

CENTERS OF EXCELLENCE

TECHNICAL TRAINING &
HUMAN PERFORMANCE



Overview of COE Benefits

Ken Davidian

*FAA AST Director of Research,
Commercial Space Transportation Program Manager*

Public Meeting | October 21-22
DoubleTree by Hilton, Crystal City (Arlington), Virginia

www.faa.gov/go/coe



Center of Excellence
for
Commercial Space
Transportation

How Does R&D Help Industry?

R&D Models

- Linear Model
- Public Good
- Source Economic Growth
- Background, Basic, Applied Research

R&D Types

- Mission-Oriented, “Regulatory” Research
- Diffusion-Oriented, “Industry Development” Research

Innovation Circle of Diffusion Research

What are the Benefits of a Center of Excellence?

BENEFIT 3. Alignment with Industry Needs

	INDIVIDUAL RESEARCH GRANTS	CENTERS OF EXCELLENCE
Types of Research Conducted	<ul style="list-style-type: none"> • Applied research for public benefit, in support of FAA mission goals • Background research 	<ul style="list-style-type: none"> • Same as IRG, plus... • Applied research (industry-funded) for product development
Industry Advisory Groups	<ul style="list-style-type: none"> • REDAC (comm'l aviation) • COMSTAC (comm'l space) • TRB 	<ul style="list-style-type: none"> • Same as IRG, plus.. • Industry Advisory Committee
Potential Secondary Partners	<ul style="list-style-type: none"> • Typically none • Not required, not prohibited 	<ul style="list-style-type: none"> • Required
Matching Resource Requirements	<ul style="list-style-type: none"> • Typically none • Not required, not prohibited 	<ul style="list-style-type: none"> • 1:1 required for all federal funding
Long-Term Self-Sufficiency	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • Required after 10 years

BENEFIT 2. Innovation Creation and Diffusion

	INDIVIDUAL RESEARCH GRANTS	CENTERS OF EXCELLENCE
Expectations of Collaboration	<ul style="list-style-type: none"> • Professional conferences and meetings • Individually managed 	<ul style="list-style-type: none"> • Same as IRG, plus... • Requirement of two annual meetings
Research Network Goals	<ul style="list-style-type: none"> • Serendipitous creation possible • None required 	<ul style="list-style-type: none"> • Deliberately created • Required by authorizing language
Terms of Commitment	<ul style="list-style-type: none"> • No long-term strategic R&D planning possible • Multiplayer, single-turn prisoner's dilemma discourages trust-building between players • Wide area full competitions necessary for every term (year) 	<ul style="list-style-type: none"> • Congressionally mandated for purpose of strategy R&D planning • Multiplayer, multi-turn prisoner's dilemma encourages trust-building between players • Internal competitions of limited scope possible • Maximizes benefit from program income and reused/shared/jointly used supplies and equipment

