



An early foray into
Adaptive (Flexible) Planning

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What is ConnectSF?

ConnectSF aligns key agencies through a ground-up process to identify long-term transportation projects and policy priorities



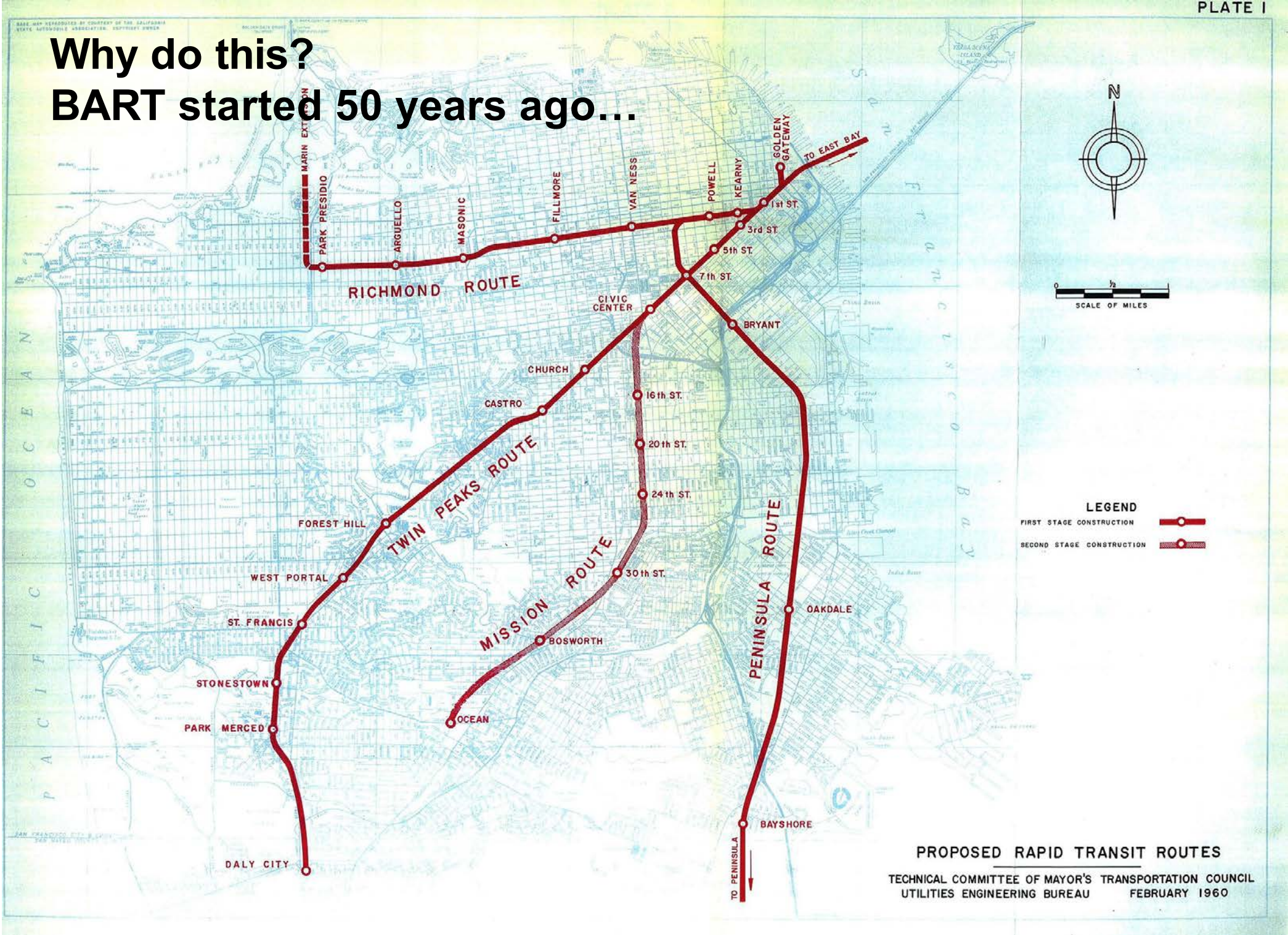
ConnectSF

ConnectSF

- Phase 1 - 50 year transportation vision using an innovative **collaborative scenario-planning approach** (2015-2017)
- Phase 2 - Project and Policies to achieve vision (ongoing)
- Phase 3 - Transportation Oriented Policy & Action Documents (ongoing)

www.connectsf.org

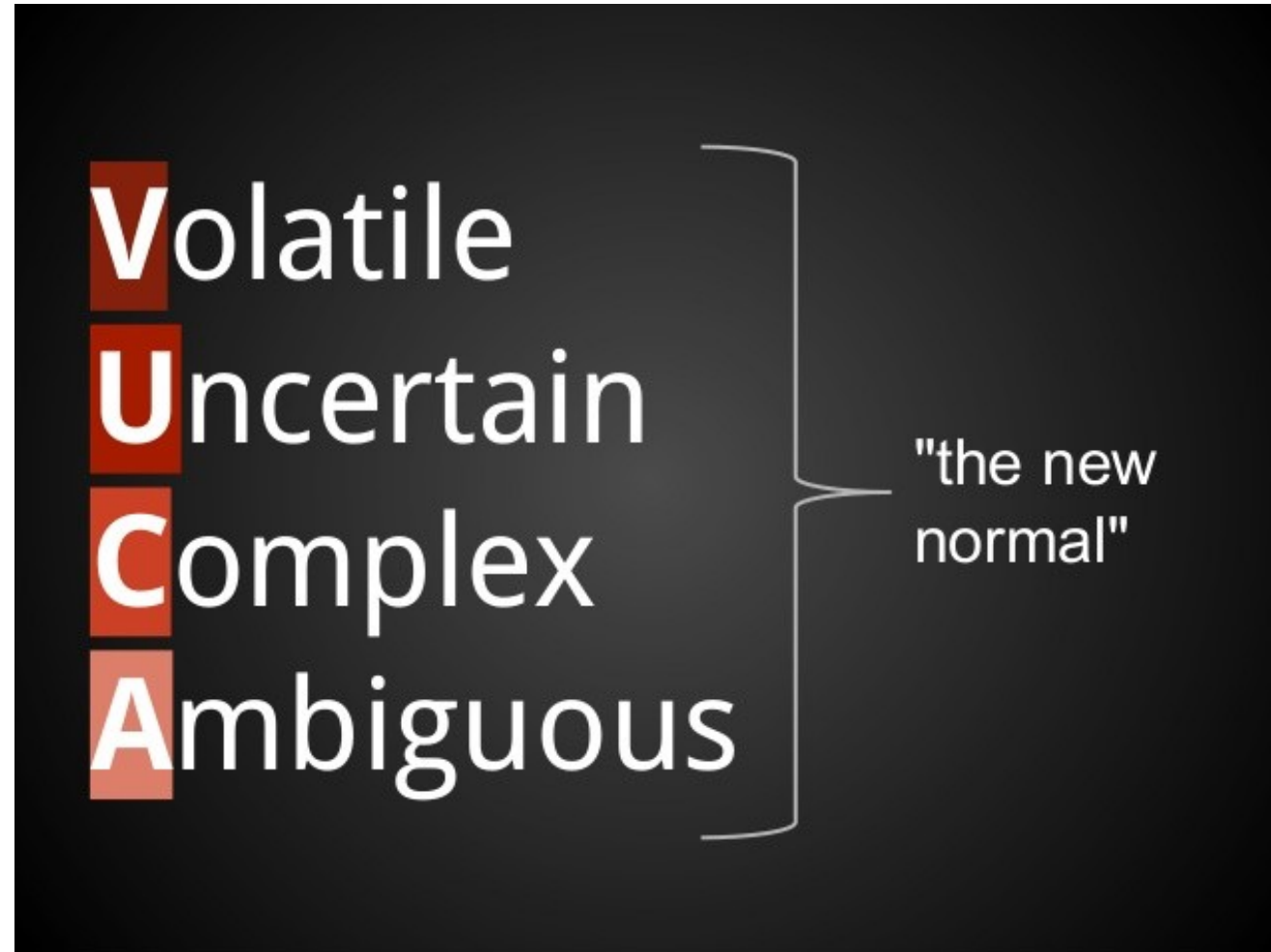
Why do this?
BART started 50 years ago...



LEGEND
 FIRST STAGE CONSTRUCTION (solid red line)
 SECOND STAGE CONSTRUCTION (dashed red line)

PROPOSED RAPID TRANSIT ROUTES
 TECHNICAL COMMITTEE OF MAYOR'S TRANSPORTATION COUNCIL
 UTILITIES ENGINEERING BUREAU FEBRUARY 1960

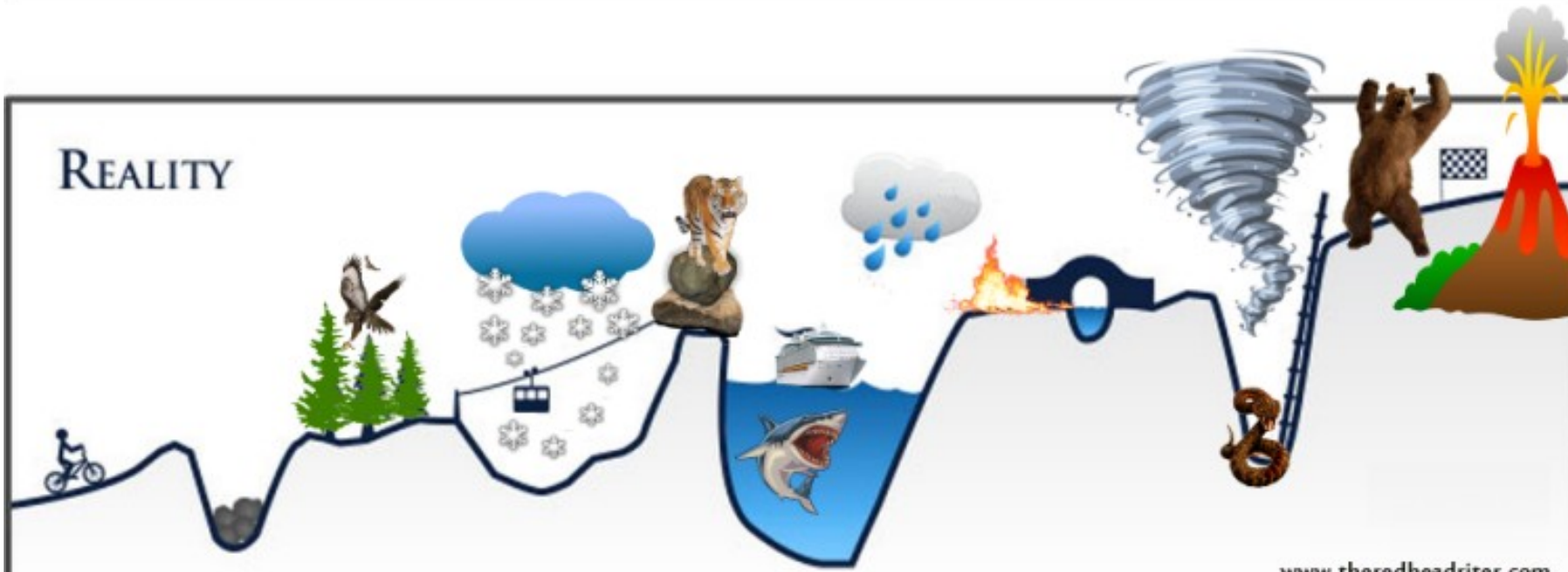
We need new planning tools for our current reality



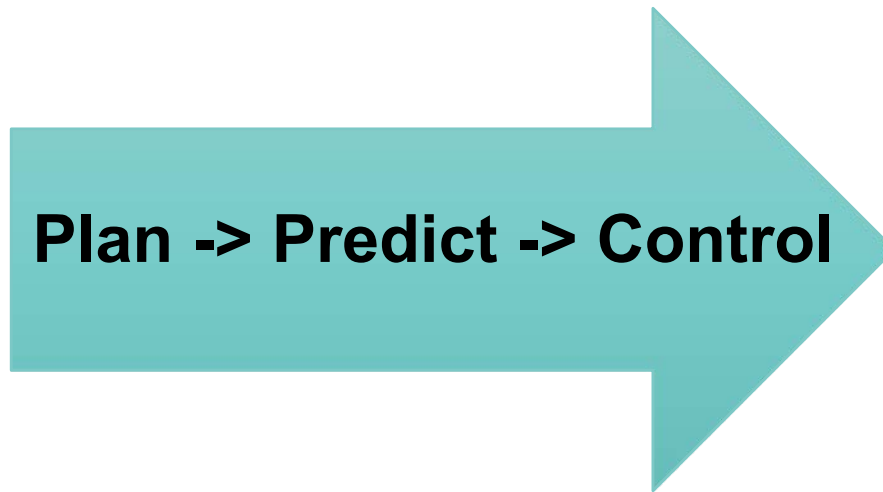
YOUR PLAN



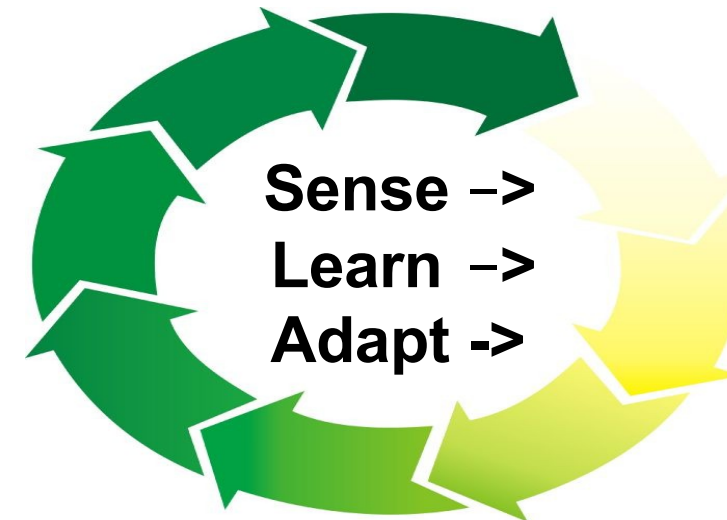
REALITY



Changing Planning Paradigm



- Linear/ Forecasting
- Static
- About the “Plan”
- About prediction
- About answers and experts



