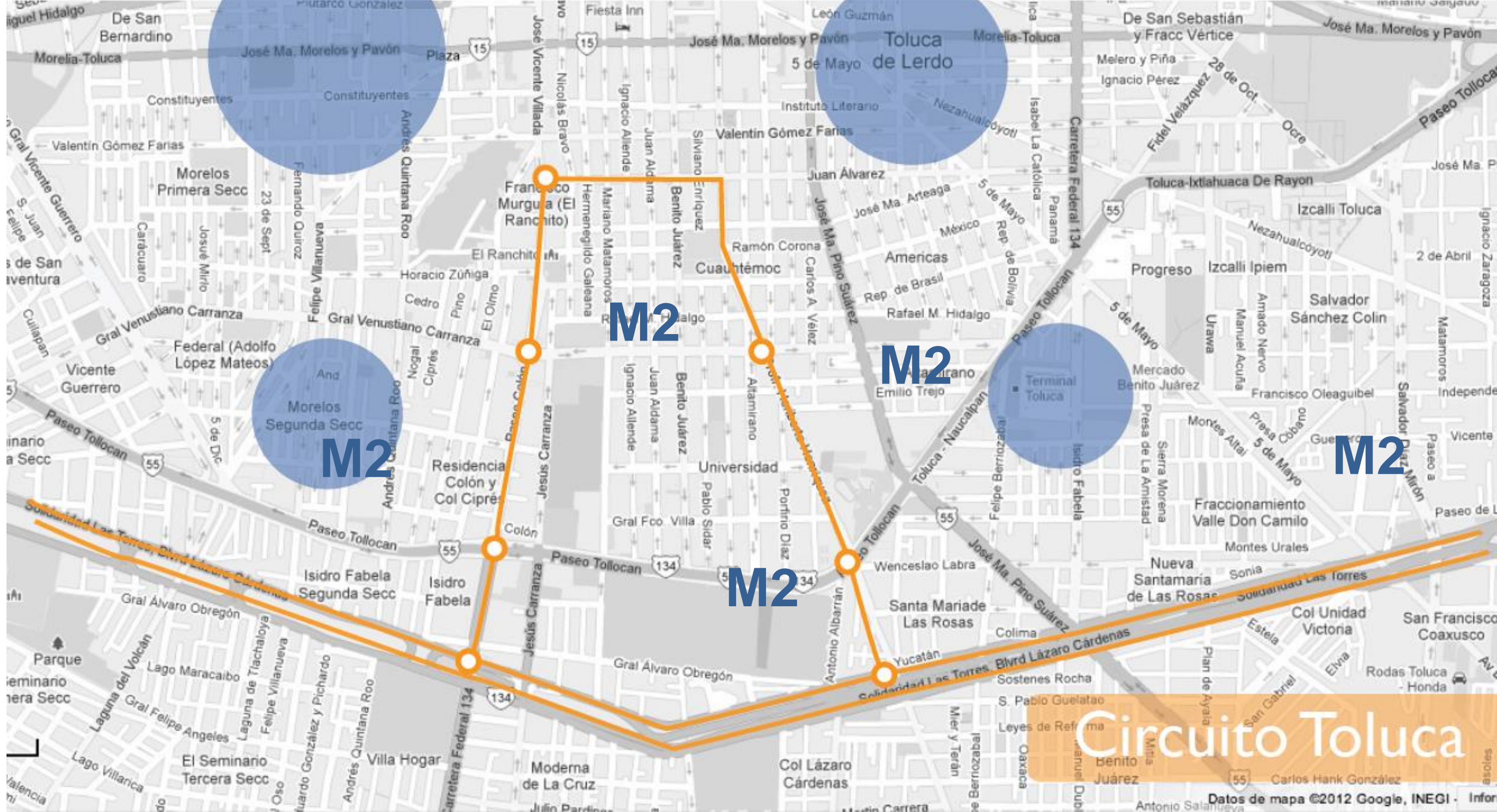






Circuito  
Ixtlahuaca





M2

M2

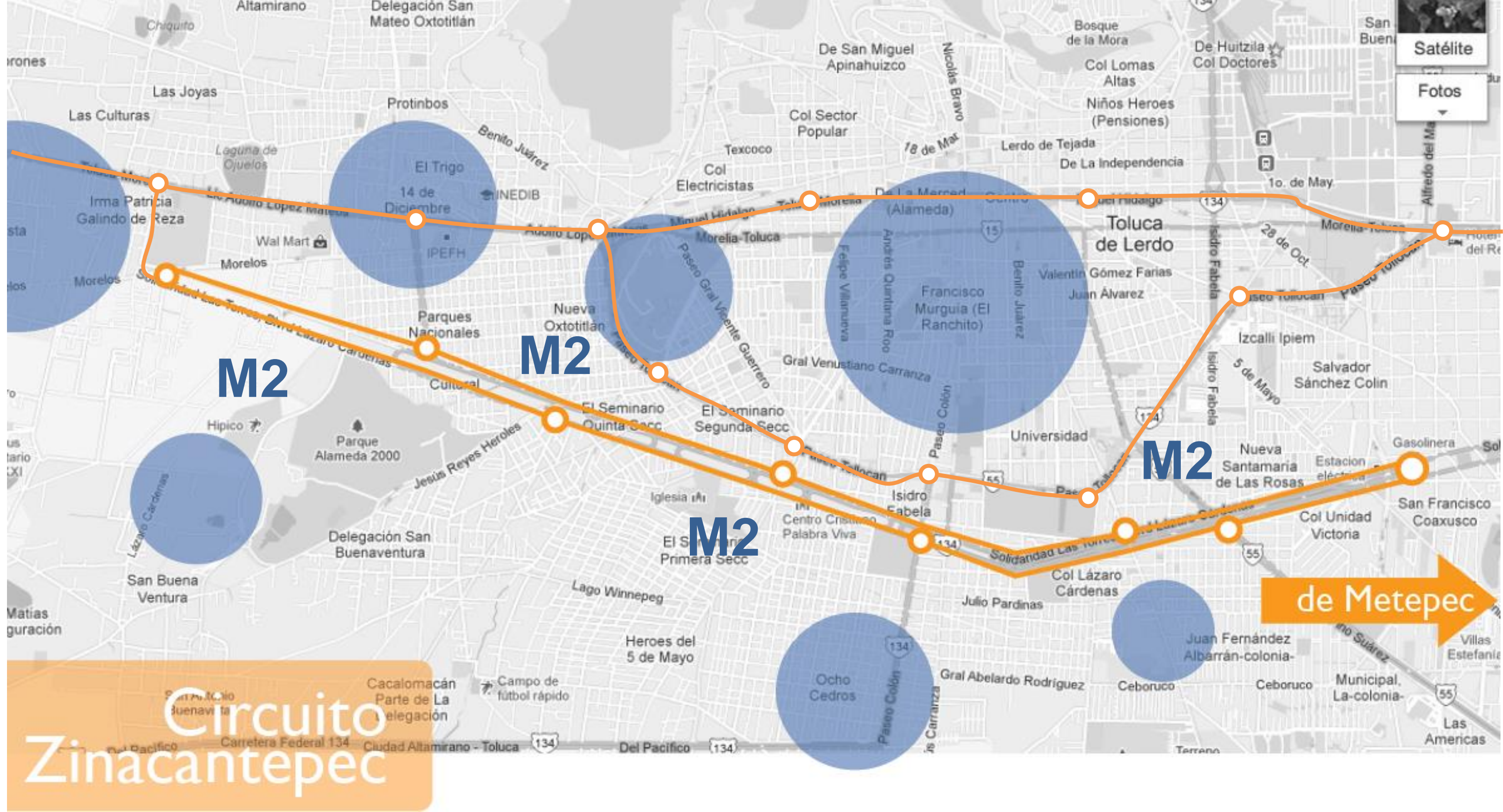
