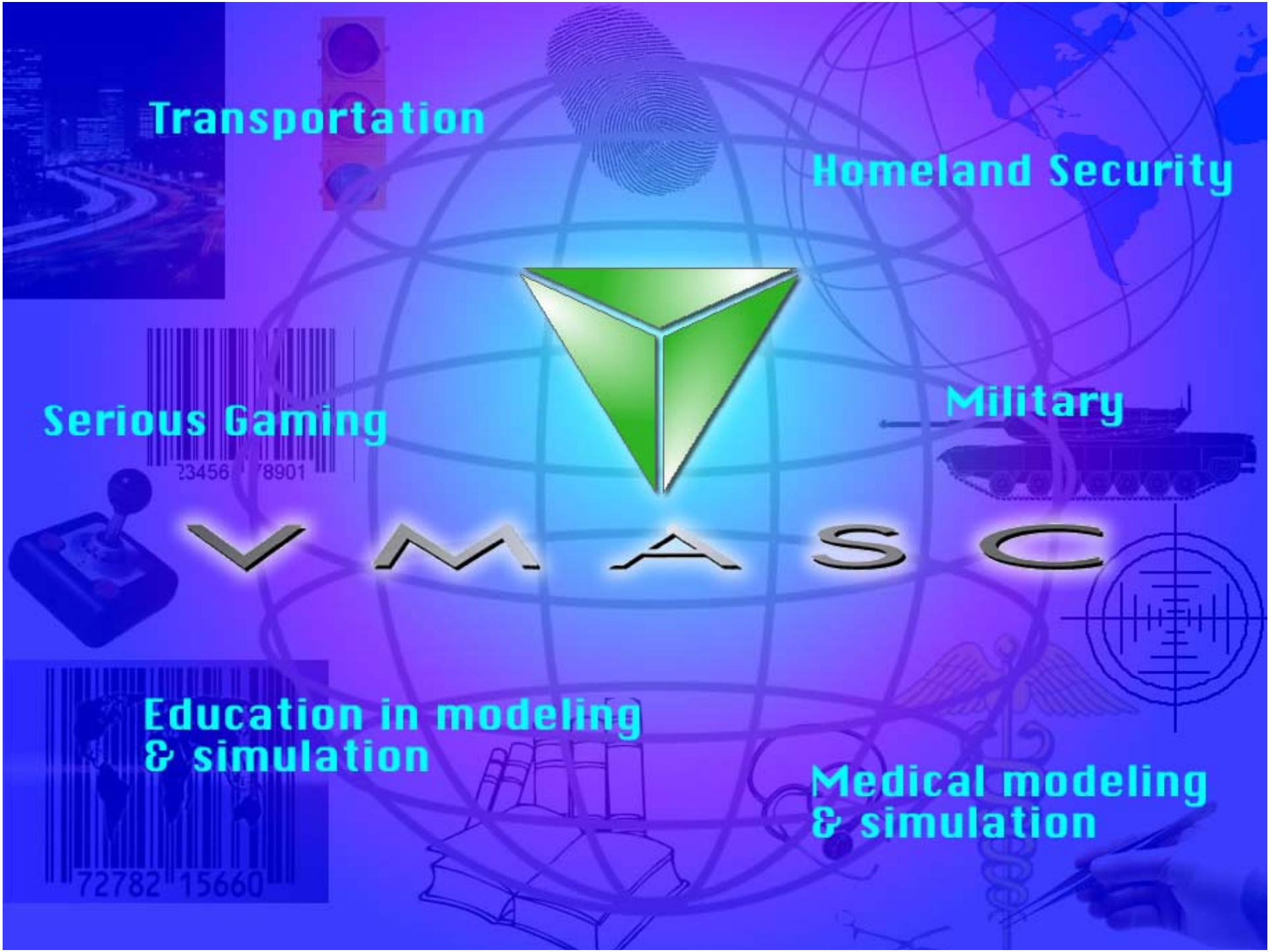
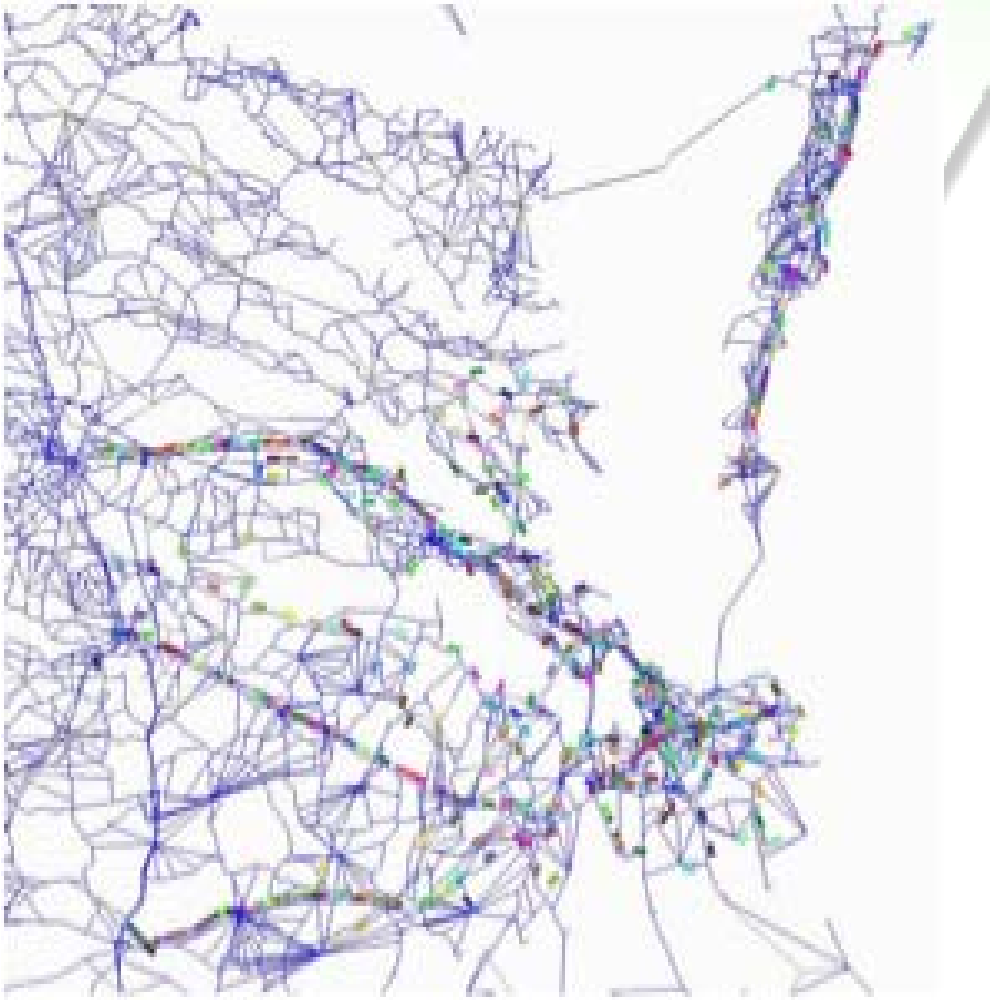

