

- consensus that incrementalism is required & market-driven
→ pretty much forces mixed traffic issue
- autonomous vehicle platoons may be required in mixed traffic to achieve throughput gain

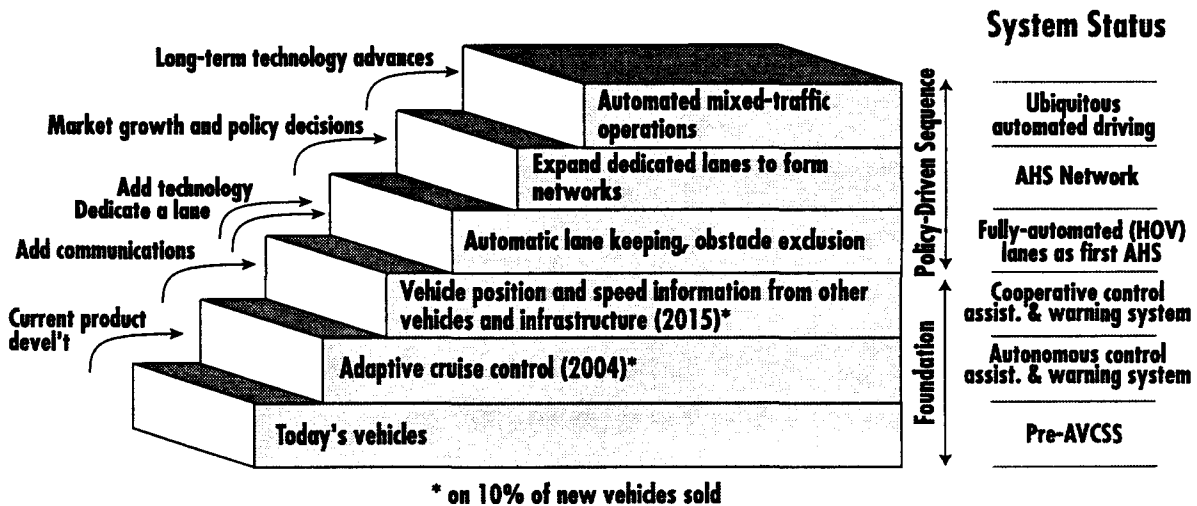
Issue - throughput vs. rural safety

- don't confuse incremental vs. sequential
- sequences may well be different for rural vs. commuters (speed vs. lane-keeping need)
- mass transit may be more effective for "brain-off" if only it had AHS-like effort
 - market driven probably means "brain-on", but may not get dramatic throughput
- Surface street capacity & congestion (Amdahl's Law) w.r.t. trip time



- WS3BRK3.9/96

Policy-Driven Sequence



WS3BRK3.9/96

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Issues for Policy-Driven Approach



- **Advantages**
 - Maximum safety and throughput gains as quickly as possible
 - Simplifies technology requirements at early stages
- **Disadvantages**
 - Early need for infrastructure investment
 - institutional/political impediments
 - time for environmental review process
 - probably needs public/private cooperation
 - Initial deployments are limited in scale:
 - System-scale benefits are deferred
 - Vehicle market may be too small
 - Vehicle market for AVCSS may not develop in time
 - Requires favorable decisions by multiple actors
 - Difficult to obtain broad base of support

WS3BRK3.9/96

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Platooning Example (Continued)

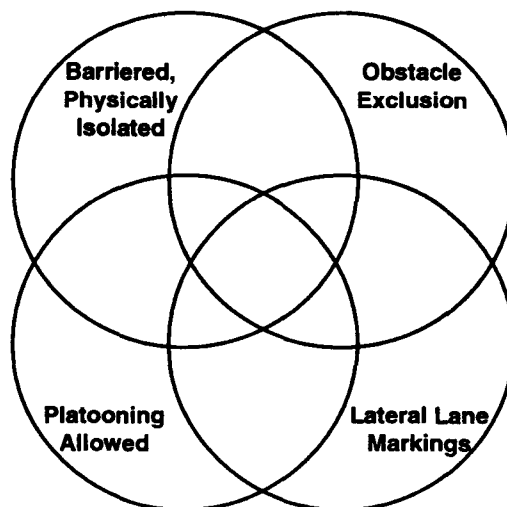


- **Platooning or Free Agents Optional**
 - **Transportation Providers May Allow or Prohibit Platooning on Their AHS Lanes**
 - **Vehicle Manufacturers May Sell Both Vehicles Which Can and Cannot Platoon**
 - **Users Face Two Types of AHS Roadways & Two or Three Types of AHS Vehicles**

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AHS Could Standardize on One or Allow Multiple Types of Roadways



980912 Standardization Intro (PPT; M/Kendree)

14-12

Levels of Flexibility



- **Single Standard**
- **Predefined Options List**
 - Example, Different Fax Protocols
- **Undefined Options Within a Defined Framework**
 - Example, Code Any Program in C
- **Open Options in an Open Framework**
 - Example, Body Styling Can Add Features and Vary Details in Ways We Have Not Even Thought Of
- **Can Be Different For Different Characteristics of AHS**

Special Flexibility and Standardization Issues for AHS



- **Localities Can be Granted Special Waivers from Highway Standards, but AHS Technical Standards May Not Allow Waivers**
- **Clear Standards Can Allow Assigning “Bright Line” Liability**
- **Standards to Support Technical Feasibility May Later Become Options**
- **System Must Contain Enough Flexibility to Evolve**

Purpose of This Breakout



- **For the Consortium to Better Understand**
 - What the Different Stakeholders Feel Should be Standardized in AHS
 - What the Different Stakeholders Feel Should be Optional
 - Most Importantly, Why The Different Stakeholders Each Want Certain Things to Be Standardized or Optional
- **So We Can Eventually Decide The Two Sides of the Same Question**
 - What About AHS Should be Standardized?
 - What About AHS Should be Optional?
 - Who Chooses for Each Option?

Why Impose Standards?



- **Interoperability**
- **Safety**
- **Better Technical Feasibility and Lower Cost with a Defined, Limited Set of Options**
- **Larger Markets**
- **Open Standard Supports Multiple Sources and Competition**
- **Reduces Variability, and Potential for Errors**
- **Creates Stable Building Blocks for Larger Systems**