M2

M2

M2

Circuito Toluca





Satélite

Fotos

M2

M2

M2

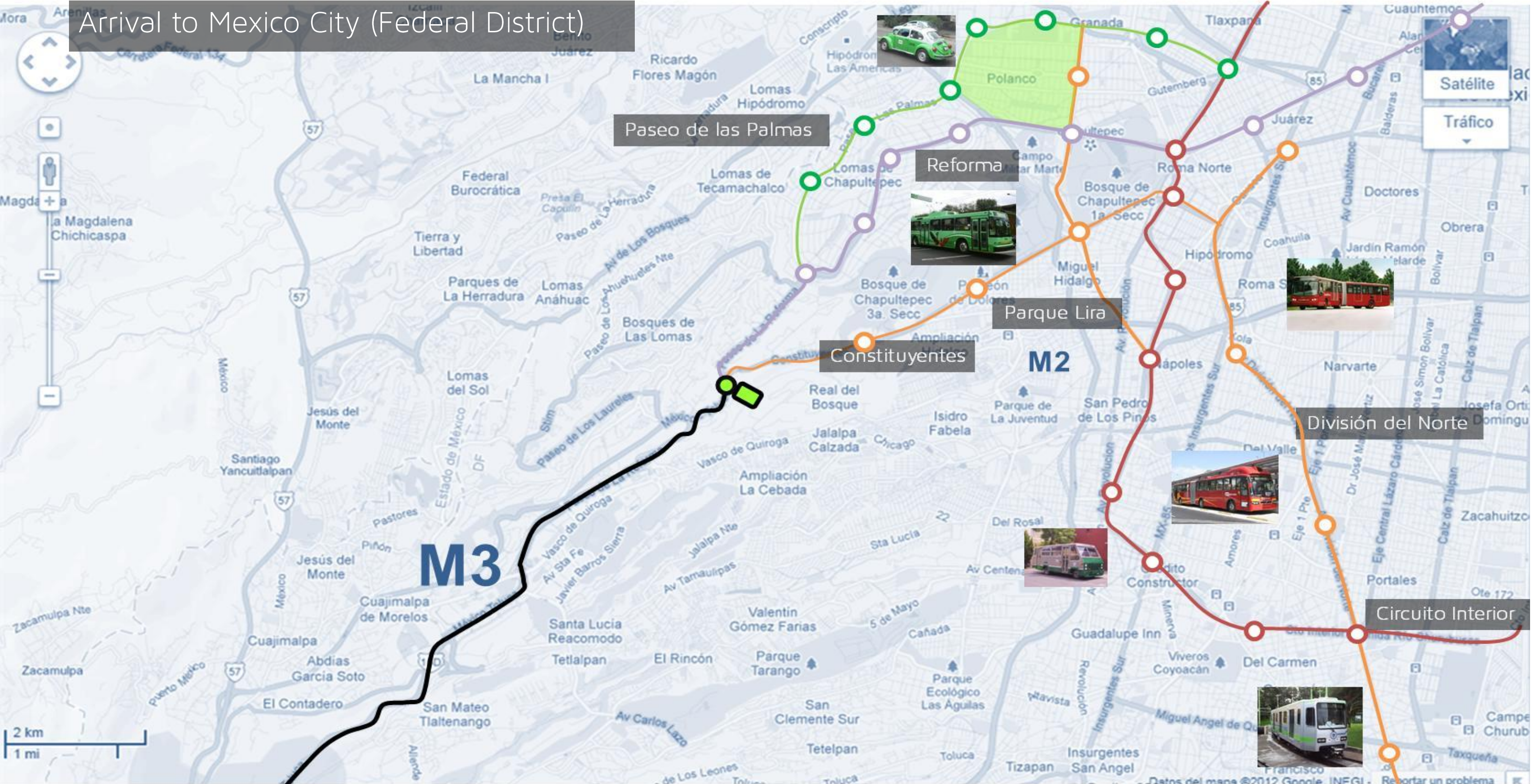
M2

de Metepec

Circuito  
Zinacantepec



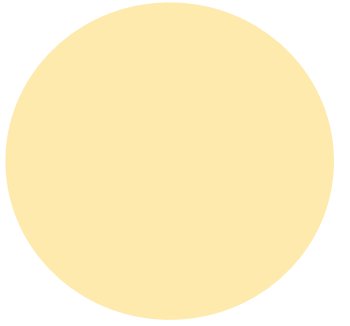
# Arrival to Mexico City (Federal District)