Transportation
Homeland Security
Serious Gaming
Military
VMASC
Education in modeling
& simulation
Medical modeling
& simulation

HR Hurricane Evacuation

- Funded by VDEM
- Four storm categories
- Primary exit routes
- Assesses Commonwealth plan
- CITILABS Cube Avenue simulation
- Delivered



Significant Findings

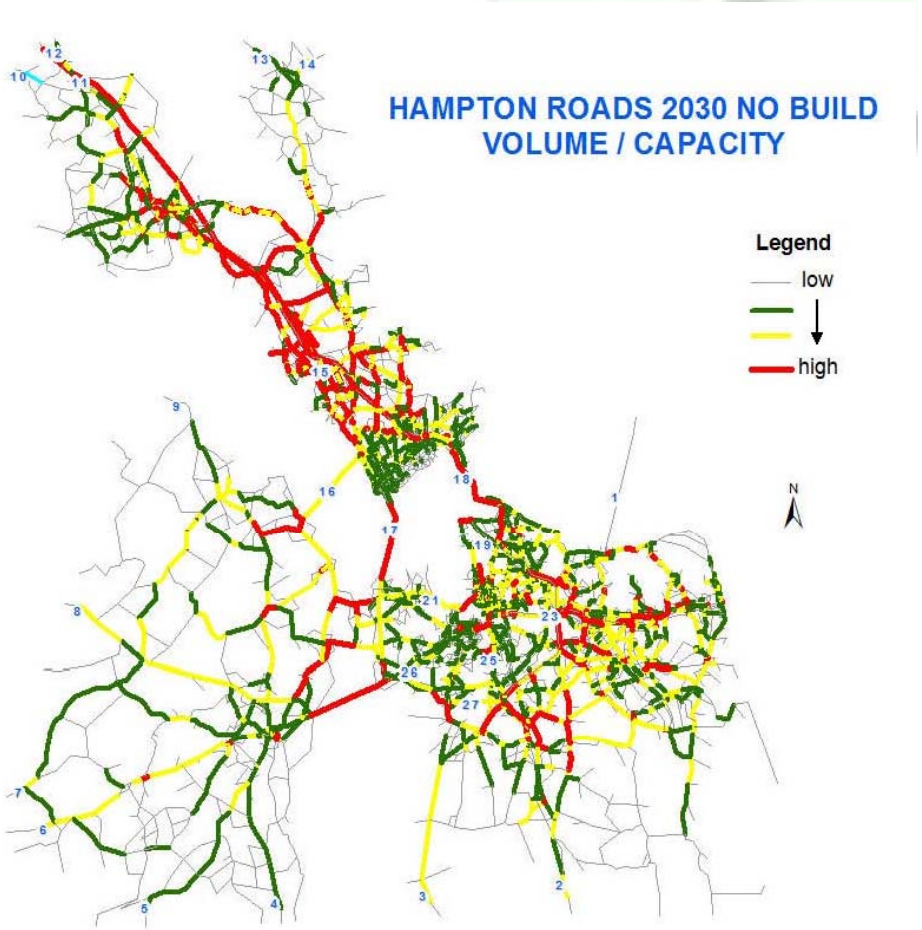
- Category two and stronger storm evacuations require more time than originally planned due to increased impacted populations
- Existing timed phased evacuation improves traffic flow
  - Improvements are enhanced when phases are separated by an overnight period
- Accidents and incidents increase travel time for immediately affected groups, but have only minor affect on total evacuation time
- Evacuee compliance with planned evacuation routes and Emergency Managers coordinated use of traffic information systems are critical

