GLOBAL ASTEROID PROTECTION SOCIETY
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global asteroid protection society

Phase III

Large Monitoring Array

Large Monitoring Array is a set of Satellites which monitor Near Earth, Between the Moon and Earth and ahead and trailing orbital areas around the earth. Working alone or as a network each system will have the capability to detect, do spectral analysis, classify, tag, do physically analysis, and if necessary – Engage the target.

Flight Systems

-Autonomous and Semi-Autonomous Flight controls, with swarm flying (three-axis-stabilized, does not spin as it flies through space)
-Hibernation Autonomous Flight Sub-System (low-power-autopilot)
-Artificial Star tracking Software/ Navigational System
-Physical Star Tracker
-Sol, Luna, Earth Trackers (distance/navigation systems)
-Gyroscope and gyroscopic control systems
-inertial reference units
-Laser range finder
-Proximity Detector

Imaging Sensors

-High-resolution advanced CCD Telescope (ultraviolet, optical, infrared, x-ray) for detection and tracking tasks (1 billion + pixels)/outputs to raw, compressed, video
-High-resolution advanced CMOS telescope (can be used in hibernation mode (low-power camera).)
- Echelle Detector with CCD chips (similar to: Superconducting tunneling junctions (STJs) Detector without need for cyro) (Senses and counts individual photons and provide associated spectral information. This data could be used to detect and "tag" asteroids and comets for simplified follow-up observations, cataloging, and future identification).
-Astronomical Digital Spectrometer (detects coherent signals from large levels of noise; picks up galactic masers, H20 Sources, etc.)

Detecting, Tracking Sensors

-Microwave radar system
-RF Sounding system
-10.5 GHz Doppler radar (short/mid range high velocity detecting and tracking)
-Multi-Directional Metal Detector (detecting Iron/Metallic Asteroids)
-Acoustic range finding, tracking
-ultrasonic distance meters
-Static Electricity Detector (detecting positive and negative static electricity)
-Gauss meter
-Fluxgate Magnetometer
-3D Magnetometer (captures thirteen magnetic field related data values per reading; rotates 360')
-Geiger-Counter (radiation detection)

Additional Detectors

(Various use, assisted tracking, novel methods)
-Gas detector (range of gasses)
-cosmic ray detector
-acoustic detector
-heat detector
-Neutrino Detector

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Computer Systems

-Ultra-Fast High Baud Data Processing Unit
-Ultra-Fast High Baud Image Analysis and Processing Unit
-Data Transfer/Relay to Communications Array
-Automated onboard fault protection software (if fault detected, switch to backup, if available)

Communications

-High band Data Transmission (to provide streaming data to data centre)
-Microwave Transmission and Relay Array (for in-space and swarm; can be used for up/downlink)
-Low-Band Data Transmission (low-bit emergency communications)
-RF Laser Point-to-Point Data Transmission and Relay (for in space, and swarm, can be used for up/downlinks)

Micro-Sat System

-Able to launch a variety of cube-sats/Nano/Micro Sats to aid in detection, monitoring, tracking, communication, testing, etc.

Weapon Systems

-Electromagnetic Launcher : Launches Kinetic Impact device.
-Kinetic Impact Device has a modular mission payload, which can be automatically changed before launch. Behind the impactor, payload can contain a tagging device, analysis, robotic systems, EMP, Conventional Explosives, Electric Thrusters, MHD/EHD Tethers.

Propulsion

-Electric Thruster (Hal Effect)
-Tether MHD Propulsion
-Electric Station keeping and multi-axis mobility thrusters

Power

-Solar power system
-Thermal Electric power system (thermopiles)
-Tether Power System
-Deep Cycle Batteries
-Rapid Charge Capacitor Banks

Structure:

-Graphite epoxy trust/support structure
-Heat channels provide venting of all excess heat (internal./external to thermopiles for power collection; heat pump recycles heat to ensure constant temperature)
-light penetration/liquid proof /static resistance layer
-Thermal/Impact Gel Packs
-Liquid cement in mini-pockets (provide instant hardening to areas which have been damaged by impacts)
-Penetration Detection Layer (field-effect transistors as pressure sensors deposited on a flexible material)
-Aerogel layer provides insulation and armour
-Demron or Sim. Material Provides radiation hardening to entire system
-Isohemp Hull provides strength, insulation, and armour
-embedded thermal electric and solar cells
-Heat “baked” glasses provides sleekness and armour

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Impactor Series of Packages

Package 1
Impactor/Ensures Soil base is strong enough to allow for package 2; If so, package 2 is deployed via a homing beckon directly into the hole produced by the impactor.

Package 2
Homing Beckon: Provides a Unique RF Encoded Tag which is easily identifiable on wide-band RF Scans.

Sample and *Analysis Package*
-time-domain radio frequency electron paramagnetic resonance spectrometer/imager (detecting and imaging free radicals in biological objects)
-mini mass spectrometer

Note
Some systems have been left out as well as additional technologies which are not disclosed due to various reasons.