What Makes a City Smart?
What Makes a City Smart?

- Attitude?
What Makes a City Smart?

- Champions?

<table>
<thead>
<tr>
<th>University</th>
<th>Championships</th>
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<tbody>
<tr>
<td>Alabama</td>
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<td>Notre Dame</td>
<td>8</td>
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<td>Ohio State</td>
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<td>Oklahoma</td>
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<td>Southern California</td>
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<td>Miami (FL)</td>
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<td>Nebraska</td>
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<td>Minnesota</td>
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<td>Florida</td>
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<td>Florida State</td>
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<td>Michigan State</td>
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Championships claimed by the school and recognized by NCAA Division I-A/Football Bowl Subdivision

SOURCE: NCAA
What Makes a City Smart?

- Marketing?
What Makes a City Smart?

- Planning Ahead?
What Makes a City Smart?

- Intelligent Policies and Processes?
What Makes a City Smart?

- Innovative Use of Technology?
What Makes a City Smart?

US DOT Smart City Vision Elements

- **Technology**
  - AV/CV
  - Intelligent Infrastructure

- **Innovation**
  - Mobility and Logistics
  - Analytics
  - Partnering and Engagement

- **Planning**
  - Standards/Architecture
  - Land Use
What Makes a City Smart?

Passionate and Engaged People

Connectivity

Partnerships

Policy, Process, and Planning

Technology and Innovation
The Smart City of the Future
Truly Connected Intersections

- Communicates directly with all vehicles in real-time
- Ultimately eliminate traffic signals

Enabling Technologies

- Connected Vehicle Dedicated Short Range Communications
- 5G Cellular/Wireless
Truly Connected Travelers

- Communicates directly with vehicles in real-time
- Travel information is readily accessible
- Enables dynamic trip requests/routing
- Pedestrian warning systems
- Enhanced fare payments

Enabling Technologies

- Connected Vehicle Dedicated Short Range Communications
- 4G/5G Cellular/Wireless
- Dual-Chip farecards/transit fare collection
- Mobile Phone payment systems
Transit Specific Technologies

• Retrofit pedestrian and vehicle detection and warning systems
• All-Electric Vehicles
• Traveler information/warning systems at transit stops

Enabling Technologies

• Connected Vehicle Dedicated Short Range Communications
• Vision-Based camera's/sensors
• Bluetooth Low Energy (BLE)
• Inductive charging systems
• Battery technology
Connected and Autonomous Vehicles

- V2V, V2I, V2X
- Operator “free” travel – eliminates or greatly reduces role of driver
- Safety improvements
- Reduced operational costs

Enabling Technologies

- Connected Vehicle Dedicated Short Range Communications
- 4G/5G Cellular/Wireless
- LiDAR, Radar, Vision-based cameras
- Ultrasonic sensors, GPS
New Modes of Travel/Transport

- Drones
- Personal transport alternatives

Enabling Technologies

- Battery Improvements
- Sensing Technologies
- Real-Time Communications
### Smart City Technology Trends from Smart City Challenge

- Shared Autonomous Vehicles
- Urban Freight Delivery
- Inductive Wireless Charging
- Dedicated Short Range Communications (DSRC)
- Free Public Wifi
- Data Analytics Platform

<table>
<thead>
<tr>
<th>How We Move</th>
<th>44 cities proposed projects to test the use of automated shared use vehicles to help travelers connect to their destinations.</th>
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</thead>
<tbody>
<tr>
<td>How We Move Things</td>
<td>11 cities envisioned improving urban freight delivery by implementing smarter curb space management (through sensors, dynamic reservations, and other technologies) to speed loading and unloading.</td>
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<tr>
<td>How We Adapt</td>
<td>17 cities proposed using inductive wireless charging to charge electric vehicles, buses, or shuttles.</td>
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<td>How We Move Better</td>
<td>53 cities proposed implementing Dedicated Short Range Communication (DSRC) to connect vehicles to infrastructure and each other.</td>
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<td>How We Grow Opportunity</td>
<td>9 cities proposed providing free public WiFi on buses, taxis, and public spaces. The seven Smart City Challenge finalists proposed over 60 unique strategies to increase access to jobs, provide training, reach underserved areas, and ensure connectivity for all.</td>
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<tr>
<td>How We Align Decisions and Dollars</td>
<td>45 cities proposed implementing a unified traffic or transportation data analytics platform, which would help them make better decisions with their limited resources.</td>
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Source: USDOT
<table>
<thead>
<tr>
<th></th>
<th>Austin</th>
<th>Columbus</th>
<th>Denver</th>
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<td>Adaptive Traffic Signals</td>
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<td>Car – Bike Sharing/Ridesourcing</td>
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<td>Fare Enhancements/Smart Cards</td>
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<td>Integrated Multi-Modal Trip</td>
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Why Columbus?

The Usual Suspects
- Politics
- Matching Funding
- Geographic Location

The Real Differentiators
- Focus on society instead of transportation
- Extensive partnership and community collaboration

How Columbus Is Using Transit to Reduce Infant Mortality
The city is hoping a new BRT line and smarter technology can help families access crucial services.

BY ADAM STONE | FEBRUARY 1, 2017

How Smart Transportation Projects Can Help Solve Social Issues
A new report on the Department of Transportation’s Smart City Challenge finds that transit projects are managing not only commuting and congestion, but also broader social issues like job access and even infant mortality.
What Makes a City “Smart?”

- Using Transportation Technology To Solve Societal Problems; Not Seeing Transportation as a Problem to be Solved
- Partnerships
- Passionate and Engaged People
- Connectivity
- Policy, Process, and Planning
- Technology and Innovation
- Seeing Transportation as a Problem to be Solved
Key Elements from Columbus

Leadership

Partnerships

Policies, Processes, and Procedures

Foundational Elements

Funding and Financing

Public Acceptance

Societal Issues
Solving Infant Mortality with Transportation Technology

Converting Cash-Based Households to Plastic

Integration of Transportation Services at Smart Hubs

Integration of Services Through Data Exchange (Transportation and Public Health)
The Power of Addressing a Societal Issue

- Original Grant Opportunity: $50M
- Funds at Submission: $140M
- Current Commitments: $450M

- US DOT and Vulcan
- Public and Private Match
- Private and Community Match
- Public and Private Match
- US DOT and Vulcan
Getting Started in Your Community

Incorporate Smart City Characteristics

- Passionate and Engaged People
- Connectivity
- Partnerships

Develop a Technology Roadmap

- Policy, Process, and Planning
- Technology and Innovation