

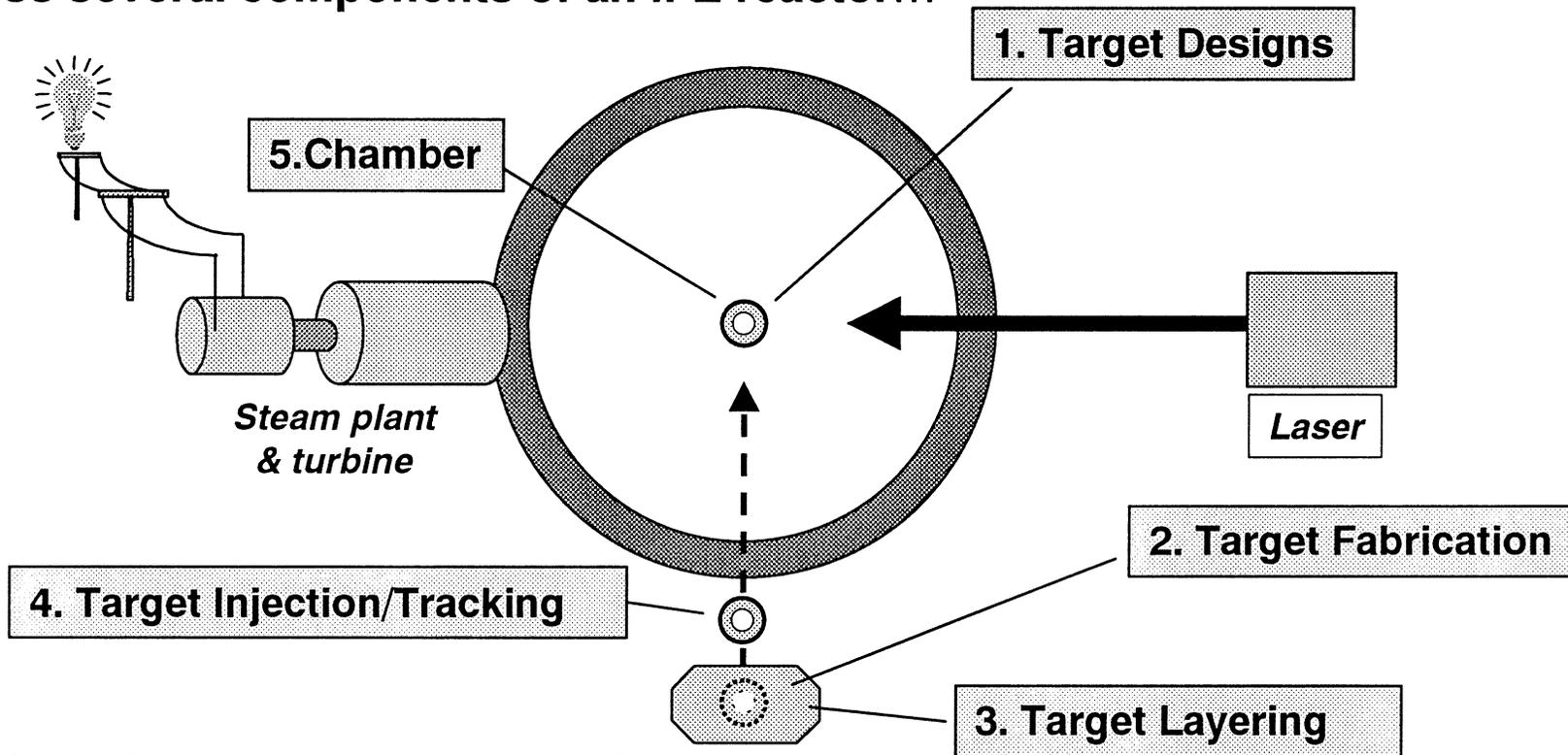
**APPENDIX C**  
**OPENING REMARKS**  
**BY**  
**JOHN SETHIAN**

# Workshop purpose-

## We want to look at Laser IFE as an integrated system

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Discuss several components of an IFE reactor...



...and how they must relate to each other

Ensures we can develop them in concert to produce an attractive power plant.

