# NUTC Workshop
# Future of Mobility

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Boeing HorizonX


M&M
GURGAON POLICE
POLICE ASSISTANCE BOOTH

# Macro Trends

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***The technological and environmental landscapes are dynamic which open opportunity***

# Megatrends Impacting Future Mobility

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**Technological and Competitive Convergence**

Tech companies / startups are converging on physical / industrial markets to expand customer reach & vertical data acquisition

Google facebook UBER amazon TESLA

**Connectivity Democratization & Data Proliferation**

Seamless connectivity and information services are getting faster, smarter, cheaper and more tailored to customers

cisco verizon

**Future Mobility**

**On-Demand / Sharing Economic Model Adoption**

Tomorrow's workforce, and much of today's, lives in a world focused on optimizing utilization of both assets and time

POSTMATES lyft CAR2GO UBER TaskRabbit airbnb Voom

**Urbanization & Middle Class Expansion**

Population growth as well as mobility challenges tied to urbanization will allow for new solutions tailored to growing middle class


***Tectonic shifts in the Ecosystem; status quo is too risky***

# HorizonX Ventures Portfolio

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ZUNUM Aero

UP SKILL Formerly APX Labs

sparkcognition

C360 A VIDEO REVOLUTION

NEAR EARTH AUTONOMY

gamma ALLOYS

CUBERG

FORTEM TECHNOLOGIES

MYRIOTA

**TYPICAL CHECK SIZE**

$1 – $10 million

**STAGE**

Seed through Series C

**RATIONALE**

Strategic & Financial Investor

**LOCATIONS**

Silicon Valley, Boston, LA, Austin, Seattle, Chicago, Washington D.C. & St. Louis

# Barriers to Adoption

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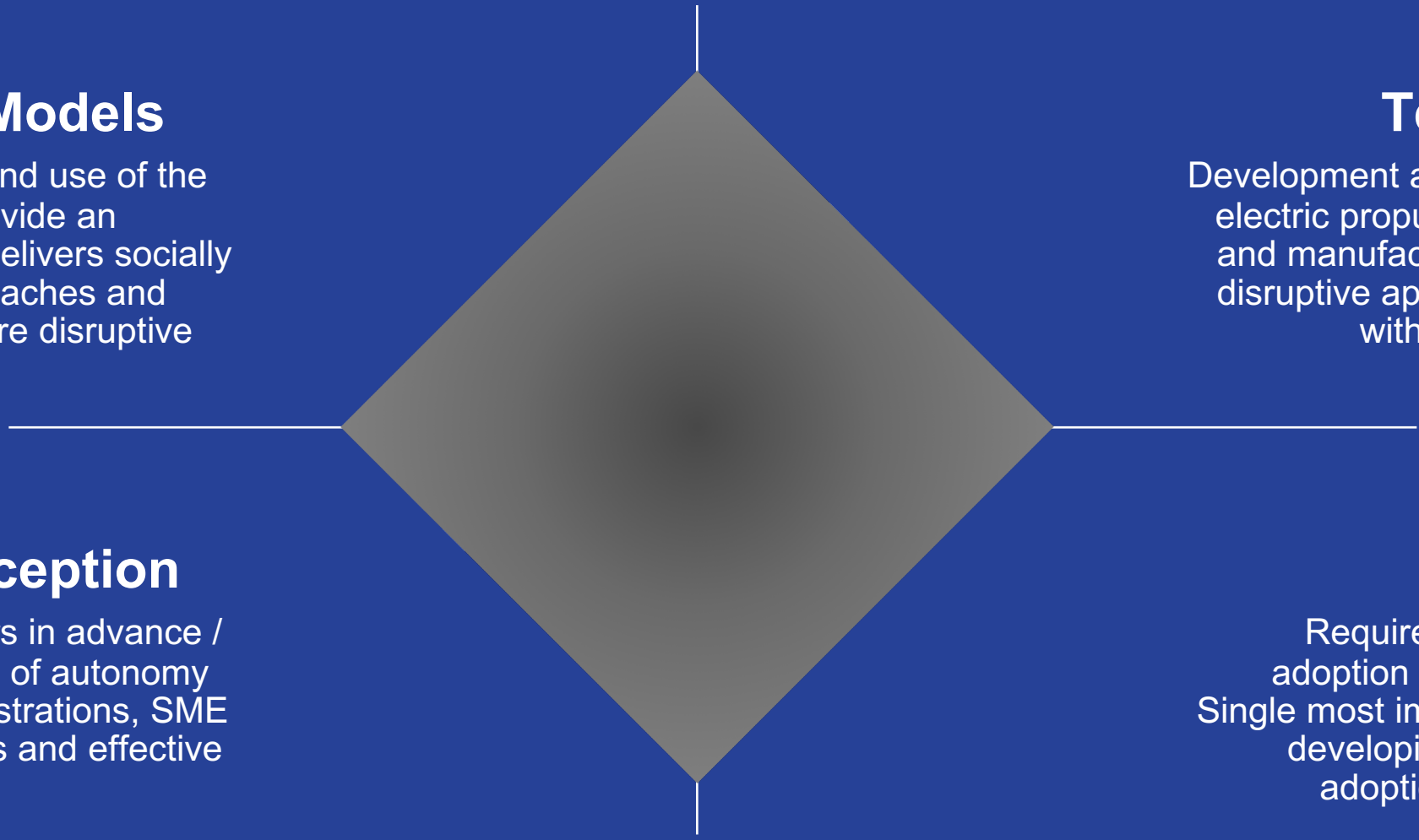
## Business Models