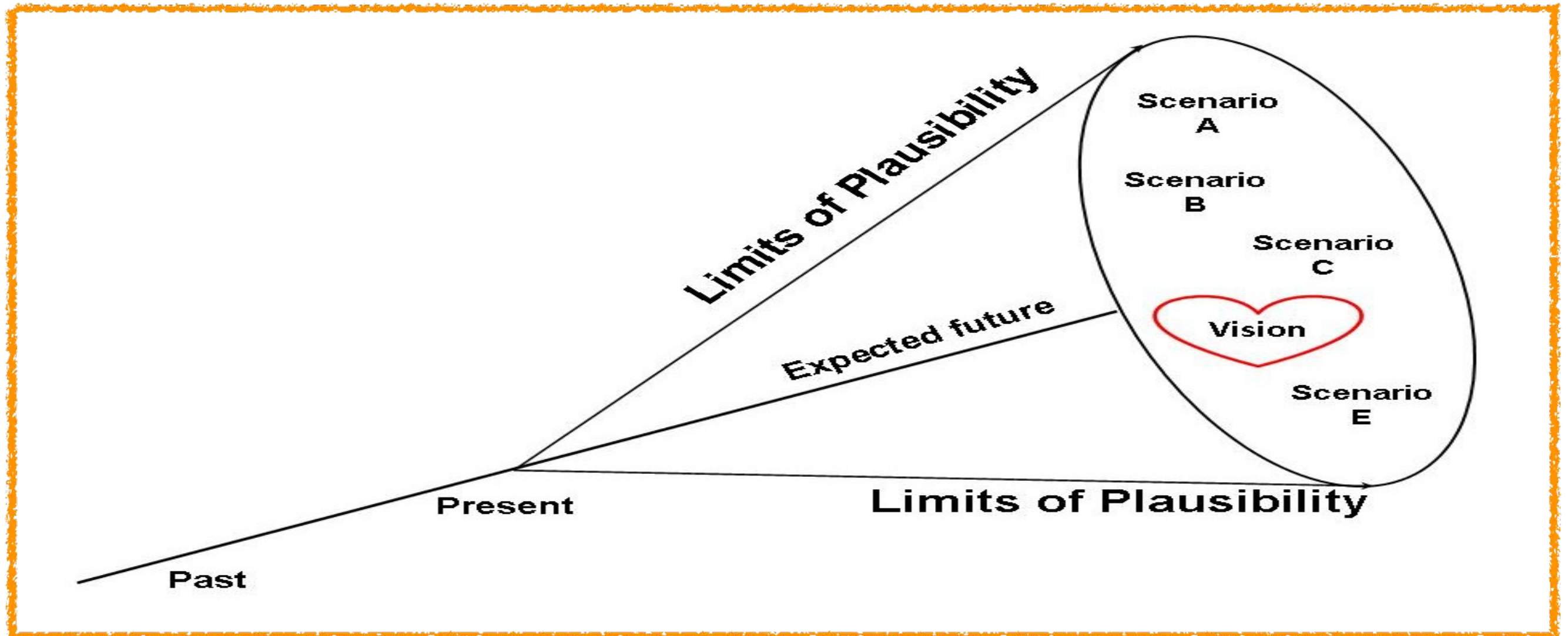
- Multiple Futures
- Dynamic
- About the Strategic Conversation”
- About managing uncertainty
- About collaboration and continuous learning



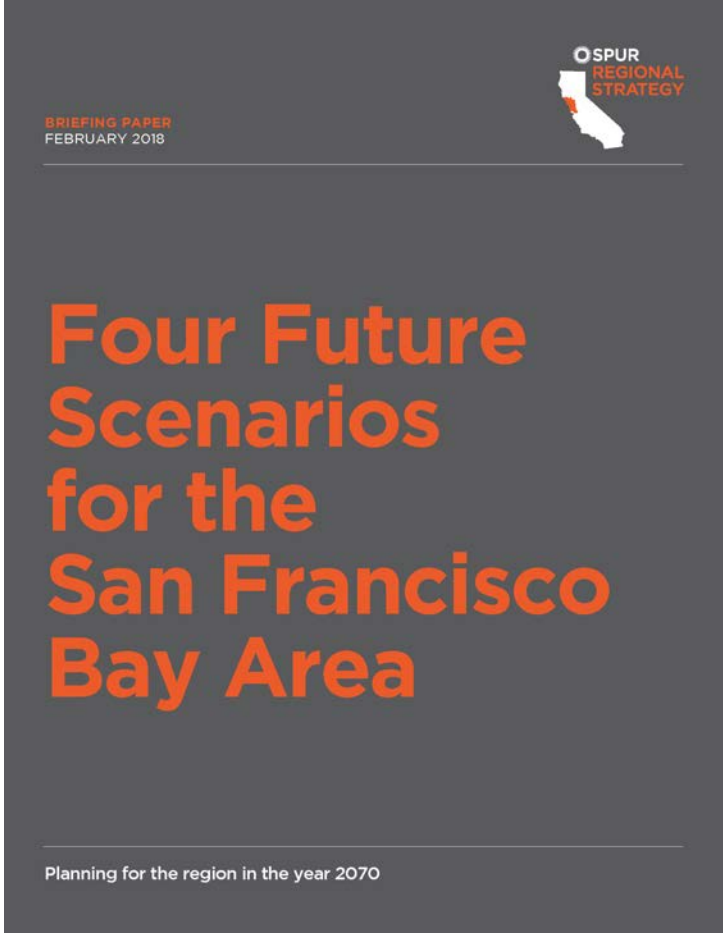
CA-37 meets North San Pablo Bay

Transformative Scenario Planning

A **collaborative, multi-disciplinary** method for thinking and shaping the future and making **flexible long term plans** and **decisions** under conditions of *uncertainty and complexity*



Other Scenario Planning Efforts



3 SCENARIOS

Plan Bay Area 2040



Main Streets

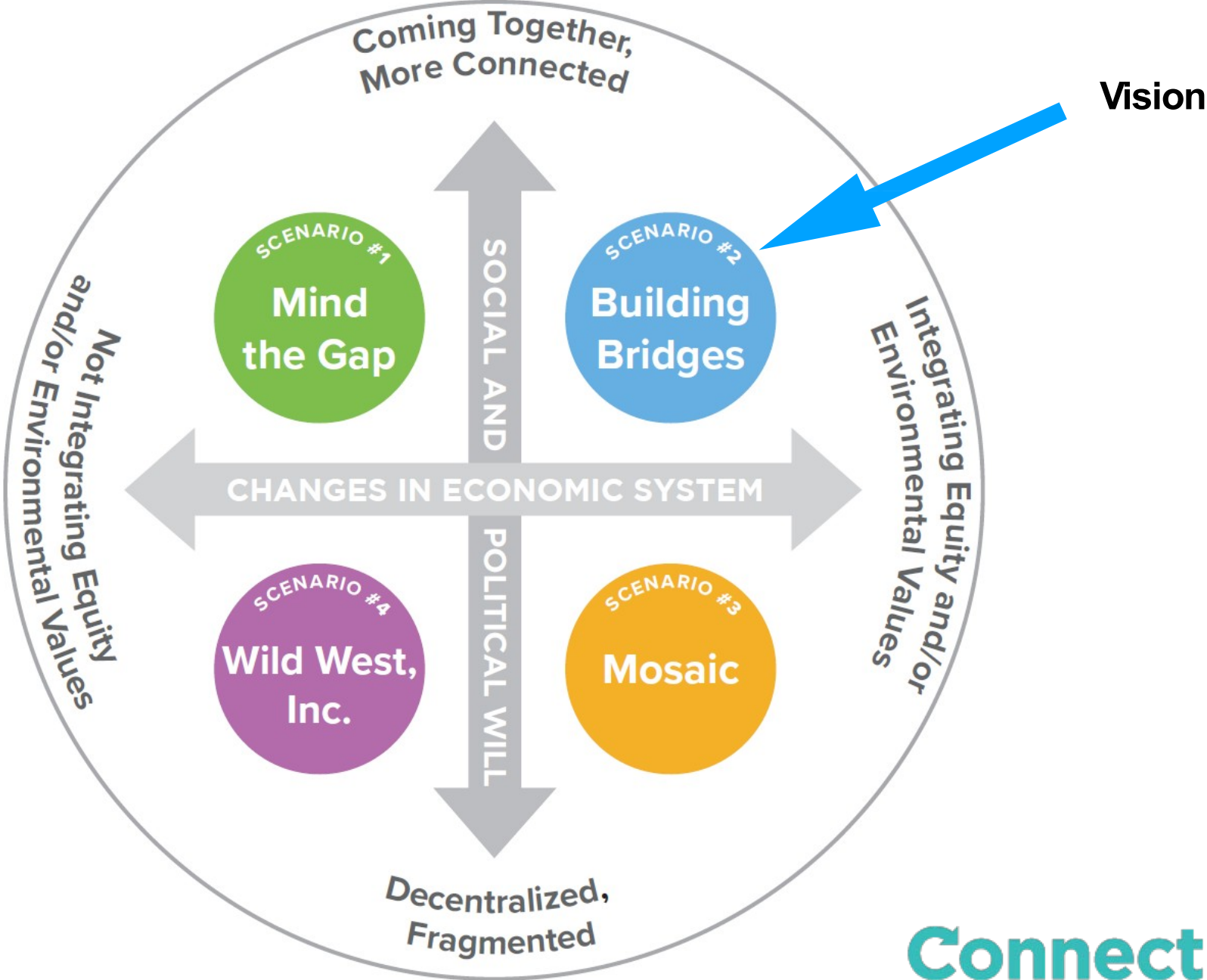


Connected Neighborhoods



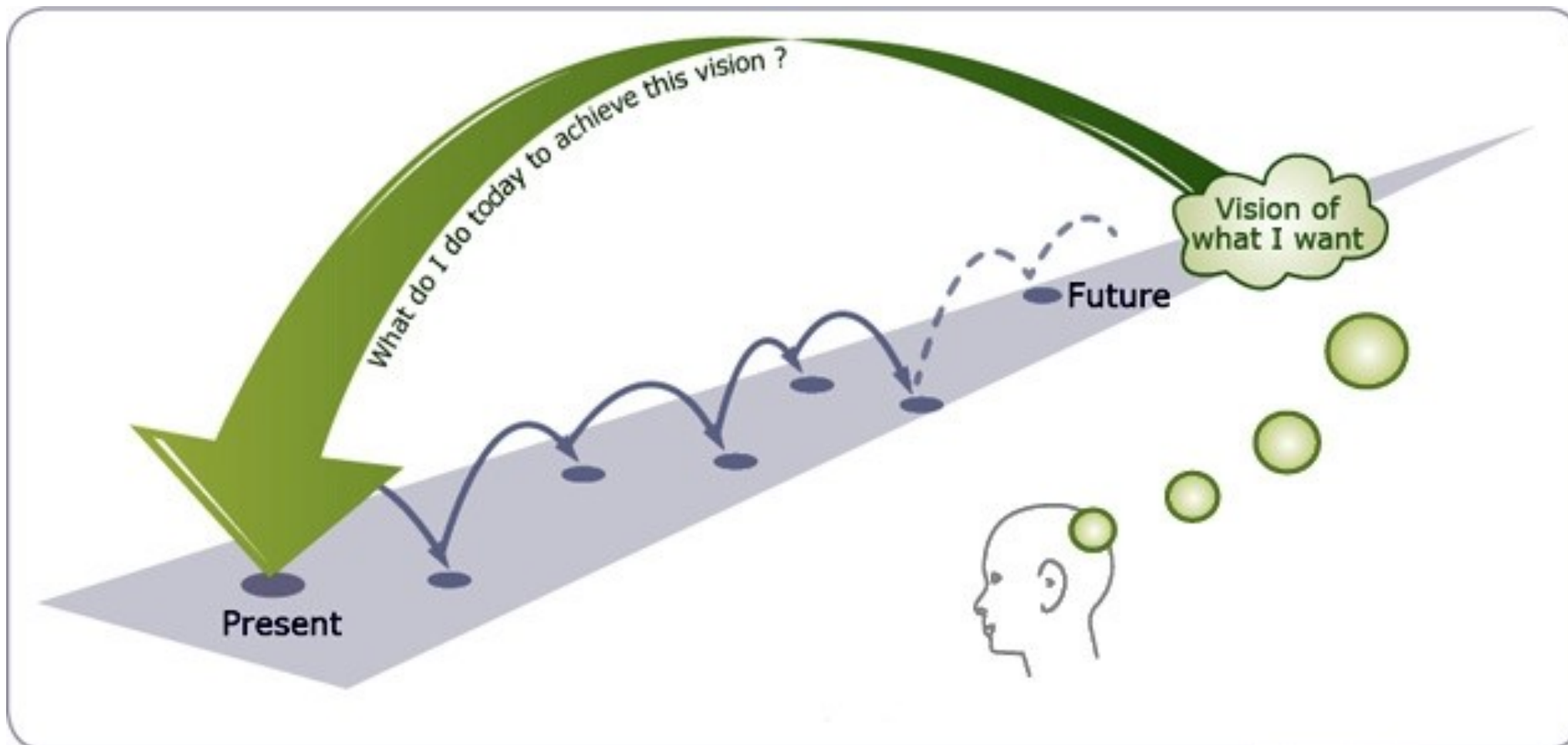
Big Cities

What is the future of San Francisco as place to live, work and play?
Scenarios for the Future ~ 50 years



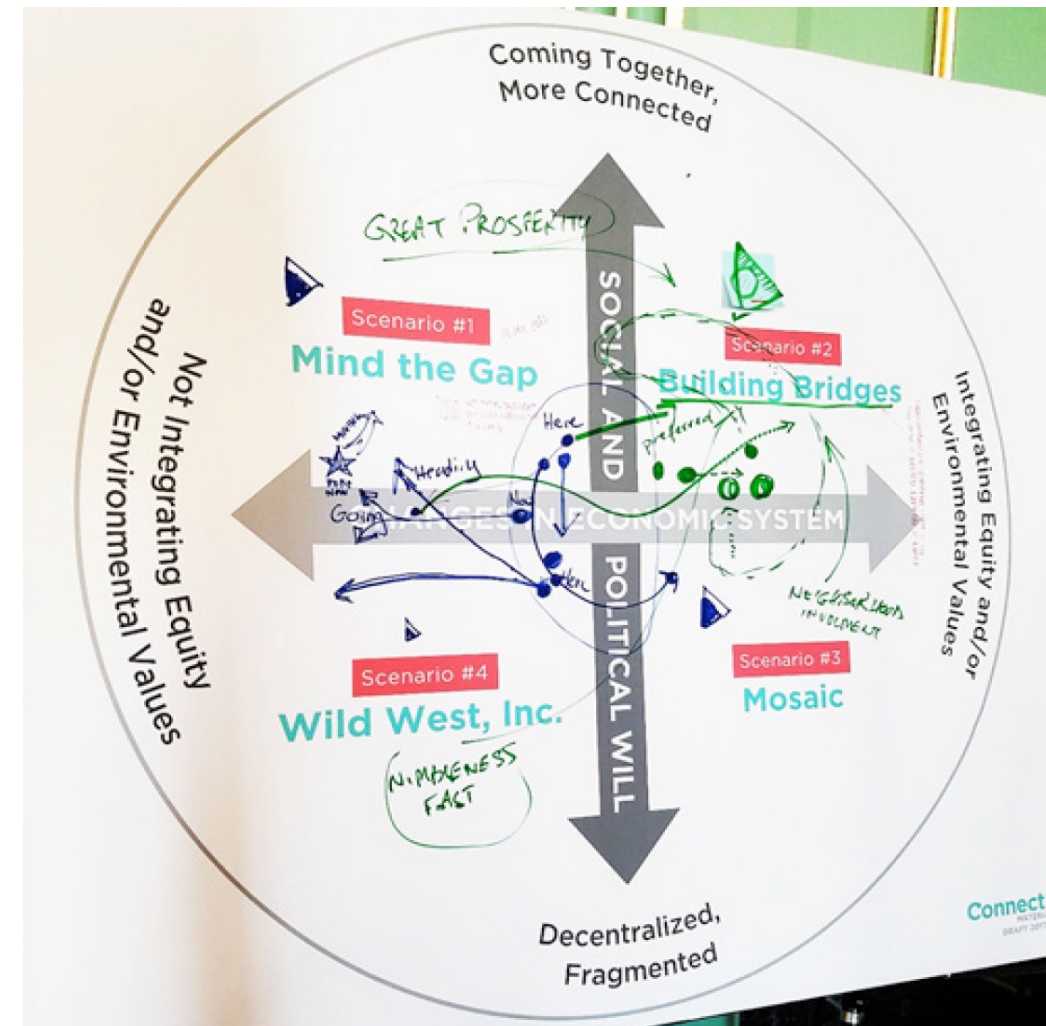
Backcasting “Building Bridges” - The Vision

What would it take?



