Approximately 38,700 fatalities and reported injuries occurred in the United States due to bicycling in 2011 averaging about 13 deaths per week, according to the National Highway Traffic Safety Administration while in the UK the number was reported to be 19,091 in 2012. Approximately 27%, of cyclist fatalities occurred during nighttime hours, between 5:00 PM and 10:00 PM. According to police reports the main reason for the accidents was the cyclist not being properly visible to the driver, especially at junctions, as 57% of serious collisions were due to visibility. Visibility is the key design factor in order to prevent crashes involving motorists, especially during evening and early morning hours. The ultimate goal of this project is to increase visibility for cyclists at night using active lighting on the bicycle.

GloBol—*Glowing* *While Mobile*—is a privately funded project focused on developing a bicycle prototype with a self-powered, illuminated frame. The frame is illuminated by Lumilor™, an electroluminescent coating system developed by Darkside Scientific, LLC. The system was chosen because it is gives a uniform illumination, a uniform Lambertian reflectance, low power consumption, low heat generation and vibration and impact resistant. A similar electroluminescent coating system can be developed using materials that can be purchased commercially from companies such as DuPont with the materials arranged in such a way that they form a capacitor structure with inorganic phosphor sandwiched between electrodes.

The GloBol electroluminescent bicycle frame is powered by the mechanical energy generated by the rotation of the wheels supplied through hub dynamos as well as 9V rechargeable batteries. Several configurations of designing the power system were investigated with the ultimate goal of developing the power to be self-generating and sustainable enough to provide a bright uniform light at all moments throughout the ride. The Hub Generator is used to power the main frame. The rechargeable batteries were used to power the brake lights and turning signals.