The main objective of this research is to introduce a crime analysis framework with a collection of data mining algorithms to efficiently deal with problems associated with the current manual system of Sri Lanka police. The proposed framework is enriched with data mining techniques, Geographical Information Systems (GIS) and a layered architecture. Tools such as Crime clock, Crime comparison, Crime pattern visualization, Modus operandi analysis, Nearest police station detection (NPSD) and Hotspot detection are integrated into the framework. Furthermore, the use of layered architecture makes the framework maintainable and extendible, and GIS capabilities assure the assistance on GIS analysis which can be very important in crime investigations.