What did we learn from the future?

- **Political and policy innovation required to create vision—** i.e. new adaptive (flexible) planning and governance is essential—removing *unhelpful laws, rules, regs & norms*
- **Gov 2.0 Role =** to facilitate “systems integration” and innovation across new & old mobility modalities and platforms
- **Plan for growth & transformative infrastructure** that enables equity and resiliency (and plan for disruption from *tech to tectonics*)



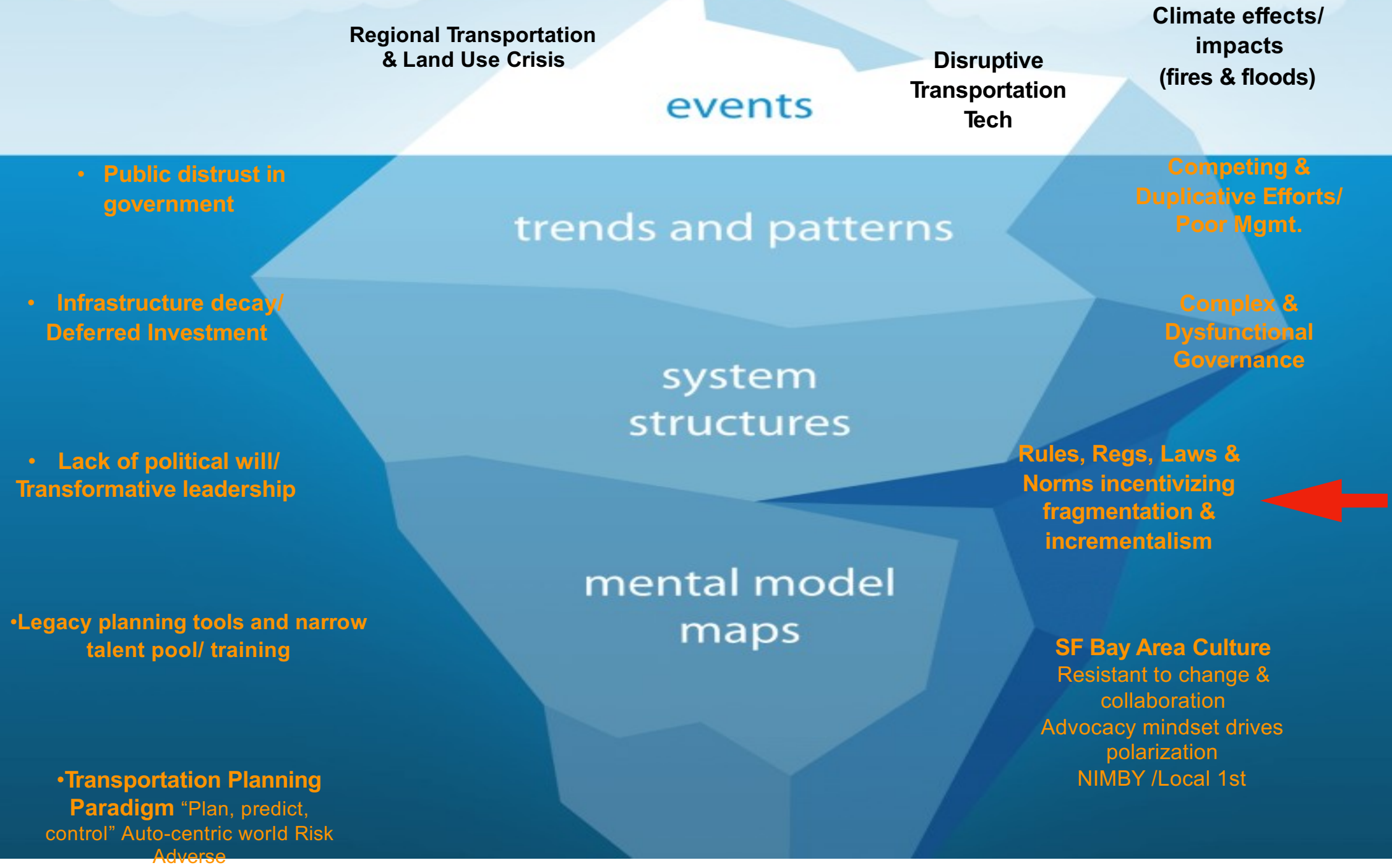
What did we learn from the future?

- Must think and act **regionally**, leveraging the best of local control and innovation
- Visionary **multi-gen leadership is key** at *all* scales
- World-class infrastructure is **expensive but worth it** because it's critical to our (past) future identity and prosperity

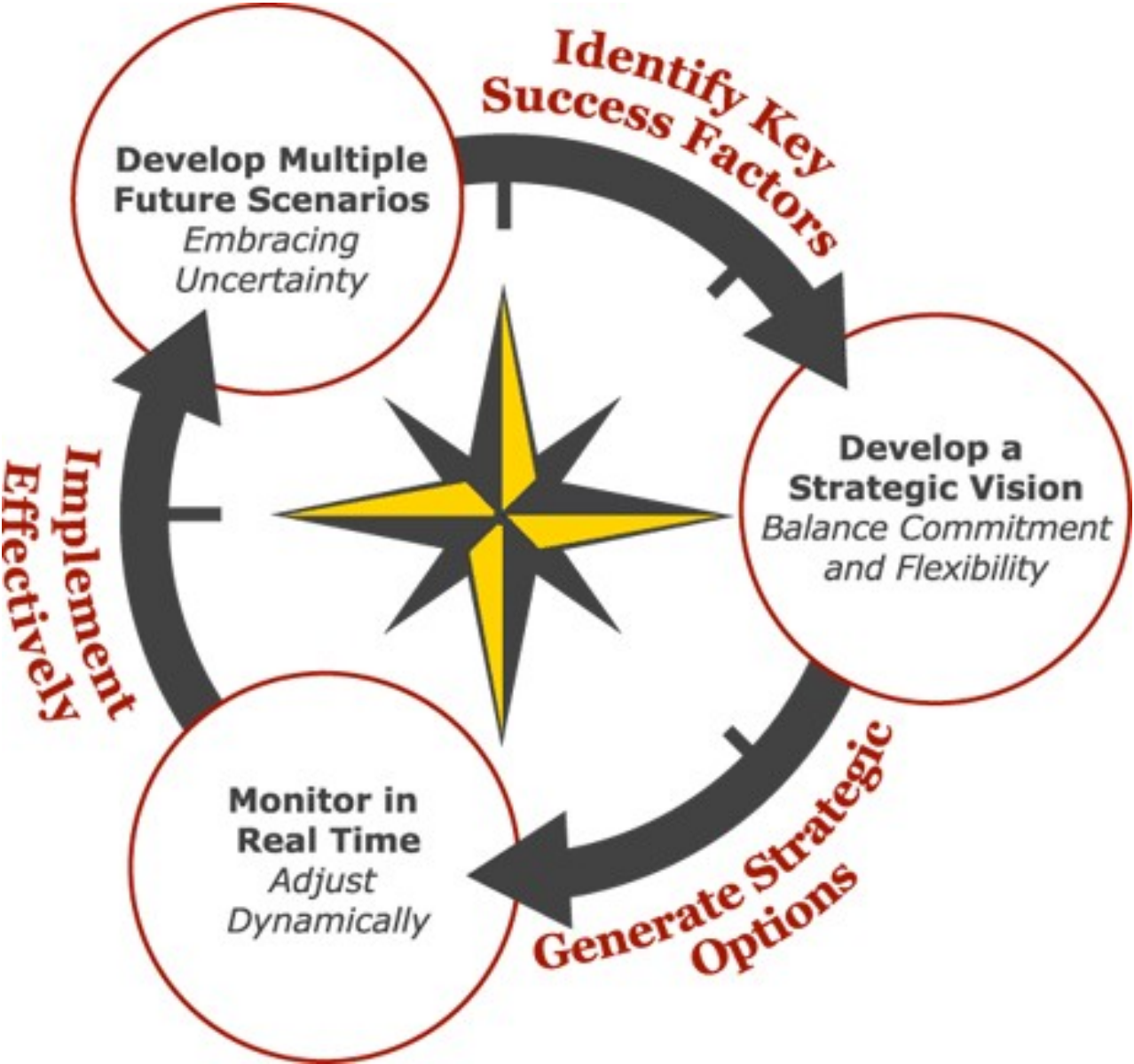


Constraints in the System for Adaptive/ Flexible Transportation

Learnings from ConnectSF



Scenario Planning Process = Learning Cycle



...language matters

adaptive

adjective **US** /ə'dæp·tɪv/

able to adjust:

These governments do not possess the adaptive capacity to endure such changes.

biology **able to adjust to the conditions of a particular environment**

having an ability to change to suit different conditions

flexible

adjective **UK** /'flek.sə.bəl/ **US** /'flek.sə.bəl/

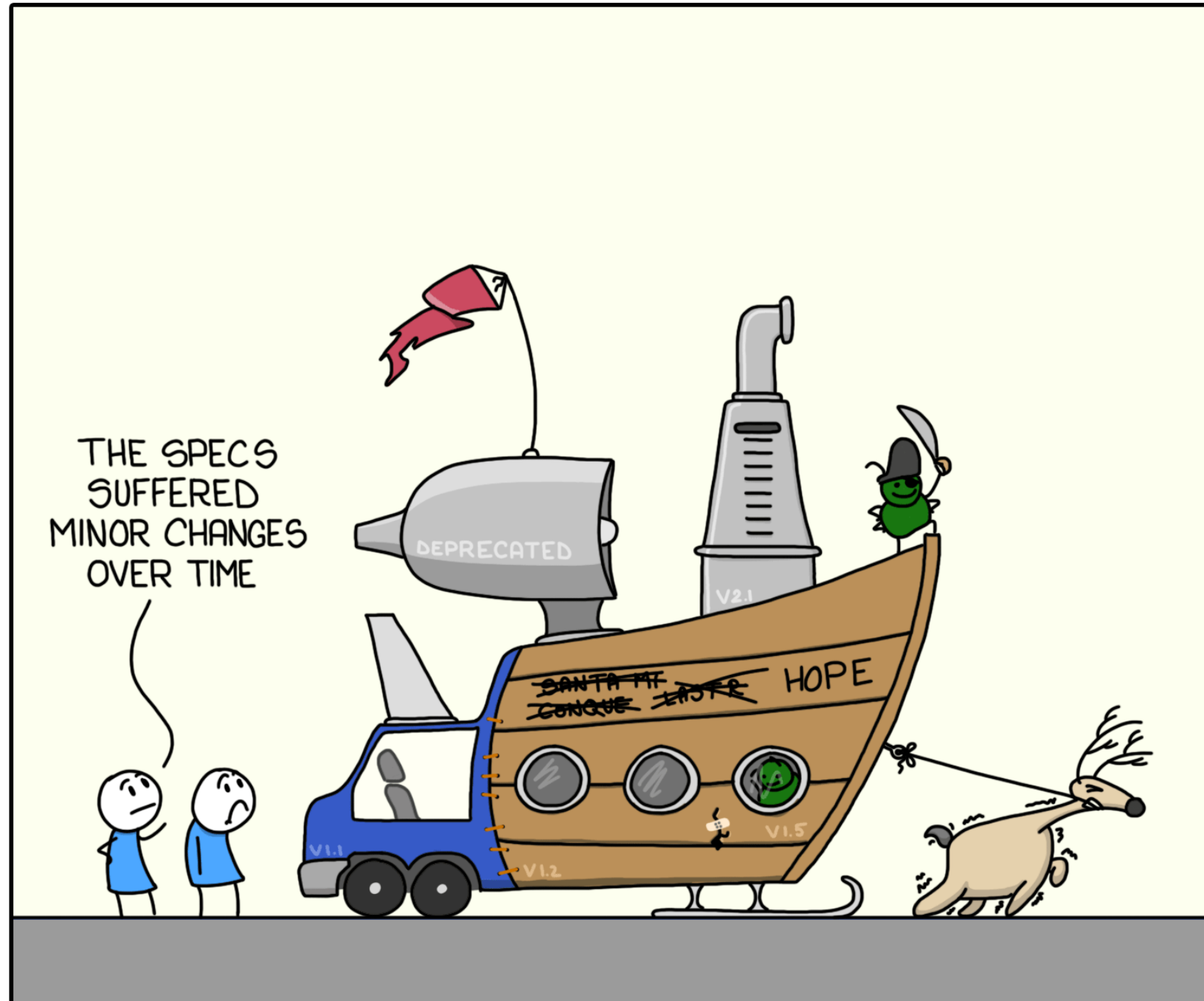
able to change or be changed easily according to the situation:

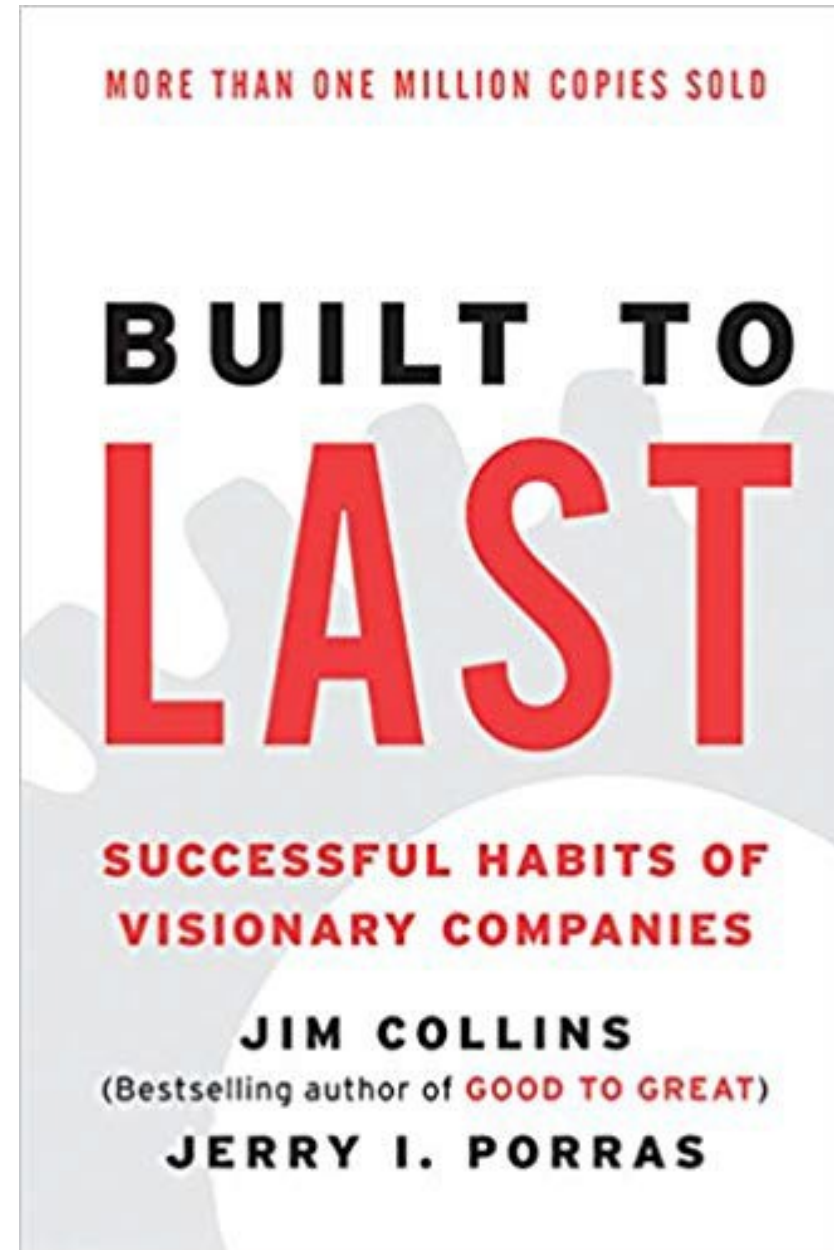
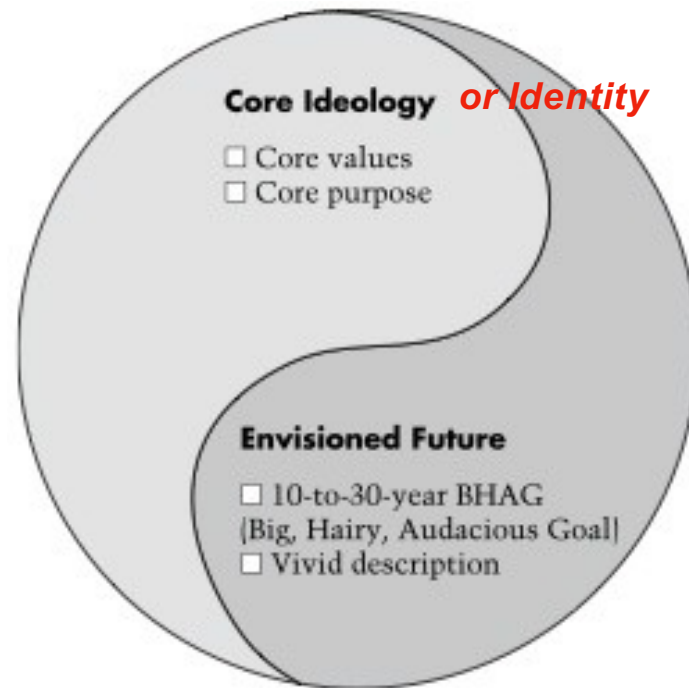
I'm fortunate because my job has flexible hours, and I can come and go pretty much as I want.

able to bend or be bent easily without breaking:

The wire has to be flexible enough to go around corners of the room.

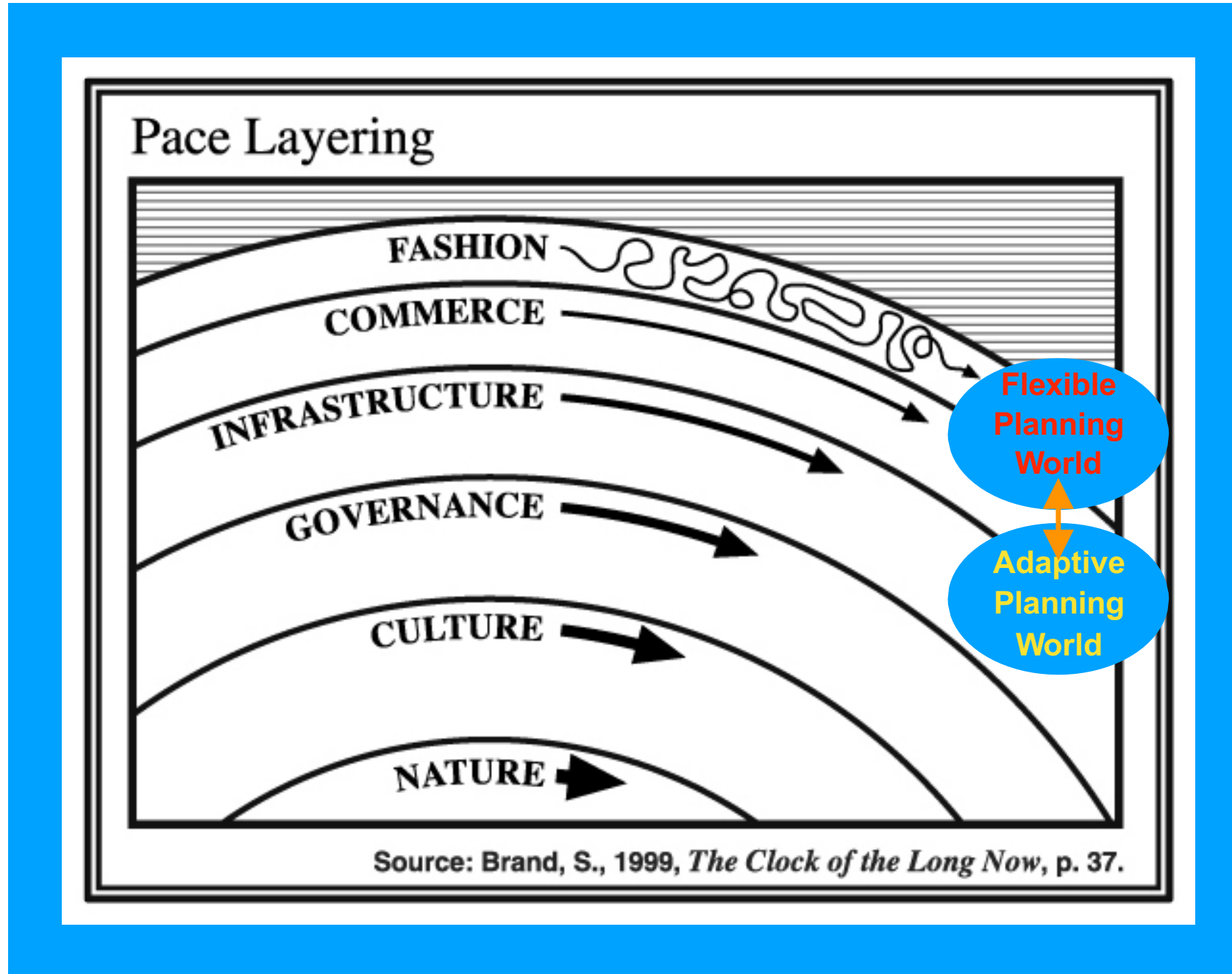
PIVOTING (too much)





1994

Health Civilizations Balance Fast & Slow / Continuity & Change



Fastest
(Quarterly, Product Cycles)

Decades

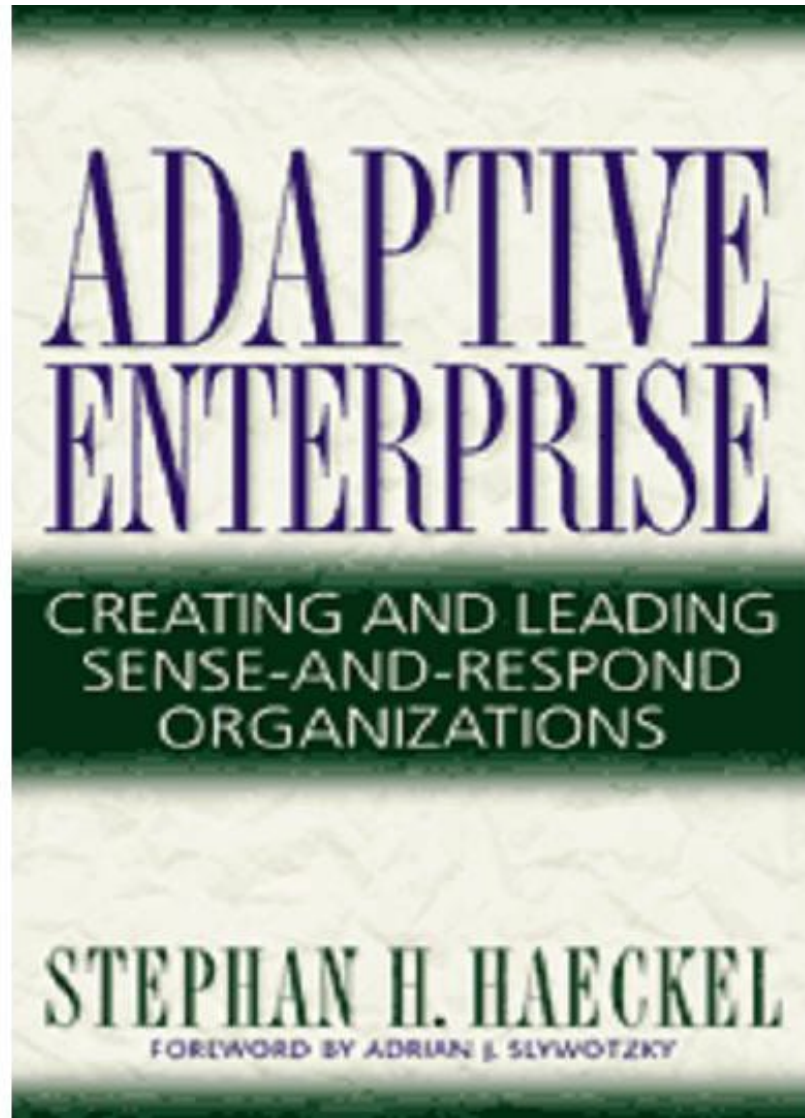
Centuries

Slowest
(Eons, Evolutionary)

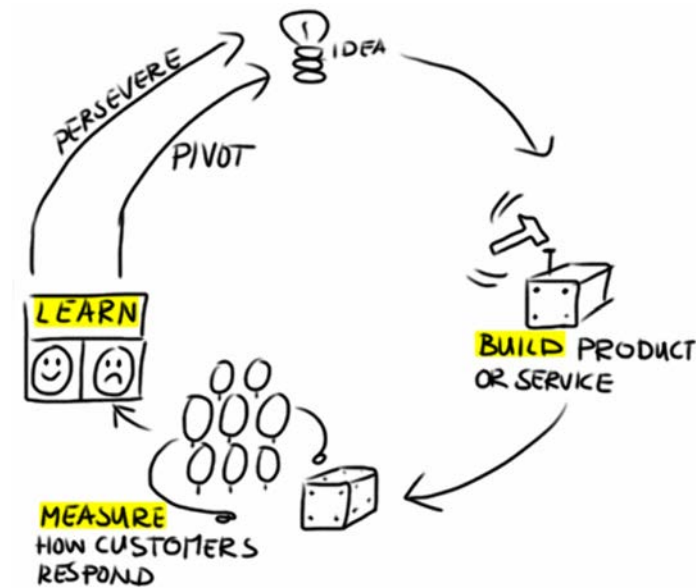
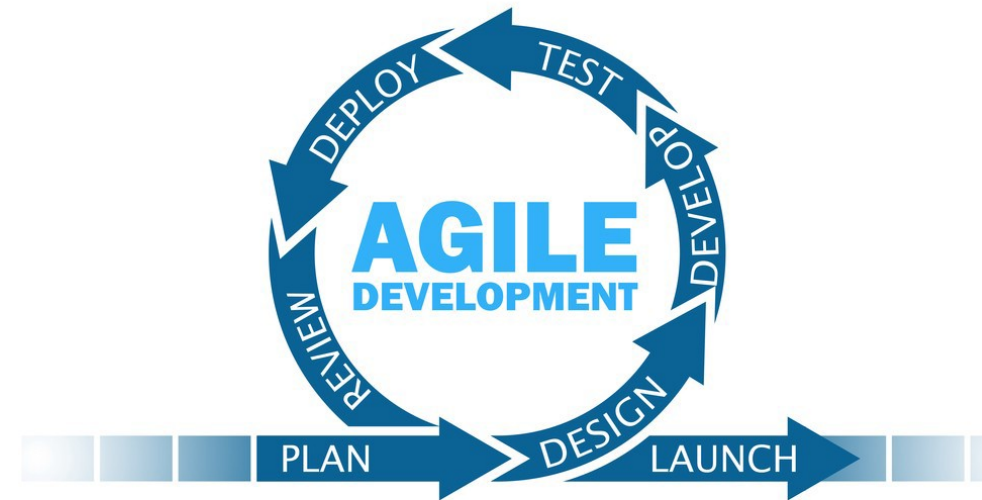
Flexible Planning World

Adaptive Planning World

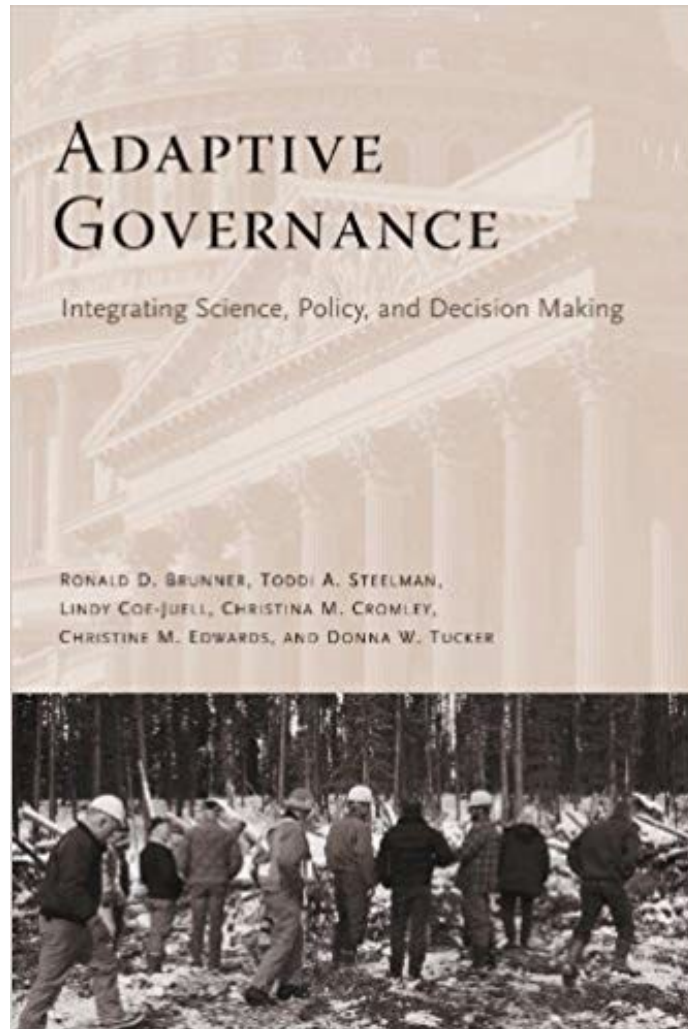
Where can we learn from
to do adaptive/ flexible
planning?