Ease of access and use of the technology to provide an experience that delivers socially acceptable approaches and economics that are disruptive

## Technology

Development and expansion of electric propulsion, autonomy and manufacturing to provide disruptive approach to merge with business model



## Public Perception

Engage end-users in advance / shape perception of autonomy via public demonstrations, SME panel discussions and effective messaging

## Safety

Requirement for market adoption and expansion – Single most important factor in developing broad market adoption with longevity

***Scale and brand presence will drive adoption and proliferation in market***

# Future of Mobility

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Digital Backbone

Digital backbone facilitating multi-modal situational awareness and airspace integration

Long-haul, large payload

REGIONAL Distribution

HUB-TO-POINT Distribution

LAST MILE, small payload delivery

MULTI-MODAL Integration

SEAMLESS Connectivity

***Reshaping logistics through a ubiquitous and seamlessly integrated, multi-modal, autonomous network***

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# Megacities and Mega Regions Growing

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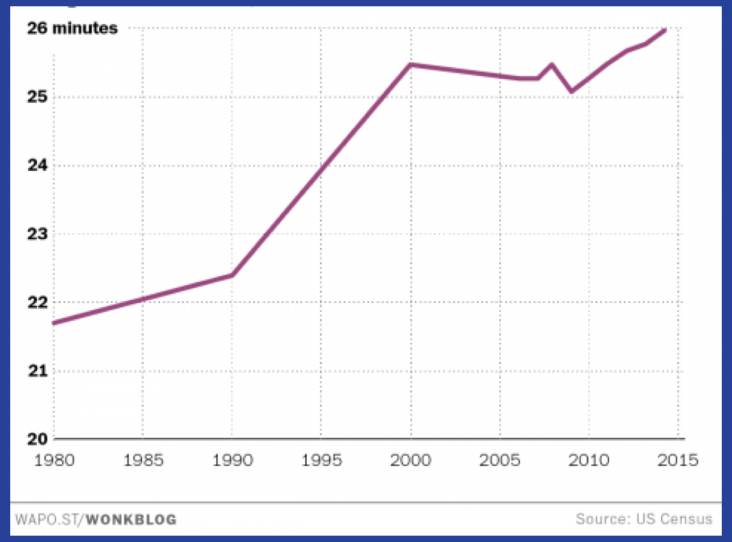
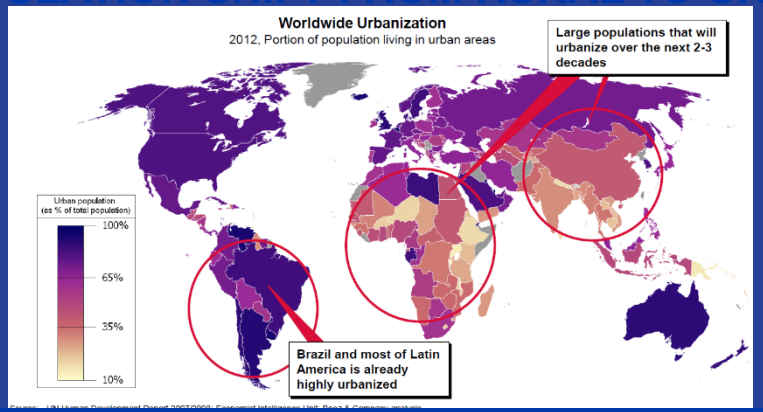
- Travel times and costs are increasing
  - Average American spends 42 hours stuck in traffic per year
  - Average commute in Mumbai exceeds 90 minutes
  - $150B in lost productivity per year in America due to traffic
- Global population shifting to urban areas
  - Urban population overtook rural ~2007
  - Growth of urban areas expected to increase significantly through 2050
  - By 2030, 55% of large cities will be in Asia – China and India
- Current infrastructure growth is limited or expensive
  - Cost of UK's high speed 2 railway ~$280M per mile
  - Highway costs in NYC area have been as high as $333M per mile
  - Urban geometry are fixed routes, exposing travelers to serious delays

