The Secret Sauce for Cycling Success

We Get What We Pay For.

We Get What We Pay For.

We Get What We Pay For.

We Get What We Pay For.


car
bicycle
pedestrian
tram

Dutch Timeline

1880s 1930s 1940s 1960s 1970s 1990s Today

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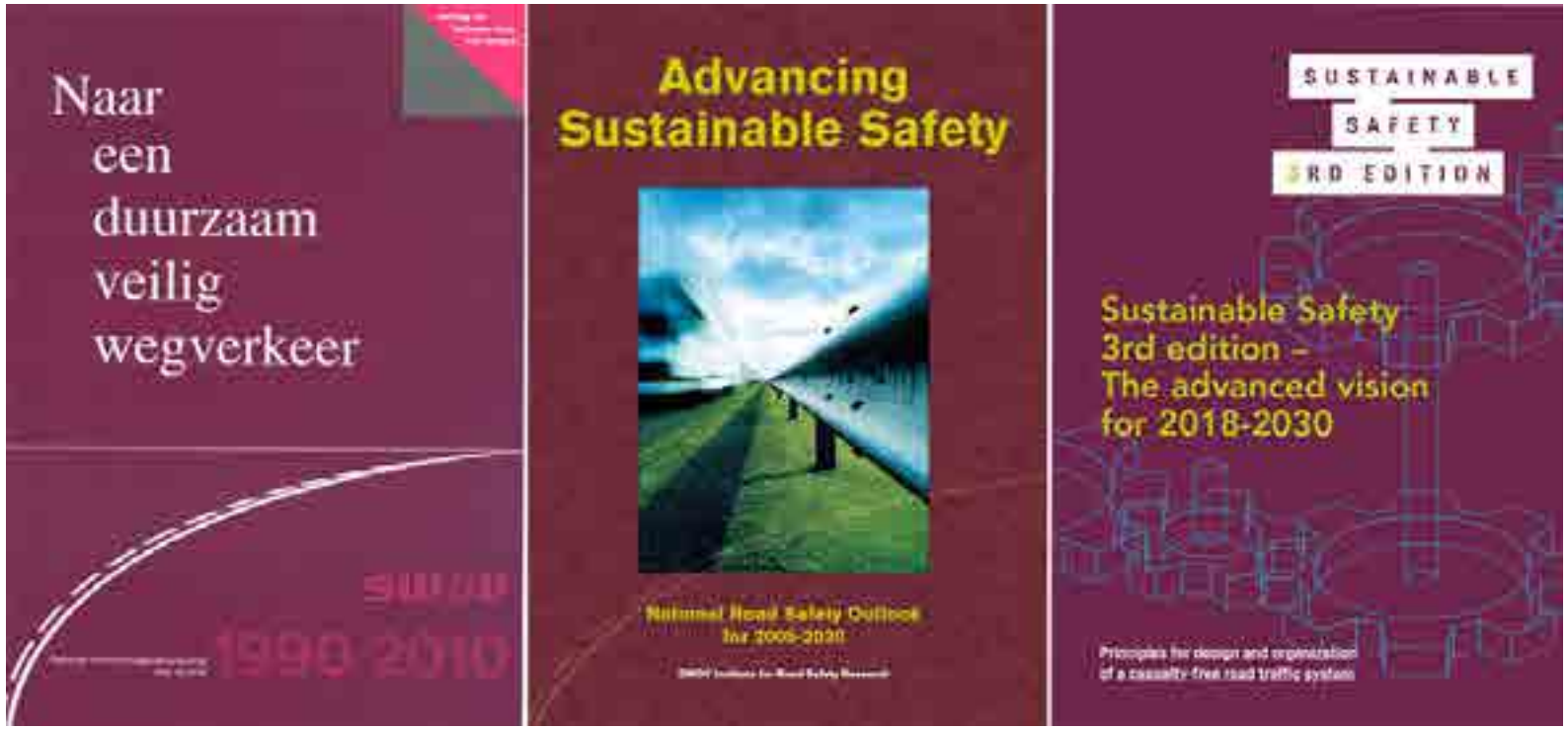
Dutch Timeline

1880s 1930s 1940s 1960s 1970s 1990s Today

Dutch Timeline



1880s 1930s 1940s 1960s 1970s 1990s Today

Dutch Timeline

1880s 1930s 1940s 1960s 1970s 1990s Today

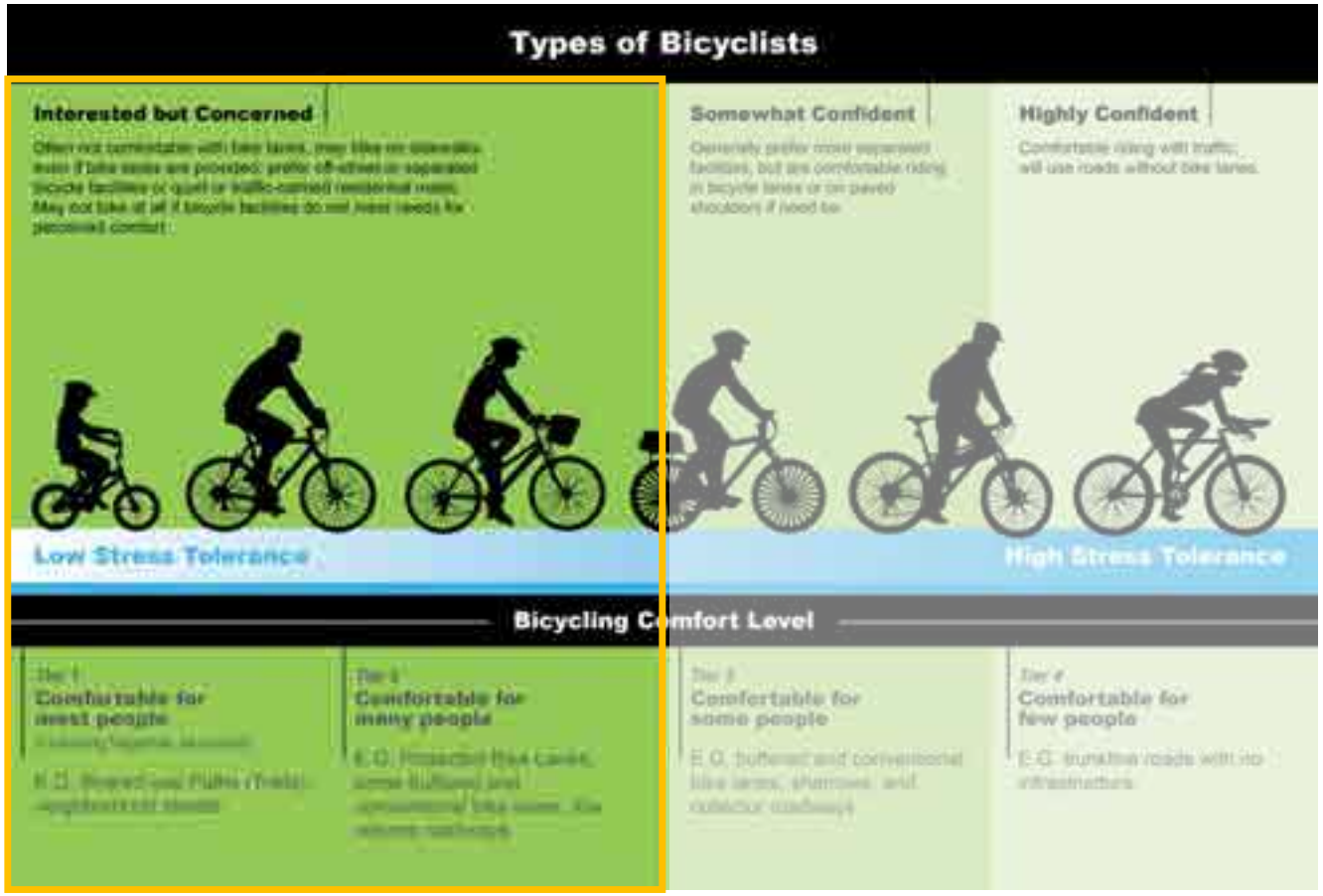
Dutch Timeline

1880s 1930s 1940s 1960s 1970s 1990s Today

Who Are We Planning For?

Who Are We Planning For?

Design for all ages and abilities



Dutch Saying: We Are Not Made of Sugar


Hills

Wind (Dutch Hills)

How Will We See Success?

