



The University of Texas at Austin

Center for Electromechanics

2016 ADVISORY PANEL

CENTER FOR ELECTROMECHANICS

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Center for Electromechanics

The University of Texas at Austin

Thank You for Being Here

- **We value the conversation**
 - We plan that you will learn enough to have made this worth your while
 - We look forward to getting new perspectives from you

Meeting Structure

- **Today we will give you information on the technologies we are pursuing**
 - **Background**
 - **Current activities**
 - **Future plans**
- **With sufficient time for discussion**
 - **In each presentation**
 - **During the laboratory visits**
 - **At lunch and breaks**
 - **At an early dinner**
- **Tomorrow, I will be available to answer questions**
 - **Then, you will draft a brief report**

Report Is Yours

- **But our hope is that it will capture**
 - **Technical areas where we are on the right track**
 - **New technical areas we should seriously consider**
 - **Any ideas as to how to work more effectively with companies**

Introduction to the Center for Electromechanics

UT Research Center Focusing on Electromechanical Technology

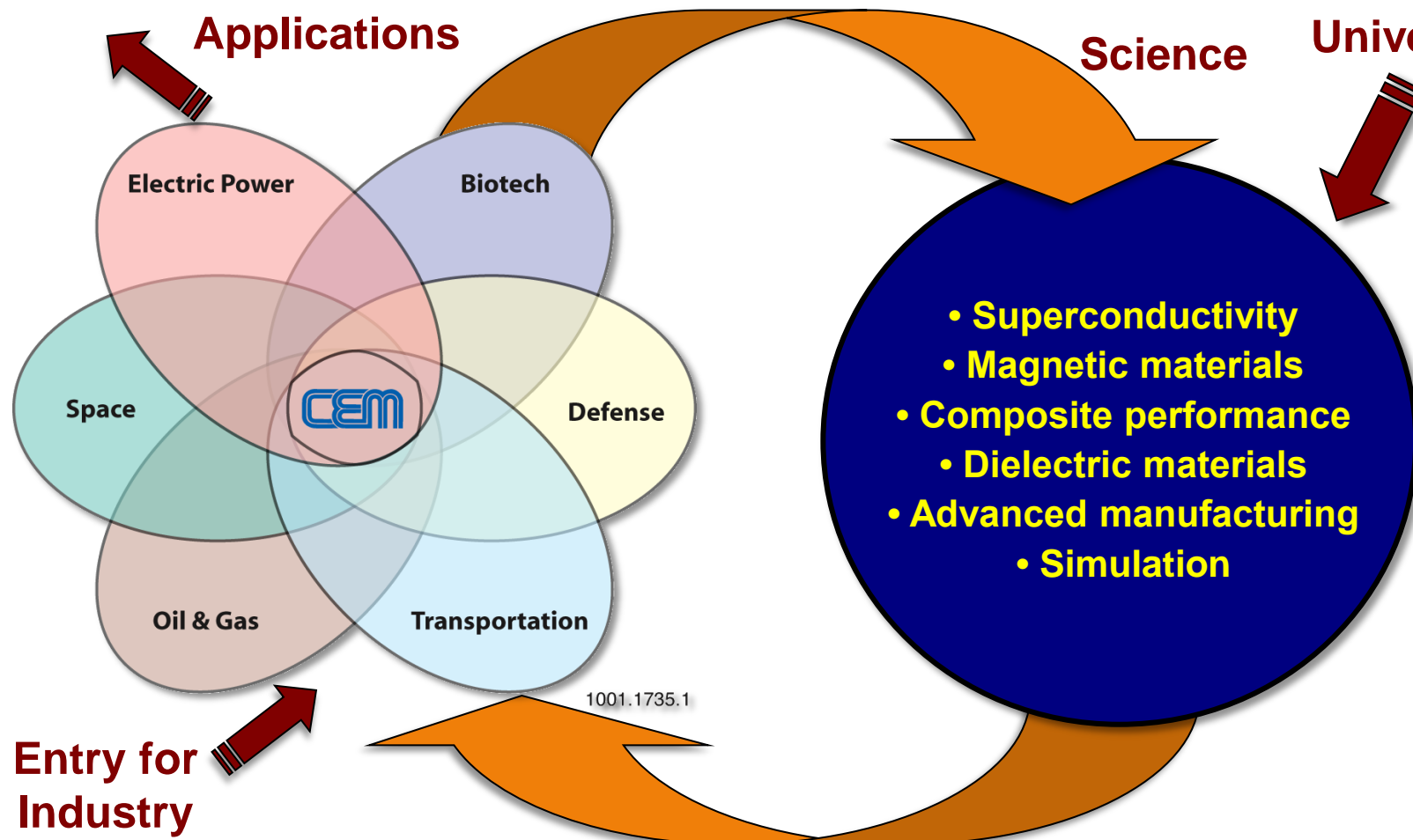
- Perform and publish world-class research
- Design, build, and test first-of-a-kind devices and systems
- Transfer products to industry
 - Spinout companies
- Educate students
- Provide technology and advice to the government

