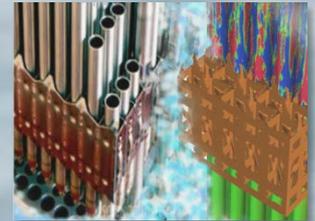
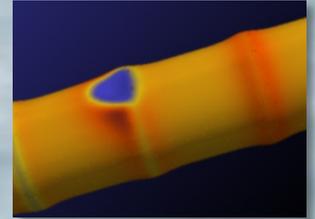
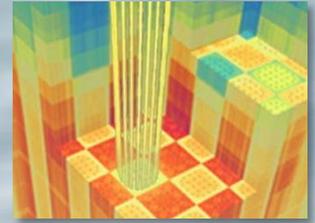


Working Group Introduction and Purpose

April 13, 2016
Greenville, SC



The Consortium for Advanced
Simulation of LWRs
A DOE Energy Innovation Hub

CASL-U-2016-1091-000



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Introduction

- **Welcome to the inaugural meeting of the VERA Working Group**
- **The purpose of the working group is to provide a forum for exchange of information related to use of the VERA tools**
 - Discussion of applications
 - Discussion of capability needs
 - Discussion of training needs
 - Discussion of usability needs (documentation, etc.)
 - Discussion of targets for future use
- **Our hope is that the working group will evolve into the VERA user community, become a primary source of user input and feedback, help shape future VERA development, and serve as an important element of the post-CASL strategy**

Introduction

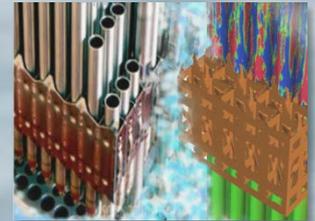
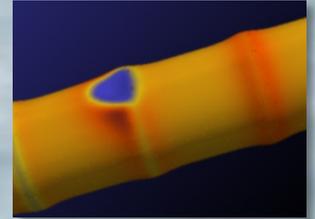
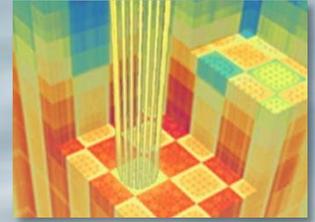
- **The Industry Council and Working Group will serve complementary but independent needs**
 - **Industry Council:** Continue providing guidance on industry needs and strategies for addressing those needs (i.e., higher level strategic input)
 - **Working Group:** Provide input on VERA usability, capability enhancements, deployment strategies, training strategies, etc. (i.e., lower level tactical input)
- **Membership of the IC and WG will initially overlap but diverge over time**
 - Our hope is that the working group will evolve into a broad community that will feel ownership of the VERA tools and be empowered to develop the tools after CASL operations are complete
- **Specific roles of the organizations will take some time to define**

Agenda

Time	Topic
1:00	Post-CASL Options
1:30	Working Group Charter Development
2:30	Break
2:45	Working Group Leadership Team Discussion
3:00	Working Group Priority Activities Discussion
3:45	Wrap - Up
4:00	Adjourn

Post – CASL Options

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CASL Products Identified During Phase 1

- **VERA, a coupled, higher fidelity, scalable multi-physics code suite with integrated uncertainty quantification**
- **The challenge problem applications aimed at solving industry's most challenging issues**
- **The pilot and milestone simulations enabled through VERA and National Laboratory world-class computing capabilities**
- **The compiled intelligence and recommendations achieved through the CASL staff's unique team experience and comprehensive knowledge base**
 - An important objective of CASL and the WG is to enable access to this knowledge during the CASL operational period and beyond

CASL End State

- **The CASL end state is discussed in the renewal application summary**
 - Elements of the end state vision include:
 - *Development and broad deployment of M&S technologies capable of addressing many current nuclear energy industry challenges, emerging issues, and evolving opportunities*
 - *Demonstration of capability to improve cost-effectiveness of nuclear energy generation*
 - *Ability to execute simulations on computer platforms ranging from small clusters to DOE's largest advanced platforms*
 - *Evolution of a nuclear enterprise community model that includes:*
 - *Broad engagement of the nuclear industry that encourages use of M&S tools*
 - *Continuation of the CASL Education Program*
 - *Support for technology transfer*
 - *Efforts to sustain the CASL technologies and continue their development*

