

How technology is changing our cities

Urbanism Next

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Sustainable Cities Initiative



Project Summary

Advances in technology such as the advent of autonomous vehicles (AV's), the rise of E-commerce, and the proliferation of the sharing economy are having profound effects not only on how we live, move, and spend our time in cities, but also increasingly on urban form and development itself. These new technologies are changing the ease of transport, the role of transit, and the places we spend our time. These changes will have profound effects on cities including large shifts in land use, changes in street design, a potential reduction on the need for parking, a shift on where we choose to live, and challenges for urban density, the extent of sprawl, and the vitality of urban areas.

While there has been a focused effort of research on the technological aspects of autonomous vehicles and systems themselves, there has been a shortage of systematic exploration on their secondary effects on city development, form, and design, with implications for sustainability, resiliency, equity, cost, and general livability.

SCI's Urbanism Next initiative focuses on the ramifications of changes in technology on the design and planning of our cities. Through a multidisciplinary approach, our research proposes to gather the latest thinking on the state and trajectories of these technologies, analyze the potential implications for urban form and development, and project how these changes should affect current design, planning, and development decisions.

SCI is engaging in research in this area and is building a national network of thought leaders from the private sector, public sector, and academia to address these topics.

How Emerging Technologies Will Affect City Development, Form and Design

Key Parameters

- The Future of Transit – Will transit compete with AV's and Ridesourcing or will it be a collaborative relationship?
- AV Ownership – Will AV ownership be in the form of fleets (a projected tenfold reduction of automobiles in the country as well as a stark reduction of the need for parking) or will there be private ownership (a projected steep increase in vehicle trips and congestion)?
- AV Cost – AVs are projected to cost about 1/2 to 1/3 of current cost per mile of private vehicles. Will this increase number of trips? Will it pull people away from transit, making it no longer feasible?
- E-Commerce Extent – How quickly will E-Commerce continue to grow and will it come to largely replace in-store shopping, resulting in a surplus of land and building formerly used for retail? Will retailers continue to focus on the shopping experience to attract customers to stores? Will this improve the quality of these built environments?
- Latent Desire for Density – There has been a growing trend towards densification and urban living. Will this trend continue if the price of transit via AV's is similar in both high and low density areas?
- Latent Desire for Dispersion – If we eliminate the 'friction' and difficulty of travel and people are able to use time during commutes for work or leisure, will people choose to live further from city centers?

Research Areas

Land Use

If private vehicle ownership is greatly diminished, how will auto-oriented uses such as gas stations, dealership, and mechanics shift? How will retail centers change as E-Commerce shifts shopping from a need to an experience?

Space/Physical Design

How will a reduction in parking needs change design opportunities in housing and commercial development? How will this differ in urban v. suburban locations? What are opportunities for adaptive re-use of existing parking structures and surface parking lots? How will street design shift if AV's require smaller lane widths and parking is eliminated?

Density/Proximity

What are the effects of a reduced need for parking? If the need for more parking and the fear of congestion are no longer valid arguments against increasing density, will opposition to increased density cease? Will 'Transit Oriented Development' continue to exist if transit substantially changes or disappears?

Dispersion/Sprawl

Will ease of transportation and a reduced need for in-person shopping lead to a further decentralization of cities? Will people choose to live further from city centers to maximize the size of their lots and houses?

Activity/Vitality

Will current urban centers thrive or diminish as the need for in-person shopping is reduced and cars deliver people directly to their desired destinations? Will 'place' have an increasing role as urban activity becomes more purposeful and less utilitarian?

Research Efforts

- Individual Research Projects/White Papers
- Expert-in-Residence: Jeff Tumlin / April 24-26, 2017
- Urbanism Next Charette / April 24, 2017
- Blog (<http://urbanismnext.uoregon.edu/>)