# **PLIET Design and Usage**

PLIET (People Locator Email Processing Task), designed and developed at NLM, is an email processing task which receives emails from a server on a specific subject, extracts relevant *embedded* information from it using natural language processing techniques, and returns a summary status to the original sender. It was designed to work with the People Locator (PL) Service at NLM, to aid people in disaster-stricken area to send search/rescue related messages and queries for an affected person, and receive the present status the person as known to PL. However, the interface between the two systems are modular and PLIET may be used by a different system for similar purpose.

High level design architecture of PLIET is provided in the next section of this document.

Note that PLIET was never deployed operationally, primarily due to the low probability of receiving large number of disaster messages as emails (compared to receiving more advanced, browser-based realtime requests at the PL Website) and the need to have a human in the loop to verify/correct the answers. The latter was needed due to (a) low accuracy of processing informal, often grammatically incorrect, text – especially from non-English-speaking areas, and (b) risk of returning incorrect information to a disaster-affected sender. However, PLIET offers a number of key features, which may be used and/or exploited by other projects with similar goals, for customizing it to meet their needs. These strengths are mentioned below.

* PLIET provides a solid infrastructure and processing flow to decode and interpret English messages corresponding to a particular domain, and to establish subjects, verbs, objects and their inter-relationship.
* It is modular in nature, and although its full architecture is PL-specific, it may be useful at two different levels for processing English text:
  + Use only the text processing components (shown as the ***InformationExtractor*** module in the architecture diagram), and ignore the email handling components and People Locator service interfaces.
* Use the Email monitoring service to receive their own emails from a designated mailbox and the Text processing modules, ignoring any other external Server interface
* PLIET is based upon the industry-standard GATE (General Architecture for Text Engineering) NLP processing framework, and uses the Stanford English Text Parser for parsing the sentences in message text.
* PLIET uses a structured, domain-specific vocabulary to connect different parsed objects (subject-verb-predicate etc.) and determines overall context-based meaning of the message sentences. By replacing the PLIET-developed *disaster related* vocabulary with a similarly structured but project-specific one, other projects can execute the PLIET processing pipeline and retrieve their results.
* PLIET is written in Java and uses open-source software and libraries, so it may be used by others without any licensing problems. It also comes with a detailed design document and other accompanying ones.

Since PLIET was never used outside of its development environment, it is expected that it might have bugs, related to operations that were not exposed earlier. So, other developers should perform their own detailed tests.

# **PLIET Architecture**

**PLIET**

**Email Service App**

**Email Monitor**

**Reported Person Record**

**Email**



**Person Records**

**PLUS Service Handler**

**PLUS Service Client**

**Information Extractor (NLP)**

**People Locator**

**Web Service**

*TriageTrak)*

***(SOAP Interface)***

**Event List**

**Reply**

PLIET System Architecture

**PLIET runs as a stand-alone client application, receiving emails from a designated account and sending created records from extracted information to a PL Web server**

* Runs as a stand-alone client application, receiving emails from a designated account and sending Person records to a specific PLUS server
* Two separate instances to communicate with PeopleLocator and TriageTrak