The working group will be instrumental in helping CASL meet these objectives

User Needs

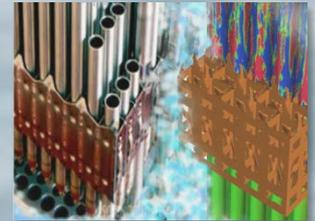
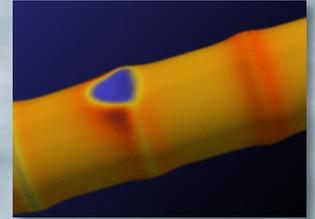
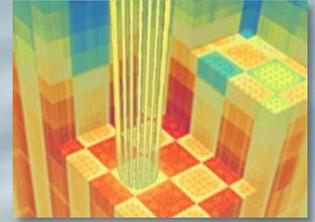
- **High priority VERA user needs identified in the CASL market study include:**
 - Ability to solve problems that aren't being solved by existing tools
 - Strong user support
 - Robust documentation
 - Training support
 - Code validation and verification
 - Applicability to a range of reactor types

VERA Deployment Options Identified During Phase 1

- 1. Lab deployed and maintained via multiple nonexclusive licenses or single exclusive license**
- 2. EPRI Maintained services**
- 3. Open source release**
- 4. Licensing CASL tools to nuclear engineering service company for broader deployment**
- 5. Work with independent software vendors to provide CASL tools as “shrink wrapped” software**

Working Group Charter Development

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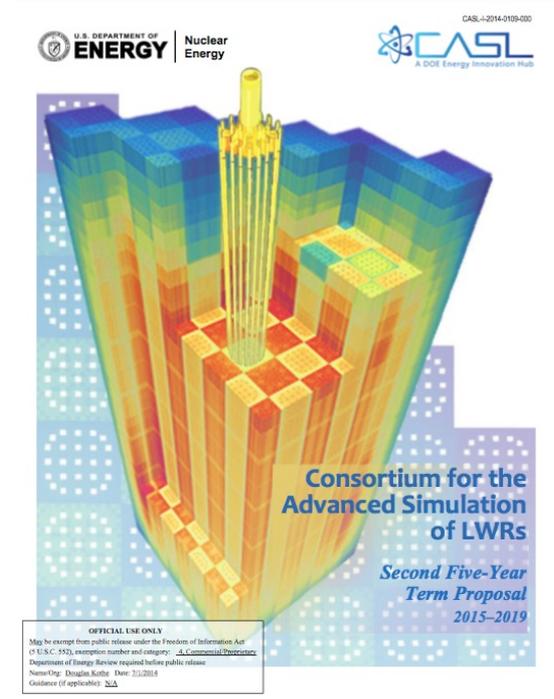
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Draft Charter

- **A draft Working Group Charter was included in Appendix B.4.2 of the CASL renewal proposal**
 - This draft could serve as an initial basis for discussion
 - Review and modifications are needed to make the charter suitable for the working group
- **Elements of the draft charter**
 - Working Group Expectations
 - Working Group Activities
 - Working Group Leadership and Membership
 - Working Group Fee Structure



Working Group Expectations

- **The working group will serve as an administrative body focused on enabling the sustained use and development of the VERA technologies**
- **The working group is a forum for VERA users to:**
 - Receive product information / updates
 - Receive software support for VERA
 - Participate in discussions of VERA and its applications
 - Participate in, evolve, and share VERA's Verification and Validation testing database
 - Provide input into VERA's business, design, functional, and quality requirements
 - Obtain VERA training
 - Provide input to VERA requirements and development

Working Group Activities

- **The goals of the WG are to:**
 - **SUSTAIN** VERA User interest and connections into the post-CASL period
 - *The WG will work with CASL to investigate and develop a post-CASL entity that can support CASL-developed tools*
 - *The WG will identify necessary general purpose capability additions and allocate resources to support code modifications*
 - **CONNECT** users of the VERA tools
 - *The combined WG will meet regularly to provide forums for User discussion, User Support, Training, and Alpha/Beta Testing*
 - *The WG will be empowered to establish subcommittees*
 - *During Phase 2, the WG will likely work closely with CASL on outreach and education initiatives*