LATE 1990s
Corporations as
“Complex Adaptive Systems”



2000s to NOW
Design Thinking,
Agile Development,
“Pivot” Strategies



- * **Resource Management Methods**
- * **Learning from nature's designs**

Back to the Future ?



“A Trip down Market Street” - April 14, 1906

<https://www.youtube.com/watch?v=8Q5Nur642BU>

COMPLETE STREETS

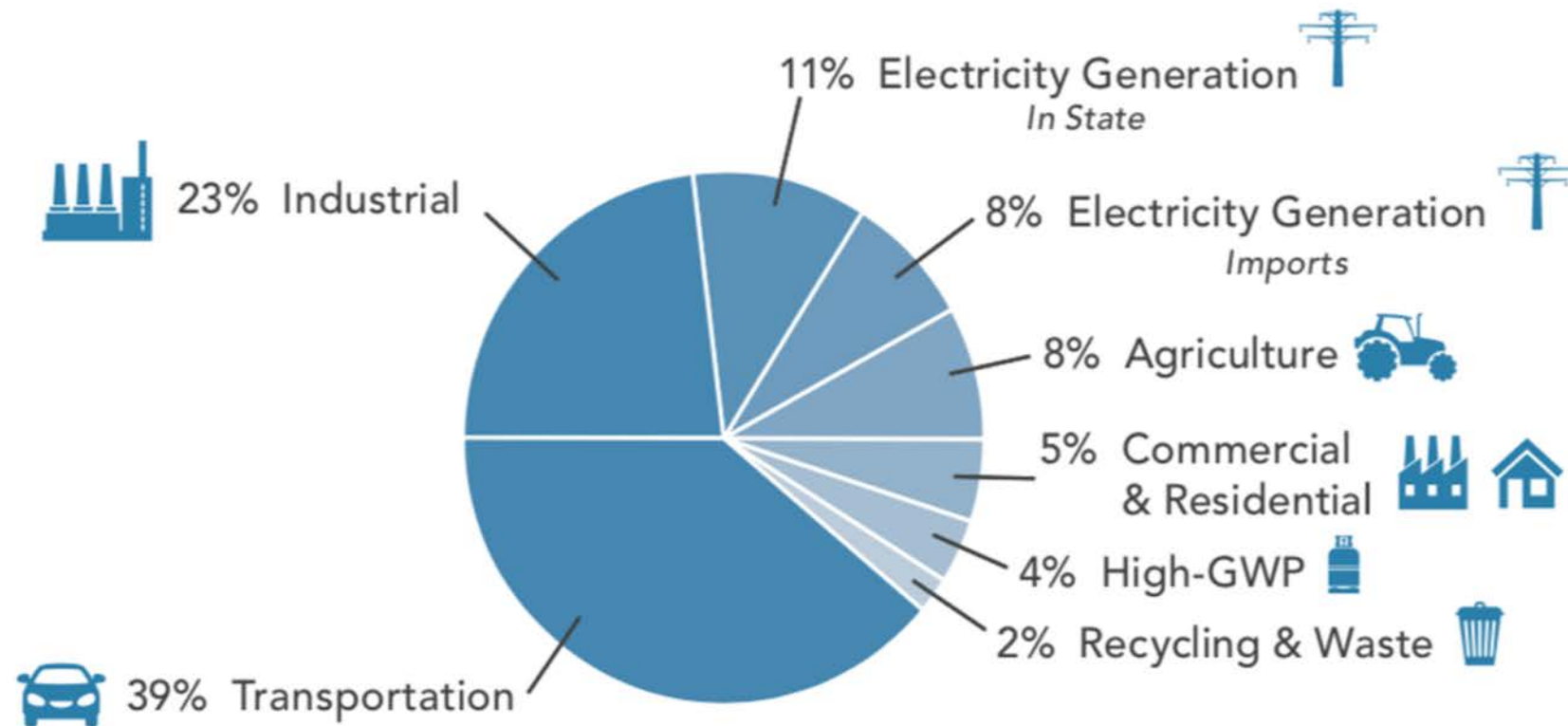
A Strategy to Achieve Flexible Transit

Andrew W. Schwartz
Shute Mihaly & Weinberger LLP
SPUR
April 24, 2019

Energy Use By Mode

<u>Mode</u>	<u>BTU/Pass. Mile</u>
car (1.5 passengers)	3,580
van, pickup, SUV	4,500
aviation	4,000
bus (25 passengers)	720
light Rail	1,150
diesel Rail (Amtrak)	2,130
high speed rail	1,500

CALIFORNIA CARBON EMISSIONS



2015 Total Emissions

440.4 MMTCO₂e

AB 32

- California Global Warming Solutions Act (2006)
- required
 - ❑ Government Code section 65080(b)(2)
 - ❑ part of Regional Transportation Plan process (23 C.F.R. Part 450)
- how it's supposed to work:
 - ❑ Identify land uses and transportation network
 - ❑ forecast “integrated development pattern” meeting California Air Resources Control Board per capita targets for passenger cars and trucks
 - ❑ target years: 2020 and 2035 (updated through 2050)

SB 375

- Sustainable Communities and Climate Protection Act (2008)
- “Sustainable Communities Strategy” - part of Regional Transportation Plan process
- how it’s supposed to work:
 - ❑ Identify land uses and transportation network
 - ❑ forecast “integrated development pattern”
meeting California Air Resources Control Board per capita targets for passenger cars and trucks
 - ❑ target years: 2020 and 2035 (updated through 2050)

Complete Streets

- Complete Streets Act (2008)
- Implements AB 32 and SB 375 by promoting significant increases in travel by
 - Public transit
 - Bicycle
 - Walking
- Government Code sections 65040.2 & 65302

Government Code section 65040.2 (2010)

Requires OPR to:

- draft guidelines for local agencies to incorporate Complete Streets policies in General Plan
- List in- and out-of-state cities that have implemented multi-modal transportation

Government Code section 65302

Requires inclusion of Complete Streets policies in revised Transportation/Circulation Element of General Plan

Complete Streets Objectives

- VMTs
- Safety
- Mobility
- Equality
- Health
- Traffic congestion
- Economic vitality
- Real estate values
- Sense of place
- Social interactions
- Employment

Complete Streets Implementation

- Funding
 - Unconditional grants
 - Conditional grants
 - MTC OBAG 2
 - Alameda CTC Measure B
- Training
- Consultation
- Narrow exceptions
- Specific performance standards

Complete Streets Example – City of Alameda

- 2009 Transportation Element Update contains many elements of Complete Streets Act
- Also adopted MTC's Complete Streets model resolution

Example of General Plan Policy

To accommodate non-vehicle streets users, assess current requirements for road widths to determine the minimal lane width for motor vehicles that will not compromise safety; adjust design guidelines and templates to reflect narrower permissible widths.

Missing Objective from Model Complete Streets Resolutions

Planning for wider streets as on-street parking is eliminated in response to proliferation of ride-sharing and Autonomous Vehicles.

THE DOCKLESS REVOLUTION

Flexible Regulation Practices

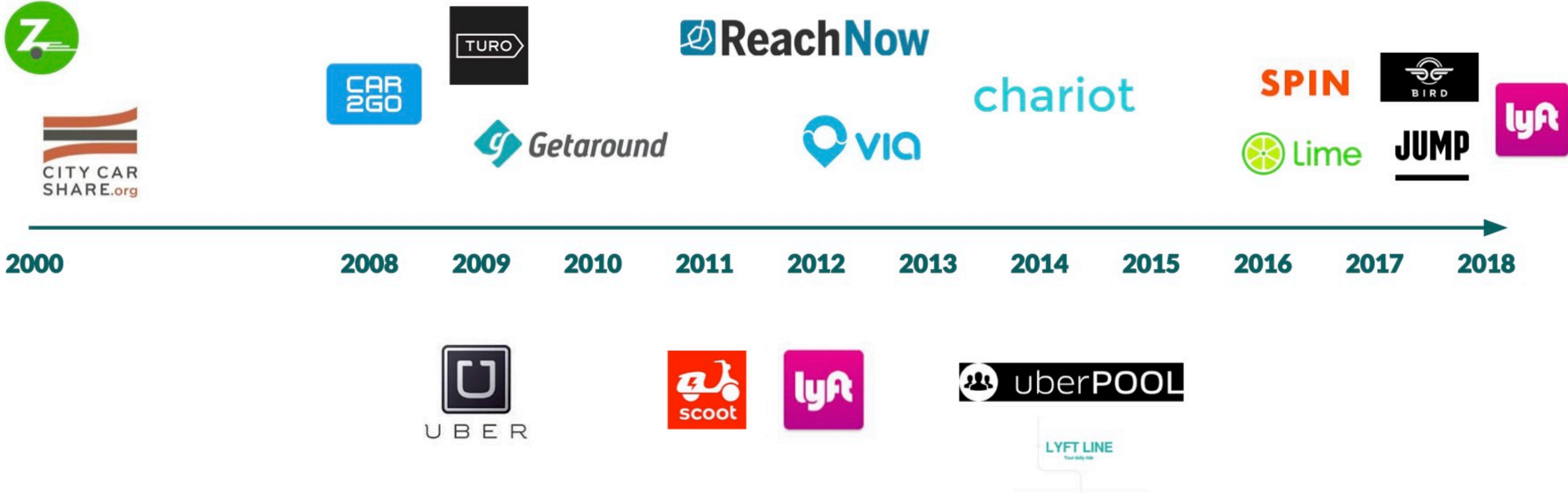
SPUR

Wed, April 24, 2019

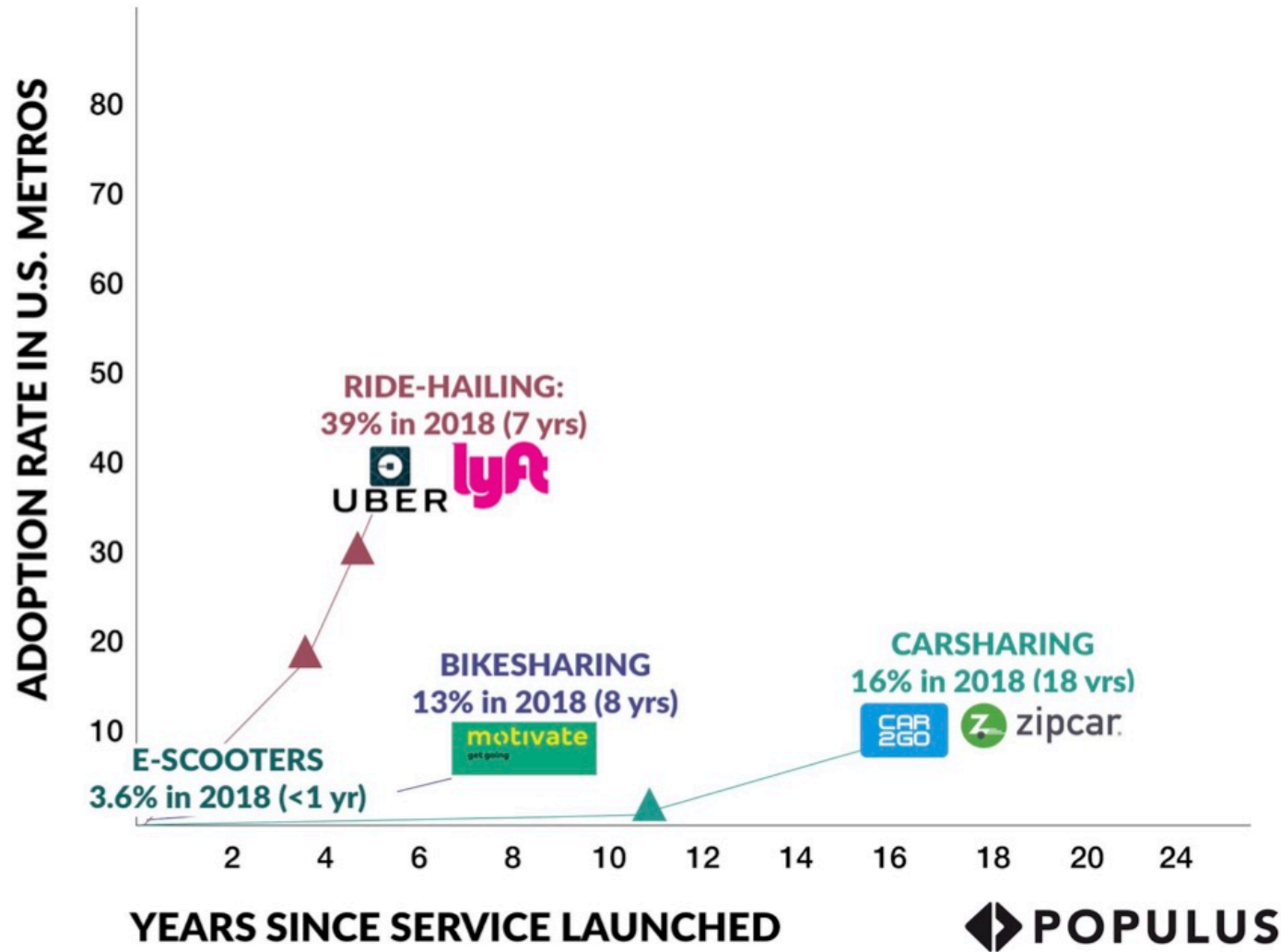


Kansas Waugh
Director of Mobility Partnerships
Populus
@populus_ai

SHARED MOBILITY SERVICES HAVE RAPIDLY EVOLVED IN CITIES



ADOPTION OF NEW MOBILITY SERVICES IS ACCELERATING



KEY FACTORS HAVE LED TO RAPID GROWTH

- 1 GPS:** smartphone adoption has risen from 35% in 2011 to 77% in 2018
- 2 Traffic:** in multiple major cities, it is likely faster to bike or scooter trips that are 3 miles or less
- 3 Venture capital:** these companies have raise more money faster than prior mobility service providers

Source: The Micro-Mobility Revolution, A Populus Research Report, July 2018

THE IMPORTANCE OF DATA FOR MANAGING MOBILITY SERVICES

Cities need data to develop informed policies and transportation plans. Their goals typically are to steer progress towards:

1

Safety: reducing transportation-related injuries and fatalities.