**Focus on issues with existing reactor architecture. (dry wall, spherical illumination.)**

Solve these issues, before abandoning concept for “greener pastures”

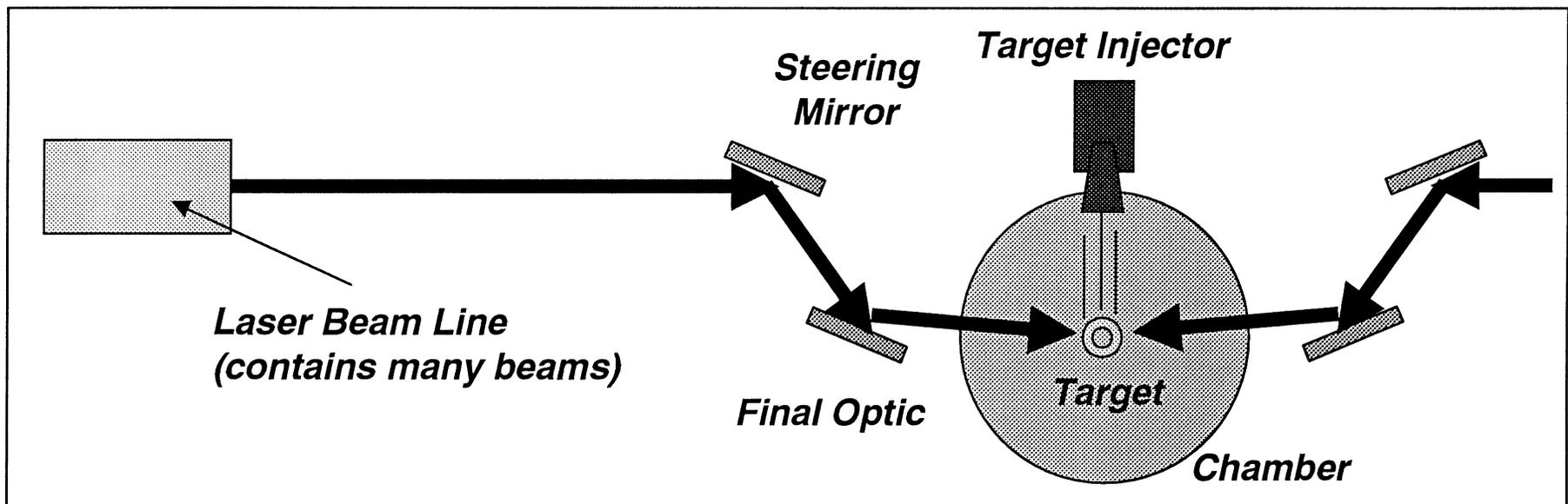
**Concentrate on things that can be tested in next 4-5 years**

Allows us to define path to the IRE

# Our View of a Laser Integrated Research Experiment (IRE)

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An integrated repetitive demonstration,  
that a power plant sized laser,  
can be steered to illuminate a target,  
that is injected into a reactor chamber environment,  
with the uniformity and precision required for inertial fusion energy.



Parameters required for an IRE will be determined by Phase I

# Role of NIF in developing Direct Drive Laser Fusion Energy

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**Main physics issues are:**

- 1. control of Rayleigh Taylor growth**
- 2. control of laser imprint**
- 3. beam balance**

**These can be addressed now with experiments on Nike and Omega  
(Nike factor of 2-10 below high gain requirements for intensity, areal mass)  
(Omega does spherical implosions)**

***Target designs can be developed, & most physics addressed, on existing lasers***

**Main role of the NIF for Laser Inertial Fusion Energy:**

***Validate target designs with intensities and laser pulse lengths at or near those required for high gain***

# A few words about getting support for Laser IFE

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**DOE views fusion as a science (& technology) program, not an energy program**

**Development of Laser IFE encompasses many areas of science.....**

<b>materials science</b>	chamber materials, target fab & injection, optics
<b>surface and interface science</b>	chamber materials, target fabrication & injection
<b>thin films, chemistry</b>	target fabrication, chamber materials
<b>nano-processing technologies</b>	target fabrication
<b>solid state electronics</b>	target injection
<b>optics</b>	laser windows, steering mirrors, final optics
<b>aerodynamics</b>	target injection
<b>cryogenics</b>	target injection & fabrication

