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venture fund

# SUMMIT 2017

Achieving Breakthroughs  
with R&D

#NSVFSummit

# Not Enough Investment in Education R&D

% TOTAL SPENDING  
ON R&D

Pharma & Biotech	15.5%
Healthcare	> 9%
Leisure Goods	6.2%
Aerospace & Defense	4%
Automotive	almost 4%
Telecom	1%
Energy	1%
K-12 Education	.038%

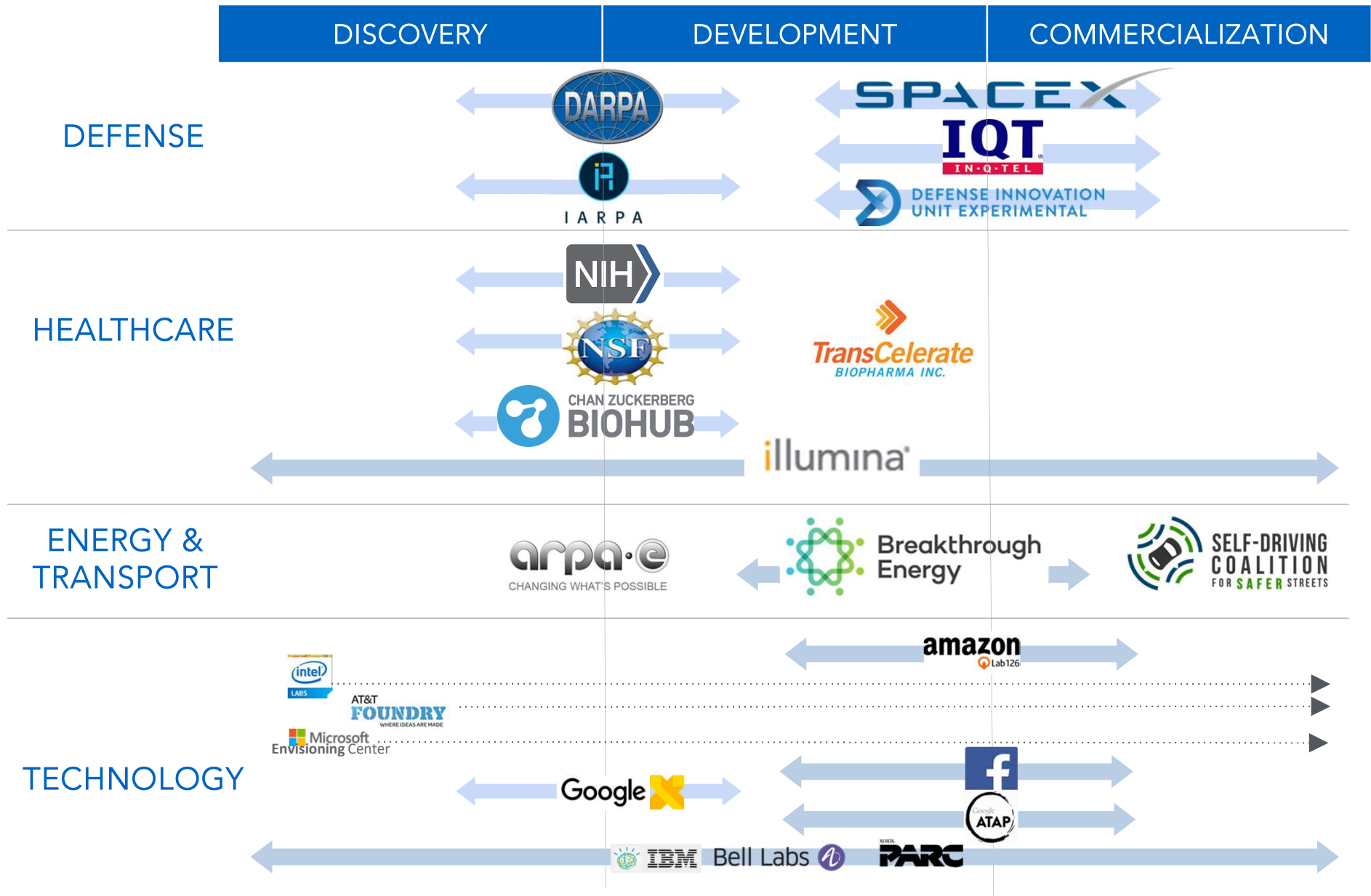
Source: [Deloitte](#) & [Statista](#)

Other sectors of national importance such as healthcare and defense have enjoyed R&D budgets equal to between 4% to 15% of industry revenues.

