

# The right honourable computer, barrister-at-law

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(PhysOrg.com) -- European researchers have created a legal analysis query engine that combines artificial intelligence, game theory and semantics to offer advice, conflict prevention and dispute settlement for European law, and it even supports policy.

While harmonisation is underway, the process itself demands that individuals, companies and law firms often have to relearn the system.

Meanwhile, areas like [intellectual property rights](#) (IPR) and digital rights regulation that seek to combat piracy are becoming evermore complex to understand and apply consistently across Europe.

## A lawyer called ALIS

Thankfully, help is at hand. The ALIS project has developed a computerised platform that uses [artificial intelligence](#) (AI), [game theory](#) and semantic technologies to ‘understand’ and track the regulations in a large, and expanding area of expertise - in this case IPR.

ALIS sought to develop a working system in IPR to tackle the fundamental technological challenges before expanding it to more areas later on.

The system is much more than a simple database of relevant legal regulations. It uses insights from game theory to help contentious parties come to an amicable agreement, either through conflict prevention or dispute resolution, and it can assist lawmaking too.

Game theory looks at how strategic interactions between rational people lead to outcomes reflecting real player preferences. In the Ultimatum game, for example, two players decide how a sum is to be divided. The proposer suggests what the split should be, the responder either can accept or reject this offer. But if the responder rejects the split, both players get nothing.

Researchers have found that often proposers offer 50:50, even though the responder might accept less. They also found that responders always reject splits where they get less than 20 percent. In economics, this would be considered irrational, because the responder loses too, but this illustrates that fairness is a very important element in strategic interactions.

These types of interactions can be rendered mathematically thanks to game theory, and the concept is so powerful that it has migrated from applied mathematics to social sciences like economics, political science, international relations and philosophy, as well as hard sciences like biology, engineering and computer science.

Game theory can be used to develop algorithms that find equilibria in games, markets, computational auctions, peer-to-peer systems, security and information markets. And, now with ALIS, it is available for legal systems too. This concept of equilibria supports conflict prevention, dispute resolution and offers decision support for lawmaking.

A key factor in the system is its test for regulatory compliance. This is very powerful. It can help citizens, companies and lawyers quickly scan the relevant legal corpus to discover if they are compliant. It is a key factor for the other roles in the ALIS system as well.

For conflict prevention, dispute resolution and lawmaking, the ALIS first establishes if the parties, or the proposed legislation, are compliant with current law. Once compliance is established, the system can present a series of options based on an analysis of the potential conflict or dispute, or it can provide information to further assist lawmakers to formulate policy.

Similarly, the tool aims to rapidly speed up the work done by lawyers, helping to resolve relatively straightforward cases faster, so they can concentrate on more complex problems.

Here, semantic technologies play a key role by establishing a machine-readable annotation of copyright law for several European countries.

## **Exploiting the system**

The ALIS project's exploitation and dissemination activities are noteworthy. Mailings, brochures, as well as many presentations and meetings have taken place between potential customers and beneficiaries of the ALIS system.

There are two primary customers or users; software providers who could

benefit from the methods, logic and innovative information processing techniques developed within ALIS; and legal service providers, lawyers, solicitors and others who can use the system to keep them up to date with a rapidly evolving legal framework and speed up query handling for clients.

In all, ALIS has created a platform that should help ensure legal compliance by citizens, companies and lawyers. And it will help improve the efficiency of justice, by contributing to conflict prevention and dispute resolution, keeping cases out of overworked courts.

But ALIS' true genius is that it creates a powerful technological platform to access legal knowledge, a platform that will become stronger over time.

More information: [www.alisproject.eu/](http://www.alisproject.eu/)

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