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The Loch Ness Monster, Bigfoot, and Safeguards Conclusions

What crowdsourcing and pervasive mobile sensors tell us about proving a negative

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Biography

Dr. Horak is a Principle Member of Technical Staff at Sandia National Laboratories in the Department of International Safeguards and Technical Systems. He has over 20 years of experience, working in Sandia's international programs since 1990. Dr. Horak has a background ecology and systematics combined with decades of work in arms control and safeguards, especially on-site inspection information management.

From 1995 until 2003 he was heavily involved with database management and web technology support to the UNSCR 687 Action Team / Iraq Nuclear Verification Office during their nuclear arms control efforts in Iraq. He is the Sandia subject matter expert for the Chemical Weapons Convention.

Dr. Horak leads a small team that provides web services for collaboration with international partners. He has studied open-source tools for managing geospatial data as it applies to safeguards. Currently he is developing augmented reality applications for arms control and nonproliferation and studying the feasibility of using mobile apps for on-site inspection.

Abstract

With over 5 billion cellphones in a world of 7 billion inhabitants, mobile phones are the most quickly adopted consumer technology in the history of the world. In advanced Western countries, over 91% of the population own cellphones and over 56% have smartphones. Miniaturized, power-efficient sensors, especially video-capable cameras, are becoming extremely widespread with the additional availability of wearable technology like GoPro, Google Glass, and lifelogging systems. The operators of these mobile systems form a large population of networked individuals that are spontaneously crowdsouring the creation of enormous sets of visual and other data. Seemingly rare and nearly impossible to document events are now routinely captured, for example, the Chelyabinsk meteor, the “miracle on the Hudson” ditching, and the Boston Marathon explosions. By now one would have expected, say the skeptics, to have high quality, definitive video evidence of the Loch Ness Monster and Bigfoot. Have cellphone cameras proved the negative, that these crypto-zoological beasts do not

exist? Can the same technology help us with safeguards conclusions? In this paper the author will explore recent trends in mobile and wearable technology, look at projected data volumes, examine some open-source tools to analyze these data streams, and discuss the implications for nuclear safeguards. Dr. Horak will recount his experience of using Google Glass for the past six months and consider what the future of pervasive mobile technology may hold for international treaties and agreements.