Innovation Process

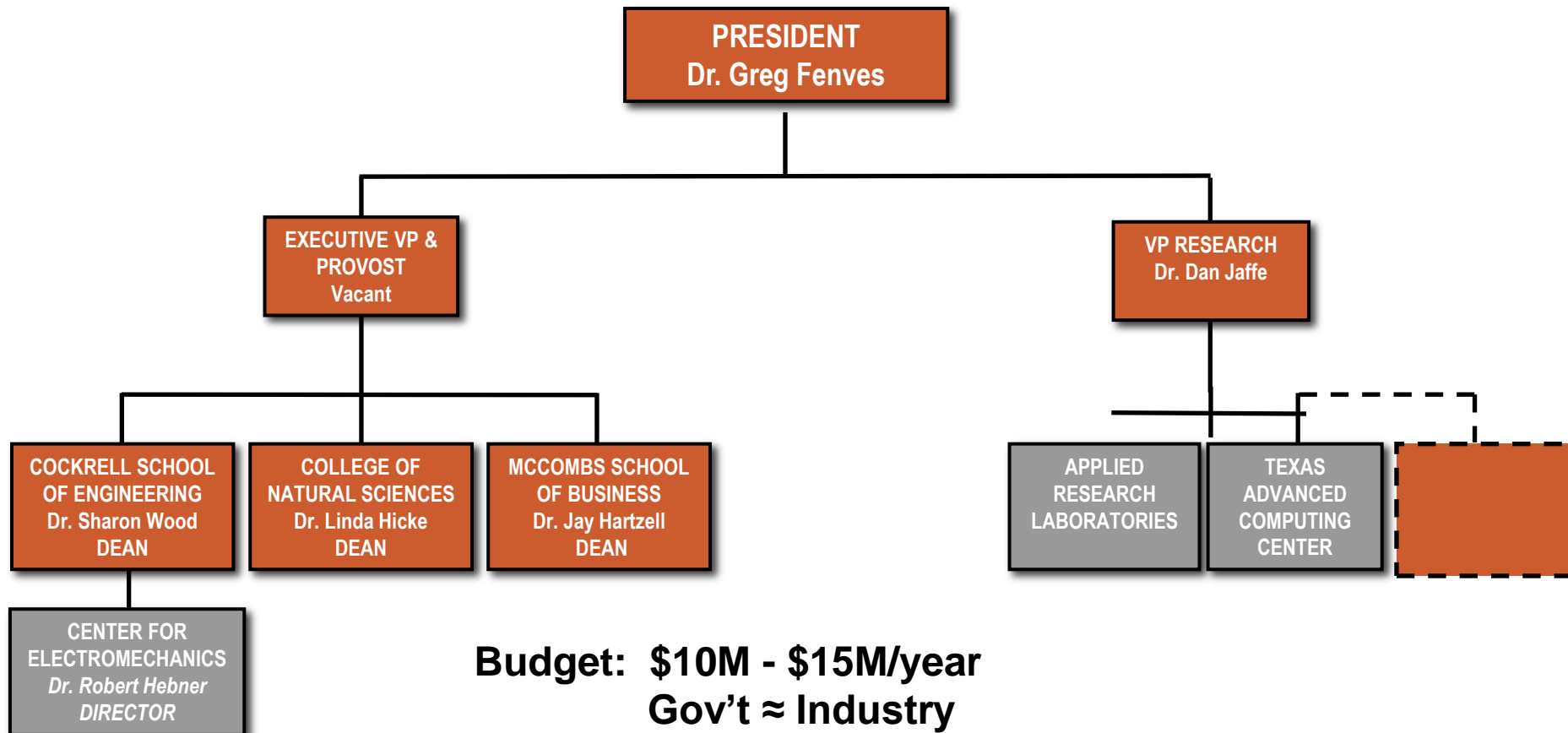
CEM uses successful spiral between applications and science

Commercialization

Entry for University



CEM at UT



Staffing: ~ 40 Affiliated
50-75 UT Collaborators

Proud to Be Part of the Cockrell School of Engineering

- **#10 – Graduate Engineering Program in the U.S.**
 - (U.S. World News & Report, 2017)
- **#5 – Best Engineering Program in the World**
 - (Academic Rankings of World Universities, 2015)
- **#2 – Engineering Program for Hispanics**
 - (Hispanic Business Magazine, 2014)
- **#1 – Producer of Minority Graduates in Texas and Fourth in the Nation**
 - (Diverse Issues in Higher Education, 2014)

Expectations with the Transfer

- **Within CSE, CEM is expected to**
 - **Contribute more strongly to undergraduate and graduate education**
 - **Publish more**
 - **Provide a prototype development capability for other CSE-initiated programs**
 - **Help CSE develop more comprehensive programs**
 - **And keep up the good work**
- **Technically, the transfer has been good**
- **Administratively, there is still a ways to go**

Accomplishments

- **EMALS**
 - Commissioned this year
- **Hobby-Eberly Telescope**
 - Commissioned this year
- **Natural Gas Compressor**
 - Trying to commercialize successful prototype
- **First firing of EM gun from a microgrid representing a ship power system**

Opportunities

- **Opportunities on the horizon include**
 - High power electromagnetics with USAF
 - New ships for Navy
 - Basic research opportunities with Army
 - Mirror-based neutron source
 - Electromagnetic cancer cures
 - Electromagnetic manipulation of cellulosic feedstocks
 - Enhanced control for microgrids and distribution systems (IoT)
 - Technology for the 21st Century Grid
 - Asset Management
 - Transportation electrification – Planes, trains and automobiles
 - Additive manufacturing
 - Nanotechnology

In Summary

- **We remain committed to working with industry to transfer our technology and to learn**
- **We have a renewed opportunity within UT**
 - **Coupled with expectations for**
 - Increased success
 - Increased educational impact
 - Increased publication rate
- **With your help, we plan to succeed**