



8:30-8:45 Introduction

8:45-10:00 Inertial Fusion Energy

10:00-10:30 Coffee Break

10:30-12:30 Magnetic Fusion Energy



opportunity for a broad community of MFE and IFE scientists to examine goals and proposed initiatives in

- burning plasma science (MFE), and
- integrated research experiments (IFE)



**a forum for the critical uniform technical
assessment of major next-steps
in the fusion energy sciences program**

- to provide crucial community input to the long range planning activities undertaken by the DOE and the Fusion Energy Sciences Advisory Committee



open to every member of the fusion energy science community

- MFE (tokamaks and other concepts) and IFE (280+ on-site participants)
- significant international participation (30+)

IFE Group Structure

Driver Physics and Technology; Next Steps

Lasers

Accelerators

Z Pinch

Fast Ignition Drivers

Target Physics

Fast Ignition

Gain curves

Stability

Symmetry

Beam-Target Interaction

IFE Chamber/ Target Technology

IFE Chamber Response - Microsecond Phenomena

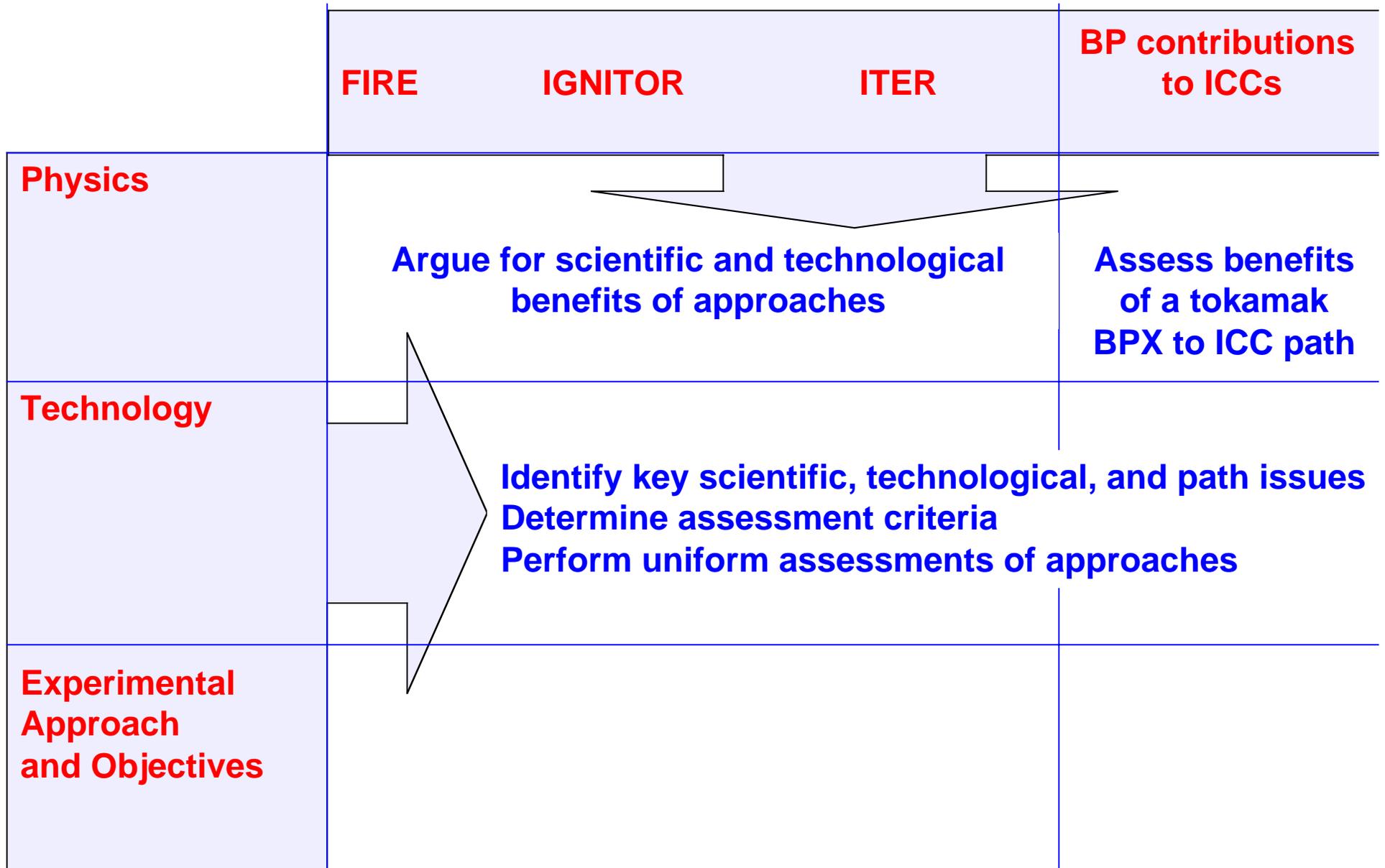
IFE Chamber Clearing/Recovery - Millisecond Phenomena