COMMUTE TIMES INCREASING




POPULATION SHIFT FROM RURAL TO URBAN




***Value of personal time is increasing; population shift to urban centers***

# Rise of the Middle Class

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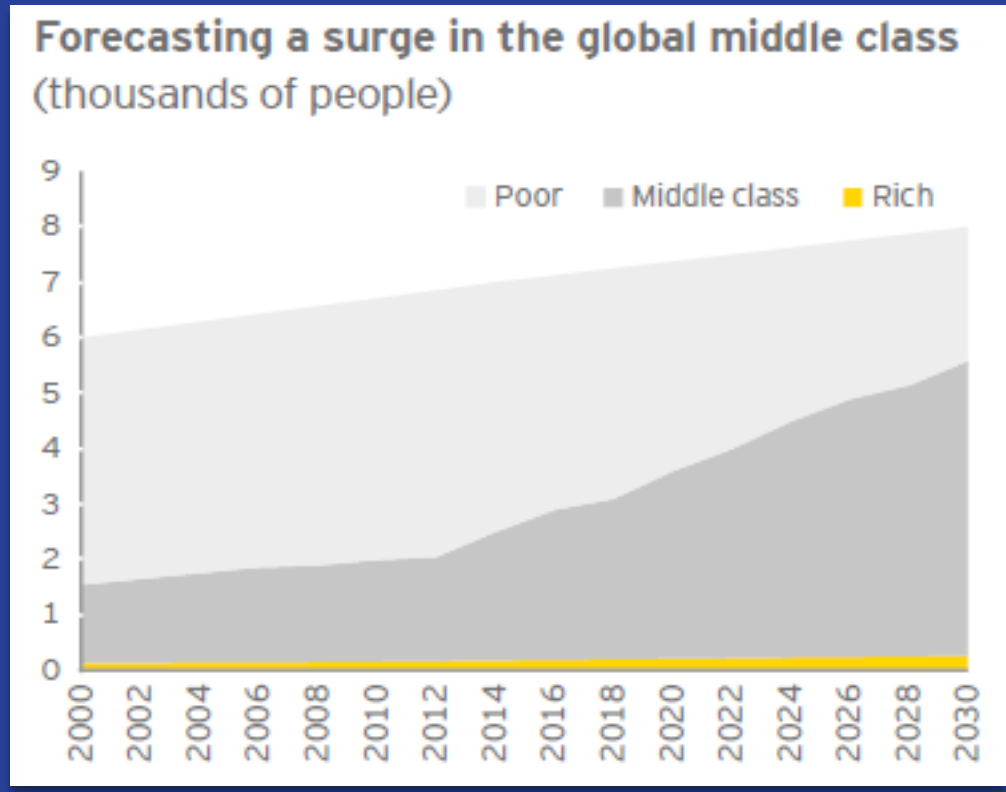
- The global middle class is growing rapidly; by 2030 there will be 4.9 billion participants in the middle class
- Asia-Pacific will be home to a forecasted 66% of the world's middle class

**The middle class: size and distribution**
(millions of people, global share)

| | 2009 | | 2020 | | 2030 | |
|---|---|---|---|---|---|---|
| North America | 338 | 18% | 333 | 10% | 322 | 7% |
| Europe | 664 | 36% | 703 | 22% | 680 | 14% |
| Central and South America | 181 | 10% | 251 | 8% | 313 | 6% |
| Asia-Pacific | 525 | 28% | 1,740 | 54% | 3,228 | 66% |
| Sub-Saharan Africa | 32 | 2% | 57 | 2% | 107 | 2% |
| Middle East and North Africa | 105 | 6% | 165 | 5% | 234 | 5% |
| World | 1,845 | 100% | 3,249 | 100% | 4,884 | 100% |




