Bridging the Deliverable Gap: Improving Government's approach to innovation intending social benefit.

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What's this session about?

It's about *[Bridging the Gap]* between government funding for R&D and society's need for beneficial deliverables:

- The free market forces of industry address most societal needs for technological innovation, except those too large, too small, too late or premature . . .
- Government's address some of these "market failures" by investing public funds, but success requires proper alignment between investment, value chain and results.
- Government sponsorship of university-led R&D in AT field is *ineffective*; it requires sector realignment to deliver intended socio-economic outcomes and impacts.

Commercial Innovation Markets

Industry delivers technological innovations to society when they meet standard commercial market requirements (market size; customer affluence; high profit margin; low entry barriers):

Market Opportunity

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Industry R&D

↓

Deliver Product

Conditions of Market Failure

- When standard business conditions are not met -- but need is deemed important to society -- government's supply the necessary resources to fill market gaps.
- Science, Technology & Innovation (STI) Policies address societal needs for 'new to the world' knowledge under conditions of market failure.
- Problems arise when people define 'new knowledge' only in the context of scholarship.

Government STI Policies

Public tax dollars allocated to generate new knowledge outputs embodied in 3 different states:

- Scientific research ➔ **Conceptual Discoveries** (*know what ?*)
- Engineering Development ➔ **Tangible Inventions** (*know how ?*)
- Industrial Production ➔ **Product Innovations** (*know why ?)*

DISCOVERY STATE: Governments sponsor universities to expand the base of fundamental knowledge.

Need for fundamental knowledge

↓

Government

↓

Universities → Basic Research

↓

Discoveries

↓

Scholarly Publications

↓

Societal Impact ???

INVENTION STATE: Governments sponsor R&D laboratories to transform discoveries into tangible prototypes in critical fields of practice.

Need for breakthrough prototypes

↓

Government

↓

Applied SR & Experimental ED

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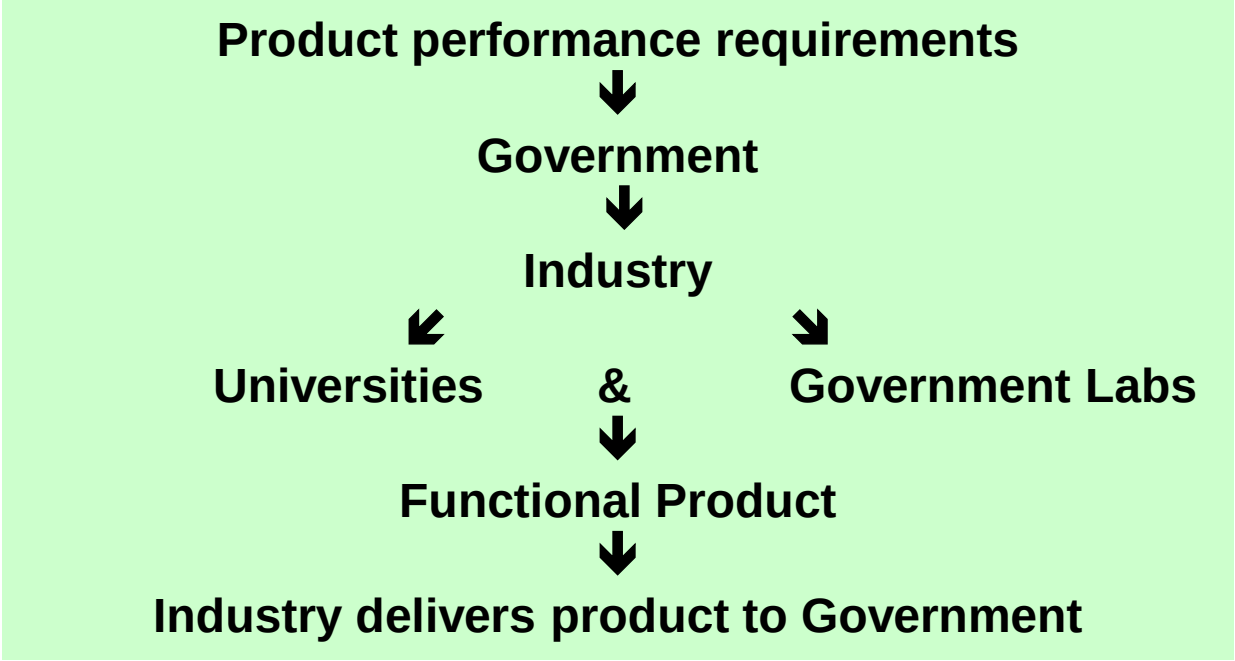
Proof of Concept Prototypes

↓

Society Impact ???

INNOVATION STATE: Governments sponsor industry to design, build, test and deliver next generation products – meeting pre-determined specifications – and then serve as primary customer for the resulting products.



Innovation in AT

Given that industry leads product innovation, what does AT industry need?

- *New fundamental discoveries in basic science?*
- *Entrepreneurs reinventing 'square wheels'?*
- *Faculty and students supplying bright ideas and alpha prototypes in their spare time?*

No! The AT industry needs governments to define critical performance requirements, and supply the missing market conditions: Reimbursement, Infrastructure and Information ('Public Procurement for Innovaiton')!

Related Publications

- *Lane,JP, Godin, B.* (2013) ***Methodology Trumps Mythology***, *Bridges, Office of Science & Technology, Embassy of Austria, Washington, DC, 36.* *http://ostaustria.org/programs-projects-english/event-management/2013-04-23-10-55-57/2003-2001/382-categories-all/magazine/volume-36-december-14-2012/opeds-a-commentaries/6002-methodology-trumps-mythology*

- *Lane, JP, Godin, B, (2012)* ***Is America's Science, Technology, and Innovation Policy Open for Business?*** *Science Progress, June 12, 2012,* *http://scienceprogress.org/2012/06/is-america%E2%80%99s-science-technology-and-innovation-policy-open-for-business/*

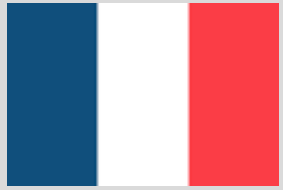
- Flagg, J, Lane, J., & Lockett M. (2013) **Need to Knowledge (NtK) Model: An Evidence-based Framework for Generating Technology-based Innovations.** *Implementation Science*, 8, 21, http://www.implementationscience.com/content/8/1/21

- Stone, V. & Lane J (2012). **Modeling the Technology Innovation Process: How the implementation of science, engineering and industry methods combine to generate beneficial socio-economic impacts.** *Implementation Science*, 7, 1, 44. http://www.implementationscience.com/content/7/1/44.

- Lane, J & Flagg, J. (2010). **Translating 3 States of Knowledge: Discovery, Invention & Innovation.** *Implementation Science*, 5, 1, 9. http://www.implementationscience.com/content/5/1/9.

- Edquist, C, *et al* (2015). **Public Procurement for Innovation**. Cheltenham, UK: Elgar Publishing Inc. http://www.e-elgar.com/shop/public-procurement-for-innovation.

- Issues in Science, Technology & Innovation Policies.
- Three States of Knowledge – Origins, Relationships & Transitions.
- Comprehensive Model of Technological Innovation.
- Tools for Effective Knowledge Translation.
- Tools for Successful Technology Transfer.
- Tools for Achieving Invention Commercialization.
- Market Research Resources.



Knowledge Translation
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