IFE Chamber Safety/Environment/Reliability-Quasi-Steady Phenomena

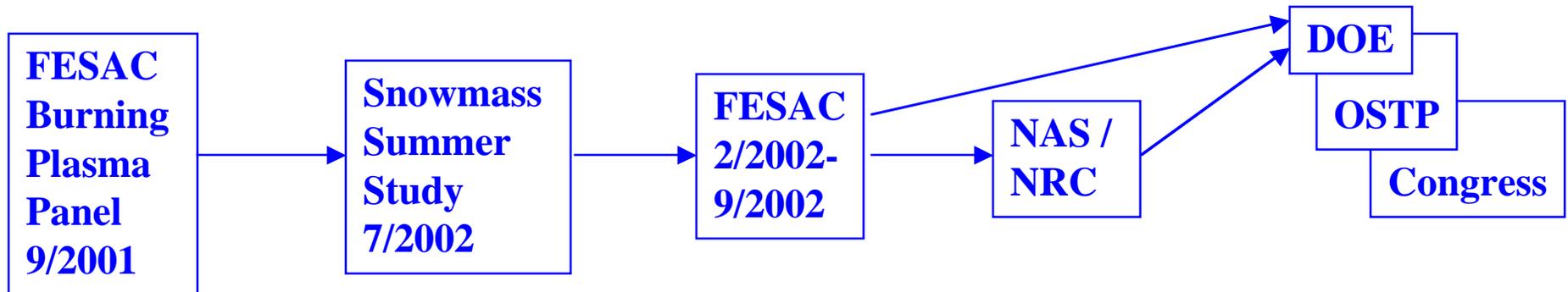
IFE Target Fabrication/Injection

IFE Integrated Chamber/Focusing System Design and Modeling

Identifying MFE issues and assessing burning plasma experiments



MFE Context for the Snowmass study





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MFE Preamble

Fusion energy shows great promise to contribute to securing the energy future of humanity.

The science which underlies this quest is at the frontier of the physics of complex systems and provides the basis for understanding the behavior of high temperature plasmas.

Grounded in recent excellent progress, the world is now at a major decision point: to go forward with exploration of a burning plasma, opening up the possibility of discoveries in a plasma dominated by self-heating from fusion reactions.

MFE Preamble

This exciting next step to explore burning plasmas is an essential element in the Fusion Energy Science Program whose mission is to “Advance plasma science, fusion science and fusion technology—the knowledge base needed for an economically and environmentally attractive fusion energy source.”

The study of burning plasmas will be carried out as part of a program that includes advancing fundamental understanding of the underlying physics and technology, theory and computational simulation, and optimization of magnetic confinement configurations.

MFE Preamble

The participants of the 2002 Fusion Summer Study developed major conclusions regarding the opportunities for exploration and discovery in the field of burning plasmas.

