

AIChE[®]

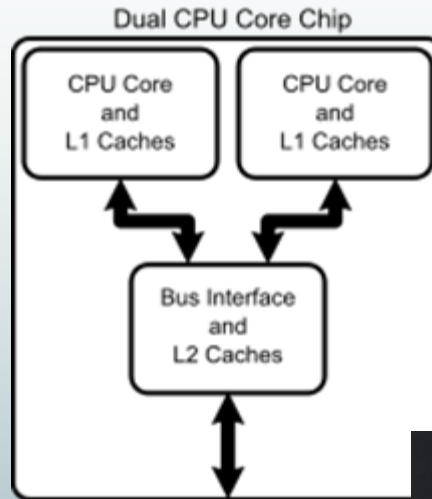


Framing Workshop Objectives for Determining AIChE Institute Roles In Simulation Based Engineering and Science

Jim Davis, UCLA, Vice Provost, IT
Bond Calloway, Past Chair
Research & New Technology Committee
Savannah River National Laboratory

Why Simulation Based Engineering and Science is at a Cross Roads – Why Should AIChE Be Involved?

- Chip Design Changing From One Instruction at a Time to Parallel Instructions – Cause: Power/Heat Load of Single Core Very Fast Chips is to High
- Application Designers (CHEs) and OS Software Designers Need to be Integrated More than in the Past
- **Students Not Trained to Program – only trained as Users – Experienced Work Force Left Behind**

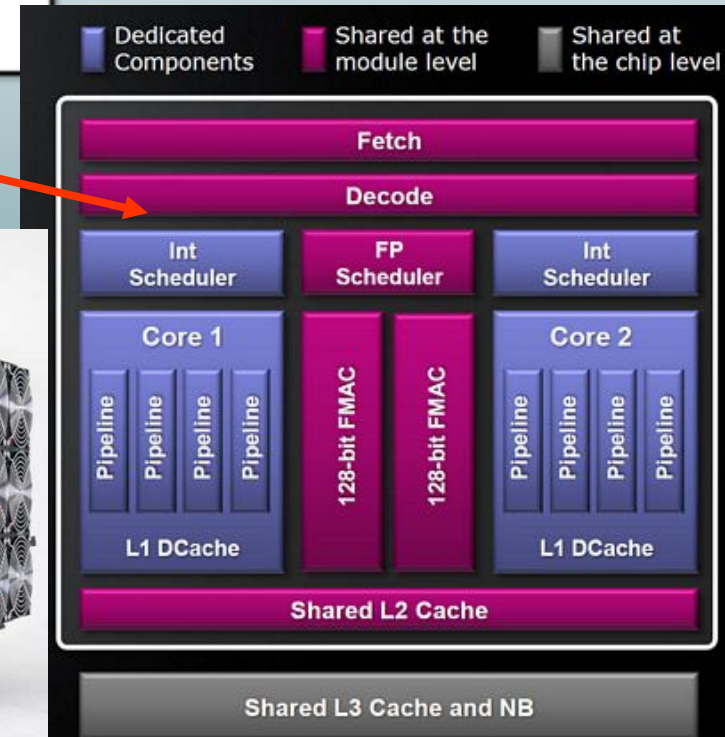


Most CHE Codes Based Upon Single Core Chips (“One Instruction at a Time”)

