Designing Sustainable Communities for Automated Transit Networks

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Emerging Technologies Innovation in the Applied Sciences and Arts
College of Applied Sciences and Arts Transportation Education Center [TEC]
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What creates a sustainable community?

1. Livability
2. Connectivity
3. Affordability
4. Sustainability
5. Resiliency

The relationships among land use, housing, transportation, human health, and the environment.
What can automated transit do to assist with creating more sustainable communities?

Automated transit systems provide a new design paradigm that can support all the key aspects of sustainable communities.

1. Rather than encouraging our communities to spread out, like the automobile encourages, automated transit networks provide a way to fully interconnect as aspects of community.
What can automated transit do to assist with creating more sustainable communities?

Due to a system of networked, on-demand and destination based vehicles, land use can change dramatically. For example the design for Columbia, MD.
What can automated transit do to assist with creating more sustainable communities?

Columbia, MD, USA, is a planned community of 10 self-contained villages, in Howard County, MD. James Rouse, developer and visionary believed:

“Urban planning deals with highways, land uses, densities – even with crime, delinquency and disease – but it almost never begins with the simple question: “How can we best provide for the happiness of a man, his wife and family?”

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The new community of Columbia, MD was designed in terms of human values, rather than merely economics and engineering. Opened in 1967, Columbia was intended to not only eliminate the inconveniences of then-current suburban design, but also eliminate racial, religious, and class segregation. *Today, Columbia, MD is ranked #8 in the Money magazine list of “Best Places to Live” in the United States.*
What can automated transit do to assist with creating more sustainable communities?

Create small walkable neighborhoods but connected to a downtown center.
What can automated transit do to assist with creating more sustainable communities?

Create large areas of green space balancing urban and natural areas

“A garden for the growing of people”

James Rouse
What can automated transit do to assist with creating more sustainable communities?

A transit system that fits into the landscape providing connectivity without the car; that would have only cost $315.00 per resident at full population for Columbia when it opened.
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Integrating green spaces, bicycles, walkability and residential areas
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The Grand Design as imagined by James Rouse, the developer:

To provide a complete and self-sustaining city.
To respect the land.
To produce the best possible environment for the growth of people.
To make a profit.
What can automated transit do to assist with creating more sustainable communities?

Livability Principles
Provide more transportation choices.
Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
What can automated transit do to assist with creating more sustainable communities?

Automated Transit Network vehicles are small and lightweight and can be solar powered contributing to a larger community vision of net zero energy. They can be elevated or be at grade and provide the same level of service as a car.
What can automated transit do to assist with creating more sustainable communities?

**Livability Principals**

**Support existing communities.**

Target federal funding toward existing communities—through strategies like transit-oriented, mixed-use development and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
What can automated transit do to assist with creating a more sustainable Carbondale?

Work toward the 2030 goal and assist with reimagining Carbondale.
What can automated transit do to assist with creating more sustainable communities?
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Livability Principals
Promote equitable, affordable housing.
Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
What can automated transit do to assist with creating more sustainable communities?

Livability Principals
Enhance economic competitiveness.
Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.
What can automated transit do to assist with creating more sustainable communities?

Forgotten part of the history of Columbia MD is the fact that a PRT system was integrated with the urban design as part of the greenways connecting the town, and that Rouse wanted to discourage automobile use.
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Livability Principals
Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.
What can automated transit do to assist with creating more sustainable communities?

Livability in rural areas focuses on the towns, villages, working lands and natural resources that surround and connect them. Rural communities vary widely based on location, geography, economic and resource base, and other factors. "Rural" can describe farming, destination, gateway, resource-based, recreational, or other types of communities. Transportation investments that support rural livability also vary depending on location and context.
What can automated transit do to assist with creating more sustainable communities?

For rural areas between towns, livability can mean safer highways and intersections, context-sensitive roadway design, multi-purpose trails, or rural on-demand transit and carpool information linked to smartphones. In small towns and villages, livability can mean a revitalized Main Street, sidewalks and improved crossings, a gateway entry, senior housing in walking distance to a redeveloped shopping district, or new neighborhoods built on the town's existing walkable street network.
What can automated transit do to assist with creating more sustainable rural communities?

*Provide transportation choices and connections. Building choice into rural transportation networks can happen at both the community and regional level, and can make it easier to get around, while encouraging more social interaction, and supporting local businesses.*

Effective strategies include:

- Add sidewalks, curb extensions, crosswalks, parking, and landscaping to make small towns more walkable and economically viable.
- Build and connect bicycling and trail networks.
What can automated transit do to assist with creating more sustainable communities?

Effective strategies include:

- Link ridesharing, rural on-demand transit vans, and commuter buses to regional employment centers and health services.
- Improve connections between neighborhoods and Main Streets, schools and parks, housing and services.
- Coordinate town and county plans and infrastructure investments with a regional vision for growth and resource protection.
- Incorporate community design and land use planning, mobility and accessibility, public health, environmental protection, and economic development.
What can automated transit do to assist with creating more sustainable communities?

Livability Principals

Coordinate and leverage federal policies and investment. Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
References:

e+c ...

environment, town, community
ephemeralization, town, culture
environment, transportation, cultivation
energy, transportation, crisis
episteme, time, confluence
environment, tourism, community
environment, town, crossroads
Total solar eclipses in 2017 and 2024

August 21, 2017
April 8, 2024
energy, transportation, crisis
energy, transportation, crisis
episteme, time, confluence
environment, transportation, cultivation
environment, transportation, cultivation
environment, transportation, cultivation
environment, tourism, community
environment, town, community

What about *Buckminster Fuller*, SIUC ARCHITECTURE, Energy and the Environment?
Spaceship Earth – Bucky Fuller
ephemeralization, town, culture
environment, town, community
environment, town, community

http://explorekarbondale.com/
environment, town, community