HR Freight Traffic Modeling

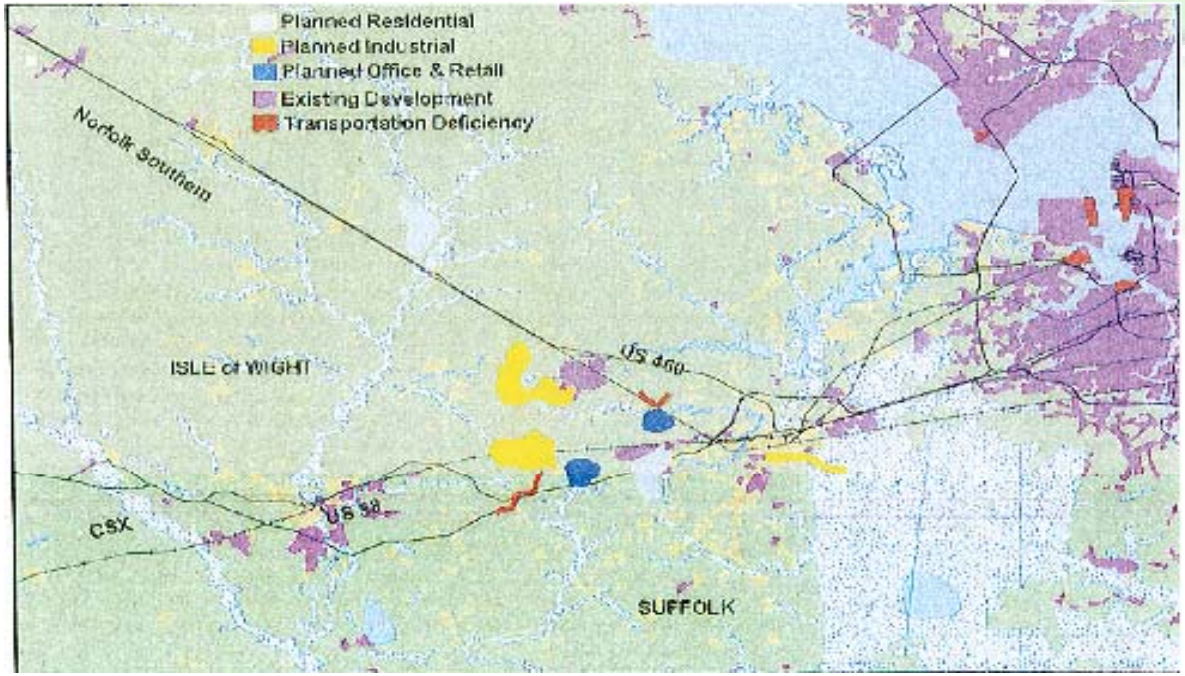
- Validated with current information, projected to future
- Integrates passenger car and commercial trucking traffic
- CITILABS Cube Cargo model
- Complete NOV 08

HR Transportation Alternatives

- HR General Assembly delegates transportation su committee
- Six proposed alternatives plus HRBT
- Three levels of simulation detail
- Assesses impact of freight traffic
- Completion in NOV 08



Multimodal Transportation Planning



- Commonwealth of Virginia Grant (VDOT)
- City of Suffolk and Isle of Wight County
- 18-month project
- Smart growth for land use strategies
- Vision: Commercially viable, exportable product
- Teamed with Moffatt& Nichol, URS

Additional Opportunities

DC Dept of Transportation

- University Research Schedule for Transportation Research and Technology Development
- Successful RFQ – 1 of 3 universities selected
- Four work areas:
  - Congestion and Urban Mobility
  - Intelligent Transportation Systems
  - Bicycle & Pedestrian Safety
  - Traffic Operations and Safety
- Partner: Clark Nexsen

Greater Richmond Transportation Company

- Route analysis & investigation
- Improvements to GRTC transit system
- Feasibility of new Bus Rapid Transit line
- Centralized bus transfer center in downtown
- Proposal submitted 10 OCT – selection process begins in 3 NOV

Dept of Commerce EDA Grant

- Four major areas
  - Sensors
  - Biomedicine
  - Atmospheric Science
  - Modeling and Simulation
- Transportation Cluster within M&S grouping
- Goal: increased use and funding of transportation M&S in Hampton Roads
- Open membership – business, government, and academic participants