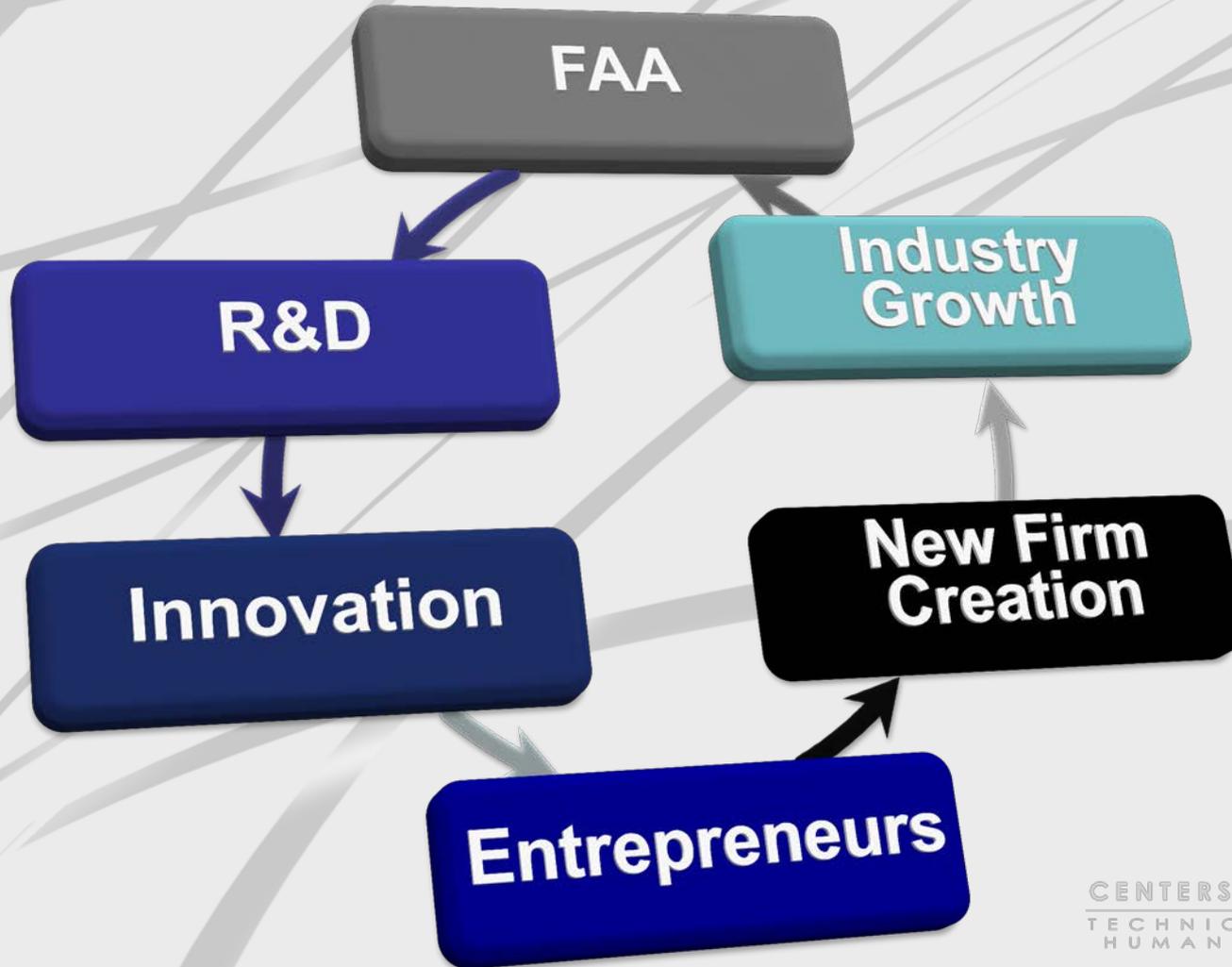
BENEFIT 1. Workforce Development

	INDIVIDUAL RESEARCH GRANTS	CENTERS OF EXCELLENCE
Functional Goals	<ul style="list-style-type: none"> • Research 	<ul style="list-style-type: none"> • Research • Training • Outreach

DIMENSIONS OF NATIONAL SCIENTIFIC INFRASTRUCTURE	EFFECT ON ECONOMIC GROWTH
Scientific Research	“a substantial negative effect ”
Scientific Labor Force	“a substantial positive and significant effect ”

Source: Schofer, E., Ramirez, F. O., & Meyer, J. W. (2000). The effects of science on national economic development, 1970 to 1990. *American Sociological Review*, 65(6), 866–887.

Innovation Circle of Diffusion Research



COE Benefits: Summary & Conclusion

Workforce Development

- Functional goals

Innovation Creation and Diffusion

- Expectations of collaboration
- Research network goals
- Terms of commitment

Alignment with Industry Needs

- Types of research conducted
- Industry advisory groups
- Potential secondary partners
- Matching resource requirements
- Long-term self sufficiency

Source: Davidian, K. J., & Watts, P. (2013). Individual research grants versus centers of excellence: Maximizing the benefits of research and innovation. *New Space*, 1(3), 136–142.

Why Is Anybody OPPOSED to COEs?

Phenomenon

- Orgs are made up of subunits, each with their own goals
- Achievement of goals require access to org resources
- Political behavior emerges when subunits compete for scarce resources

Reason

- In general, opposition to COEs is not based on differences of rational (vs. natural) reasoning