**FESAC has recommended funding for IFE “chamber technologies”**

**Suggest we prepare a series of proposals, to submit if funding becomes available**

**Emphasize science**

**But directed towards resolving laser IFE issues**

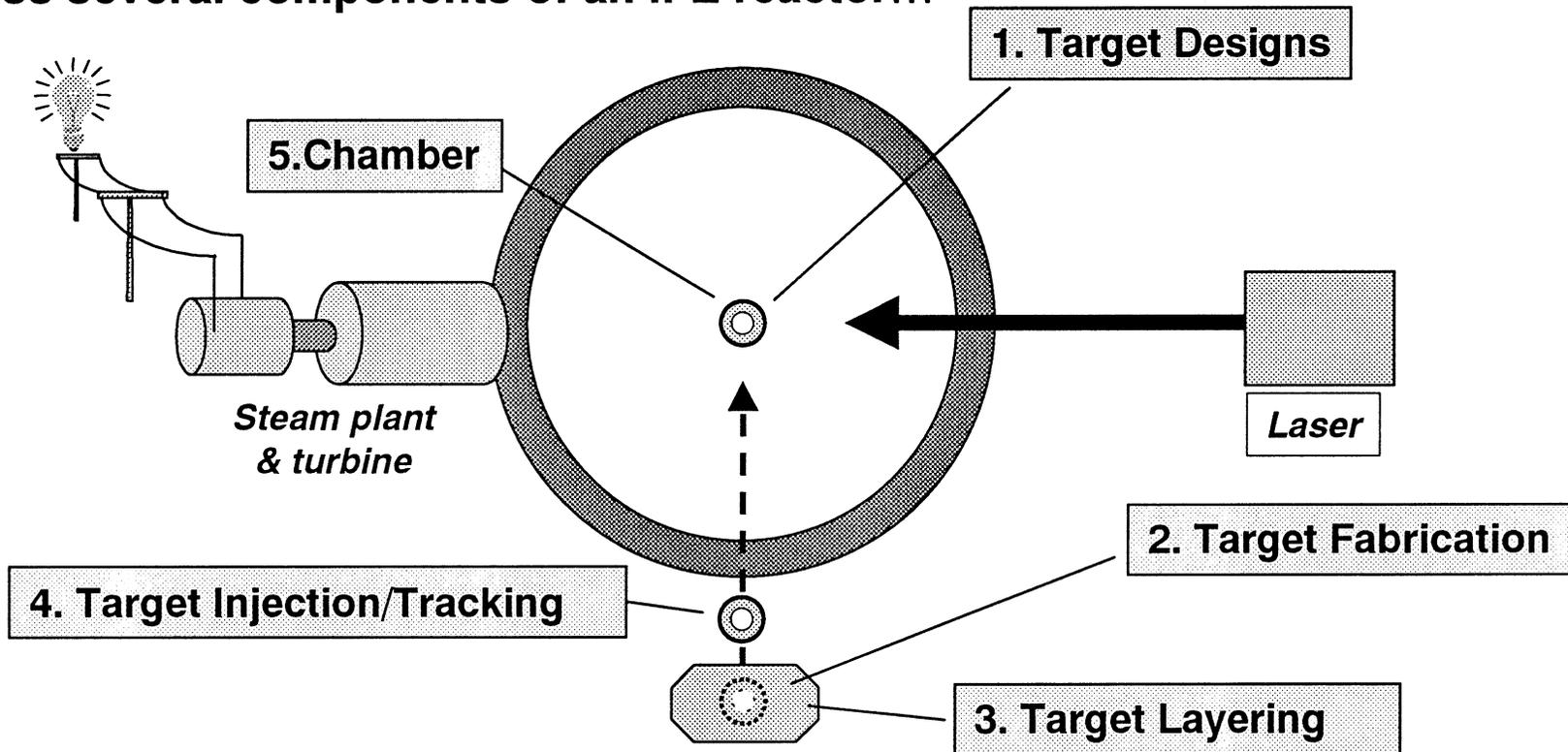
***i.e. the purpose of this workshop***

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