Program Objectives and Results

The research performed in this Phase I program originated in NASA SBIR solicitation number O2.01. The overall program goal, as stated in this solicitation, was to develop a fully automated, optical tracking system. This system was expected to provide accurate, real-time trajectory and range data for space launch vehicles for as long after launch as possible, even in the poor visibility conditions caused by smoke, clouds, or haze. The final system design must also provide a means of transmitting this analyzed data to the mission command center. In addition to building the tracking system, testing or modeling must be performed to determine the following:

- the maximum downrange tracking distance;
- tracking error as a function of downrange distance; and
- processing speed.

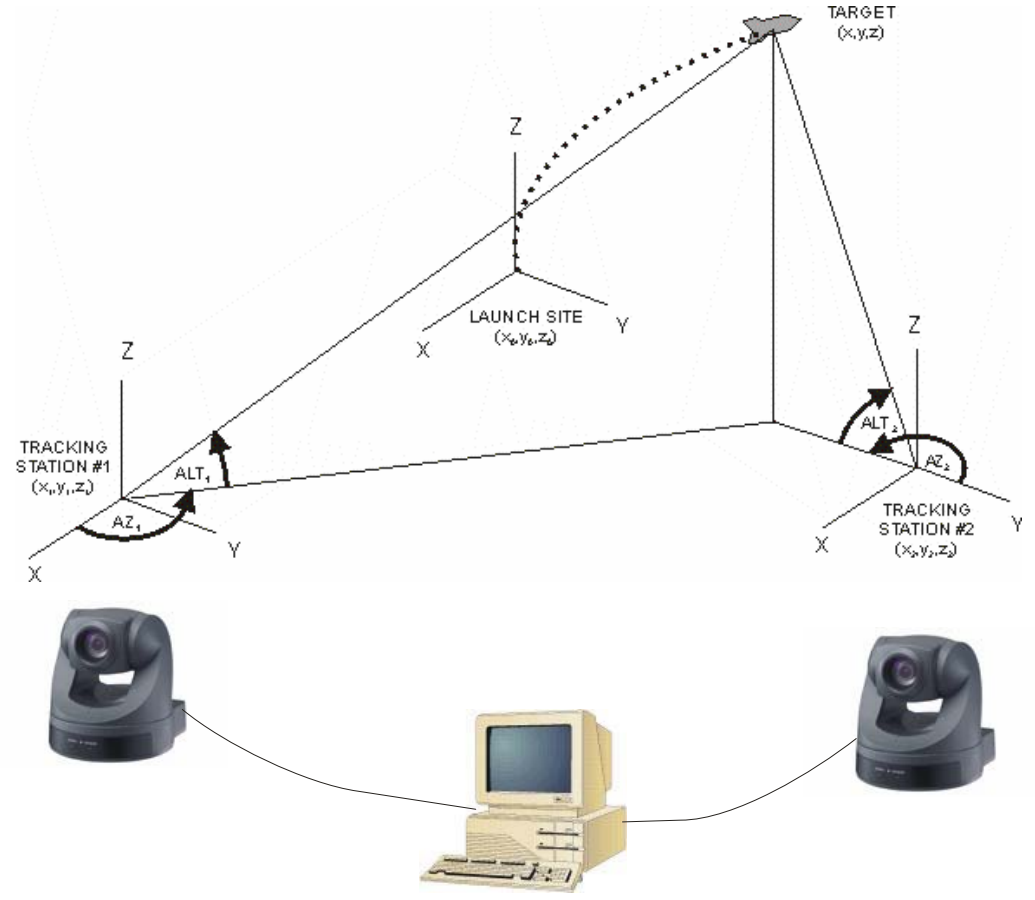

Figure 1 – The above image gives a conceptual overview of the tracking system we have designed. Here the XYZ frame depicted in the above image corresponds to the earth-centered, earth-fixed EFG frame, where Alt and Az are defined as depicted.