Time to **configure** and **characterize**





Interstate



Cyclical and  
Programable

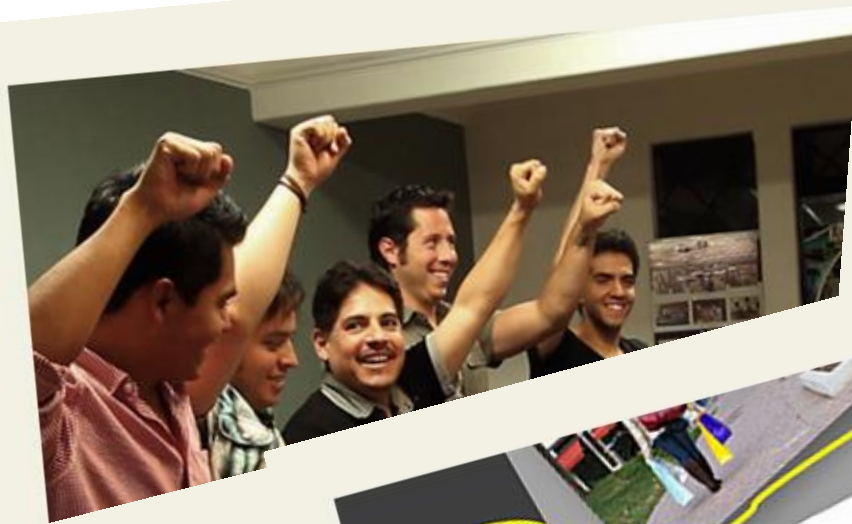


Auxiliary

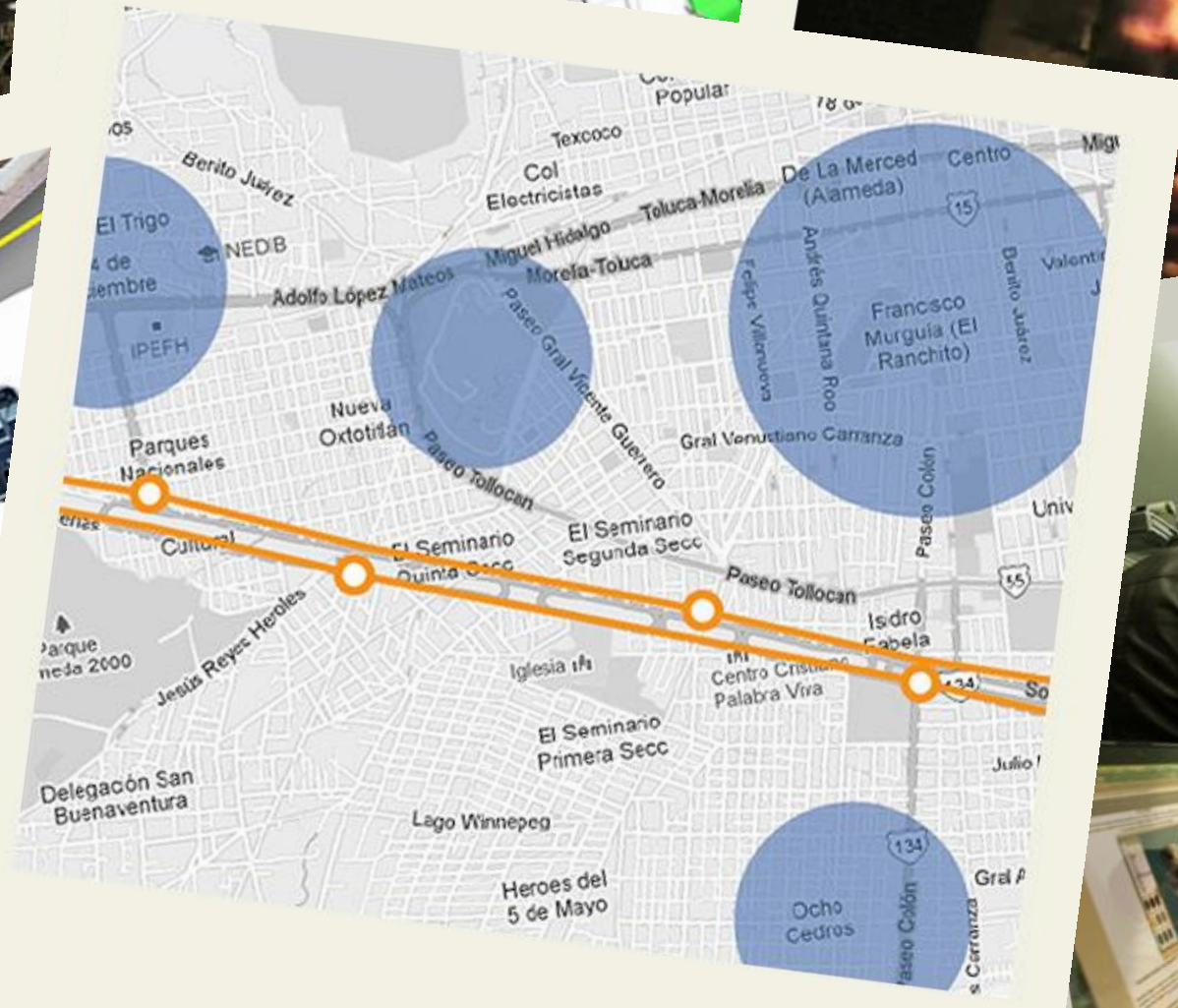