Land Use

+

5 Design Principles

LEHI CITY

Land Use

Land Use


Pedestrian Promenade
Market Plaza
Future BRT Platform
Bicycle Parking
Bus Loop

Land Use

Land Use

Land Use - Parking


Bellevue
Verkeers-
situatie
gewijzigd

Land Use – Bike Parking

Land Use – Bike Parking

Density with Open Spaces

Land Use – Village Centers


Marshalls

Sprawl Repair

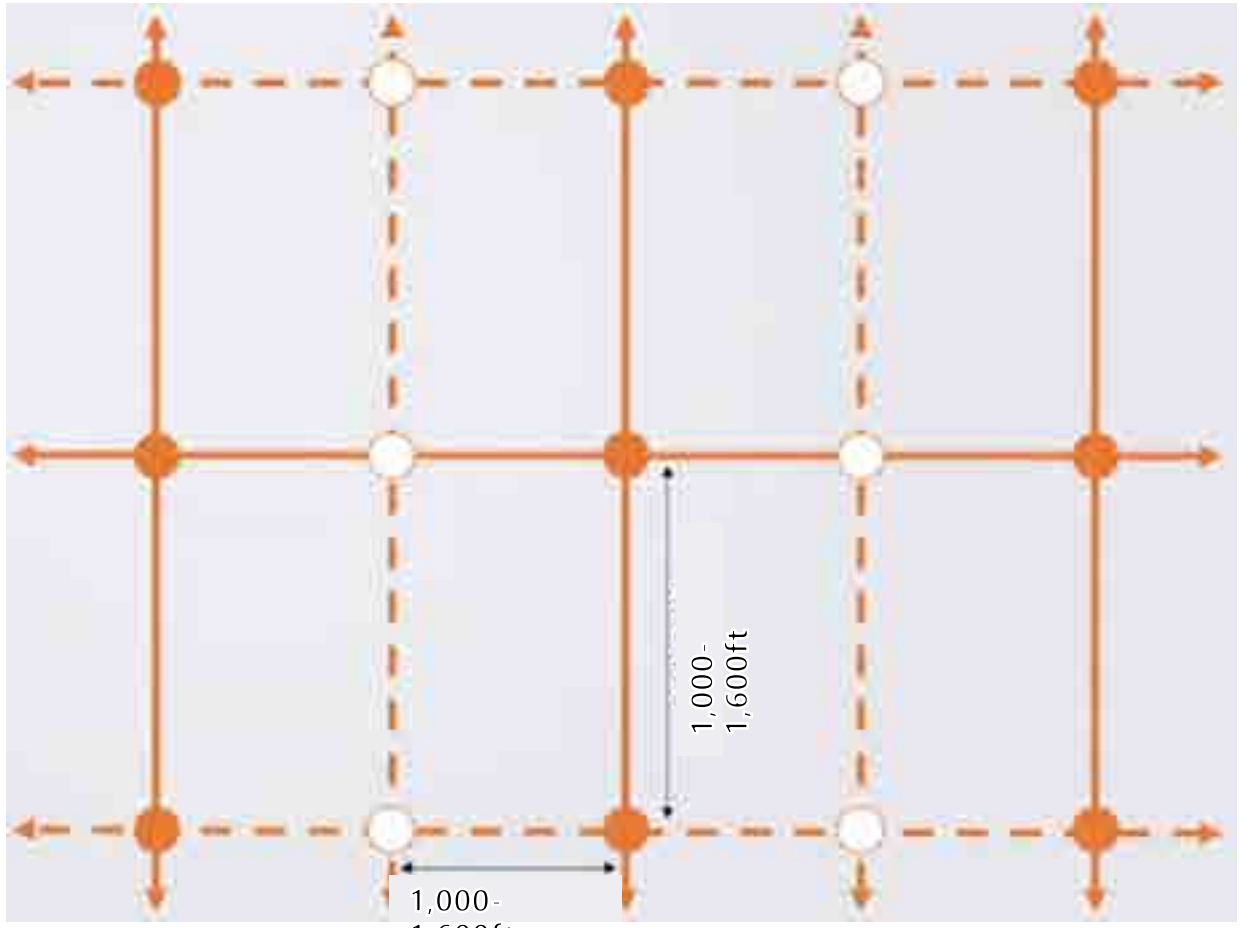
Sprawl Repair

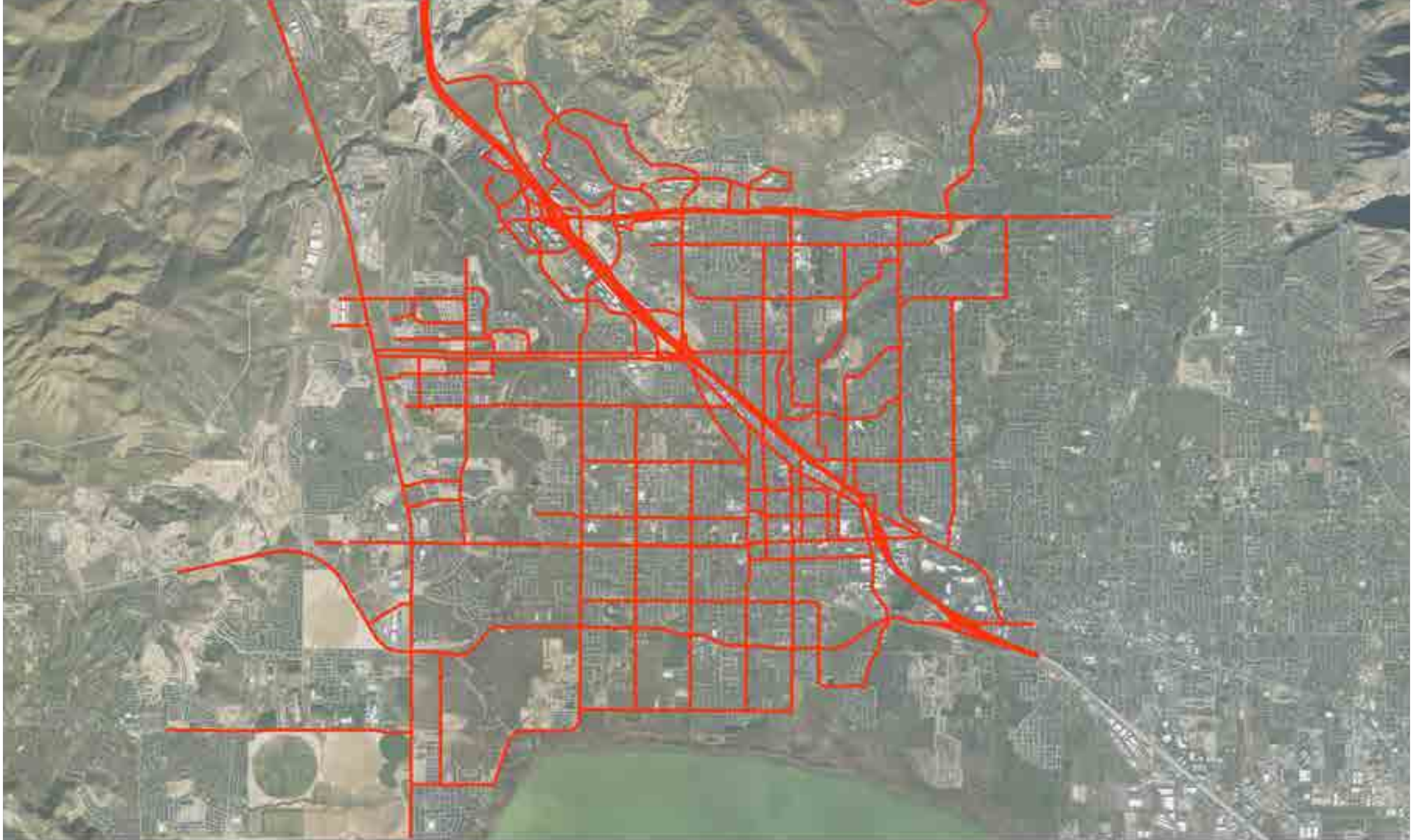
5 Design Principles

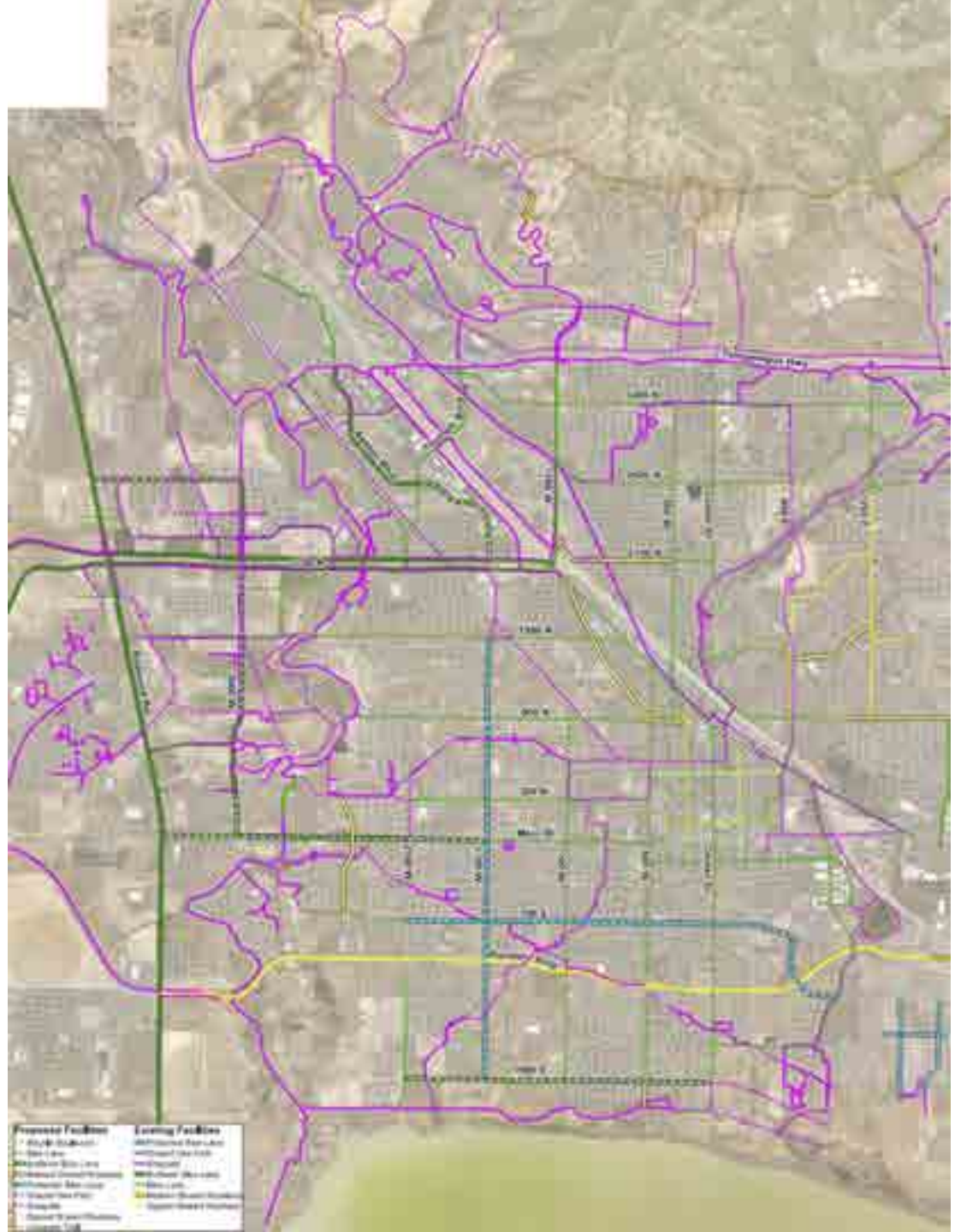
Cohesion
Directness
Safety
Comfort
Attractiveness

Principle 1 - Cohesion

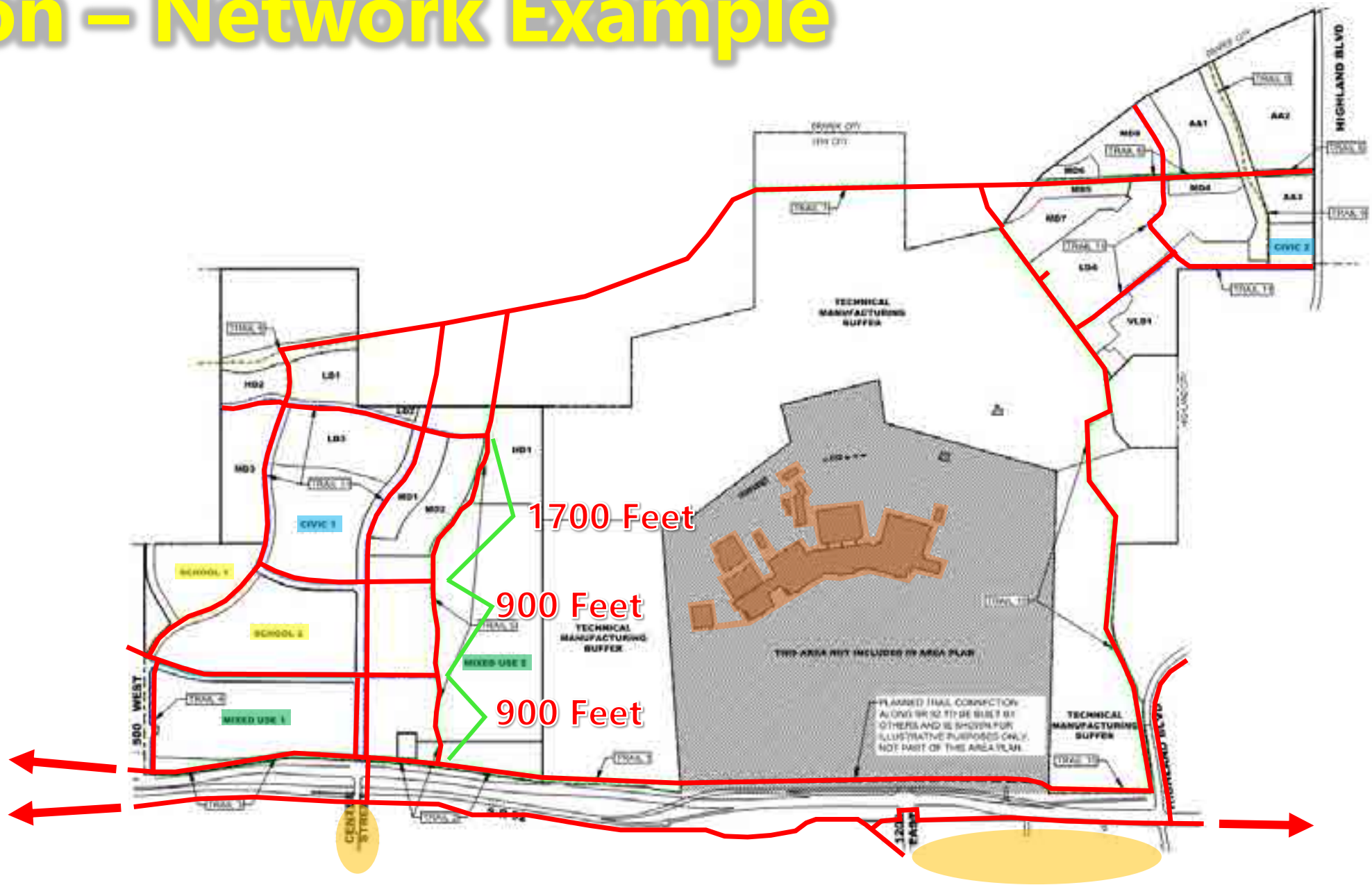
Can you get from **anywhere** to **everywhere?**

