

# Towards Next-Generation Software Infrastructure for Crisis Informatics Research

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## Abstract

Crisis Informatics is a multidisciplinary research area that examines the socio-technical relationships among people, information, and technology during mass emergency events. One area of crisis informatics examines the on-line behaviors of members of the public making use of social media during a crisis event to make sense of it, to report on it, and, in some cases, to coordinate a response to it either locally or from afar. In order to study those behaviors, this social media data has to be systematically captured and stored in a scalable and reliable way for later analysis. Project EPIC is a large U.S. National Science Foundation funded project that has been performing crisis informatics research since Fall 2009 and has been designing and developing a reliable and robust software infrastructure for the storage and analysis of large crisis informatics data sets.

Prof. Ken Anderson has led the research and development in this software engineering effort and will discuss the challenges (both technical and social) that Project EPIC faced in developing its software infrastructure, known as EPIC Collect and EPIC Analyze. EPIC Collect has been in 24/7 operation in various forms since Spring 2010 and has collected terabytes of social media data across hundreds of mass emergency events since that time. EPIC Analyze is a data analysis platform for large social media data sets that provides efficient browsing, filtering, and collaborative annotation services. Prof. Anderson will discuss these systems and also present the challenges of collecting and analyzing social media data (with an emphasis on Twitter data) at scale. Project EPIC has designed and evaluated software architectural styles that can be adopted by other research groups to help develop their own capacity to work in this space. Prof. Anderson will conclude the talk with a vision for future work in this area: What's next for crisis informatics software infrastructure?

## ACM Classification

D.2.11 [Software Engineering]: Software Architectures---Domain-specific architectures

## Keywords

crisis informatics; data-intensive systems; software infrastructure

## Short Bio

Ken Anderson is an Associate Professor of Computer Science at the University of Colorado Boulder. He co-directs Project EPIC, a \$4M NSF grant that investigates how members of the public make use of social media during times of mass emergency. He leads the design and implementation of Project EPIC's large-scale data collection and analytics system.



Prof. Anderson was a participant in the first cohort of the NCWIT Pacesetters program, a program designed to recruit more women to the field of computer science and encourage them to pursue their careers in technology. As part of his Pacesetters efforts, Prof. Anderson led the charge to create a new BA in CS degree at CU that allows students in Arts and Sciences to earn a degree in computer science. This new degree program was first offered in Fall 2013 and had 240 students enroll during its first semester and now has nearly 600 majors less than two years later.

Prof. Anderson also organizes and hosts the annual NCWIT Colorado Aspirations in Computing Award, something he has done for the past five years. This award recognizes the computing achievements of female high school students in Colorado and encourages them to enroll in computer science at the college level.

Prof. Anderson received his Ph.D. in Computer Science in 1997 at the University of California, Irvine. His research interests include hypermedia and the design of reliable large-scale software infrastructure, data-intensive systems, and web application frameworks.

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*WWW 2015 Companion*, May 18–22, 2015, Florence, Italy.  
ACM 978-1-4503-3473-0/15/05.  
<http://dx.doi.org/10.1145/2740908.2745795>