Experimental Application of Process Technology to the Creation and Adoption of Online Dispute Resolution

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ABSTRACT
We report on the development of formal models of alternative dispute resolution processes, the creation of an online dispute resolution system based on this model and initial experimental analysis of this system. Early results suggest that formalizing the negotiation process definition indeed leads to clearer understandings and a greater chance for effective automation.

Categories and Subject Descriptors
K.4.3 [**Organizational Impacts**]: Computer-Supported Collaborative Work

General Terms
Experimentation

Keywords
Online Dispute Resolution, Process Technology, Mediation

1. INTRODUCTION
The use of alternative dispute resolution (ADR) processes has grown rapidly over the last three decades. In the last few years, the field of online dispute resolution (ODR) has developed to enable mediation and arbitration to occur at a distance and to use computers to enhance and assist in the resolution of conflict. ODR has taken hold in e-commerce. Like many other areas of Information Technology, ODR has been slow to take hold in the Federal Government. We hypothesize that the key to adoption lays in effective change management processes. We contend that such processes can be based on merging powerful process definition and analysis approaches into participatory computer systems design methods. This note reports progress on a project undertaken by the University of Massachusetts Amherst and the National Mediation Board (NMB) to understand how ODR can improve efficiency, effectiveness, and fairness in Government dispute resolution and how ODR systems can gain acceptance.

2. OUR APPROACH
We argue that technology can be looked at as a "fourth party," an element in the dispute resolution process that can play various roles in consensus building, in decision making, and in the interaction between the parties in dispute and a third-party neutral [1]. We contend that ODR will offer increased access for public participation, more effective public policy processes, and new processes for collaborative problem solving. ODR provides asynchronous and/or real-time capabilities which can be leveraged with the ability to bring people together virtually. ODR offers new tools for multi-party stakeholder collaborations, facilitation, negotiation, and mediation. One of the most widely known processes for dispute resolution is Interest-Based Bargaining (IBB) [2]. NMB offers IBB mediation. We have based our initial ODR process on IBB.

At the core of the differences between commercial and government adoption of technology is the overriding need to establish cooperation between stakeholders to permit change. We hypothesize that we can enhance the adoption of digital government including ODR by building on process technology. We view dispute resolution as a complex process, whose clear, precise, and complete definition will pave the way for development of efficient, effective and fair ODR systems. We have applied our research on process languages and formalisms to the problem of defining these ODR processes [3]. This work forms a solid basis for studying what must be changed or added to meet the challenges of ODR for grievance mediation. To this end, we are developing methods to embed process technology in participatory design methods, such as Joint Application Development (JAD), to ease the acceptance of the resultant ODR systems. Together, we believe we can produce efficient, effective and fair methods of producing ODR systems that will be readily adopted.

3. MODELING THE NMB IBB GRIEVANCE MEDIATION PROCESS AND SUPPORTING IT ONLINE
The NMB, established by the 1934 amendments to the Railway Labor Act of 1926, is an independent agency that helps facilitate harmonious labor-management relations within the nation's railroads and airlines. NMB IBB programs provide an integrated dispute resolution process including face-to-face mediation processes typical of many in person mediation processes.

While casual observers may be skeptical that process formalism can facilitate the informal process of negotiation, skilled negotiators, such as those at the US National Mediation Board (NMB), have long understood that careful adherence to predefined process restrictions can do much to facilitate the process of bringing disputants to agreement. Over a period of many years and decades, much has been learned and documented about how to discipline negotiation processes. These disciplined processes are currently passed from person to person through instruction and training, and indeed the understanding of the nature of such processes grows accordingly over time.

We are using a rigorous process definition language to develop and exhibit the first rigorous definition of the IBB process used by NMB. We have been using the Little-JIL process formalism as the basis for this definition. Little-JIL is one of a family of process definition languages that are defined through formal semantics that create the possibility of process definitions that demonstrate precision and rigor. Over the last year we have been trained by NMB in their processes, interviewed NMB mediators on their standard practices and recorded their recollections of mediations they have conducted.

Using the process model as a specification, we have first concentrated on a prototype ODR tool for supporting a brainstorming process that is at the core of the NMB's grievance mediation method. The mapping from manual process to online tool has been relatively straight-forward. In fact, the willingness of NMB to support this research stems in part from the complexity of commercially available tools. The tools support many different types of mediation, not just the one NMB has settled on. The tool is described in more detail in an accompanying note [4}

4. EVALUATION

The ODR system has been demonstrated on numerous occasions and subjected to several rounds of experimental evaluation. Three University classes on the University of Massachusetts Amherst campus have simulated work as parties in NMB training cases. Half of each class was assigned to act as a team representing each party. One of the three, an online University class with members across the U.S, has used the ODR system to run an extended asynchronous mediation case study. All of these had a professional mediator running the session. NMB professional mediators have used this ODR system in simulations based upon cases. Here one set of mediators was assigned to act as the mediator on the case.

At a high level, we have found that participants have little trouble adopting the online tool, effectively generating many ideas and moving fairly directly towards solutions. At the same time, the volume of text generated has presented a challenge to effectiveness. Participants and instructors noted that the anonymity of posts lowered inhibitions for questionable contributions. In addition, inhibitions for creative engagement in brainstorming were also lowered – and this enhanced the quality and content of the posts.

Response from the mediators is especially promising. They have in the past expressed dissatisfaction with the complexity of their existing ODR tool. Our hypothesis has been that involving them in the design of the new tool will aid change. Having several of the subjects as models for the mediation process, we would be disappointed if they did not approve of the tool. We were not. Here are quotes from three mediators: "I am amazed that software is so far along … (sic) & that it is so user friendly. My enthusiasm is directly proportional to the ease of computing."; "Great capabilities w/ (the) software."; and "Already an easy-to-use system in its prototype phase."

At the same time, the mediators in a JAD session, as well as the students through written surveys, have suggested many improvements on the prototype. We have a list of over 50 changes and enhancements. Suggestions for modifications range from screen layout to text edit functions. Suggestions for new functionality include the possibility of concurrent discussions and support for reorganizing lists of ideas. The majority of suggestions have come from the mediators. We take this to indicate that the careful analysis of their process has led them to a clearer understanding of the possibilities of computer support.

5. NEXT STEPS
We are currently evaluating the trade offs of expanding the functionality of the system. We are developing tools to directly connect the process model to the prototype so stakeholders can see the implications of changes in the process directly. We continue to explore ways to realize the promise of the computer as a Fourth Party to fully "assist in identifying and evaluating interests, options and solutions".

6. ACKNOWLEDGMENTS

7. REFERENCES
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