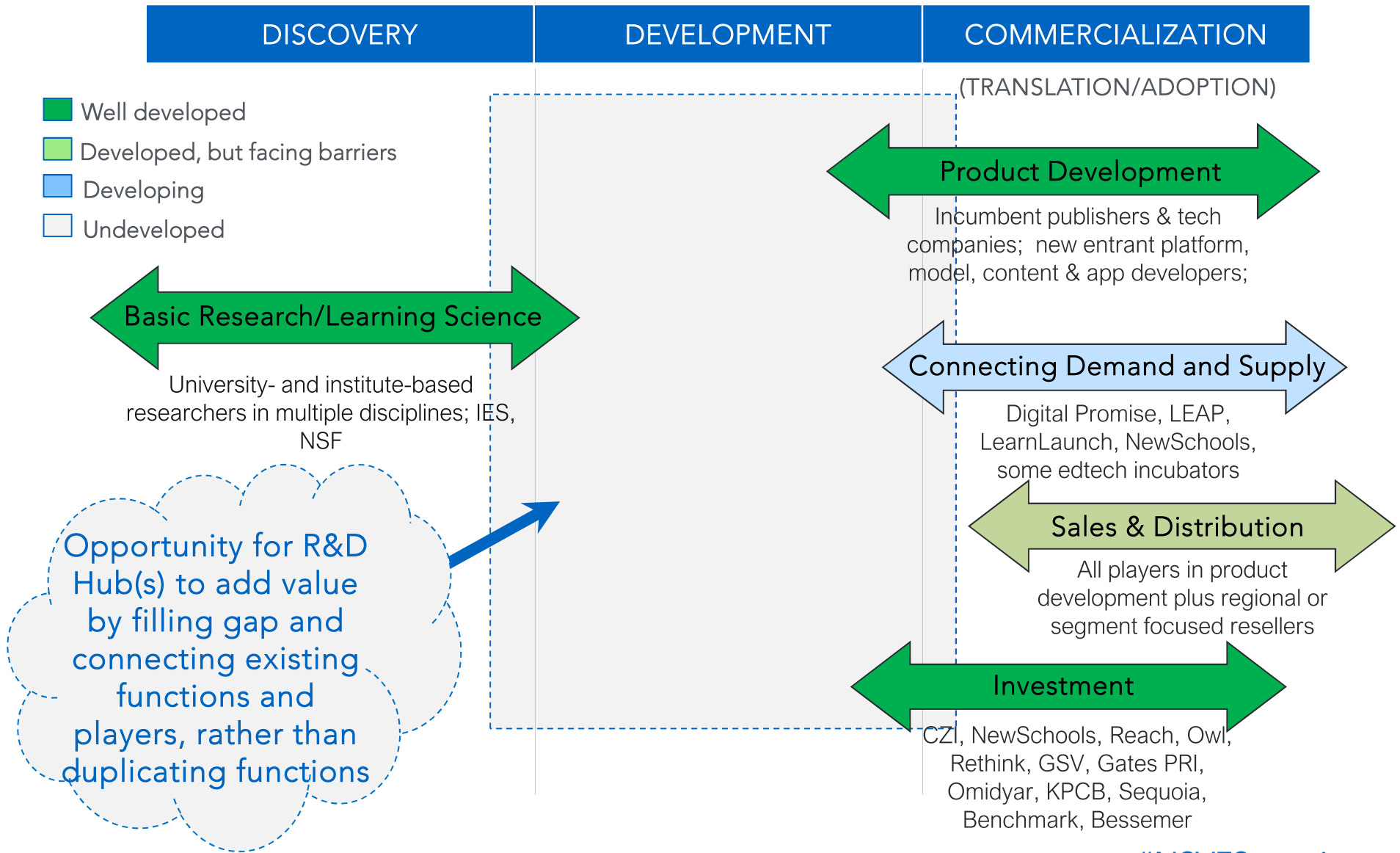
By comparison, R&D routinely accounts for less than 0.05% of total K-12 dollars.