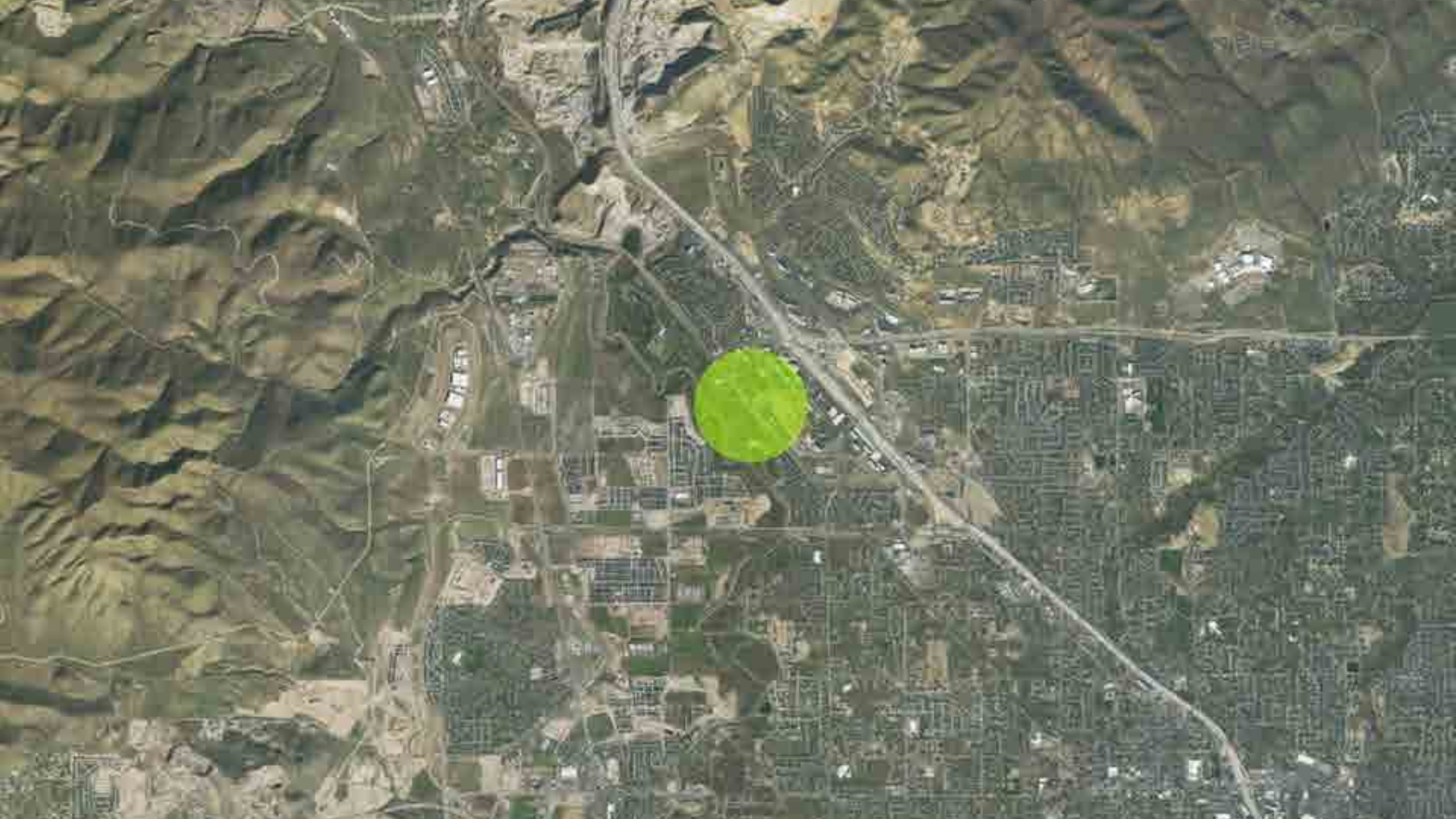


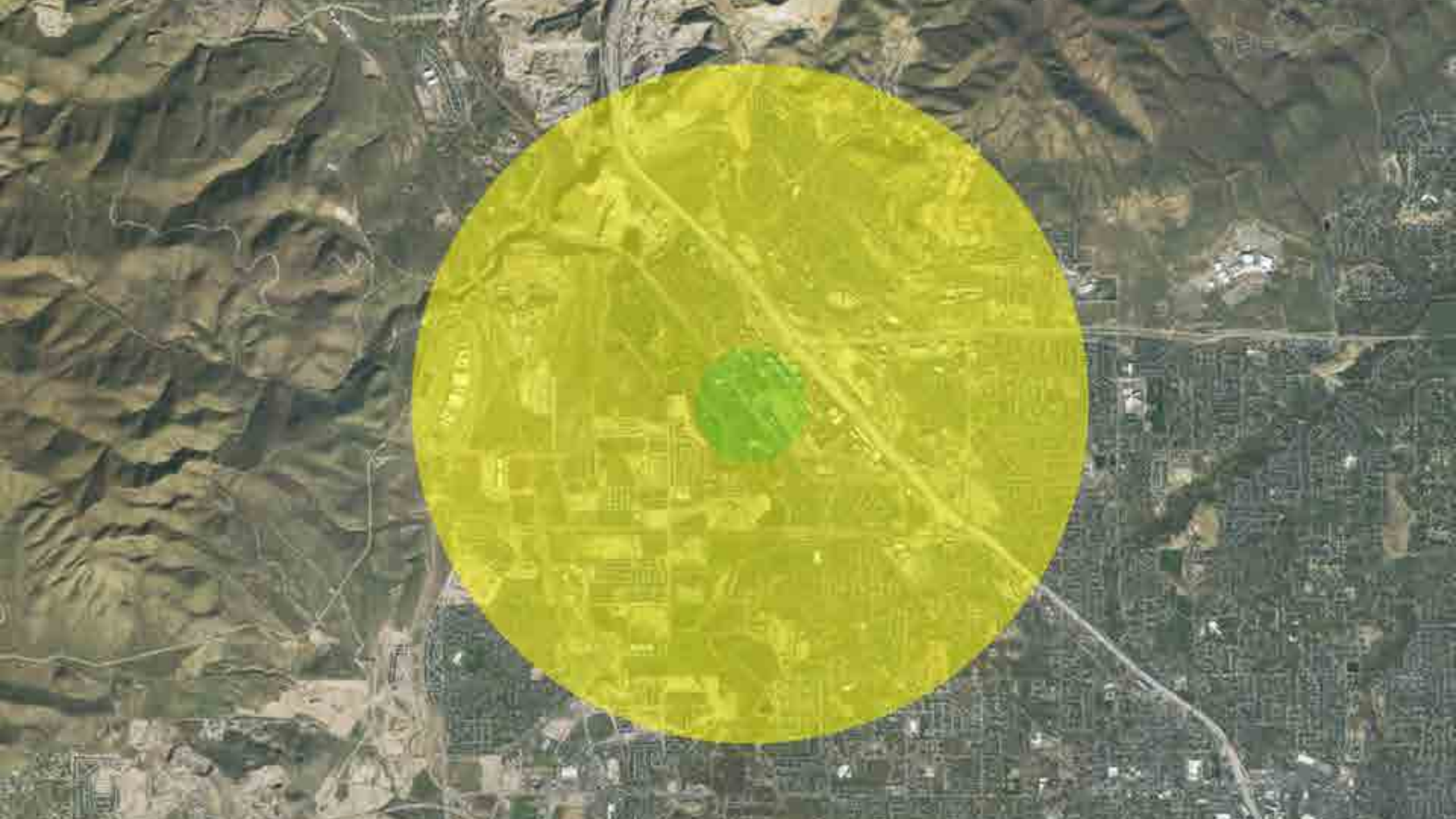




Cohesion – Network Example





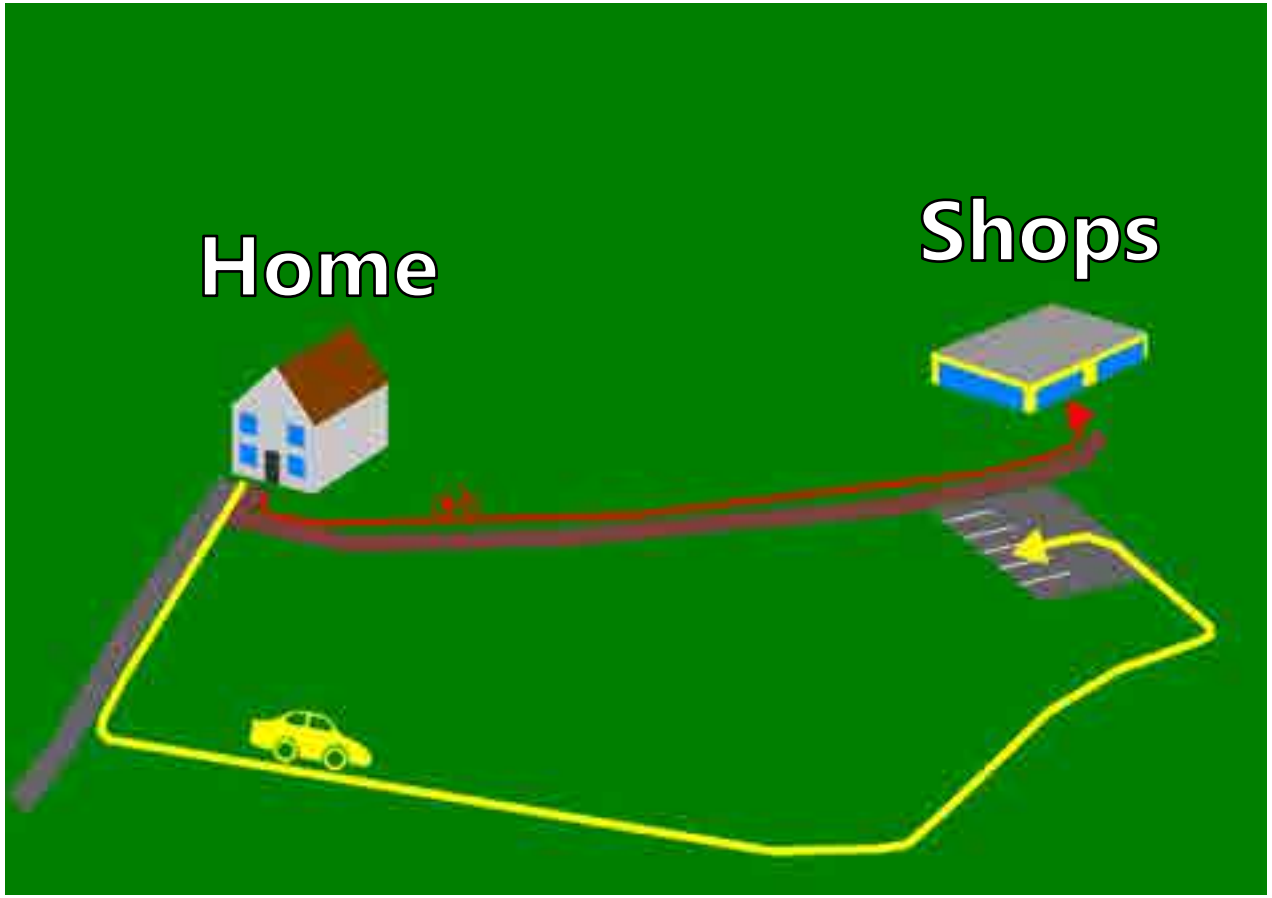



EMERGENCY
ATTENTION


IDESHARE.COM 801.287.206

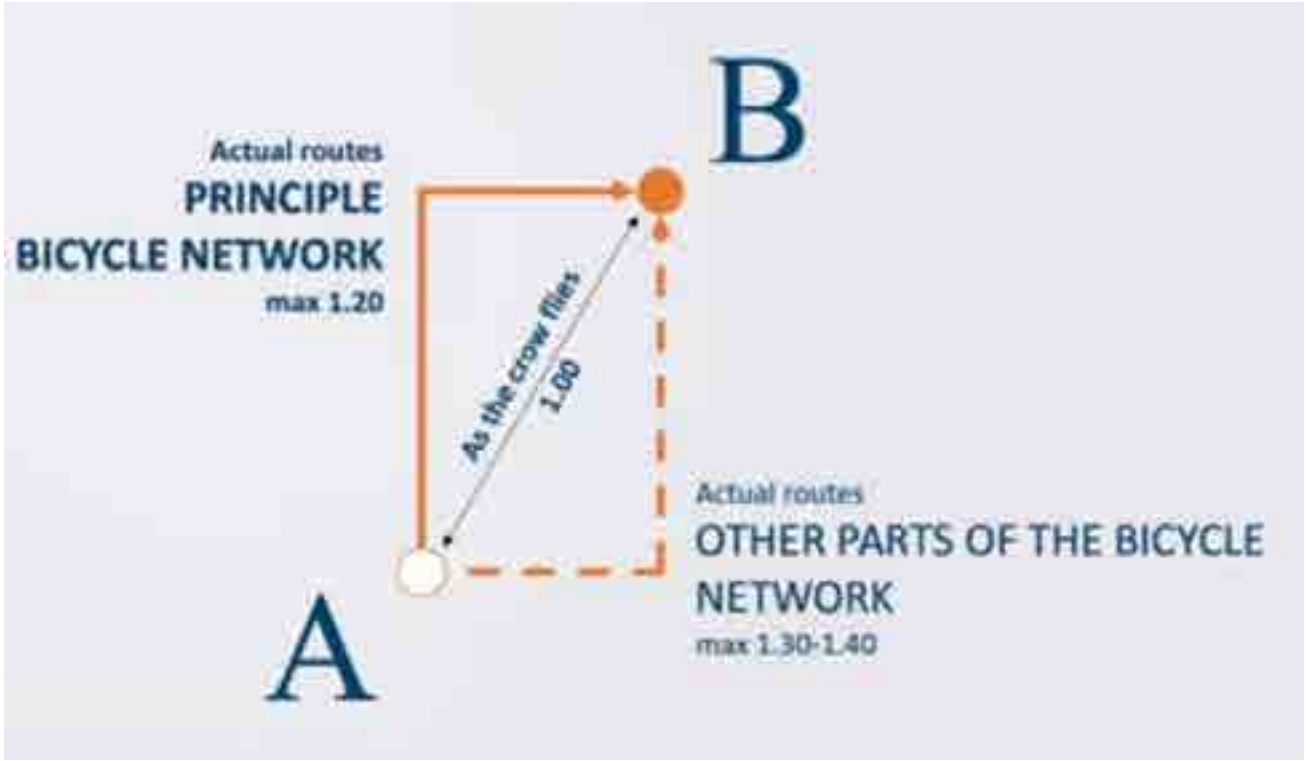
Principle 2 - Directness

Mobility competitiveness, scale, and convenience



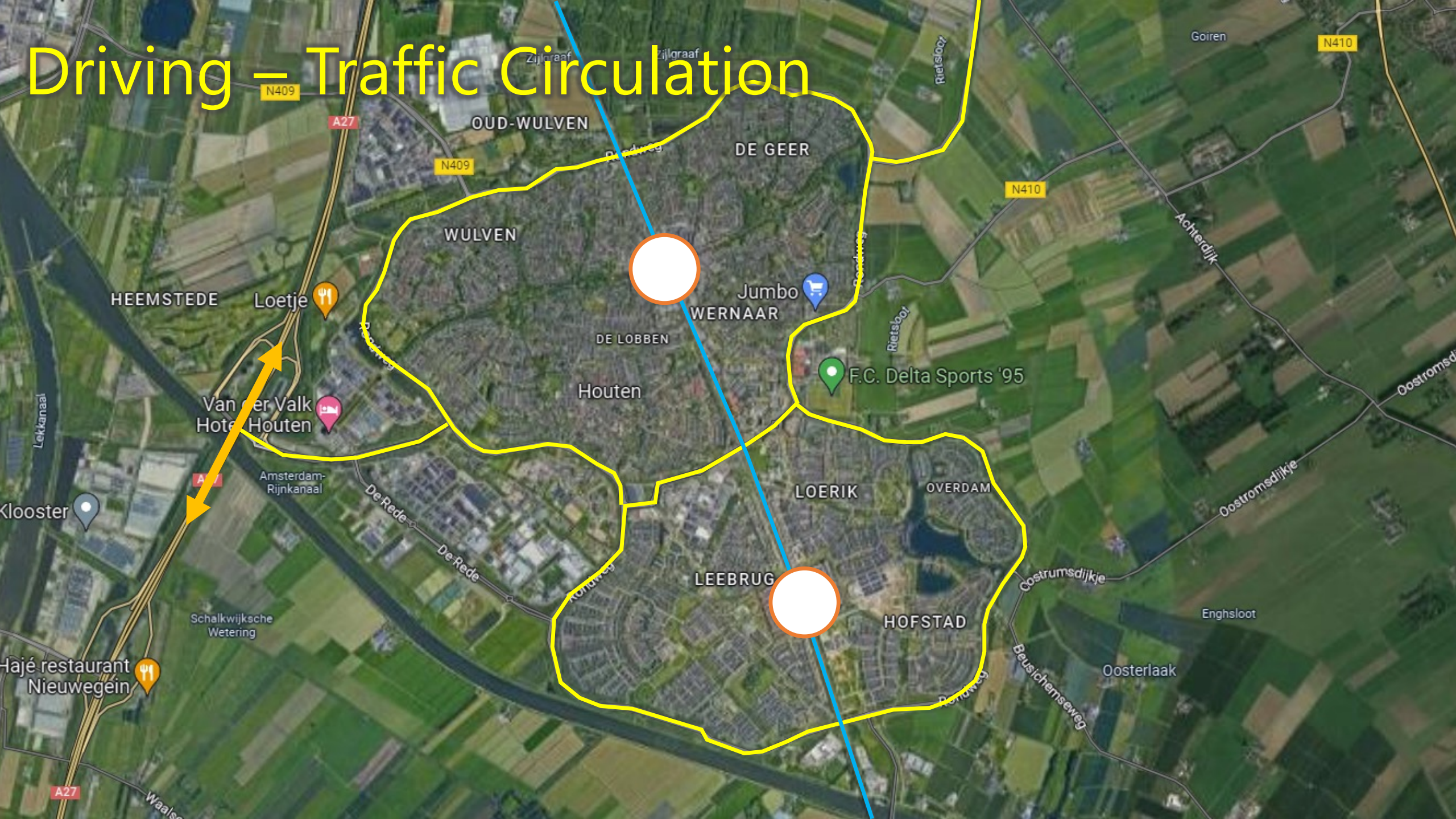
Principle 2 - Directness

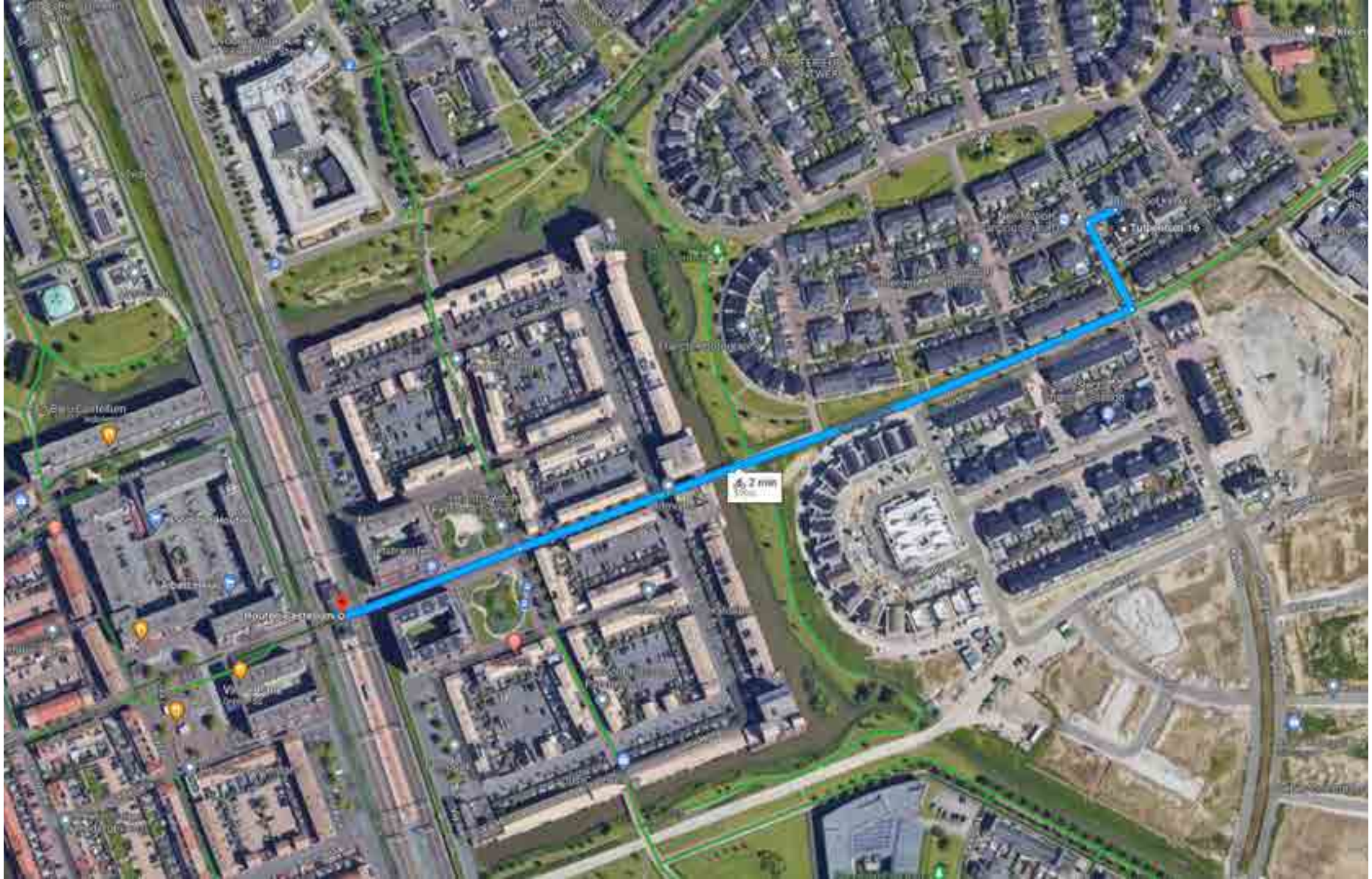
Detour Factor



Modal Networks Circulation

Driving – Traffic Circulation




2 min


7 min
3.2 km


NORTH
154


3 Minute
Ride 0.5
miles
7 Minute Drive
2.5 miles


TACO BELL
SOBO
nektar
Wendy's
