Although the probability of a small body impact with Earth is low, the greatest natural threat to the long-term survivability of civilization is an asteroid or comet impact. To-date, the existence and orbits of a only few hundred near-Earth asteroids and comets are known -- many more are yet to be discovered. In addition, limited resources are dedicated to expanding this catalog. To protect the Earth against a collision, the asteroid must first be discovered, then deflected or fragmented into pieces that will miss the Earth or vaporize in Earth's atmosphere. The problem involves both detection and elimination. Many studies have examined particular portions of the problem of detecting and protecting the Earth from approaching comets and asteroids. However, there has been very little examination of the complete Earth-protection problem. This proposal will study the architecture of SHIELD, a comprehensive Earth-protection system, with special emphasis on a non-nuclear method of small-body deflection. This proposal will show that a non-nuclear system for smaller threats can almost be built today, and that with projected advancements in technology, a complete system for the important range of impactor sizes will be practical in a 40 year interval.