



Summary of Study Group

Communication, Education, Outreach (CEO)

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Survey of U.S. Particle Physicists

Completing our survey (641)
Joining lunchtime discussions (190)



CSS 2013, Minneapolis, August 2013



Physics Slam on Ice!



Kyle Cranmer, Tim Tait, Sarah Demers, Jim Kakalios, Vladimir Savinov, Mark Messier, Stuart Henderson

893 happy people attended, mostly from the general public

CSS 2013, Minneapolis, August 2013



Survey Results - 641 Respondents

Of the respondents:

47% Faculty members

28% Research scientists

14% Students

10% Postdocs

62% engage with the general public and journalists

49% with K-12 teachers and students

36% with scientists in other fields (should we do better?)

30% with policy makers and opinion leaders (need to do much better)



Survey Results

Top three barriers to engage in outreach are (in order):

Time

Little reward, particularly in tenure process

Lack of access to readily available resources or opportunities

What respondents are uncomfortable discussing:

50% economic impact

40% workforce impact



Survey Results

Of those who engage with policy makers, the top three things they stress most are (in order):

- The opportunity for scientific discovery

- Workforce training

- Societal benefit from past investment in particle physics

What they asked for more resources about (in order):

- Societal benefit from past investment in particle physics

- The opportunity for scientific discovery

- Spin-offs



What We Heard This Week

It is vital that the HEP community comes together to support the plan that results from the HEPAP deliberations.—E. Moniz

We must educate our representatives in Congress, our fellow citizens, the business community and the scientific agencies.

—D. Gross

You are underselling yourselves ... you are technology incubators for other fields of science.—R. Roser

The media missed the substantial impact of the U.S. on the Higgs discovery.—J. Incandela

You need to appeal to varied stakeholders to convince them that you do valuable science with a sensible plan. Illustrate the benefits of high-energy physics to society.—G. Blazey



What We Heard This Week

Our community should make a *coherent* case for particle physics:

The compelling questions we want to address

The facilities we need to do our research

The value of particle physics to society

Our community should:

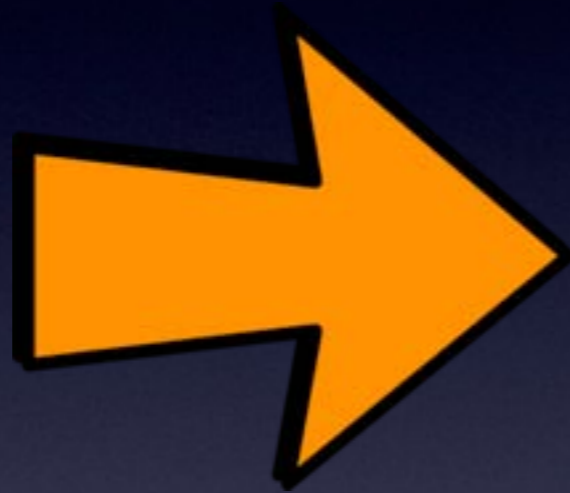
Include communicating with, educating and reaching out to people outside the field as part of what we do.

Recognize the importance of public communication and outreach and recognize—formally and informally—physicists who devote time to these efforts.