Agenda for the MFE Session

Preamble

Sauthoff

IGNITOR

Coppi

FIRE

Meade

ITER

Lackner

Innovative Confinement Concepts

Hooper

Major Conclusions of the Study

1. Why a burning plasma

Navratil

2. Burning plasma options

Baker

3. Assessment of contributions of the options

Van Dam

4. Assessment of the feasibility of the options

Taylor

5. Assessment of fusion development paths

Taylor

6. Relation to the national program

Prager



Snowmass Schedule Week 1: July 8-12

		Monday	Tuesday	Wednesday	Thursday	Friday			
A	(9:00 AM Start)								
	General Plenary Session	MFE Plenary	IFE Plenary	MFE	IFE	MFE	IFE		
	Welcome & Introduction	P	D (Drivers)	B/T Joint ITER	IFE Drivers	B/T Joint FIRE	B/T Joint IGNITOR	IP/IT Joint	
	MFE Issues & Goals	T			D2, D3 (Heavy Ion and Z- Pinch)	IT/D2 and IP/D1 parallel		D2 Research Plans	
	IFE Issues & Goals	E		B/E Joint ITER		IT/D3 and IP/D4 parallel	B/E Joint IGNITOR	D3 Research Plans	
	FESAC Panel				B/E Joint FIRE				
	NRC Panel								
	B1 (ITER)								
	IP (Targets)								
B	General Plenary Session	MFE	IFE	MFE	IFE	MFE	IFE	MFE	IFE
	B2 (FIRE)	B/P Joint ITER	Group Breakouts	B/P Joint FIRE	IFE Drivers	B/P Joint IGNITOR	IT/D1 and IP/D2 parallel	Breakouts and Work on Interim Reports	D1 Research Plans
	IT (IFE Technology)		IP, IT, D		D1, D4 (Lasers & Fast Ignition)		IT/D4 and IP/D3 parallel	D4 Research Plans	
	B3 (IGNITOR)								
	D (Drivers)								
	B4 (BP impact on ICC)								
	Community Issues Group Discussion	Community Issues Group Discussion		B/P ICCs	B/T/E ICCs		Community Issues Group Discussion		

A: 8:30 AM – Noon

B: 1:30 PM – 5:30 PM

C: 5:30 PM – 6:30 PM

D: 6:30 PM – 8:00 PM

E: 8:00 PM →

Context for the Snowmass study

FESAC
Burning
Plasma
Panel
9/2001



“1. NOW is the time ... to take the steps leading to the expeditious construction of a burning plasma experiment.”

“2. Funds for a burning plasma experiment should arise as an addition to the base Fusion Energy Sciences budget.”

“3. The U.S. Fusion Energy Sciences Program should establish a proactive U.S. plan on burning plasma experiments....”

Context for the Snowmass study

FESAC
Burning
Plasma
Panel
9/2001



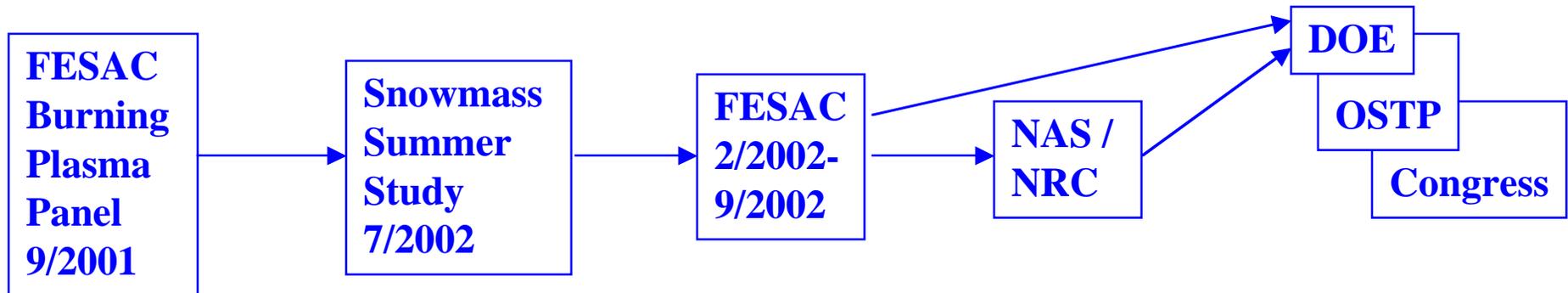
“Hold a “Snowmass” workshop in the summer 2002, for the critical scientific and technological examination of proposed burning plasma experimental designs and to provide crucial community input and endorsement to the planning activities undertaken by FESAC.”

“Specifically, the workshop should determine which of the specific burning plasma options are technically viable but should not select among them.”

“Request the Director of the Office of Energy Sciences to charge FESAC with the mission of forming an “action” panel in Spring 2002, to select among the technically viable burning plasma experimental options.”

“Initiate a review by a National Research Council panel in Spring 2002, with the goal of determining the desirability as well as the scientific and technological credibility of the burning plasma experiment design by Fall 2003.”

Context for the Snowmass study



DOE/SC charge to the FESAC panel:

- The next step in this process is for FESAC to establish a high-level panel that would use the results of the Summer Study to recommend a strategy for burning plasma experiments.
- This panel's report should show how ITER would fit into the U.S. fusion program, if it were to go forward with our participation.
- The panel should also indicate how a FIRE or Ignitor type of device would fit in our program, if ITER were not to go forward [with the US].
- The panel's proposed plan should provide flexibility for us to join ITER, should the Administration decide to enter negotiations, and if we are able to negotiate acceptable terms, and that allows us to decline to join if the terms are not acceptable to both the community and the Administration.