AMD “Bulldozer”
8 Cores

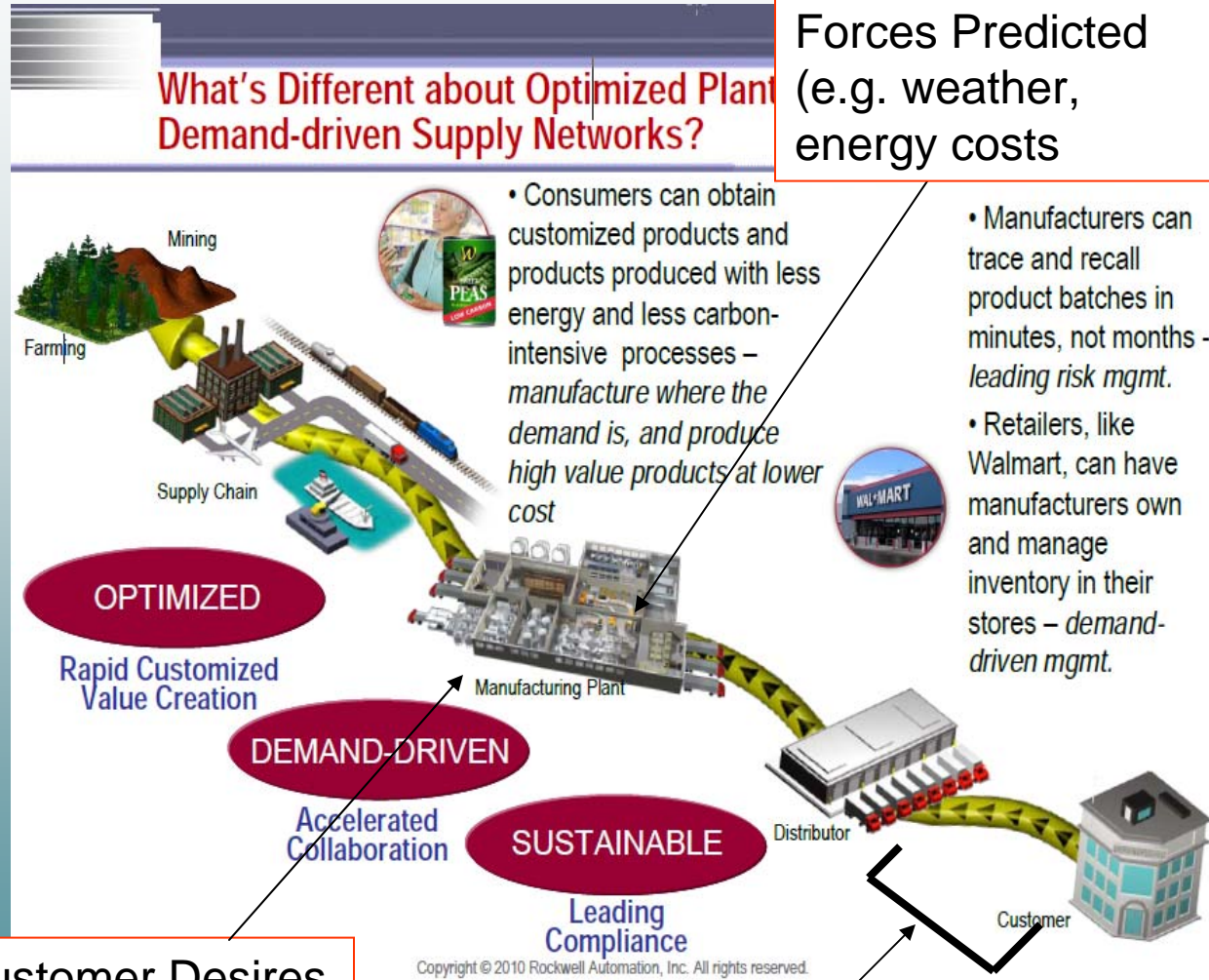


Revolution Fueled By Gaming Industry
16K “Water Cooled”
PC



Why Simulation Based Engineering and Science is at a Cross Roads – Why Should AIChE Be Involved?

Environmental Factors & Market Forces Predicted (e.g. weather, energy costs)



Customer Desires Are Collected in a Secure fashion

Optimize Parts Between “Island Of Efficiency”

- Smart Manufacturing – Fueled by Market/Labor Pressures
- Multi-scale Dynamic Modeling – Across Company, Region, State etc.
- Large-Scale Optimization Across Raw Materials, Production, Markets
- Secure Networks with Impeding Efficiency
- Large Data Set Management
- Sensor Networks Across All Business Operations

Roles for AIChE in SBE&S – Examples

- Center for Energy Initiatives

- Projects
- Education
- Communication
- Enhanced Programming Opportunities
- Government Interactions/ Workshops



CENTER FOR ENERGY INITIATIVES
An AIChE Technological Community



INTERNATIONAL CONGRESS ON
ENERGY
Sustaining Supplies 2010





CENTER FOR ENERGY INITIATIVES

An AIChE Technological Community

- Vision
 - Become recognized technical leader
 - Achieve by uniting energy professionals and their expertise under AIChE
 - To formulate, advocate and implement projects and initiatives that address energy issues
- Themes (Scope and Objectives)
 - Not a replacement for existing entities
 - New projects
 - Leverage: internal and external – collaborate / partner
 - Communication