A Common Theme

Resources
Training
Programs

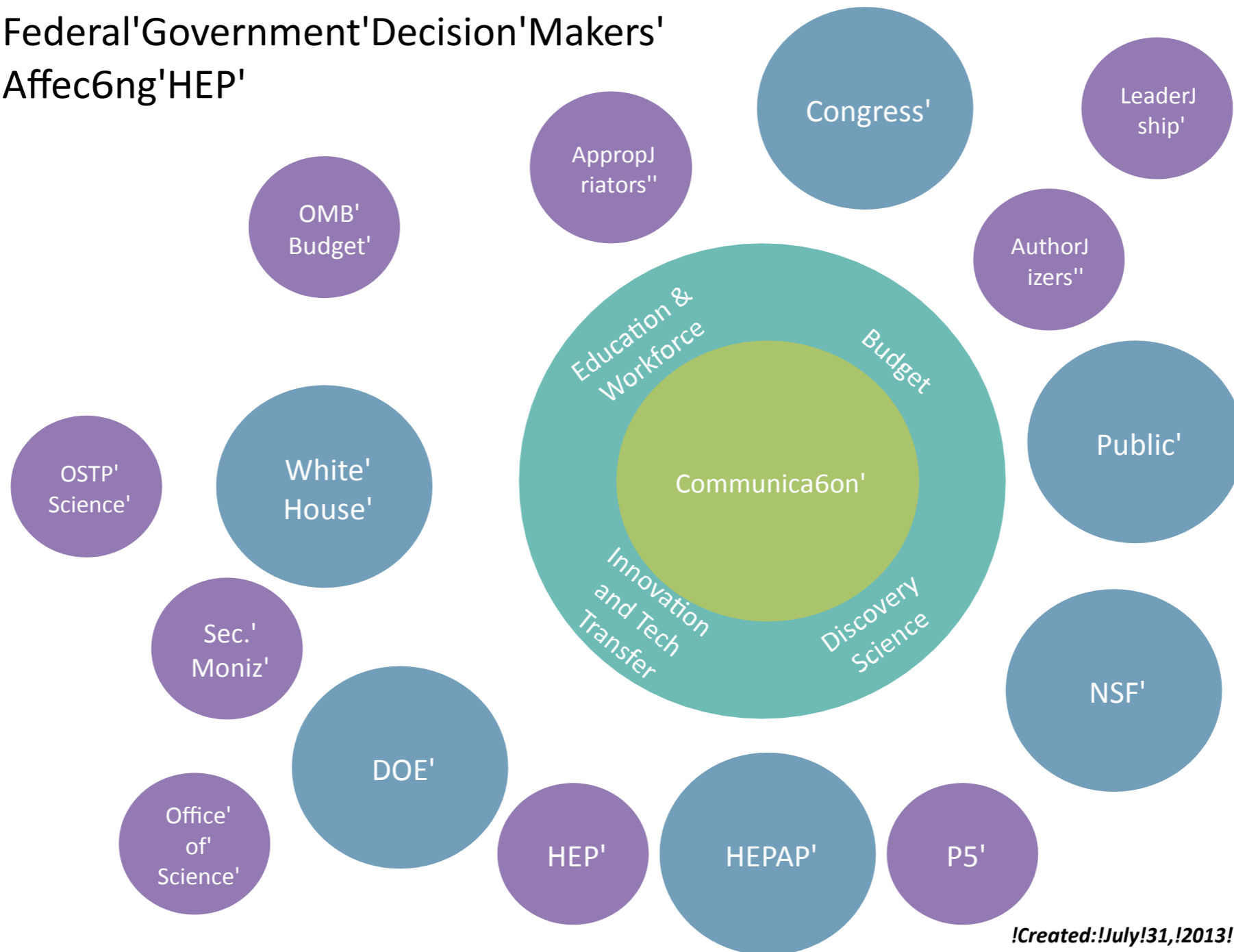


We need to augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.



Here Are Our Audiences

Federal Government Decision Makers
Affecting HEP



!Created: July 31, 2013!



Overarching CEO Goals

1. To ensure that the U.S. particle physics community has the resources necessary to conduct research and maintain a world leadership role.
2. To ensure that the U.S. public appreciates the value and excitement of particle physics.
3. To ensure that a talented and diverse group of students enter particle physics and other STEM careers, including science teaching.



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Strategies for Policy Makers & Opinion Leaders



1. Empower and enable members of the particle physics community to communicate and advocate coherently, consistently and effectively on behalf of their science.
2. Develop an enduring process to track, update and disseminate statistics on the impact of particle physics on society.
3. Put informed third-party advocates to work raising the profile of and informing key stakeholders about the importance of particle physics, physics and basic science to the United States.

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Implementation

Augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.

Develop a comprehensive central communication, outreach and education resource for physicists, with initial content available before the end of the P5 process.

Organize and identify logistical support for year-round campaigns in which particle physicists strategically advocate for scientific research with policy makers.

Work with DPF and HEPAP to develop a sustainable process for collecting statistics on workforce development and technology transfer.



Implementation

Augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.

Work with APS to investigate a U.S. economic impact study for physics research that includes particle physics as a key component.

Generate letters and statements in support of the impact of particle physics on society from third-party advocates (CEOs, notable scientists in other fields, opinion leaders).

Strategies for the General Public



1. Engage the public in a wide range of outreach activities.
2. Make the public aware of direct and indirect applications of research, both historical and potential.
3. Communicate the role and stories of U.S. physicists in particle physics, particularly in major discoveries and in the context of our international collaborations.



Implementation

Augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.

Develop a website to provide resources (e.g., text, image, video, powerpoint, etc.) that empower physicists to carry out effective outreach.

Develop competitions/contests to engage the public in creating outreach materials.

Develop materials and arguments that enable physicists to present information on direct and indirect applications.

Provide physicists with good examples of great stories.

Encourage collaborations to develop a more tolerant attitude to communicating personal contributions.



Strategies to Work With The Scientific Community



1. Foster more dialog and understanding with other fields, beginning with other physics subfields.
2. Identify areas of common cause and unite in support of them.
3. Develop consensus in our field that we need to prioritize, buy into the mechanism of prioritization and support the resulting plan.

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Implementation

Augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.

Work with APS to create and foster new opportunities for dialog between leaders of other physic subfields.

Hold combined open sessions at March/April meetings to disseminate the better understanding and the identified common causes.

Work together to implement and support P5 so that our community will support and communicate the resulting plan irrespective of how individual activities are prioritized.



Strategies for Educators & Students



1. Encourage and enable the direct engagement of physicists with students and educators, inviting them into our unique community.
2. Encourage and enable physicists to be involved in and support local, national and world-wide efforts that:
 - i. Offer long-term professional development and training opportunities for educators (including pre-service educators), using best practice and approaches supported by physics education research.
 - ii. Create learning opportunities for students of all ages, including classroom, out-of-school and online activities that allow students to explore particle physics.



Implementation

Augment existing efforts with additional personnel and resources dedicated to nationwide coordination, training and support.

Training: Create workshops for scientists who want to engage educators and students.

Programs: Extend existing educator networks.

Create additional professional development opportunities for educators, including pre-service.

Create programs for students and teachers that use examples from particle physics and experimental data.

Align and collaborate with national efforts to improve diversity in STEM fields.

Resources: Produce learning materials that support the programs above.



Our work starts now!

We need to make a coherence, compelling case consistently, starting with how we talk about the outcomes of Snowmass and continuing through and after P5.

We all need to up our game in consistently reaching out, informing, inspiring and educating.

We must recognize—formally and informally—the importance of the CE&O work of our colleagues, postdocs and students and encourage that work to continue.



CSS 2013, Minneapolis, August 2013



Thanks to Our Subgroup Leaders

Herman White, Katie Yurkewicz

Michael Barnett, Kyle Cranmer

Pushpa Bhat, Joe Lykken

Tom Jordan, Peggy Norris

Ken Cecire, Inga Karliner