BLAZE PIZZA
Village Baker
Chick-fil-A


THE RIDGE
SOBO
TACO BELL
nekter
Wendy's
BLAZE PIZZA
Village Baker
Chick-fil-A

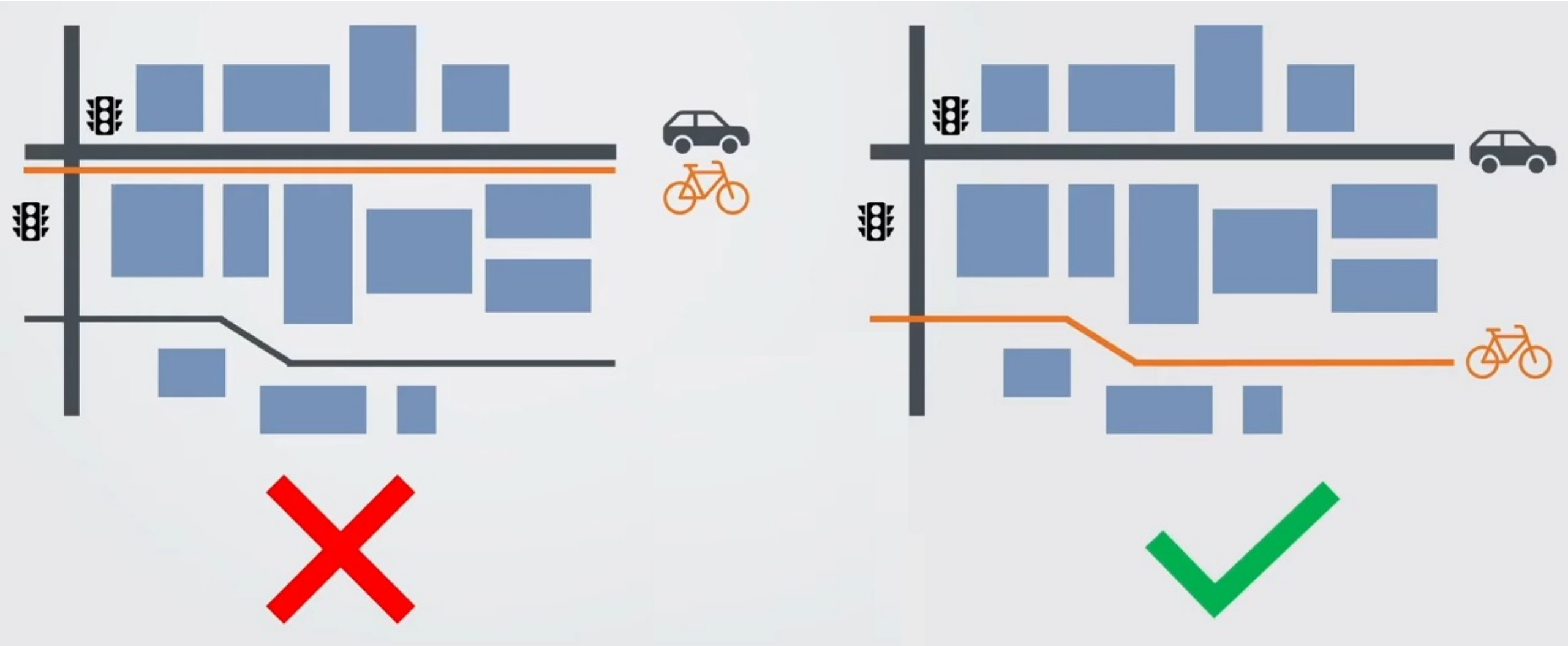

Chick-fil-A
3470
Caramel Crumble Milkshake


GOTRAX
GOTRAX

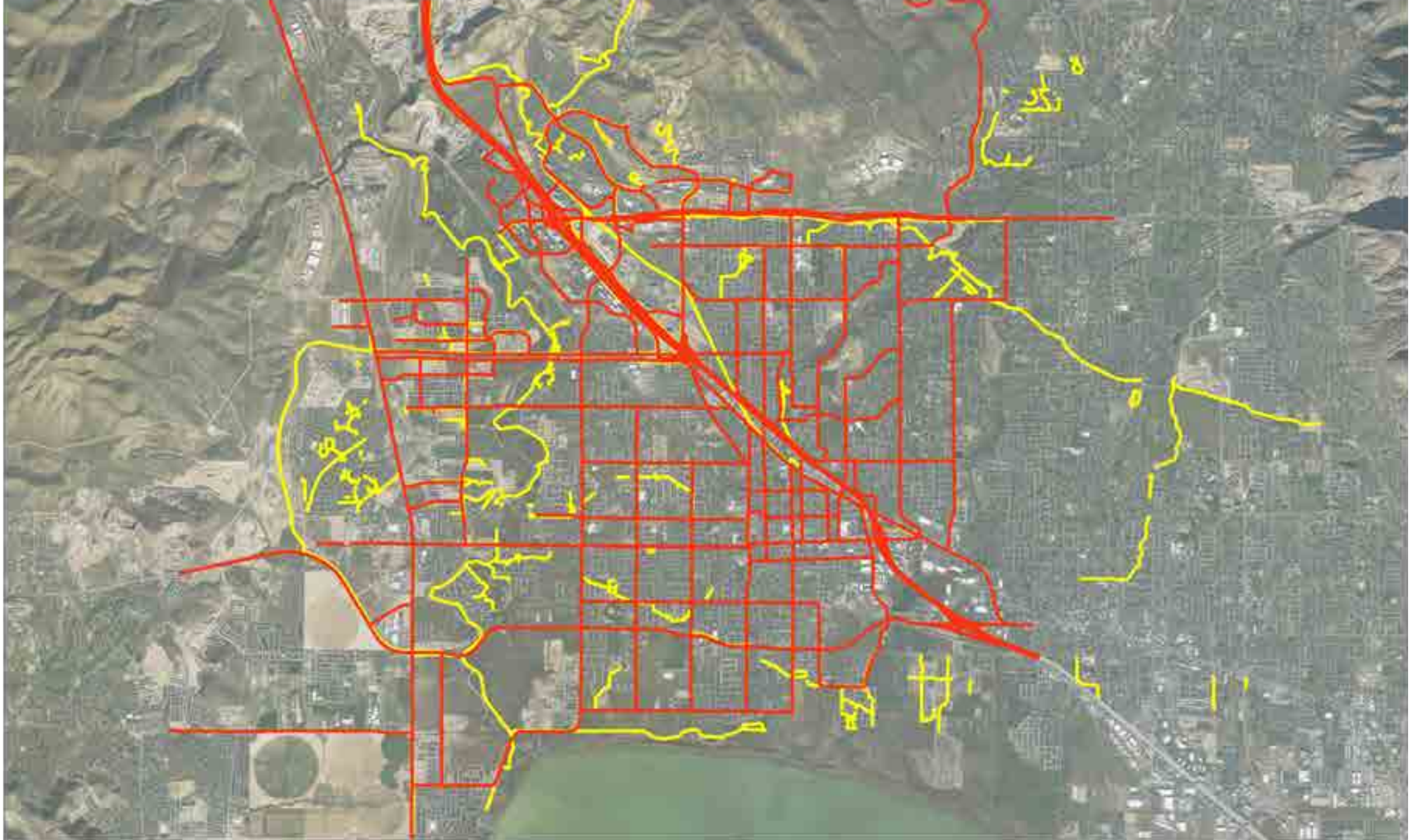
Principle 3 - Safety

Reduce exposure, risk, emissions, noise, stress

Principle 3 - Safety




Bloom

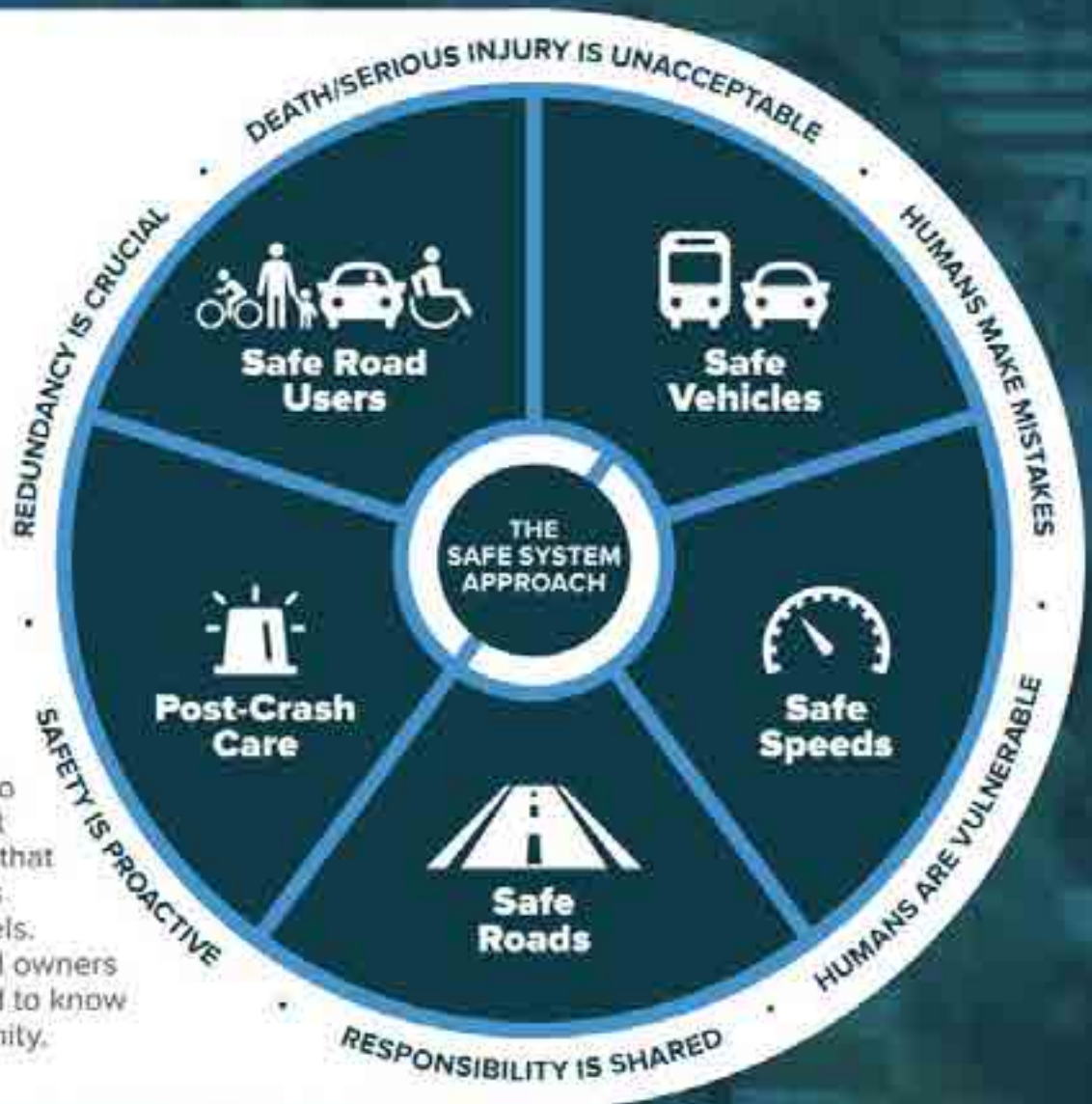


THE SAFE SYSTEM

APPROACH

Zero is our goal. A Safe System is how we will get there.

Imagine a world where nobody has to die from vehicle crashes. The Safe System approach aims to eliminate fatal & serious injuries for all road users. It does so through a holistic view of the road system that first anticipates human mistakes and second keeps impact energy on the human body at tolerable levels. Safety is an ethical imperative of the designers and owners of the transportation system. Here's what you need to know to bring the Safe System approach to your community.



Safe Systems Approach

Safe Systems Approach

Principle 3 - Safety

Crash Type	Driver Speeds Corresponding to 10% Fatal Injury Risk and 10% Serious Injury Risk
Pedestrian/vehicle crash[i]	20 mph for fatality 10 mph for serious injury
Side impact vehicle/vehicle crash (typically at intersections)[i]	30 mph for fatality 20 mph for serious injury
Head-on vehicle/vehicle crash (typically without median barriers)[i]	30–45 mph for fatality 20 mph for serious injury
Rear-end vehicle/vehicle crash[i]	35–70 mph for fatality 35 mph for serious injury
Motorcycle crash[ii]	19 mph for fatality

i = synthesized by Washington Injury Minimization and Speed Management Policy and Guidelines Workgroup, 2020

ii = reported as biomechanical tolerance in Gaca and Pazdan 2017; see also Fildes, Langford, Andrea, and Scully 2005.

Table 4 Further implementation of 'safe speed limits'.[22,23,24] Difference with the row above are **indicated in bold**.