***Middle class will grow from ~2 billion in 2010 to ~5 billion in 2030***

# Social Acceptance of Autonomy

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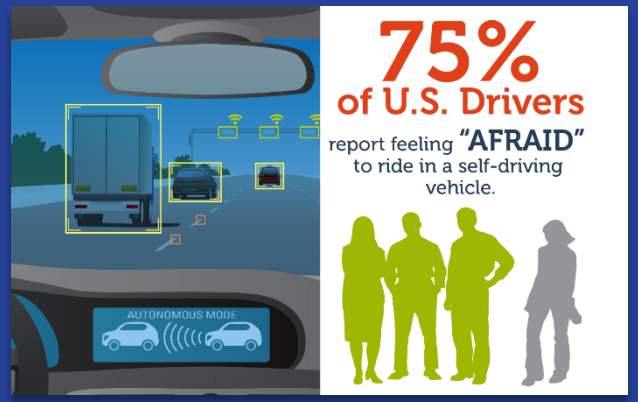
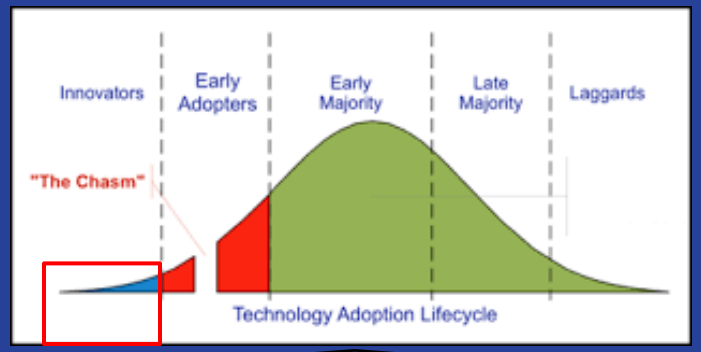
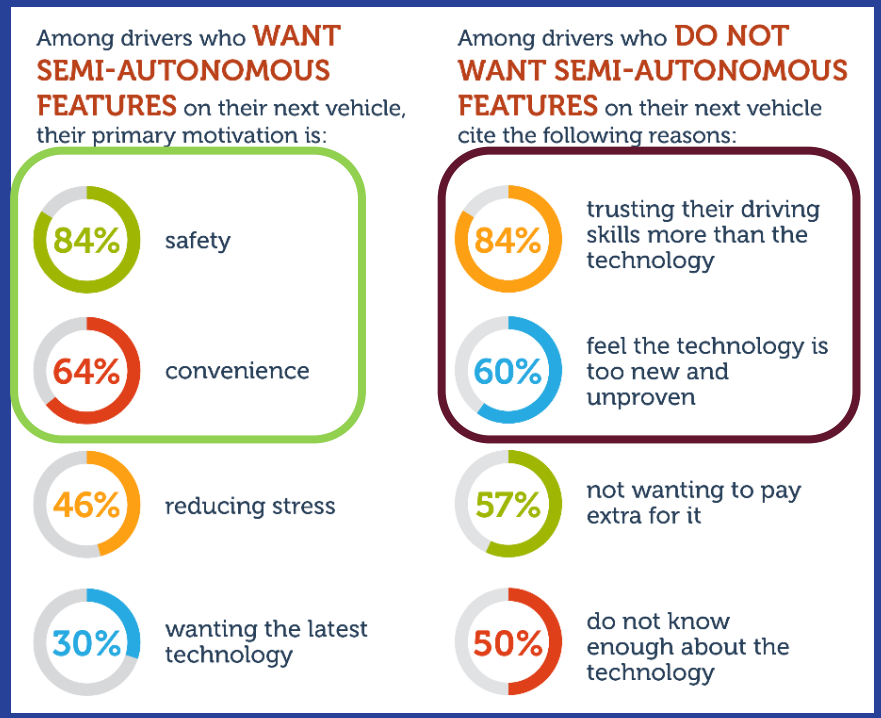
- Broad social acceptance does not yet exist for autonomous cars
- Both those who favor and disfavor autonomy cite safety as a leading reason
- Perceptions of safety change as users experience partial autonomy (i.e. adaptive cruise control, emergency braking)
- Key challenge will be to get users comfortable with airborne autonomy
- Journey from piloted to remotely piloted to autonomous may enable faster customer adoption




Customer adoption of autonomy is still very nascent

***Path to social acceptance for autonomous cars may pave way for aerospace***