CEI Activities

Initiatives	Projects	Organization Participants	Revenue Sources (UEF, 2 agencies, Nat'l Lab, 10 industry)
Technologies for Carbon Management	Energy Sys. Scorecards; Gaps & Barriers; Measurement	Founder Societies	UEF Industry
Energy System Analysis	Biofuels Metrics; Electric Power Metrics; Transportation Metrics; WISE Intern Topics; Energy Analysis Dialogue	Industry; Government; GRC; ACS; ASME; IEEE	UEF EPA, NREL Industry
Education	Student Chapter/K-12 energy modules; UG energy ed modules; Teach the Teachers; Webinars and Speakers	AIChE entities; Universities; Industry	NSF grants (2 proposals)

CEI Activities

Initiatives	Projects	Organization Participants	Revenue Sources (UEF, 2 agencies, Nat'l Lab, 10 industry)
Meetings / Workshops	Two AIChE/SPE workshops; IPCC workshop; 10xE Challenge; Sustainability / Europe; Local Section Support FS Joint Carbon Management Conference SECARB Education Workshop	AIChE / SPE; AIChE / AIME; AIChE / Founder Societies Industry / Agencies NETL/SECARB	Conference fees UEF Industry

CEI Activities

Go To AIChE Energy

Search Energy
Find It Fast >>>

About Energy Energy at AIChE Get Involved Projects Publications Conferences & Events Education & Outreach

Welcome to the AIChE Energy 5 forum for chemical engineers to energy issues.

Energy Spotlight

Join the Energy Mailing List Now!

Sign up for updates on Energy activities and developments. Open to members and nonmembers. [Click here.](#)

2010 AIChE Annual Meeting

Join us on November 7-12, 2010 in Salt Lake City, UT to participate in amazing talks on energy and the first International Congress on Energy: Sustaining Supplies. Read more about the Annual Meeting.

[Read More](#)

AIChE Board of Directors forms Center for Energy Initiatives

The Board of Directors of the American Institute of Chemical Engineers (AIChE) has approved the formation of a Center for Energy Initiatives. One of the Center's first activities will be conducting the First International Congress on Energy: Sustaining Supplies in conjunction with AIChE's Annual Meeting in Salt Lake City, Utah, this November 7-12. The Center grew out of the work of AIChE's Energy Advisory Board, which was formed in 2005 and has already undertaken a number of research and education projects. It has coordinated a project on carbon management for a group of leading engineering societies, made awards for K-12 energy education projects, and developed a "Speakers Academy" of energy experts.

AIChE's SEP and Energy Initiative Announce an Undergraduate Competition

The AIChE's Sustainable Engineering Forum and Energy Initiative announce a competition to promote energy education in K-12 schools. Project proposals are due December 1, 2010 and the project should be completed by May 1, 2011. The program will offer awards of \$2,500 to each of two student chapters who complete the project.

Washington Internships for Students in Engineering (WISE)

AIChE WISE Interns Jennifer Christensen from Texas

[Energy Metrics](#)



SPECIAL SUPPLEMENT: NUCLEAR ENERGY

Nuclear Waste Policy in the United States

SARAH WIDDER
PACIFIC NORTHWEST NATIONAL
LABORATORY
T. BOND CALLOWAY, JR.
SAVANNAH RIVER NATIONAL
LABORATORY

The current U.S. reactor fleet produces 2,100–2,400 ton/yr of spent nuclear fuel (SNF). After 50-plus years of nuclear power generation, 64,000 tons of SNF has accumulated in temporary storage at the reactor sites. How did we get where we are, and where do we go from here?