Potential conflicts and requirements associated with	Safe speed
• Possible conflicts with vulnerable road users in home zones (woonerfs) (no footpaths and pedestrians using the carriageway)	15 km/h
• Possible conflicts with vulnerable road users **on roads, at intersections**, including situations with **bike lanes or advisory bike lanes**	30 km/h
• **No conflicts with vulnerable road users, except with helmet-protected riders of motorized two-wheelers (mopeds in the carriageway)** • Possible right-angle conflicts between motorized vehicles, possible frontal conflicts between motorized vehicles • **Stopping sight distance ≈ 47 m**	50 km/h
• No conflicts with vulnerable road users **No right-angle conflicts between motorized vehicles**, possible frontal conflicts between motorized vehicles **Obstacles shielded or obstacle-free zone ≈ 2.5 m, (semi-)hard shoulder** **Stopping sight distance ≈ 64 m**	60 km/h
• No conflicts with vulnerable road users No right-angle conflicts between motorized vehicles, possible frontal conflicts between motorized vehicles Obstacles shielded or **obstacle-free zone ≈ 4.5 m**, (semi-)hard shoulder **Stopping sight distance ≈ 82 m**	70 km/h
• No conflicts with vulnerable road users **No right-angle or frontal conflicts between motorized vehicles** Obstacles shielded or **obstacle-free zone ≈ 6 m**, (semi-)hard shoulder **Stopping sight distance ≈ 105 m**	80 km/h
• No conflicts with vulnerable road users No interactive and frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≈ 10 m, hard shoulder** **Stopping sight distance ≈ 170 m**	100 km/h
• No conflicts with vulnerable road users No right-angle or frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≈ 13 m**, hard shoulder **Stopping sight distance ≈ 260 m**	120 km/h
• No conflicts with vulnerable road users No right-angle or frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≈ 14.5 m**, hard shoulder **Stopping sight distance ≈ 315 m**	130 km/h

Principle 3 - Safety

Crash Type	Driver Speeds Corresponding to 10% Fatal Injury Risk and 10% Serious Injury Risk
	35 mph for serious injury
Motorcycle crash[ii]	19 mph for fatality

i = synthesized by Washington Injury Minimization and Speed Management Policy and Guidelines Workgroup, 2020
ii = reported as biomechanical tolerance in Gaca and Pazdan 2017; see also Fildes, Langford, Andreu, and Scully 2005.

Table 4 Further implementation of 'safe speed limits'.[21,22,24] Difference with the row above are **indicated in bold**.

Potential conflicts and requirements associated with	Safe speed
• Possible conflicts with vulnerable road users in home zones (woonerfs) (no footpaths and pedestrians using the carriageway)	15 km/h
• Possible conflicts with vulnerable road users **on roads, at intersections**, including situations with **bike lanes or advisory bike lanes**	30 km/h
• **No conflicts with vulnerable road users, except with helmet-protected riders of motorized two-wheelers (mopeds in the carriageway)** • Possible right-angle conflicts between motorized vehicles, possible frontal conflicts between motorized vehicles • **Stopping sight distance ≈ 47 m**	50 km/h
• No conflicts with vulnerable road users	60 km/h
No right-angle or frontal conflicts between motorized vehicles Obstacles shielded or **obstacle-free zone ≥ 6 m**, (semi-)hard shoulder **Stopping sight distance ≥ 105 m**	
• No conflicts with vulnerable road users No interactive and frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≥ 10 m, hard shoulder** **Stopping sight distance ≈ 170 m**	100 km/h
• No conflicts with vulnerable road users No right-angle or frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≥ 13 m**, hard shoulder **Stopping sight distance ≥ 260 m**	120 km/h
• No conflicts with vulnerable road users No right-angle or frontal conflict between motorized vehicles Obstacles shielded or **obstacle-free zone ≥ 14.5 m**, hard shoulder **Stopping sight distance ≥ 315 m**	130 km/h

- Possible conflicts with vulnerable road users **on roads, at intersections**, including situations with **bike lanes or advisory bike lanes** — 30 km/h
- **No conflicts with vulnerable road users, except with helmet-protected riders of motorized two-wheelers (mopeds in the carriageway)** — 50 km/h

Principle 3 - Safety

Principle 3 - Safety

Principle 3 - Safety

Principle 3 - Safety

Principle 3 - Safety

Cycling – Traffic Calming/Priority

Principle 3 - Safety


HOME 2


J.R. GRISLEY MACHINE TOOLS

Principle 4 - Comfort

Comfort – Design with the user in mind


RAILROAD
CROSSING
2
TRACKS

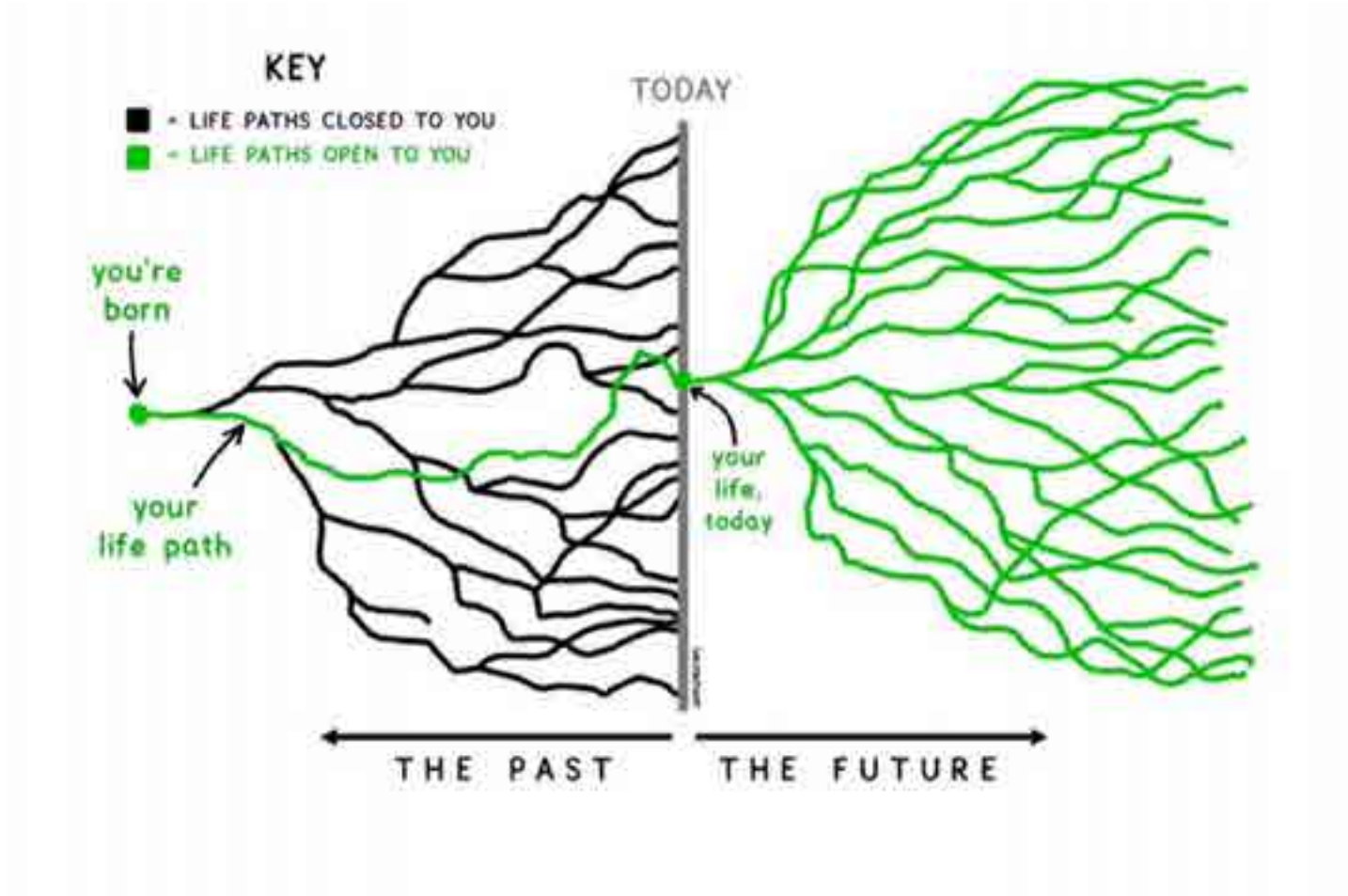

KOHLER

Principle 5 - Attractiveness

Attractiveness – General features encourage walking/biking


PEDWAY
ENTRANCE

Decide


KEY
= LIFE PATHS CLOSED TO YOU
= LIFE PATHS OPEN TO YOU
TODAY
you're born
your life path
your life, today
THE PAST
THE FUTURE

Questions?

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