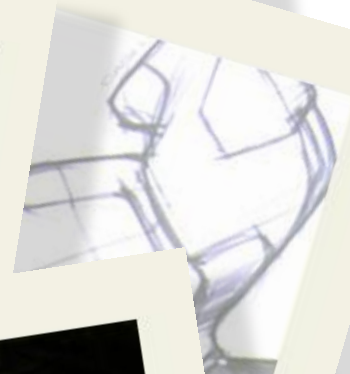
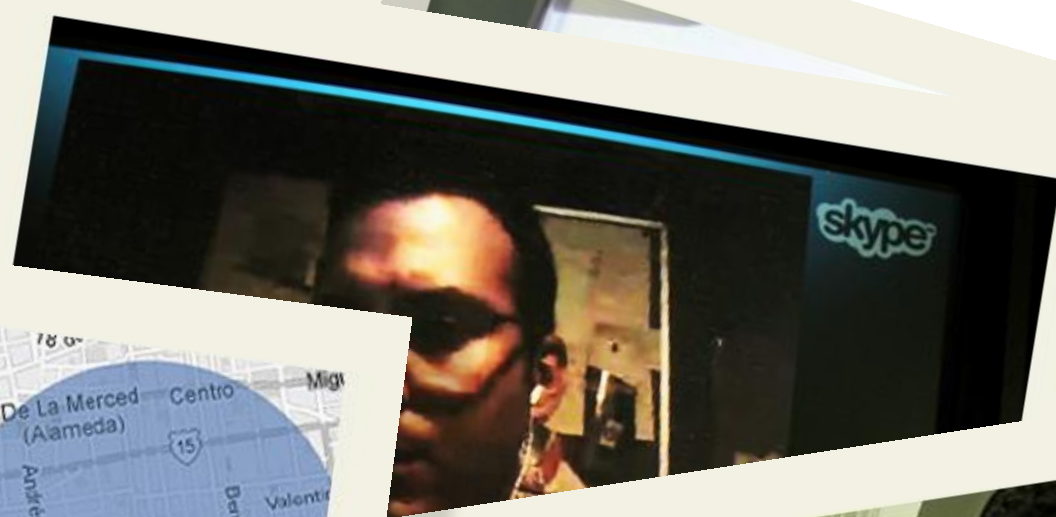


Long periods of analysis and study  
cases, previous to start the design  
process...

