

Wildland Fire Capabilities & Expertise

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Capabilities

Benchmark Research & Safety, Inc. is a multifaceted human factors consulting firm that has a long history within the wildland fire community in the United States. Before forming as a company and every year since, Benchmark has applied its knowledge of human factors, human performance, decision making, team processes, situational awareness, systems design, and research to aid wildland fire agencies in achieving their goals of improved performance, enhance training, and integration of technology into the profession of wildland fire. As a company, Benchmark has a passion to advance the practices within wildland fire to promote performance, achieve safety, and enhance the understanding of wildland fire as a physical, individual, and social phenomenon.

The company's service to federal and state land management agencies with wildland fire responsibilities builds on the work accomplished by its founder. Dr. Curt Braun began his relationship with the wildland fire community in the late 1980s and early 1990s when he served the US Forest Service as a firefighter on a Hotshot crew and an engine and also worked as a fire prevention technician. After receiving a doctorate in experimental psychology with an emphasis in human factors in 1993, Dr. Braun became increasingly active as a consultant to the wildfire community. Benchmark represents a formalization of consulting work he performed while serving as an Associate Professor of Psychology at the University of Idaho for 13 years.

Through formal training and through years of interacting with this community, we have developed an in depth understanding of wildland fire systems as they are embodied in federal, state, and local agencies. The Incident Command System (ICS) and the National Wildfire Coordinating Group (NWCG) are bridges that connect the many disparate organizations with wildfire responsibilities. Benchmark staff has engaged the wildland fire communities at all levels ranging from the smallest initial attack fires to the large fires of national significance.

The fire qualified staff are trained as psychologists and approach wildland fire issues from a human-centric perspective. Because firefighters are placed in situations that can often jeopardize safety and performance, it is imperative to understand how individual's cognition and perceptions, their interactions with

others, the system, and the environment affect firefighters ability to assess, predict, and evaluate fire and firefighter behavior.

Technology is part of modern firefighting. Benchmark staff has worked extensively in the design and evaluation of system interfaces. In recent years, our staff has provided design guidelines and evaluations on variety of technological devices ranging from web applications to ultra-mobile handheld devices. Paired with the internal information technology capabilities, Benchmark is capable of managing all aspects of a technology development project.

Experience with the Wildland Fire Community

Benchmark's experience with the wildland fire community can be divided into four categories:

- Training
- Knowledge Management
- Technology Development
- Research

Training

Dr. Braun has been a regular instructor and lecturer for the wildland fire community since 1994. Currently he serves on the faculty of S-520 Advanced Incident Management where he teaches courses on team development and team performance and serves as an informal evaluator of incident management teams completing this course. He is also a regular instructor for Fire Management Leadership (FML), a course for agency administrators. For the FML course, Dr. Braun teaches a course on fire fighter and public safety.

In addition to these two courses, Dr. Braun has addressed a large number of federal land management agencies across the country. He has lectured at small district or unit meetings within the US Forest Service and the Bureau of Land Management. These lectures were given as part of orientations, formal trainings (e.g., S-404 Fire Safety Officer) and as part of management leadership conferences. Over the years, he has addressed new employees, firefighters, researchers, management teams and Washington Office staff.

Knowledge Management

Benchmark has been actively involved in knowledge management and dissemination within the wildland fire community. The majority of this work has been accomplished with the Wildland Fire Lessons Learned Center (WFLLC) (www.wildfirelessons.net) located at the National Advanced Fire Research Institute (NAFRI) in Tucson, Arizona.

The WFLLC has contracted with Benchmark four of the last five years to promote their knowledge management and learning organization objectives. Benchmark's fire qualified staff have worked to gather lessons learned from the wildland fire community. Over the past five years, our staff has gathered

information from fires in Alaska, California, and Arizona. Benchmark staff have performed interviews, conducted surveys, documented practices, and published reports that have been disseminated throughout the wildland fire community.

In 2005, Benchmark in conjunction with the WFLLC created Advances in Fire Practice (AFP) which serves as a bridge between the fire researchers and fire managers. The site provides summaries of recent research publications, support fire science educators, and highlights new and promising practices that developed in the field. Articles from the site have been regularly published in two wildland fire professional magazines.

Technology Development

Benchmark has developed and hosts several wildland fire related web applications. In 2005, we developed and currently host the Wildland Fire Appropriate Management Response site (www.wildlandfireamr.net). Wildland Fire AMR was modeled after the stand alone WFSAPlus application. It provides federal land management agencies with web-versions of the Wildland Fire Situation Analysis (WFSA) and the Wildfire Implementation Plan (WFIP). The web version of this application builds on the standalone version by adding a geographic mapping component and integration with existing fire weather data. Fire managers can now access information from multiple sources from within the AMR site.

In the past four years, we have developed and maintained three web applications for the WFLLC. The primary site www.wildfirelessons.net serves as WFLLCs primary repository for fire related information and it also serves as the gateway to efforts promoting organizational learning, documenting incidents, and other advances within the fire community. The second site www.myfirecommunity.net is a discussion center that targets fire managers and firefighters. The site now has thousands of registered users and hundreds of neighborhoods that support communities of practice within the wildland fire. The third site www.imtcenter.net hosts the team websites for 40 incident management teams, area command teams, and fire use teams. This site provides these teams with high-level web capabilities with requiring a web programmer. In its first full year, the site has been a valuable tool in promoting the interaction of teams while they are on incidents.

In 2007, Benchmark began developing a fourth site that integrates GIS fuel layers, weather predictions and fire spread application, Farsite the fire spread application. The prototype called FireSite give firefighters the ability to mark the ignition point(s) of a fire on a map and simulate fire progression based on predicted fire weather and fuel data created by the Land Fire project.

Research

Dr. Braun has conducted a variety of research studies. Early research focused primarily on decision biases among fire managers and the effects of safety equipment on perceptions of fire risk. These studies have been published in peer

reviewed conference proceedings and fire science journals. Additionally, work examining the information systems used in wildland fire (i.e., Standard Orders and Watch-out situations) has also been published.

Benchmark staff have conducted a variety of fireline safety surveys and have surveyed firefighters to assess how new practices have been implemented at the ground level. Additional work to determine performance criteria for agency administrators and fire management officer has also been conducted. Finally, Dr. Braun has participated in a number of wildland fire injury investigations.

Dr. Braun continues to train new human factors students as an adjunct faculty member at the University of Idaho where he teaches a course in Advanced Human Factors. This class covers a variety of topics include performance assessment, human reliability, situational awareness, system automation and other topics that have applications in wildland fire.

About Benchmark Research & Safety, Inc.

Benchmark Research & Safety, Inc. is a human factors and ergonomics consulting firm that specializes in usability, user-centered design, product safety, warnings, expert witnessing, research (design, ethnographic, perceptual) and training. Incorporated in 2000, Benchmark Research & Safety, Inc. is one of the few multi-capability firms in the Northwest - headquartered in Moscow, Idaho with branch offices in Boise and Rigby, Idaho; Portland, Oregon; Spokane, Washington; and Grand Junction, Colorado.

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Whether you are planning your next project or looking for assistance with an existing project, we can help. Benchmark's unique combination of perspectives contributes to a solution that you can apply with confidence. Contact us at 877-641-4468 or info@benchmarkrs.com.