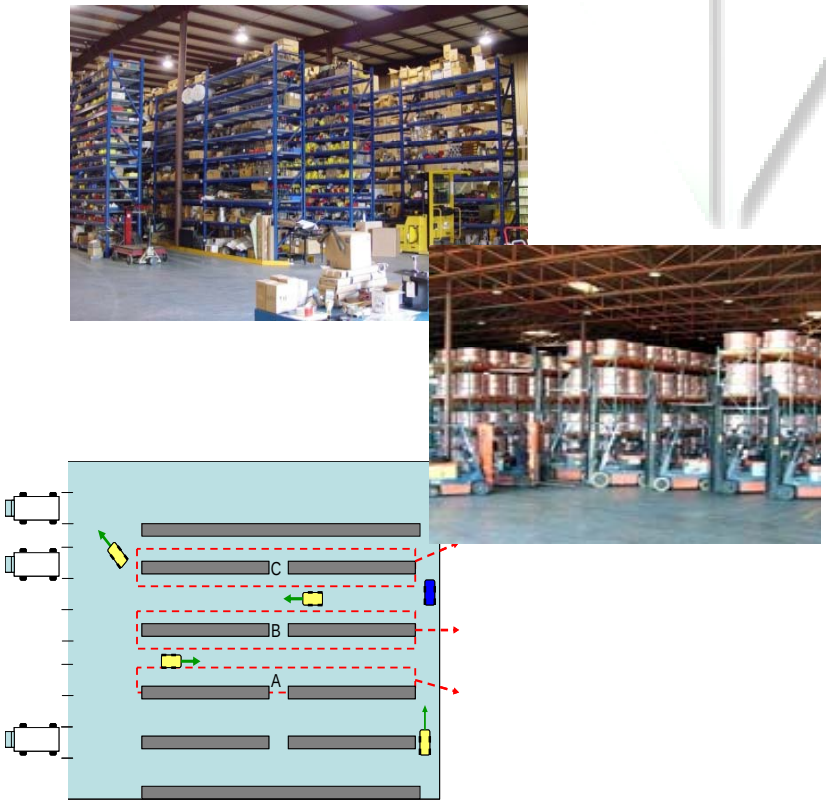
Evacuee Driver Decision-Making

- When faced with congestion during an evacuation, will drivers divert to an alternate route?
- Multiple decision-making models assessed to select “best fit”
- Results modeled in a dynamic simulation to assess effects of decisions made
- Tendencies gathered via survey at: www.vmasc.odu.edu using the Transportation Survey link

Enhancing Warehouse Efficiency

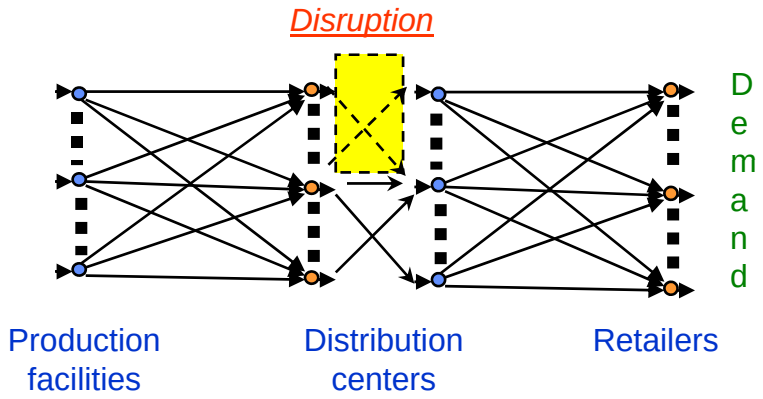
Minimizing traveled distance by Optimal SKU assignment

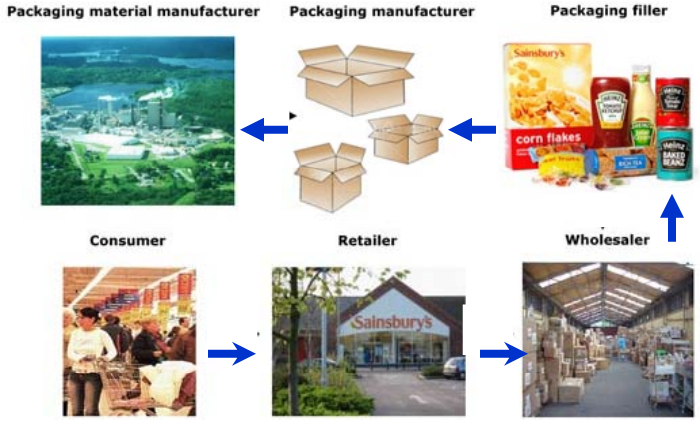
- **Developed product assignment technique**:
  1. **Probability of ordering certain SKUs together**
  2. **Throughput ratio (fast/slow movers)**
  3. **Weight diversity**



Intelligent Production and Supply Chains Systems

- **Results obtained in production areas. 30%-50% reductions in service times by producing what is needed.**
- **Novel logistic models that increase supply chain efficiency.**
- **Combined with regional factors (HR transportation networks) – Enablers.**
- **Applications:**
  - **Disruption, flexibility, and capacity management**





Questions?