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# Where Industry Players Focus Their R&D Efforts



# Education: Disconnected R&D Activities & Players

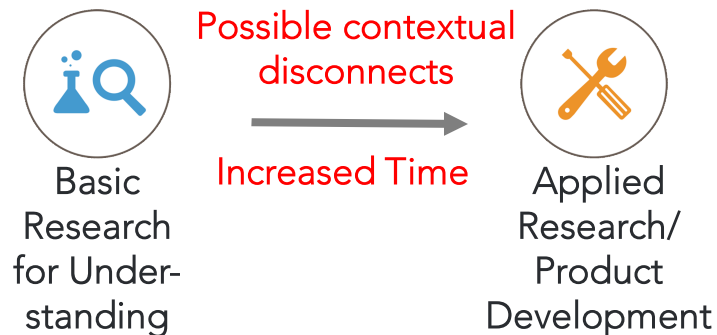




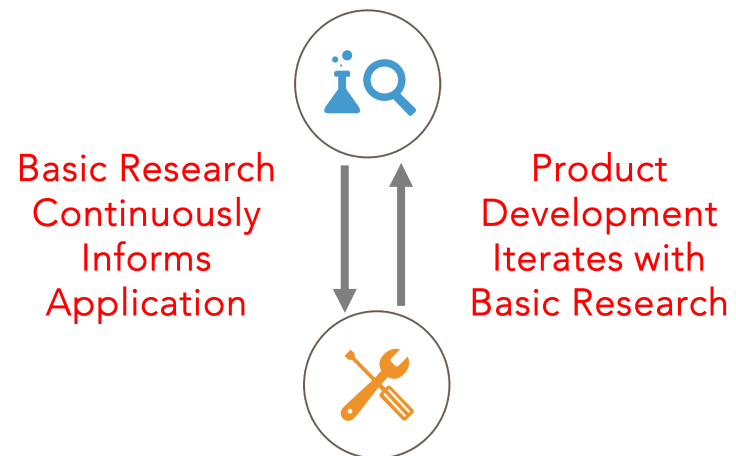
# Directed Development: Pasteur's Quadrant

Basic Research Aimed at Applied Goals

## Current Post-WWII Approach



## Pasteur's Quadrant



**Collapses distinction between Basic and Applied Research**

Stokes, Donald E. (1997). [\*Pasteur's Quadrant – Basic Science and Technological Innovation\*](#). [Brookings Institution](#) Press.

# Exploratory Model for an Edu R&D Hub

Organizational Structure	Key Competencies
<ul style="list-style-type: none"><li>• Non-profit</li><li>• Funded by multiple players with shared goals</li><li>• Engage multi-disciplinary talent</li><li>• Empower an independent team</li><li>• External advisory board made up of world-class educators and other experts</li></ul>	<ul style="list-style-type: none"><li>• Identify bold challenges that can be addressed by technology in 3-5 years</li><li>• Develop clear project mission and framework for impact</li><li>• Work and iterate quickly</li><li>• Maximize public benefit through thoughtful intellectual property and tech transfer</li><li>• Proactive public dissemination of research findings</li><li>• Incorporate customer demand &amp; feedback as early and often as possible</li></ul>

## Example Learning Challenges to Tackle

Real-time assessment of comprehension and mastery

New school models attempt to tailor instruction to student needs, and move students on when they can show what they know. Can we find new approaches to assessment that measure mastery in real time rather than at the end of a course?

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Algebra mastery by the end of 8<sup>th</sup> grade for all students

Students who don't complete Algebra 1 have less than a 20% chance of graduating high school ready for college or a career. Algebra, and the analytic skills it develops, is the gateway to success in the 21st century. How might we ensure every student masters algebra by the end of 8th grade, preparing them to succeed at much higher rates?

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Fluency for English Language Learners within a few years

ELLs are the fastest-growing group of students in the US, but their outcomes are worse than most other groups. Is it possible to help English language learners from any native language become fluent English speakers, readers, and writers within two years, regardless of their age?

# Move to Breakout Groups & Discuss!

## QUESTION 1 – FIRST 10 MINUTES

What are the major learning challenges that face us now, where technology breakthroughs might help us unlock a wave of innovations that support learners?

## QUESTION 2 – NEXT 10 MINUTES

What are a few of the basic research advances that need to be made in order to address each major challenge?

## QUESTION 3 – FINAL 1 MINUTE

Which one idea should we share out with the full group?