Subject: (from Helena Keeley / Compsim) Explainable AI
Date: Friday, August 21, 2020 at 11:17:49 AM Eastern Daylight Time
From: Helena Keeley
To: explainable-AI@nist.gov
CC:

To Whom it May Concern:

We read your recent NIST RFI document on the subject of Explainable AI.
We understand you are asking for comments and/or questions.

Question: we aren't sure of the wording that is used regarding Royality Free or Royalty-Bearing.
We license our technology depending on the market value of the use of the patents. So for Compsim – regarding the cost of licensing -"it depends"…
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Our Comments:

When we applied for the patents below, the term "Explainable AI" was not used. The patents are for technology that can be used anywhere human-like reasoning and judgment needs to be incorporated in machines. It is 100% auditable and explainable, so now we use the term "Explainable AI" all the time. When we developed our version of AI we felt explainable and auditable behavior was a necessity; not an option.
In fact we were asked to write a chapter on the 2015 **NATO** book on Autonomous Systems: "**Issues for Defence Policy Makers":** http://www.act.nato.int/images/stories/media/capdev/capdev_02.pdf Chapter 9: Auditable Policies for Autonomous Systems (Decisional Forensics). Starting at the book page 196. Chap 9 explains how KEEL Technology addresses the needs of autonomous systems.

We didn't see any references to our patents, so we thought you should know about them. Here is a list of the granted patents, and a brief sentence describing them.

COMPSIM's Granted Patent Portfolio:

1.QUANTITATIVE DECISION SUPPORT PROGRAM (Patent # 6,833,842 issued 12/21/04) -This patent covers the decision-making mechanism used in Compsim's Management Tools which provides the decision-making basis for KEEL technology

2.COMPUTER PROGRAM AND DATA STRUCTURE FOR USE IN KNOWLEDGE ENHANCED ELECTRONIC LOGIC (Patent # 7,039,623 issued 5/2/06) - This patent covers the KEEL engine architecture

3.COMPUTER PROGRAM AND RELATED DATA PROCESSING METHODS FOR USE IN KNOWLEDGE ENHANCED ELECTRONIC LOGIC (Patent # 7,009,610 issued 3/7/06) - This patent covers the KEEL decision-making algorithm and options in detail

4.PROGRAMMING TOOLKIT FOR USE IN THE DEVELOPMENT OF KNOWLEDGE ENHANCED ELECTRONIC LOGIC PROGRAM (Patent #7,159,208 issued 01/02/07) - This patent covers the KEEL toolkit: User interface and underlying mechanisms

5.ELECTRONIC CIRCUIT IMPLEMENTING KNOWLEDGE ENHANCED ELECTRONIC LOGIC (Patent #7,512,581 issued 3/31/2009) - This patent covers the hardware implementation of KEEL

6.MECHANISM FOR COMPLEX COGNITIVE RELATIONSHIP IMPLEMENTED WITH KNOWLEDGE ENHANCED ELECTRONIC LOGIC (Patent # 7,685,528 issued 3/23/2010) -This patent covers additional functional relationships to solve more complex problem sets.

Another Comment - regarding the NIST whitepaper:

NIST 4 Principles of Explainable AI:

Explanation: Systems deliver accompanying evidence or reason(s) for all outputs.
KEEL DGL 100%
Meaningful: Systems provide explanations that are understandable to individual users.
KEEL (easy)
Explanation Accuracy: The explanation correctly reflects the system's process for generating the output.
KEEL 100% because the DGL defines the policy that is executed.
Knowledge Limits: The system only operates under conditions for which it was designed or when the system reaches a sufficient confidence in its output.
The system architect will determine how and when cognition is executed within the system. The designer is in control. Confidence is exposed and under human (or other) control. As is controlling the "value system". KEEL doesn't care.

Our thought is that the NIST authors must only be thinking about Machine Learning. KEEL Technology is an Expert System, but it is definitely AI. And, it's Explainable AI.
From the whitepaper's terminology, KEEL would "kind of" fit in what is termed "Self-Explainable Models". Our other observation is that the whitepaper's examples are all "augmented human" examples, rather than autonomous system related (information rather than action).

We look forward to hearing your response – any comments/answers would be appreciated.

Regards,

Helena

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- Devices / Systems that can interpret information better and faster and can react better and faster will win.
- Organizations that control those devices / systems will win.
- Organizations that can accumulate these devices / systems faster will win.