Problem Statement: According to the U.S. Department of Homeland Security’s proposed secure border initiative (SBI), the government intends to gain operational control of the United States’ borders through the integration of increased staffing, interior enforcement, detection technology and infrastructure, and coordination on the federal, state, local, and international levels(http://www.dhs.gov/ximgtn/programs/editorial_0868.shtm). SBInet is a common operating picture system of systems that will incorporate communications, provide situational awareness, infrastructure, command and control, intelligence and sensors. The use of sensors as a method to detect and identify unauthorized border crossings is an important function of enforcement and protection of the U.S. border. The department of homeland security currently does not possess a sensor network that they can employ along the entire U.S. border nor do they have the capability to detect and identify with sensors. In response to this problem, our group proposes to investigate possible sensor system solutions to meet the requirements of the U.S. Border Patrol.

Societal Need: The U.S. Border Patrol is in need of high-tech sensors that provide real-time situational awareness along the entire U.S. border that detects and identifies unauthorized border crossings.

Predecessor Systems: All department of defense systems.
JLENS – department of defense system tested along U.S. –Mexico border and deployed along Iraq-Iran border. Uses tethered balloons.
REMBASS (remotely monitored battlefield sensor system, version I) REMBASS II (remotely monitored battlefield sensor system, version II) FCS UGS (future combat system unattended ground sensor system)

Systems functions and life cycle considerations:
• Detect border crossing / instantaneously • Identify object crossing border • Assumed ground target • Communicate securely to COP / instantaneously • Work at night/day/inclement weather • Cover entire border in depth • No electronic breach of configuration • No mechanical breach of configuration • Cost. Within budget constraints • Within time line • Minimize maintenance costs • Minimize man-hours to deploy New or improved technology:
o EOIR (Electro optical infrared remote sensing) o 360 degree mirrored digital imagery o NOVA Roam communications o UGS (Unattended ground sensors) o LIDAR/LADAR o “biologic” batteries o Satellite o Solar radiation power o Underground detection technology