Topic	Physical Process(es)	Enterprise	Performance Measures & Targets	Gaps	Tensions
Autonomous Mine Detection	Vehicle to tow sonar in mine clearance region	Mine Detection and Clearance Enterprise in response to mine layers (generally Navy)	• Cost to search area • Time to search area • Risk of death/injury operators	• Cost gap • Time gap • Risk gap	• Operators (risk of injury) vs Management (cost and time) • Bill payers (i.e. Congress/DoD) vs Functionality creep (manufacturers)(
Remote Manipulation/Quadcopter	Moving cones in remote arena	JSD competition	• Points per game • Territory held	• Competitors points • Competitors vs own territories vs own	• Competitors • Complexity vs time/cost
Transportation/Cyber-security	• ADS-type surveillance systems • Air traffic flow management system in non-primary/secondary radar regions	Air traffic flow management and flight separation system (Air Navigation Service Provider e.g. FAA-ATO)	• Collision risk • Throughput Capacity = f(separation distance) • Throughput capacity reliability (i.e. capacity coverage chart)	• Throughput capacity vs throughput demand in non primary/secondary radar regions • Surveillance Reliability vs target • Throughput capacity reliability vs target	• Cost of redundant surveillance vs reliability • Cost of secure transmission vs reliability
Innovation and Social Networking	University undergraduate recruiting process	University Admissions office (finances, resources and processes)	• Target GPA/SAT ranges • Cost of recruit/admit/enroll	• Actual vs Targets GPA/SAT ranges • Actual vs Target costs	• Cost vs meet targets
Fleet Management	Campus transportation demand Campus fleet management to meet demand for transportation	Fleet acquisition and management	• Acquisition costs • Fleet inventory type targets according to Exec order (i.e. elec) • Operational costs (e.g. fuel, emissions, …) • Emissions	• Gaps in meet demand for transportation • Exec order gaps • Budget vs actual fuel costs/maintenance costs	• Cost vs satisfy demand for transportation
Eco-system/Dam Sediment Management System	Sediment build up at dam based on river flow rates and river sediment content	• Chesapeake Bay watershed Health Management • Upriver agriculture and industry	• Sediment build up at dam • Transient sediment plume frequency	• Dam sediment build-up vs target • Transient sediment plumes frequency vs target	• Cost vs Societal impact (i.e. all stakeholders)

		• Hydro-electric power supply to PHL			
Single Pilot Cockpit	Cockpit operations (Procedures, tasks, actions)	• Flight management of airline revenue service flight • Pilot training and availability • Airline operating costs (i.e. fuel prices going up)	• Time to complete tasks (including rare-event tasks) • Reliability of completing all tasks	• Demand vs supply of pilots (long-term) • Costs of cockpit operation • Time to complete tasks vs target • Task reliability vs target	• Cost vs Reliability • Maintaining safety levels vs costs vs benefits
Climate Change/Contrails	• Contrail formation • Flight fuel burn • Radiative heating	• Flight planning in presence of ISSRegions • Greenhouse Gas/Climate Dynamics • Cap-and Trade emissions policies	• Radiative heating due to contrails • Excess Fuel burn due to contrail avoidance • Excess CO2 emissions due to contrail avoidance	• Actual vs target radiative heating • Contrail % coverage • Excess fuel burn = 0 • Excess CO2 emissions = 0	• Tradeoff excess fuel burn/CO2 with Reduction in Radiative Heating