**Agent Communication Languages (ACLs):**

**1. FIPA-ACL (Foundation for Intelligent Physical Agents ACL):**

* **Standardization:** It's a standardized language, developed by the FIPA consortium, for communication between software agents.
* **Performatives:** FIPA-ACL defines a set of performatives, which are communicative acts like request, inform, query-if, agree, refuse, etc. These performatives specify the intent of the message.
* **Content Language:** The content of a message can be expressed in various languages, including KIF (Knowledge Interchange Format), RDF (Resource Description Framework), or other ontologies.
* **Example:**

(inform :sender agent1 :receiver agent2

 :content (price item1 100))

This message informs agent2 that the price of item1 is 100.

**2. KQML (Knowledge Query and Manipulation Language):**

* **Flexibility:** It's a more flexible language that allows for customization and extension.
* **Performatives:** KQML also defines a set of performatives, but it's more open-ended and allows for the definition of custom performatives.
* **Content Language:** KQML can handle a wide range of content languages, including logical formulas, natural language, and structured data.
* **Example:**

(ask :sender agent1 :receiver agent2

 :content (price ?item ?price))

This message asks agent2 for the price of an item.

**Key Differences:**

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| --- | --- | --- |
| **Feature** | **FIPA-ACL** | **KQML** |
| Standardization | Standardized | More flexible |
| Performatives | Fixed set | More customizable |
| Content Language | Can use various languages | Can handle a wide range of languages |

Both FIPA-ACL and KQML are used in various multi-agent systems to enable communication and coordination between autonomous agents. The choice of ACL depends on the specific requirements of the application and the desired level of standardization and flexibility.