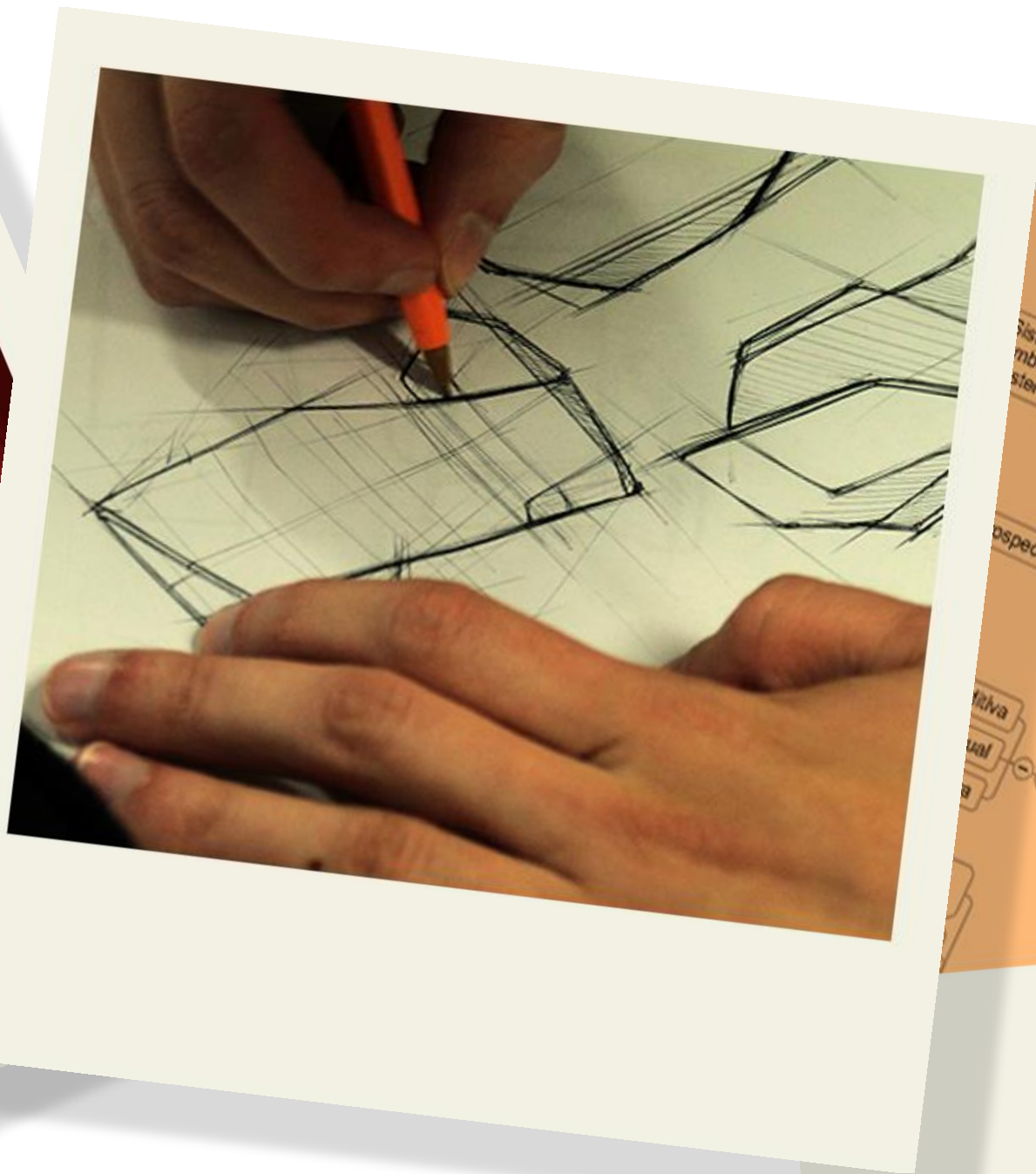




MOVILIDAD TIPO 3  
(SVTC-M3)  
SISTEMA DE TRANSPORTE COLECTIVO



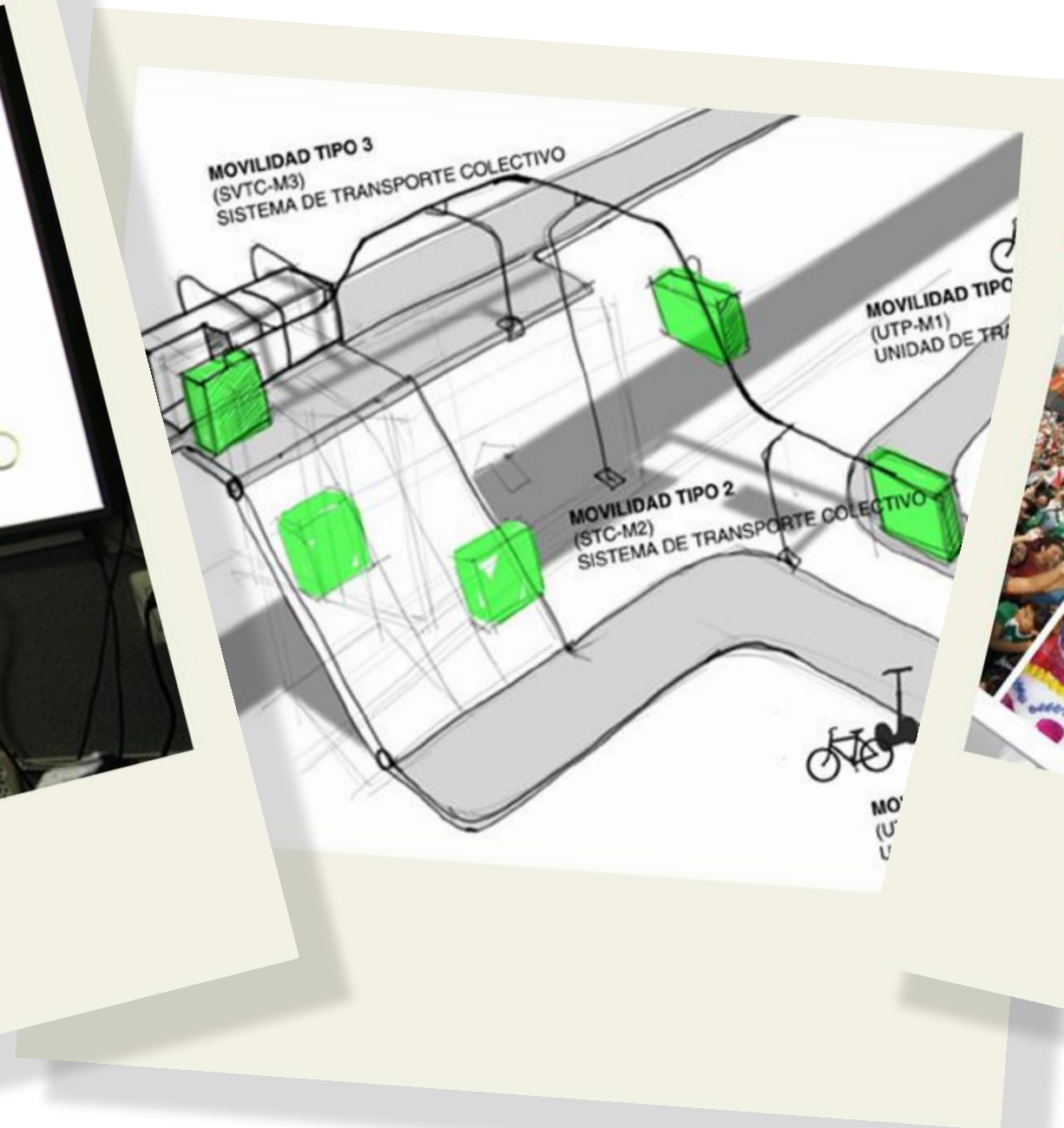








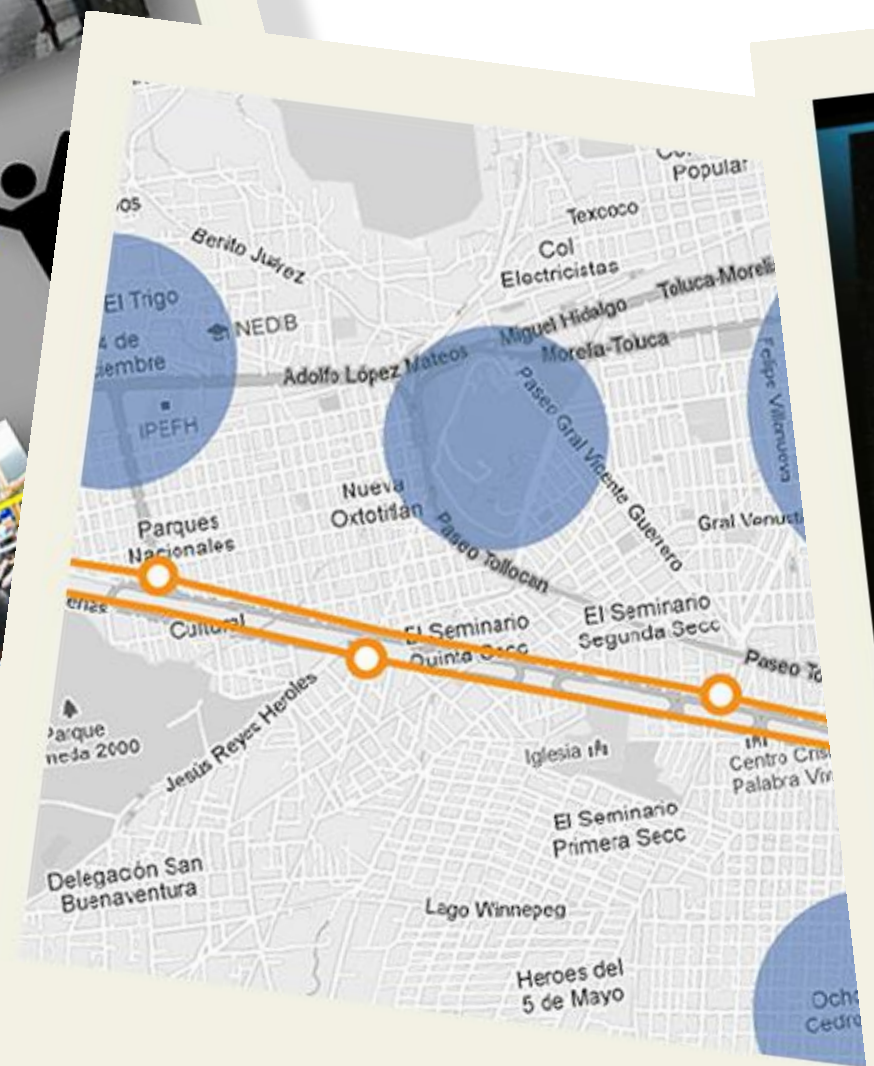