NAE/AAES
Convocation;
Congressional
Briefings

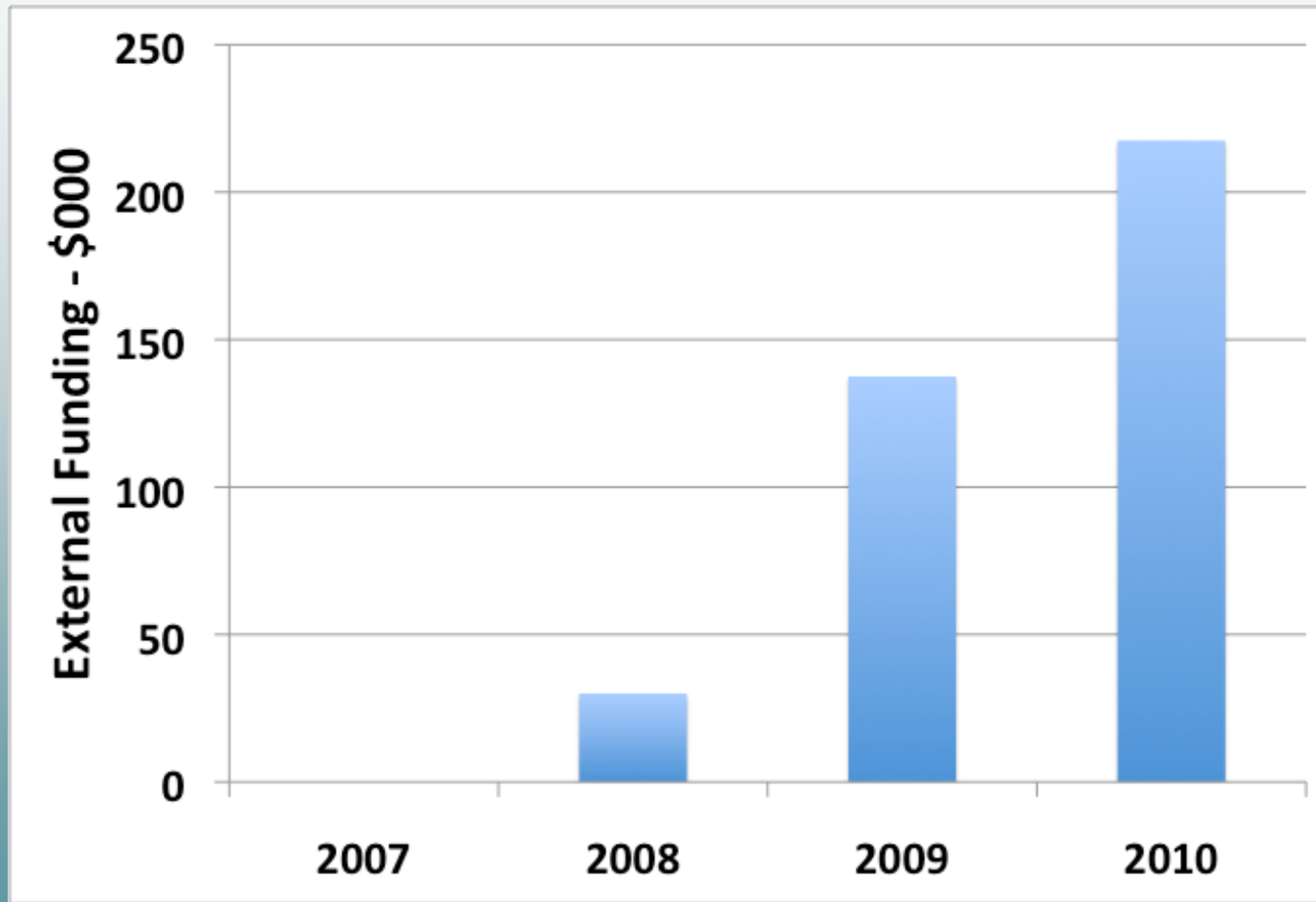


The AIChE Energy Initiative

User's Guide to Energy Focused Events
April 26-30, 2009

09 AIChE
Spring Meeting, Tampa, Florida

CEI - Financial Performance - Goal



Genesis, Pitfalls, Lessons Learned

Commission on Energy
Challenges – Summer 2005



Energy Advisory Board



Summer 2010



- Bond Calloway
- John Chen
- Scott Fogler
- Dennis Griffith
- Dale Keairns, chair
- Haroon Khashgi
- Darlene Schuster
- Subhas Sikdar
- June Wispelwey

Fall 2008 – Summer 2010

Task Team Participants

- Jason Keith
- Skip Rochefort
- Sarah Widder
- Kate Ziemer
- Many faculty on ed grants

Reflections and Opportunities



- Seek Staff Support Early
- Develop A Core Team
- Seek Industry Support
- Meet Often and Decide What You Want to Do – Objectives/Vision
- Only Do What is Doable with Volunteers unless staff support is provided