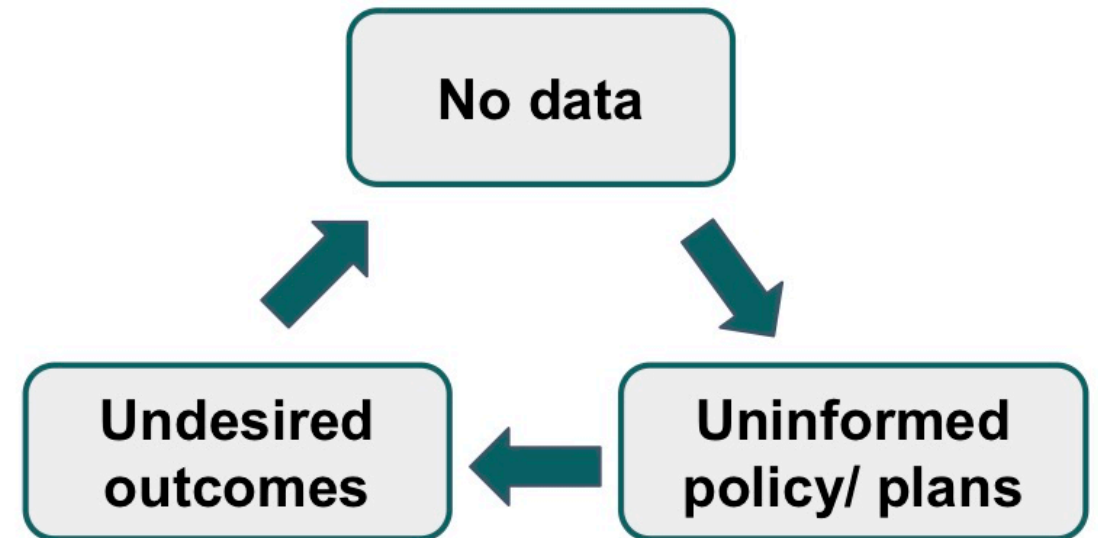
2

Equitable access: improving availability and accessibility of transportation services to people of all backgrounds.

3

Efficiency: prioritizing efficient use of public space, and reducing transportation energy use/ climate impacts.

CITIES ARE LOOKING OUT FOR THE COMMON GOOD



WHY DOCKLESS MOBILITY HAS BEEN EASILY AND QUICKLY REGULATED



Cities from coast to coast have adopted dockless mobility regulations in 2018.

- Fleets are owned
- Vehicles are small
- Vehicles are stationary (for a significant portion of time)
- Shared best practices

COMMON MICROMOBILITY DATA REQUIREMENTS



COMMONLY REQUESTED DATA POINTS FROM OPERATORS

- Trips
- Vehicles
- Maintenance logs
- Complaints
- Injuries



REQUEST DATA THROUGH INDUSTRY STANDARDS

- GBFS (General Bike Feed Specification) is commonly required for public-facing APIs of vehicle locations (for example to third-party apps).
- MDS (Mobility Data Specification), introduced by LADOT, is now being used widely to require trip, vehicle status, and route data.



COLLECT SURVEY DATA TO ANSWER KEY QUESTIONS

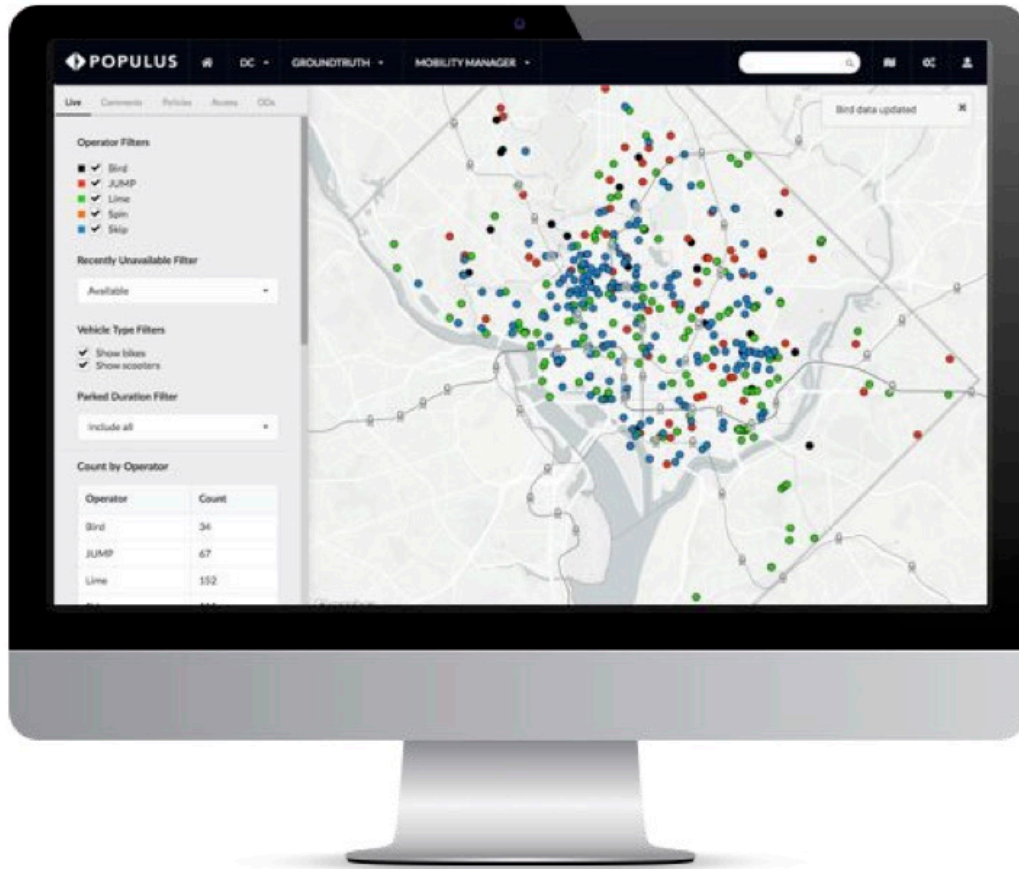
- Many key policy questions cannot be answered with GPS based locational data alone. They require asking people to respond to a survey.
- Cities should require that operators collect data in a consistent format approved by the city.

CITIES ARE TRANSITIONING TOWARDS ACTIVE MOBILITY MANAGEMENT

With access to real-time data for new mobility services (today primarily dockless shared bikes and scooters), cities are entering a new era of active mobility management.

KEY EXAMPLES

- Vehicle and fleet monitoring
- Incident management
- Data-driven policy (e.g. flexible vehicle caps)
- Data-driven planning
- Pricing to efficiently allocate public space



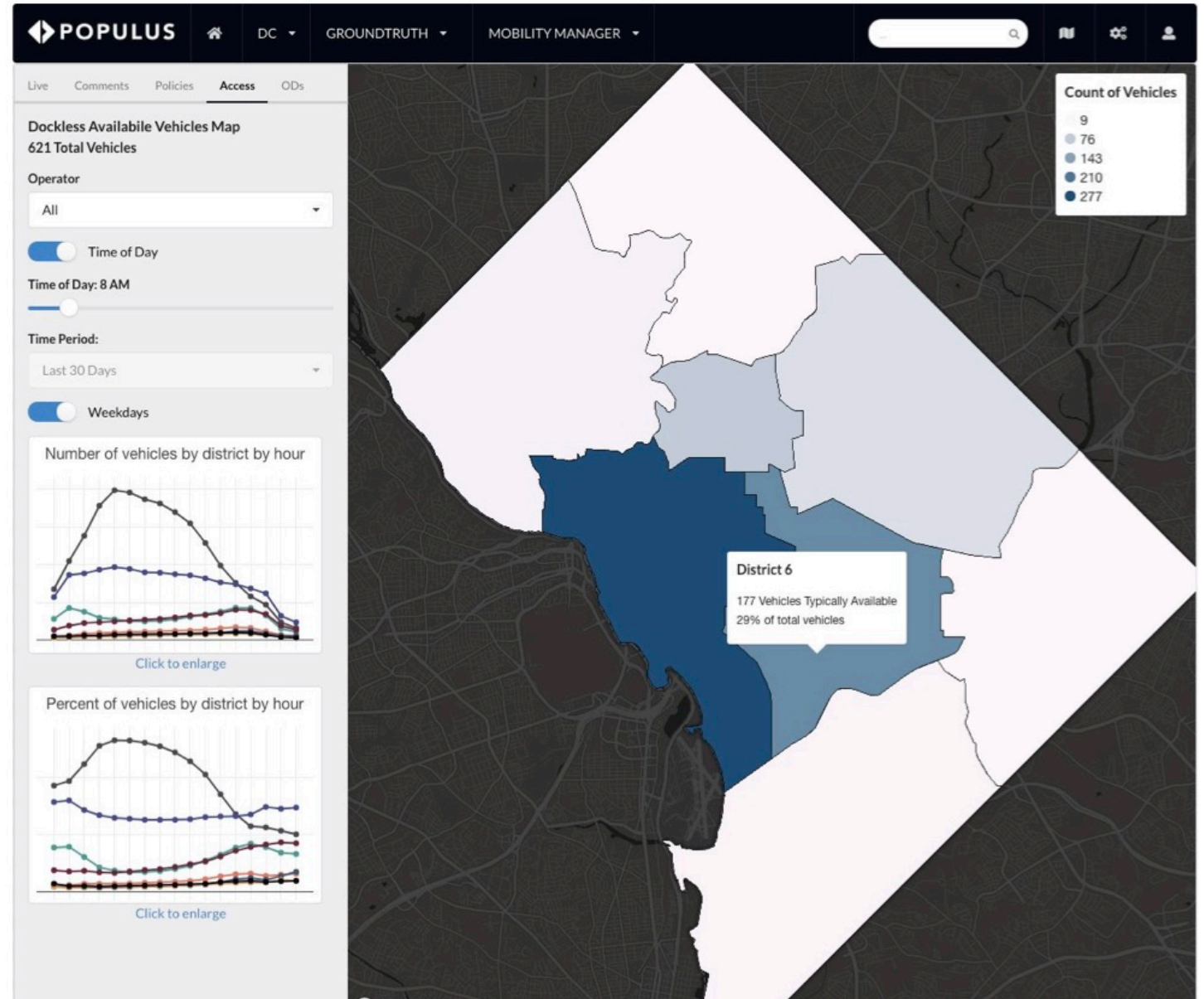
EVALUATING EQUITABLE ACCESS TO MICROMOBILITY

Equitable access to new mobility services by disadvantaged communities is a key concern for cities.

With access to real-time and historical data, cities can better design for equity.

Key examples:

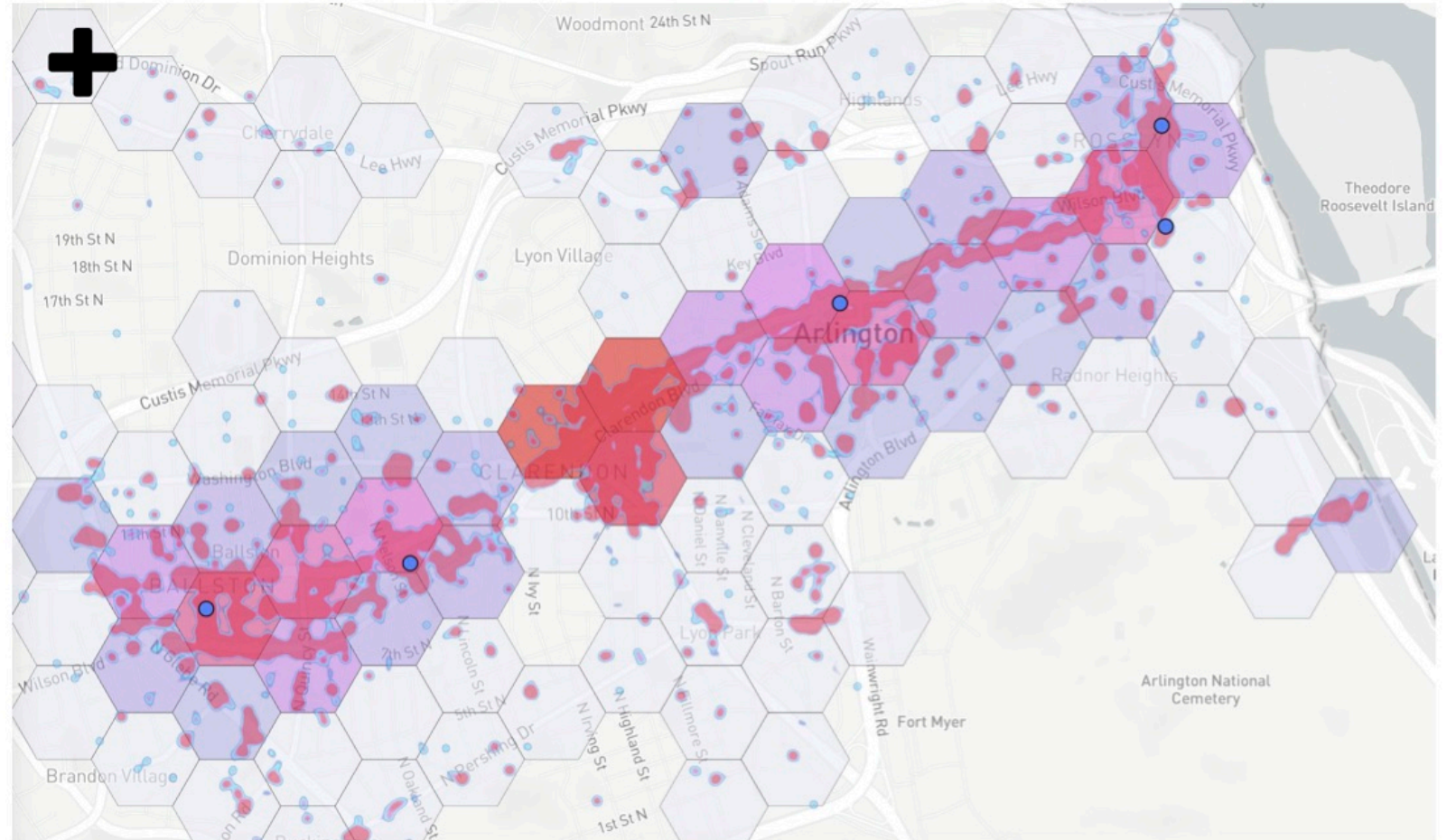
- Incentivizing placement of a specific # or % of vehicles in underserved communities.
- Developing a low-income program for new mobility services and to measure progress.



EXPANDING INFRASTRUCTURE FOR ACTIVE TRANSPORTATION

Cities that receive detailed trip data can now harness GPS trace data to plan safer routes for bicycling and scooter infrastructure such as protected lanes and parking areas.

