Message from the Workshop Chairs

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Welcome to VizSec 2009! The 6th International Workshop on Visualization for Cyber Security continues to provide a forum bringing researchers and practitioners in information visualization and security together to address the specific needs of the cyber security community through new and insightful visualization techniques. VizSec 2009 continues the established practice of alternating our meeting between research conferences focused on cybersecurity, and researchers focused on analytics. This provides a balance between "Viz" (visualization and analytics) and "Sec" (cybersecurity). This balance is important – as is the balance between practitioner goals and the interests of the long term researcher. While the immediate needs within the cybersecurity community are great, and visualization can provide much needed support, a focus only on the immediate analytical crisis will at best provide short bursts of improvement. Longer term research is also necessary, especially long term research that is undertaken with an eye towards improving the lot of the intended user. It is here that VizSec fills an important and unique niche.

VizSec remains a relatively new meeting. The first VizSec workshop was held in conjunction with the ACM Conference on Computer and Communications Security (CCS) in 2004. In 2005 the conference was held in conjunction with the IEEE Visualization Conferences, and in 2006 again with CCS, then in 2007 the IEEE Visualization Conferences. Last year's very successful meeting was held at MIT in conjunction with the International Symposium on Recent Advances in Intrusion Detection (RAID), under the leadership of John Goodall, and the meeting was both well attended and well received. In 2009, VizSec is pleased to be co-located with the IEEE Visualization Conferences, during VizWeek. Since the inception of VizSec, we have seen both the application of existing visualization techniques to security problems and the development of novel security visualization approaches. However, while security visualization research has addressed the development of applications there has only been limited coverage of user needs and designing visualization to support those needs. Further, visualizations tend to be ad hoc and it can be difficult to determine whether the new approaches are advancing cybersecurity goals.

This year our focus is on advancing visualization for cybersecurity as a scientific discipline. While art, engineering, and intuitions regarding the human element will always remain important if we are to obtain useful cyber security visualizations, advances in the scientific practice of research are needed. The scientific aspects of visualization for cybersecurity draw both on empirical observation (similar to many natural and social sciences) and formal science (such as the formal derivations in mathematics). Barriers confronting current researchers include concerns about available data, lack of a common agreement about what constitutes sound experimental design, the difficulties of measuring the relative effectiveness of security visualizations in practice, and the lack of a common understanding of user requirements. While researchers are making progress in these and other critical areas, much work remains.

For our 2009 meeting, we will emphasize four topics:

- Network Visualization
- Malware and Forensics
- Users and Usability
- Security Practices

Network Visualization is one of the most popular topics within VizSec, and this year is no exception. Our three papers in this area cover visualization of complex attacks and the associated state of the attacked network (Gamayunov and Yelizarov), visualization for network analysis (Glanfield et al), and visualization support within IPv6 (Barrera and van Oorschot). In Malware and Forensics, our three papers emphasize visualization of compiled executables to support malware analysis (Quist and Liebrock), visual analysis of malware behavior (Trinius et al), and also analysis supporting examination of digital forensics evi-

dence (Jankun-Kelly et al). In the area of Users and Usability, we have papers that range from consideration of how analysts' workspace support their efforts (Fink et al), and evaluation of when visualization provides better results (Goodall). Finally, in the area of Security Practices, we offer two papers, one on visualizing keyboard pattern passwords (Schweitzer et al) and another on visualizing firewall configurations (Morrissey and Grinstein).

Throughout the years, VizSec leadership has a tradition of seeking ways to bring the meetings' findings to a larger audience and to increase the breadth of participation. In the earlier meetings, attendance of around 40 was not unusual. Last year, over 100 people attended VizSec 2008, and we hope to continue that trend. Paper quality and requests to present have also continued to increase. This year we had even stronger competition for presentation slots: 10 out of 23 submitted papers were selected for the program, which incorporates short papers and long papers. In addition to these, we are hosting an associated works in progress/poster session. Also, authors of the best papers accepted by VizSec will be invited to extend and revise their paper for journal publication in a special issue of Information Visualization. Finally, we deeply appreciate the generous support of our sponsors, which as of this date appears to be sufficient to allow us to provide a printed proceedings without additional cost to our attendees, and to support keynote speakers and student travel.

As with all meetings of this type, preparations depend largely on volunteer efforts. All of us in the chairs' team – Deb Frincke, John Goodall, Carrie Gates – are grateful for the hard work of the program committee in performing reviews and assisting with publicizing the event. This year's reviews were among the best provided to VizSec authors. We also wish to thank Rob Erbacher, our papers chair. Rob spent many late nights ensuring that submitted papers were properly entered into the system so that they could be reviewed, and ensuring that final versions made the transition to camera ready format. The polished appearance of this volume owes much to his efforts. Also, we would like to express our thanks to Klaus Mueller, one of the general chairs of VisWeek 2009. His willingness to include VizSec as a workshop within VisWeek, and the help and professionalism of the VisWeek team throughout the year of preparations leading up to the meeting, are very much appreciated.

But in the final analysis, the success of VizSec will lie within the hands of those of you who write the papers, attend the meetings, and participate in discussions – and then use the results. Only with your help can VizSec's twin goals of advancing science and improving the state of the practice be achieved.

And now, welcome to Atlantic City, and enjoy the meeting!

Supporting Organizations

The conferences would like to sincerely thank the following organizations for their support: