

Institute for Software Integrated Systems



Vanderbilt University

The CPS-VO Collaboration Platform

http://cps-vo.org

2012 National CPS PI Meeting National Harbor, MD Oct 4th, 2012



Outline



- Mission
- Collaboration Services
- Growth Trends
- Getting Involved



Objectives



Community Building

- promoting collaboration and close interaction between academia, industry & government
- facilitating interactions across technical disciplines & across applications areas
- cross-fertilization of research in CPS core sciences and applied research in domain- and mission-oriented problems in a multiagency setting

Collaboration Support via the website

- information flow and awareness of CPS activities
- collaboration and professional networking
- knowledge repository to facilitate the open exchange of challenge problems, research results, tools, and educational materials

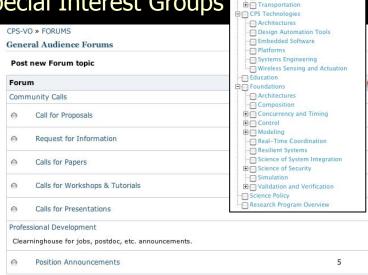


The VO Community Portal





- Community Announcements
- Shared File Repository
- Community Calendar
- Taxonomic Search
- •Special Interest Groups



Consumer

Health Care

Manufacturing

Defense

- Communication

Critical Infrastructure



Welcome to the home page of the Cyber Physical Systems Virtual Organization

Join the CPS-VO



PUBLICIZE EVENTS & MAKE ANNOUNCEMENTS



SHARE DOCUMENTS & COLLABORATE



FORM & MANAGE COMMUNITIES OF INTEREST



ORGANIZE ONLINE

Upcoming Events

09/16/12 - 09/21/12

Nano-Tera/Artist Summer School in Europe 2012 -September 16-21 OVERVIEW This year's edition of the Artist Summer School on Embedded Systems Design

10/07/12 - 10/12/12 Embedded Systems Week

will be held in... more

2012 Embedded Systems Week is

an exciting event which brings together conferences, tutorials, and... more

More Events >>>

Who are We?

In the Spotlight

CPS Principal Investigator

The third annual CPS PI meeting is scheduled for October 3-5, 2012 at the Gaylord National Hotel and Convention Center, National Harbor, Maryland. The CPS PI meeting is a

CPS Research Projects

Flow Management



Solicitations

NSF Announces Updated CP Solicitation

Cyber-physical systems (CPS) are engineered systems that are built from and depend upon the synergy... more

ARPA-E Open Funding Opportunity in Energy R&D

Opportunity in Energy R&D

To address the challenges
imposed by the rapidly
evolving global energy market,
ARPA-E seeks to... more

NSF Solicitation: Expeditions in Computing

The far-reaching impact and rate of innovation in the computing and information disciplines has... more

More Announcements >>>

Recent News

Agency briefings about

The ASEE Engineering Research Council hold a meeting in Washington DC on March 5, 2012. There were presentations from OSTP, ASD-R... more

Proceedings of the IEEE --Special Issue on CPS

The January 2012 Special Issue of the Proceedings of the IEEE focuses on Cyber-Physical Systems. The issue includes 19 research... more

Collaborative Research: A CPS Approach to Robot Design

A Real-Time Cognitive Operating System

Virtual Organization for Cyber-Physical Research (VO-CyPhER)

Hybrid Systems for Modeling and Teaching the Language of Surgery

Embedded Fault Detection for Low-Cost, Safety-Critical Systems

Understanding Volatility and Improving Operational Reliability

Collaborative Research: Smart Power Systems of the Future: Foundations for

Collaborative Research: CyberMech, a Novel Run-Time Substrate for Cyber-Mechanical Systems

Dynamical-Network Evaluation and Design Tools for Strategic-to-Tactical Air Traffic

Programming Environment and Architecture for Situational Awareness and Response
Autonomous Driving in Mixed-Traffic Urban Environments



VO 'Group' Services



- Branding with Configurable Dashboard
- Configurable Security Policy
- Discussion Forums
- Wiki
- Email Announcements

- A Virtual Filesystem
- Revision Control

 (incl. diff-s)
- Domain-Specific Search Engine
- Calendar Mgmt
 (incl. Desktop Sharing Meetings)
- Content Subscriptions/
 Notifications Service



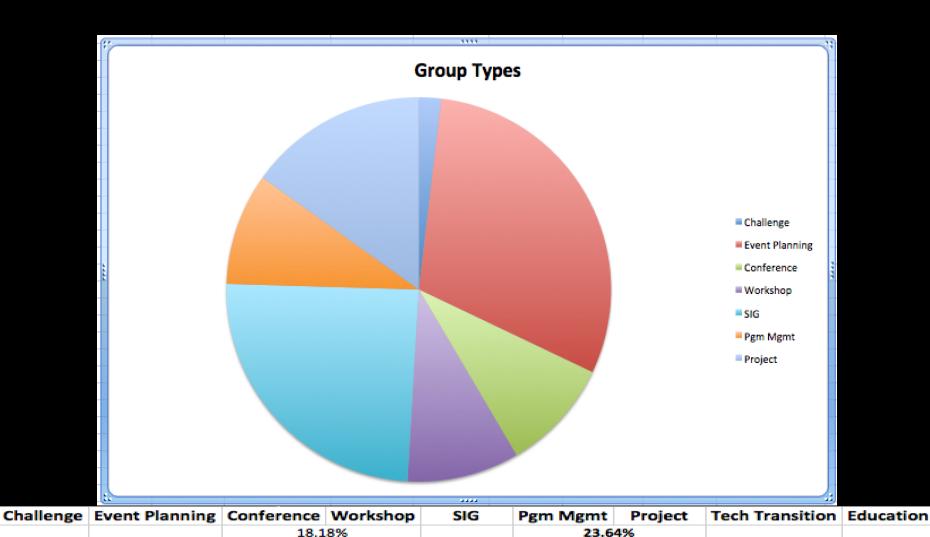
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Common Types of Groups



1.82%

1.82%



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9.09%

14.55%

9.09%

9.09%

29.09%

Example Event Planning

2012 The New Clockwork for Time-Critical Systems Planning Meeting Program Committee

CPS-VO » 2012 NATIONAL WORKSHOP ON THE NEW CLOCKWORK FOR TIME-CRITICAL SYSTEMS » 2012 THE NEW CLOCKWORK FOR TIME-CRITICAL SYSTEMS PLANNING MEETING PROGRAM COMMITTEE

2012 The New Clockwork for Time-Critical Systems Planning Meeting Program Committee

Home

Calendar

Recent Posts

Members

Invitees

Forums

Files

COLLABORATE

- Create Event
- Upload File
- Create Forum Topic
- Create Group
- Create News Item
- Create Online Meeting
- Create Video
- Create Webform Create Wiki Page
- Create Web Page

SUBGROUPS

- 2012 National Workshop on the New Clockwork for Time-Critical Systems
 - 2012 The New Clockwork for Time-Critical Systems Planning Meeting Program Committee
 - 2012 The New Clockwork for Time-Critical Systems Planning Meeting



Welcome



A cyber-physical system consists of two interacting subsystems, a cybersystem and a physical system. The behavior of the cyber system is controlled by the execution of programs on a distributed digital computer system, while the laws of physics control the behavior of the physical system. The different models of time-dense physical time in the physical system versus discrete execution time in the cyber system, and the impossibility of perfect synchronization of the physical clocks of the nodes of a distributed computer system, lead to interesting phenomena concerning the joint behavior of these two subsystems. The colloquium is intended to shed light on these phenomena by renowned scientists who have worked on this topic from different perspectives.

This is a non-public group.

Two Meetings:

- 1. The Planning Meeting: The New Clockwork for Time-Critical Systems Planning Meeting was held on Monday, June 11 and half of Tuesday, June 12 at Dayton just before \$5 ₺ for ~25 people.
- 2. The Workshop: The National Workshop on the New Clockwork for Time-Critical Systems

Resources:

List of Invitees for the Baltimore New Clockwork for Time-Critical Systems Workshop

List of registrations for the Baltimore New CLockwork for Time-Critical Systems Workshop

- · Overview from the time workshop MS Word file that was in italics
- . The non-italic portion is on the Workshop page

Forum topics:

Recent Minutes

- April 18, 2012
- April 4, 2012
- February 29, 2012
- February 22, 2012
- February 8, 2012
- Candidates for Invitees General Discussion

Planning Telecons

A Permanent Conference Web Presence





2012 High Confidence Software and Systems Conference

A world class community of researchers will gather in Annapolis, MD for a full week of High Confidence Software and Systems Conference activities that are structured to focus on new scientific and technological foundations that can enable entirely new generations of engineered designs that are becoming essential for effectively operating life-, safety-, security-, and mission-critical systems.

May 6-11, 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	6	7 8	9	10	11
SCC Meeting	SCC Meeting	HCSS Conference	HCSS Conference	HCSS Conference	Designed-In Security Workshop
		Theme: Technology Transfer	Theme: Formal Synthesis	Theme: Compositional Reasoning	

- Create File
- Create Forum topic
-) Create Event
- Create Online Meeting
- Create News Item
- Create Page
- Create Video
- Create Webform
-) Create Wiki page
- Create Group
- 21 members
- Manager:) KNEW
- My membership
- Invite members

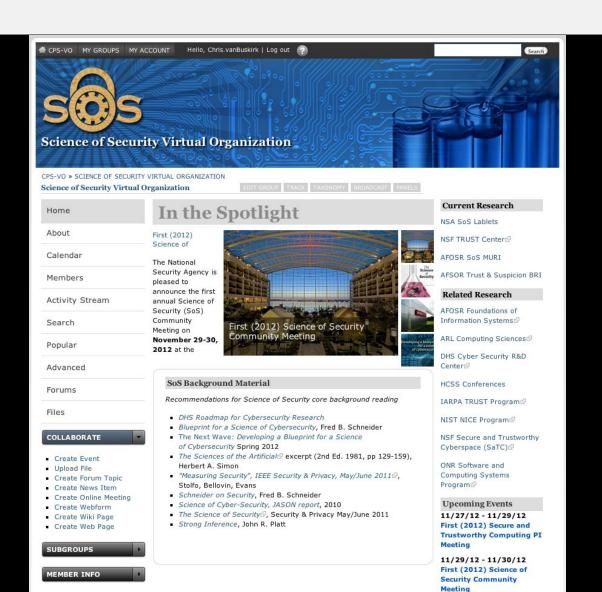
Subgroups

- · HCSS Conferences
 - 2011 HCSS Conference Program Committee
 - 2012 HCSS Conference Program
 Committee

[+] Feedback

Conference Archives: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012

Example SIG



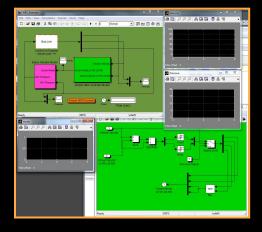
SUBGROUPS

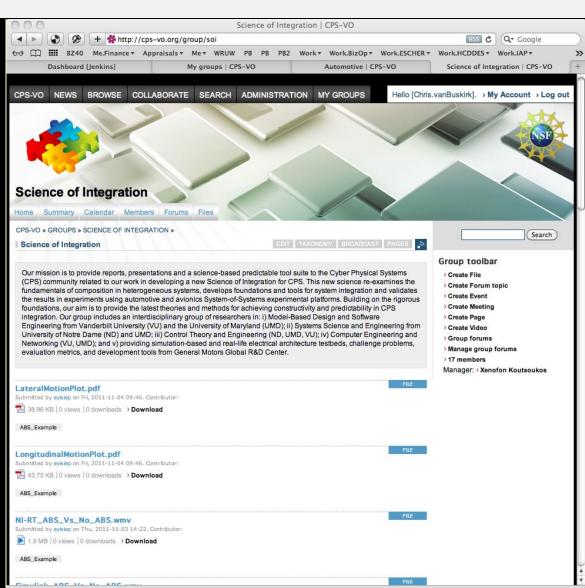
- Science of Security VO
 - <Private>
 - <Private>
 - <Private>
- Moving Target Research Symposium
 - <Private>
 - 2012 SoS Community Meeting
 - <Private>
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Example Research Project

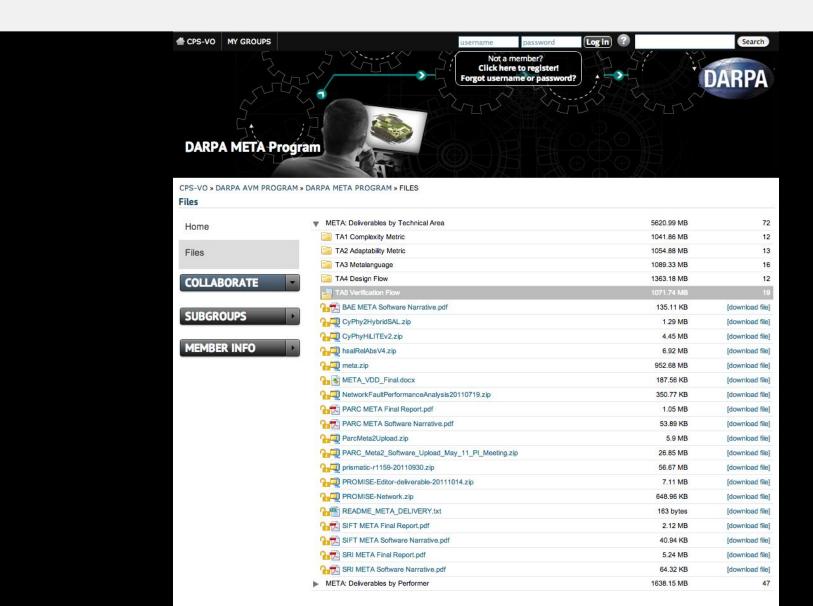
Science of Integration

- Research Findings
- Meeting Coordination
- Automotive Experimental Platform (AEP)
- Publishing Models





Example Tech Transition





Groups are Taking Off



Groups



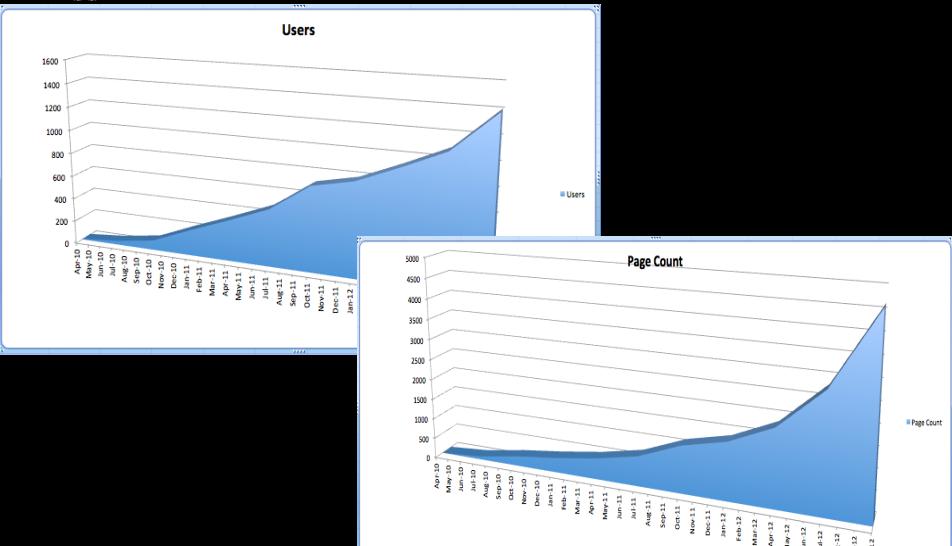


Historical Growth



May-12

Jul-12 Aug-12







Get Involved!



Vocabularies/Taxonomies Enable Search



CPS Domains
Consumer Communication Communi
⊕ Defense
⊕ Energy
⊕ Critical Infrastructure
⊕ Health Care
⊕ Manufacturing
- Robotics
⊕ Transportation
CPS Technologies
Architectures Design Automation Tools Embedded Software Platforms Systems Engineering Wireless Sensing and Actuation
Embedded Software
- Platforms
Systems Engineering
Wireless Sensing and Actuation
- Education
Foundations
- Architectures - Composition
⊕ Concurrency and Timing
⊕ Control
⊞ Modeling
Real-Time Coordination
Resilient Systems
- Science of System Integration
Science of Security Science of Security
Simulation
Architectures Composition Concurrency and Timing Control Modeling Real-Time Coordination Resilient Systems Science of System Integration Simulation Simulation Validation and Verification
Science Policy
Research Program Overview

CPS-VO Faxonomic Search			
Keyword search			
	With all of the words		
Search			
-Guided search			
Click a term to initiate a search.			
Group		Event Types	
HCSS Conferences (329) 2011 CPS PI Meeting (280) Computational Cybersecurity in Compromised Environments (C3E) (243) VO Moderators (227) Science of Security Virtual	DARPA AVM Meta-X (103) DARPA AVM Meta-X Private (102) 2011 HCSS Conference Program Committee (101) 2011 Automotive CPS Workshop (78) more	Workshop (54) Conference (52) PI Meeting (45) Satellite Workshop (17) Symposium (14) Community Forum (5)	Summer School (5) Breakout Session (1) Panel (1) Session (1) more
Organization (137) 2012 HCSS Conference Program			2012 (2005)
Committee (122)		2010 (280) 2011 (837)	2012 (2985)
Торісѕ		Document Type	
Foundations (399)	Research Program Overview (44)		
CPS Domains (329)	Education (39)	Abstract (51) Agenda (21)	Memo (3) Minutes (9)
CPS Technologies (93)	Science Policy (34)	Announcement (6)	Model (2)
Contributor(s)		Call for Proposal (6)	Poster (118)
		Congressional Testimony (5)	Presentation (463)
A. Gray (1)	Aaron Tomb (1)	Documentation (4)	Press release (2)
A. Joshi (1)	Adam Anderson (2)	Draft (5)	Publications (140)
A. Prasad Sistla (2)	Adam J. Aviv (1)	Executive Summary (4)	more
A. Shelestov (2)	Adam Shostack (1)	D	
A. Sherman (1)	Adam Wick (2)	Document Source	
A. Sidorenko (2) A. Squicciarini (1)	Adel Sadek (3) Adrian Agogino (3)	Academia (598)	NSF (8)
A.C. Jensen (1)	Ahmed AlEroud (1)	Industry (182)	DARPA (5)
A.J. Ramirez (1)	Ajinkya Bhave (1)	U.S. Government (40)	United Kingdom (4)
Aaron Botello (1)	more	Research Organization (19)	Canada (3)
Aaron Ridley (2)	more	Professional Organization (13) NSA (10)	more
Keywords		Content type	
2- layer authentication (1)	adversary attack behavior (1)	Content type	
A/V (2)	aerial (1)	Event (463)	Story (6)
abstract interpretation (2)	Aerospace (3)	File (1965)	User Profile (1220)
acceptability (1)	aerospace industry (1)	Forum topic (143)	Video (14)
Access Control (1)	AFOSR/RSL (1)	Page (250)	Webform (41)
ACCESS Linnaeus Center (1)	AFRL (1)		
Ada Core Technologies (1)	Agilent Laboratories (1)		
adaptive adversaries (1)	Air Force Institute of Technology (1)		
adaptive manufacturing (1) Adaptive Vehicle Make (1)	Air Force Research Laboratory (1) more		



Advertise Yourself



CPS-VO BROWSE SEARCH	COLLABORATE MY GROUPS MY ACCOUNT	Hello, vbuskirk Log out	Search
My account			VIEW EDIT TRACK
Invitations Messages Notific	cations Badges File browser		
account user profile	-		
Profile	- ▶ Subscriptions (0)		
Contributions	First Name: * Christopher		
MY TOOLS	Middle Initial:		
Edit My Profile Activity Stream Contacts Activity Stream My Contacts	Last Name: * Buskirk • Vocabularies		
My Notifications My Subscriptions My Meeting Invites My Bookmarks	Topics: 2 CPS Domains		
My GROUPS	☐ Consumer ☐ Communication ☐ Defense		
	□ Robotics ▶ □ Transportation ▼ □ CPS Technologies □ Architectures		
	☐ Architectures ☐ Design Automation Tools ☐ Embedded Software ☐ Platforms		
	Systems Engineering ☐ Wireless Sensing and Actuation ☑ Education		
	Toundations Architectures Composition		
	Concurrency and Timing ☐ Control ☑ Modeling		
	Hybrid Models Multi-models		
	☐ Moder tegration		



Apply For 'Trusted User' Privileges

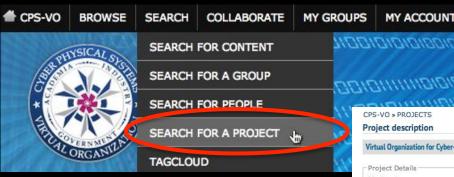


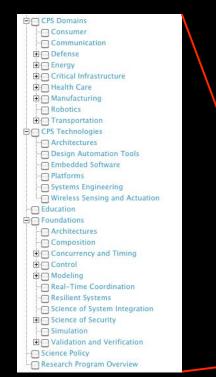
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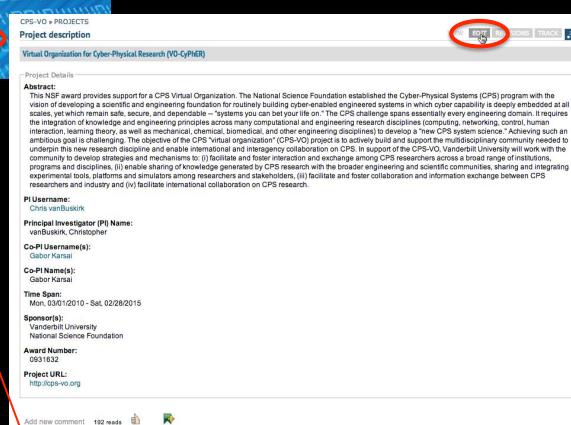


Advertise Your Project









CPS Domains CPS Technologies Education Foundations Science Policy Research Program Overview

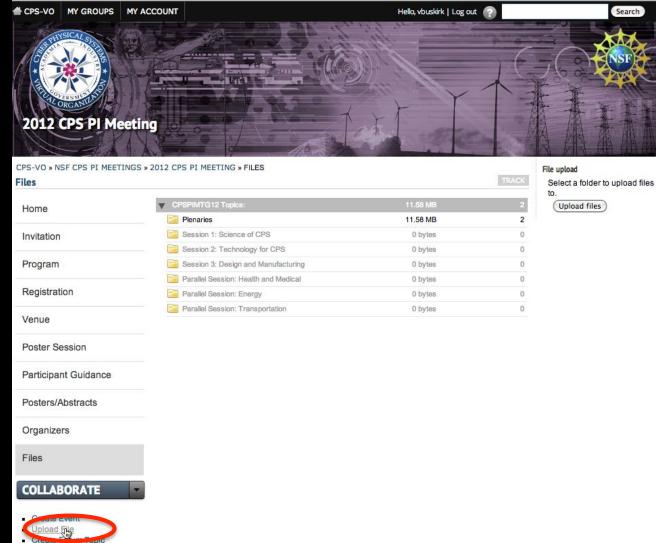


Upload/Advertise Your Talk





Create News Item
 Create Online Meeting
 Create Wiki Page



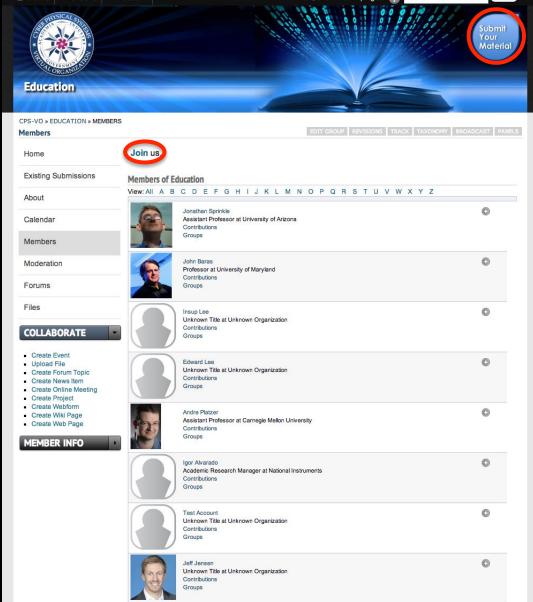


Join/Participate in a Group



http://cps-vo.org/group/edu

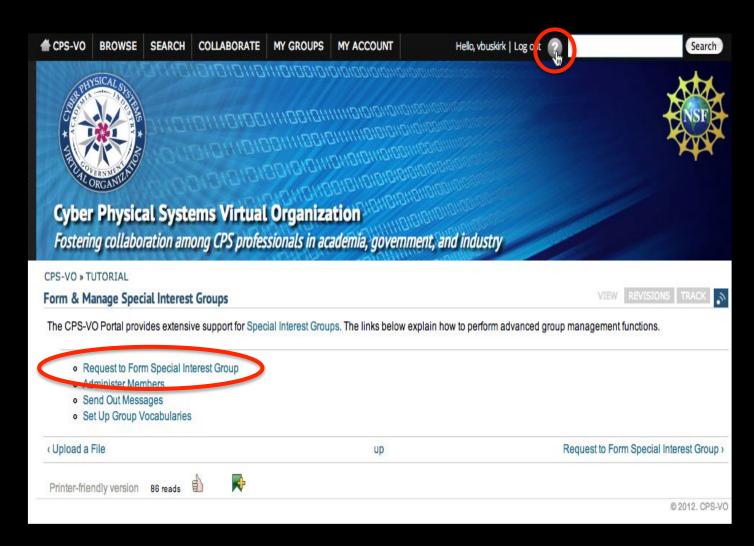
GOAL: dissemination of CPS educational materials





Establish a New Group







Drop by the Help Desk





Navigate the CPS-VO.ORG

...it's more than a website.

PUBLICIZE EVENTS AND MAKE ANNOUNCEMENTS • SHARE DOCUMENTS AND COLLABORATE • FIND COLLEAGUES • JOIN GROUPS • FORM AND MANAGE COMMUNITIES OF INTEREST • ORGANIZE ONLINE MEETINGS

SITE FEATURES

- · Community-Oriented Framework
- · Cohesive Collection of Loosely Coupled Websites
- File Repository
- Meta-Data
- Taxonomic Search Engine
- Community Announcements
- · Current News
- · Activity Streaming
- · Community Calendar
- · Collaboration with Colleagues

TYPES OF GROUPS

- · Special Interest Groups
- Event Planning
- · Archival of Proceedings
- · Research Project Management
- · Research Results Promotion
- Competitions or Challenge Problems
- Educational Resources

GROUP BENEFITS

- Customized Branding
- · Configurable Security Policy Calendaring Service
- · Online Desktop-Sharing meetings control)
- Meeting Invites · Virtual Filesystem (includes version
- · Discussion Forums
- Wikis

- · Group-Specific Vocabularies (or 'taxonomies' for labeling documents; including associated group search engines)
- Email Broadcasting to Group Membership
- Customized Forms (e.g. a tailored attendee registration page for upcoming conference)
- Inviting Other Potential Members
- Creating Subgroups (i.e. hierarchical families of Groups)

OUR OBJECTIVES

Community Building

- · promoting collaboration and close interaction between academia, industry &
- facilitating interactions across technical disciplines & across applications areas
- · cross-fertilization of research in CPS core sciences and applied research in domainand mission-oriented problems in a multi-agency setting

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- knowledge repository to facilitate the open exchange of challenge problems, research results, tools, and educational

YOUR COMPL



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