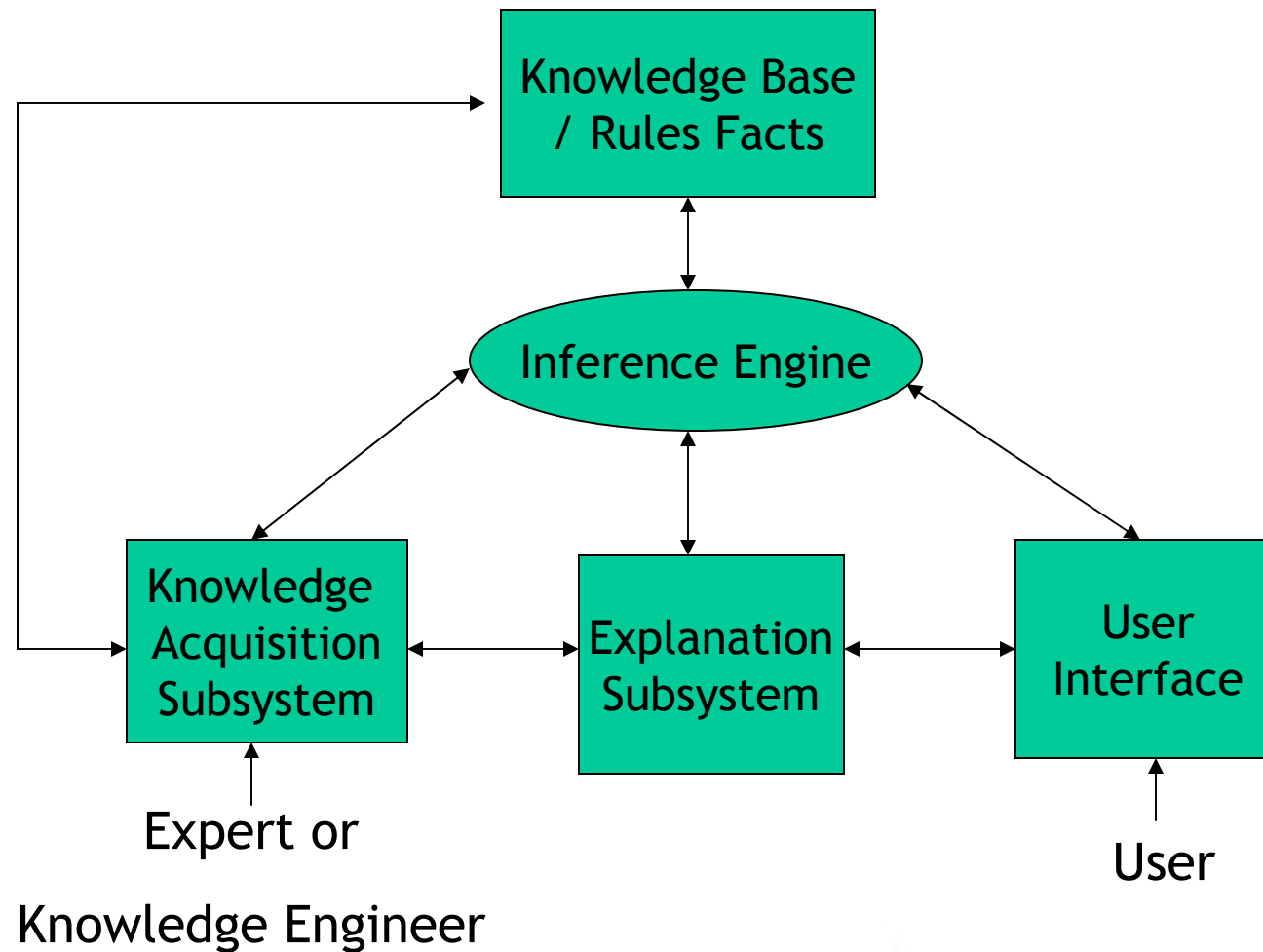


The Architecture of Knowledge-based Expert System



Knowledge Acquisition Subsystem

We can get expert's knowledge from the following resource, then put them into knowledge base.

1. Tech Watch Columns

Such as: Ted Lewis, Computer Magazine

Bob Glass, Journal of Systems and Software

Steve McConnell, Software Magazine

For example:

We can get the following rules from Ted Lewis's articles:

Rule 1: Innovation + high risk → fail

Rule 2: Innovation + low risk → success

Rule 3: There is venture fund in innovation → low risk

Knowledge Acquisition Subsystem

Rule 4: Technology + Before market → success

Rule 5: Technology + After market → fail

Fact 1: Digital Radio Broadcast Satellites(DARS) is after market

Fact 2: Old economy company is transferring into Agile,
e-business economy;

Fact 3: Venture capital is increasing very quickly for research.

Fact 4: Traditional product development is a sequential model.

Fact 5: Viral money system is being formed.

Fact 6: The current e-commerce is too overcrowded.

Knowledge Acquisition Subsystem

2. Tech News

For example:

IEEE tech news

ACM tech news

Gartner tech news

MCC tech news

Software Productivity Consortium tech trends

From these tech news, we can get a lot of facts about current tech trends.

For example:

Fact 1. B2B is long on promise, but still short on results.

Knowledge Acquisition Subsystem

Fact 2: Sales of desktop computers and servers are slowing down

Fact 3: U.S. home Internet access penetration levels jumped significantly during September

3. Tech Watch Companies/ Institutes

For example:

Gartner Group

Chasm Group

MCC

Software Productivity Consortium

We can also get rules and facts from them.

Inference Engine

Inference Engine compares the user's information with the knowledge in knowledge base, and derives whatever conclusions may logically follow.

There are two common inference method:

Backward-chaining: Inference Engine guesses a conclusion and then attempts to prove that this guess is correct.

Forward-Chaining: Inference Engine compares the facts with the IF part of a rule, and fires a conclusion from the THEN part of that rule.

According to the goal of tech watch, Our Expert system will chose the Forward-Chaining as the main inference Engine.

Explanation subsystem and User Interface

An appropriate explanation subsystem and user interface should be constructed, to help user query expert system and understand the result.

There are variety of interface techniques available today, such as Web-based, graphics, natural language, We can construct an expert system based on Web.

Expert System Development Tools

There are lots of expert system development tools available:

LISP

PROLOG

CLIPS

JESS

and lots of other tools on <http://www.pcai.com/pcai>