In addition to requiring that operators provide stationary vehicle location data (i.e. parked vehicles), the city would also need to require trip and route data through a standard such as the Mobility Data Specification (MDS).



EFFICIENT ALLOCATION OF SCARCE PUBLIC SPACE

As we look to the future, many cities are exploring strategies for more efficient curbside utilization, including:

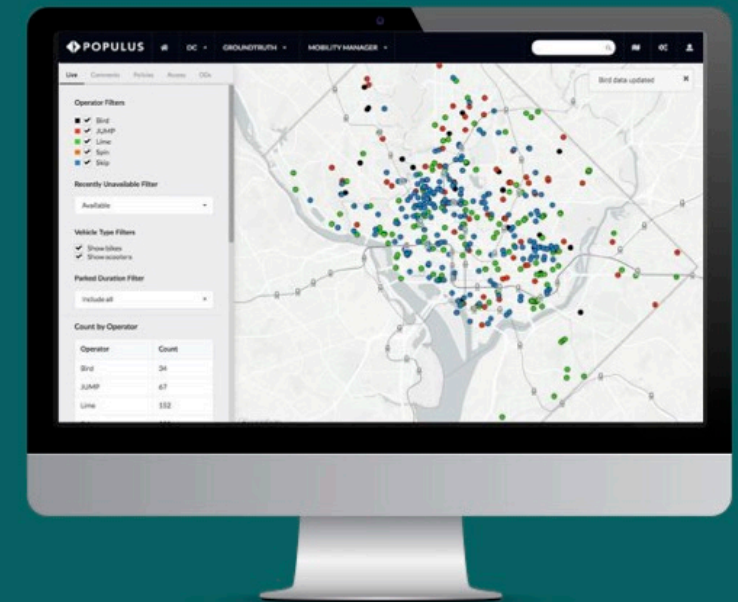
- Removing underutilized on-street parking to create pick-up/ drop-off zones for fleet vehicles.
- Pricing and incentivizing public space for shared fleets, including curbs and sidewalks, for micromobility parking.
- Using data to identify mobility hubs, where transit and shared modes can be designed to be complementary.



Lime and Populus announced a new partnership to validate use of on-street parking for their free-floating car-sharing vehicles, the LimePod, for a city.

THANK YOU

Kansas Waugh, Director of Mobility Partnerships, Populus
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A data platform for cities to manage the future of mobility



how to size markets for **FLEXIBLE TRANSIT**

Andy Kosinski
[@andykosinski](https://twitter.com/andykosinski)

FEHR & PEERS

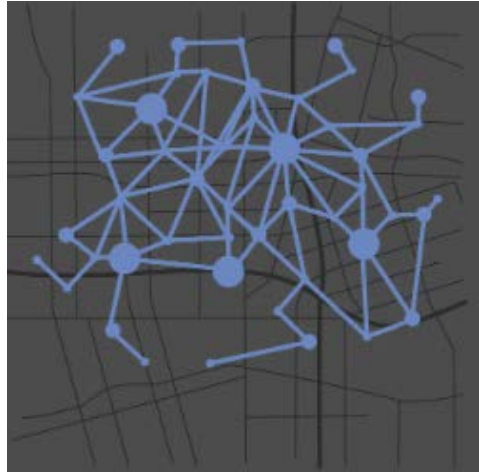
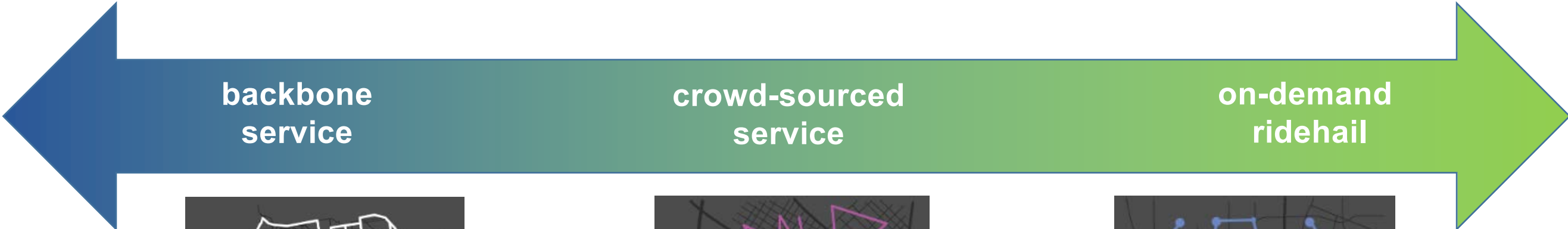
April 24, 2019

Outline

1. what “flexible transit” is
2. TNCs role alongside fixed route
3. how to evaluate potential markets

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2. TNCs role alongside fixed route
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Mobility service types



Rail

“Ridership” bus,
BRT

“Coverage” bus

Shuttles/
Microtransit

Pooling

Drive



uberPOOL

Lyft Line



Microtransit's Record



- 6 vehicles
- 41 boardings per day
- **0.4 boardings per revenue hour**
- *Ridecell*



- 12 vehicles
- 11 boardings per day
- **<1 boarding/revenue hour**
- *Via*



- 3 vehicles
- 45 boardings per day
- **Up to 7 boardings per rev hr**
- *DemandTrans*

1. what “next generation transit” is
2. TNCs role alongside fixed route
3. how to evaluate potential markets

We are all concerned about transit ridership decline

Metro Continues Steep Ridership Decline Amid Nationwide Trend Of Transit Losses

Uber and Lyft use at SFO increases six-fold in two years, BART loses ridership

SF may consider imposing fee on Uber, Lyft rides

Subway Ridership Declines in New York. Is Uber to Blame?

By EMMA G. FITZSIMMONS FEB. 23, 2017

What Factors Are Causing Metro's Declining Ridership? What Next?

By Joe Linton | Jan 29, 2016 | 45

News > Transportation

BART's Oakland Airport Connector losing money; Uber, Lyft to blame?

CANADA

A Canadian Town Wanted a Transit System. It Hired Uber.

By CRAIG S. SMITH MAY 16, 2017

Lyft Shuttle is an experimental new Lyft Line feature that works like a bus route

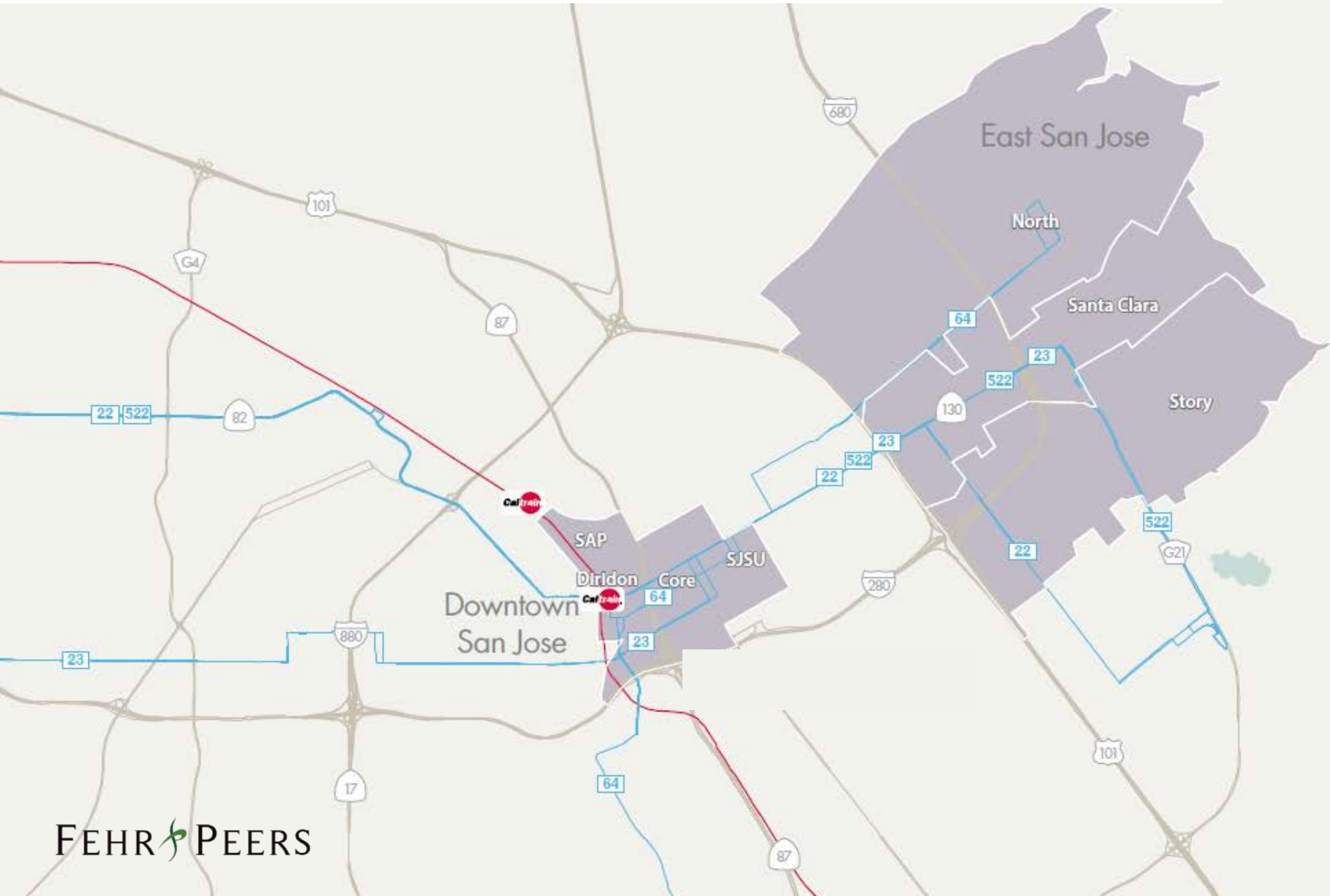
Posted Mar 29, 2017 by Darrell Etherington (@etherington)

Future of flexibility

- Strengthen backbone transit
- Incorporate some innovations from TNCs
- Harness pooled ridehailing to fill in transit gaps

1. what “next generation transit” is
2. TNCs role alongside fixed route
3. how to evaluate potential markets

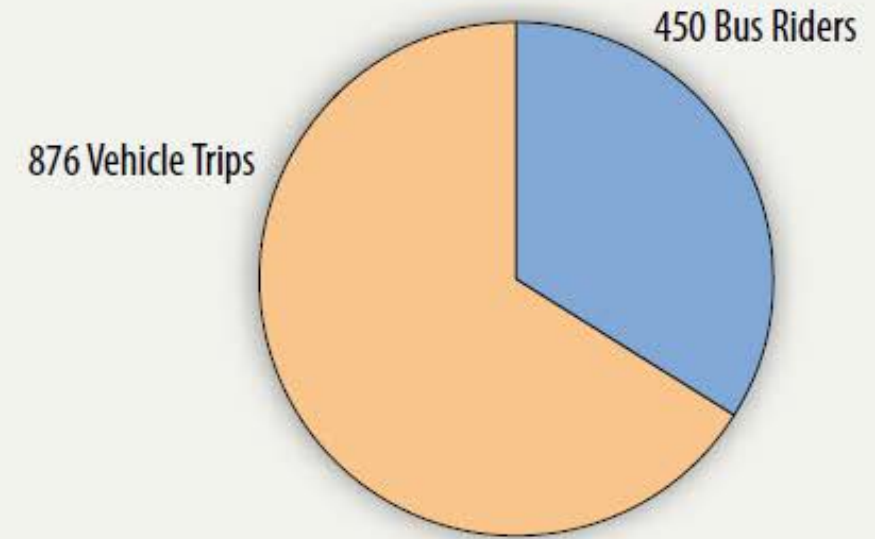
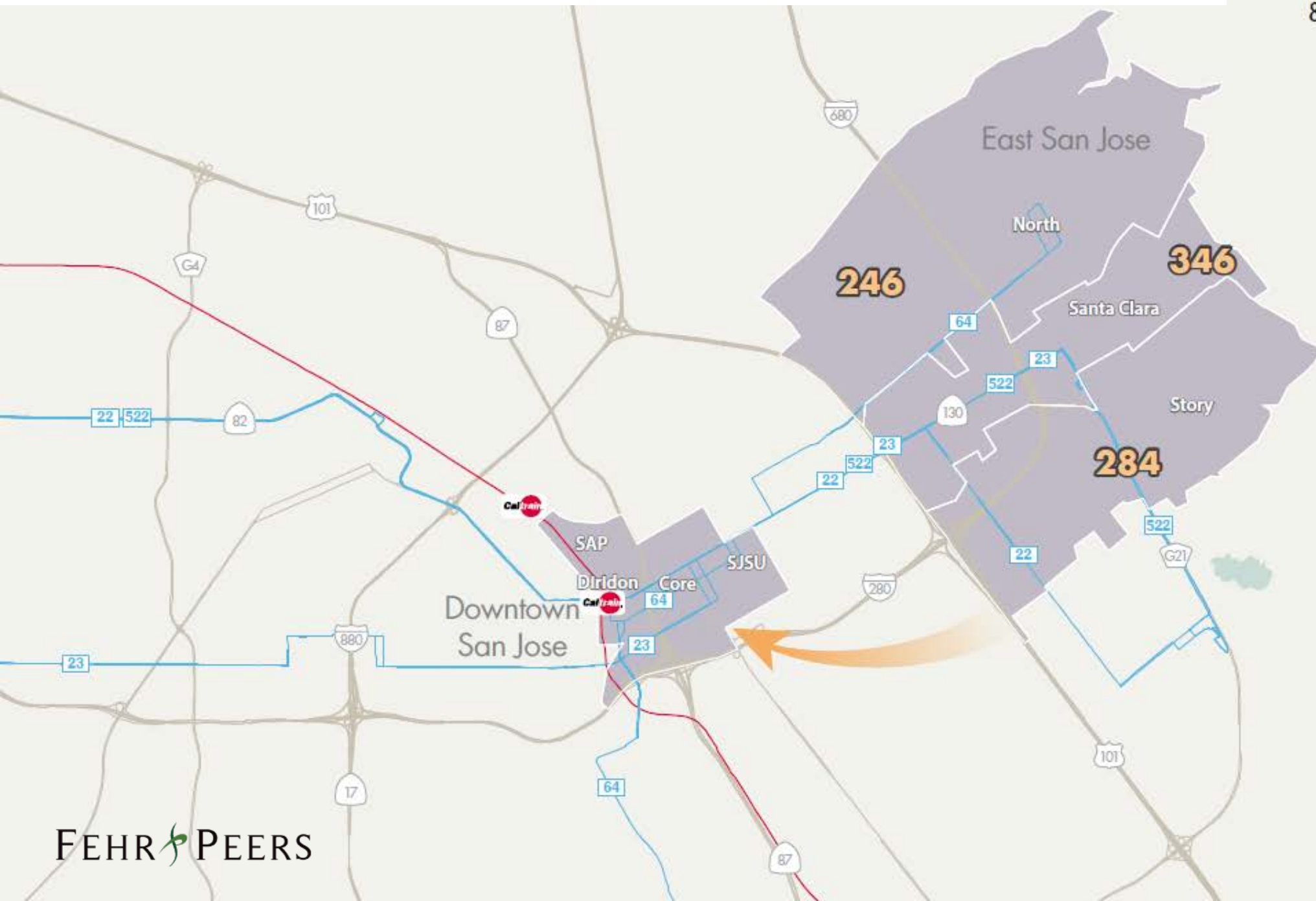
Start with market identification