Working Group Activities (continued)

- **The goals of the WG are to:**
 - **SHARE** training, experience, best practices, simulation results, validation data, and successes
 - *The WG will facilitate the sharing of user experience, best practices, data, and successes through meetings and webcasts*
 - *The WG will further facilitate sharing through exploration of potential affiliations with other organizations such as ANS, ASME, AIAA, SIAM, EPRI, and utility owner's groups*
 - Coordinating delegates to meetings
 - Sponsorship of cross-organization tasks
 - Establishing new technical discussions at meetings and conferences
 - **COLLABORATE** on future development of the VERA tools
 - *The WG will collaborate with the code development teams on:*
 - Requirements and specifications
 - Testing and V&V
 - Source code development, maintenance, and usability
 - Identification of funding opportunities

Working Group Leadership

- **The proposed working group leadership structure is similar to the Industry Council structure**
 - During Phase 2, the WG will be led by a membership elected Chairperson and an Executive Director appointed by CASL
 - *Steve Hess of EPRI has volunteered to serve as the initial Executive Director*
 - After CASL operations are complete, the Chairperson and the Executive Director will be elected by the membership

Working Group Membership

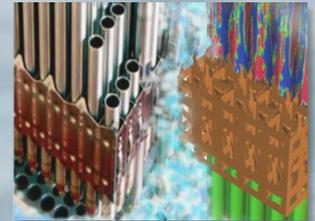
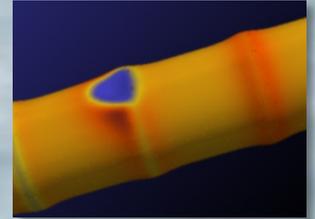
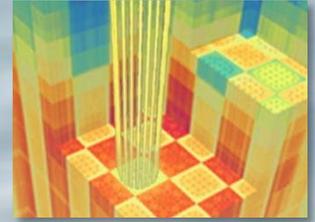
- **The membership of the WG will be composed of representatives from interested public and private institutions**
 - Membership will be open to individuals and organizations that are eligible to license VERA
 - The size of member organizations is expected to vary from small businesses to large educational and corporate institutions
- **The following types of organizations are expected to have an interest in participating:**
 - **Nuclear Vendors:** Organizations that provide reactors, nuclear fuel, and engineering services to utilities
 - *Vendors are primarily responsible for development of new products, and licensing new technologies and applications with the NRC*
 - **Nuclear Utilities** – Operators of nuclear reactors for commercial purposes
 - **Independent Software Vendors (ISVs) and Engineering Firms**
 - **National Laboratories**
 - **Universities**

Working Group Fee Structure

- **Working Group activities during the post-CASL period will be funded by the member organizations**
 - Fee requirements will be low (possibly zero) during the remaining CASL operational period
 - *To the maximum extent possible, WG activities will be funded by CASL during this period*
 - The WG will need to become self-sustaining after CASL operations are complete
 - *The WG will be empowered to define its own fee structure*

Working Group Priority Activities

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Working Group Priority Activity Selection

- **We'd like to identify a preliminary list of working group priority activities**
 - Proposed strategies for addressing the actions will be developed before the next meeting
- **Potential priorities might include:**
 - Identification of new VERA capabilities
 - Requirement and specification development
 - Verification and validation data development
 - Training opportunities and requirements
 - VERA usability improvements
 - Application and testing development
 - Outreach and education
 - Affiliation with outside organizations
 - Preparing for regulatory licensing

Follow On Meetings

- **Possible schedules for follow-on meetings**
 - Scheduling in conjunction with next Industry Council meeting
 - Conference calls could be scheduled in lieu of, or in addition to, face to face meetings
 - Future meetings will include more formal membership interactions (e.g., motions, nominations, voting)
- **Please consider nominations for the working group chair**
- **Comments and suggestions on structure of the working group and future meetings are welcome**



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