TOMAR ASIENTOS.  
TES.  
NICAS.





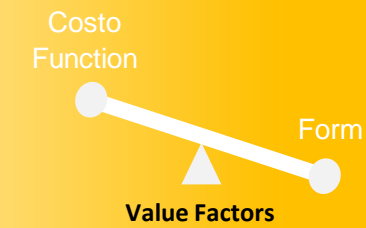
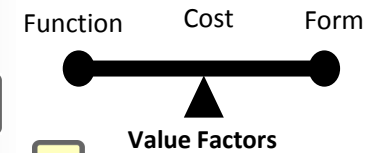
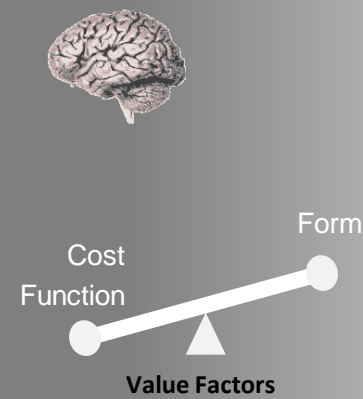
# The Universe of tangible Industrial Design

Utilitarian Products

World Class Products

Object - Art

Objetivity and  
Function



Symbol and  
Emotion

The Engineering World



The World of Art







LETS CONTINUE THE PRESENTATION  
IN PDF PART 2