**Weekday midday
(9 AM to 2 PM)**



Start with market identification



Data sources:

STREETLIGHTDATA

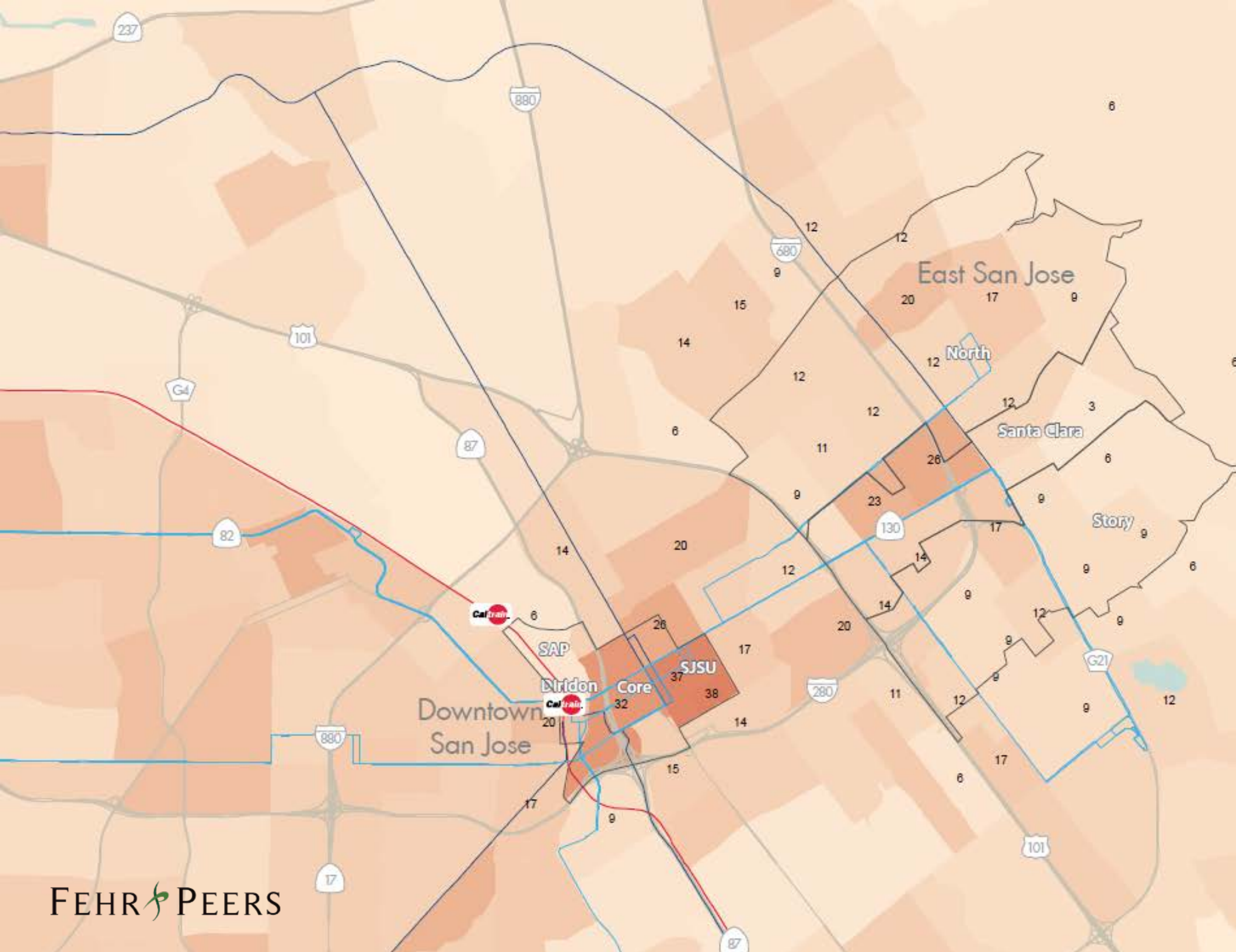


**Weekday midday
(9 AM to 2 PM)**

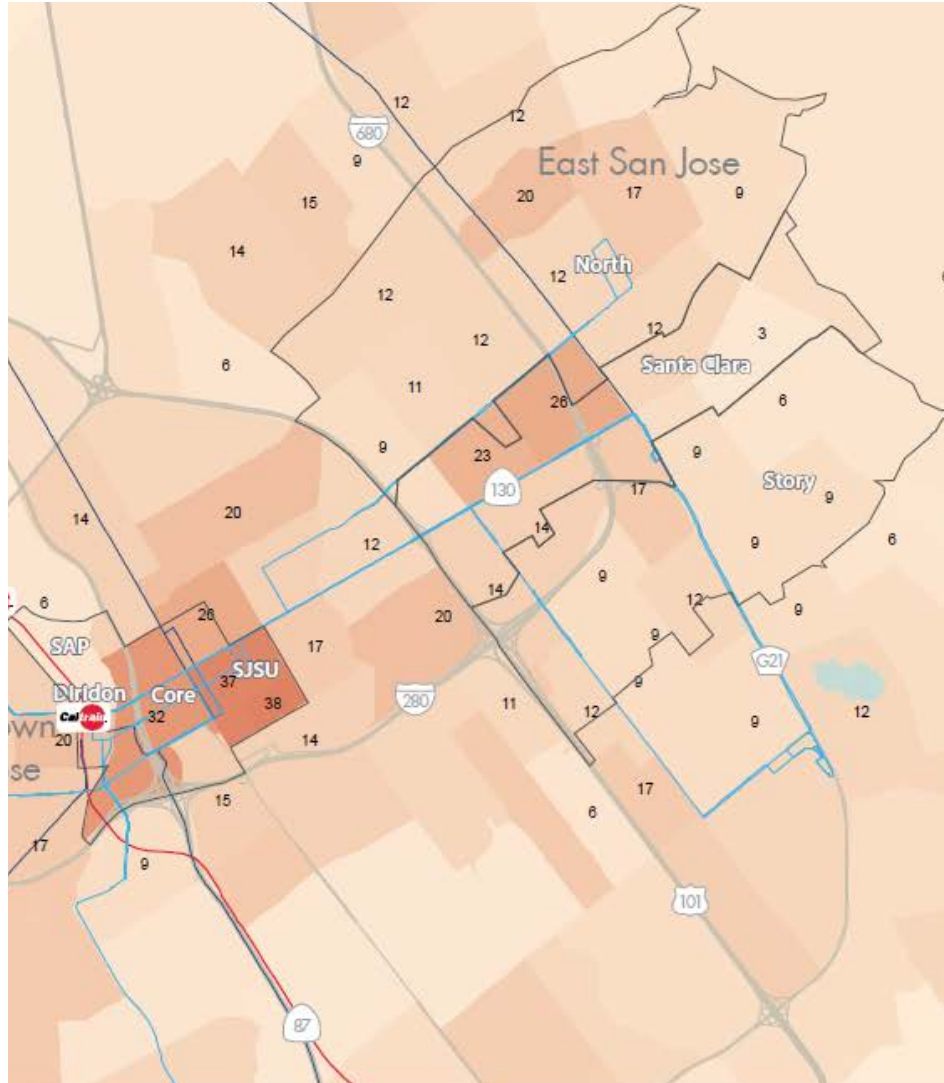
Then, market segmentation

Backbone	Crowd-sourced	Point-to-point
High trip end density	High college enrollments	Low trip end density
Mid-low incomes	Low persons per household	High incomes
High intersection density	Intermediate intersection density	Low intersection density
High parking cost	Moderate/high parking cost	High percent retail jobs
High person density	Intermediate person density	Low household density

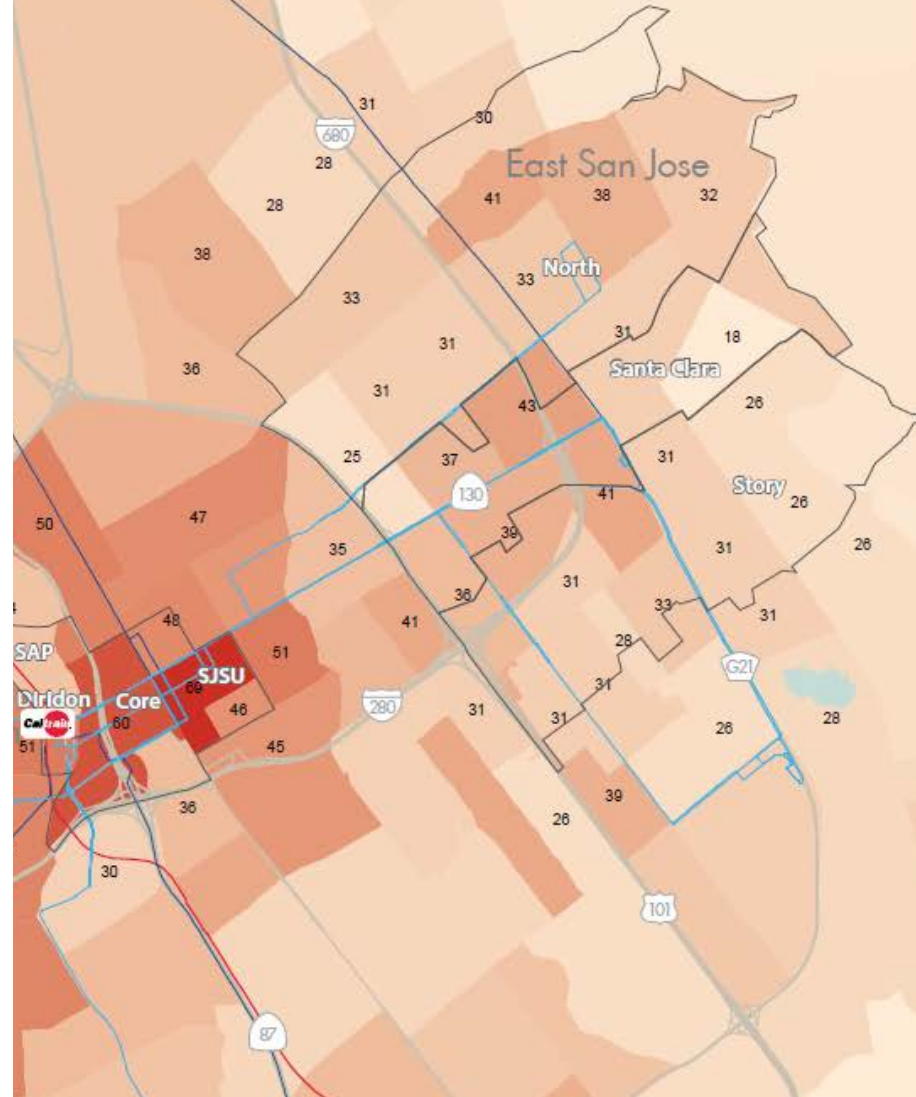
Backbone



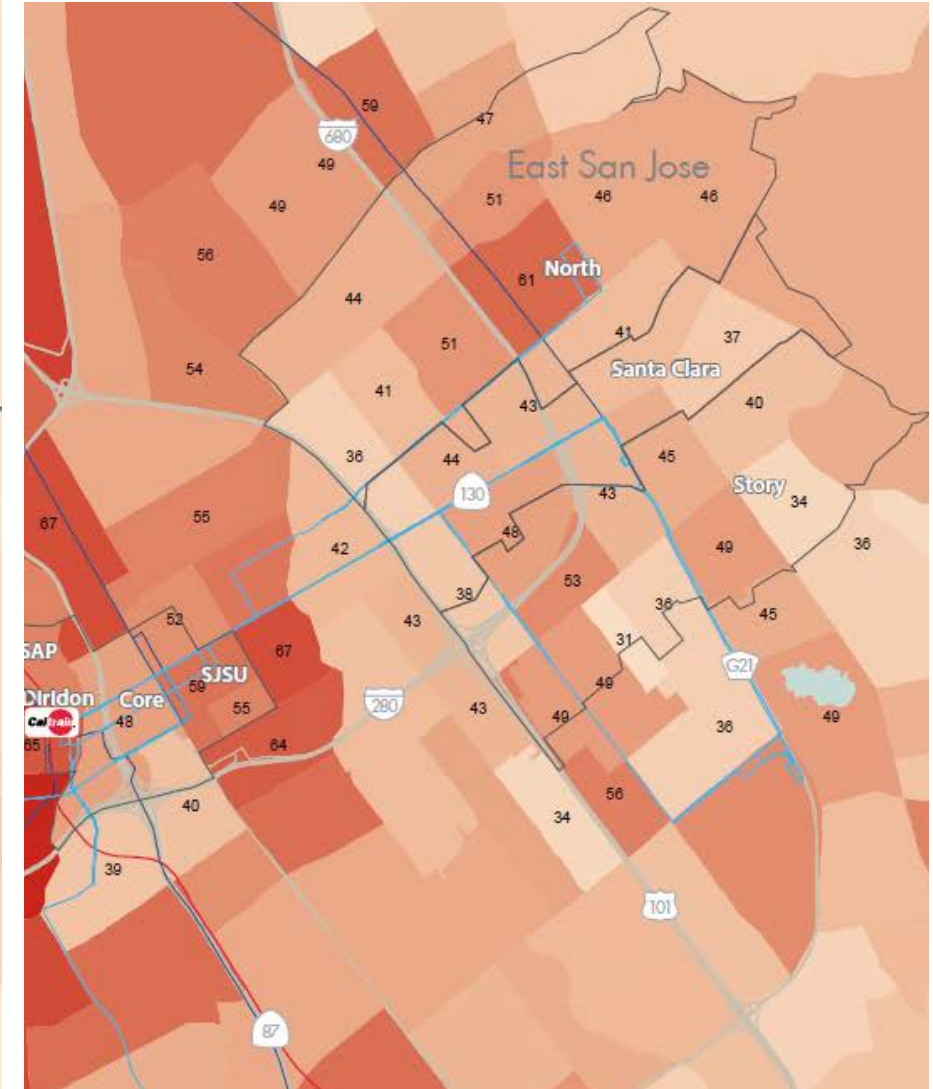
Backbone



Crowdsource



Ridehail



Evaluate policy effects



Wrap up

- The next generation of transit is being iterated
- New techniques can help agencies to size demand
- These tools are responsive to policy decisions

how to size markets for **FLEXIBLE TRANSIT**



Andy Kosinski

@andykosinski

fehrandpeers.com/next-generation-transit/