



Battelle

The Business of Innovation

Joint CBRN Conference Technology Panel

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TECHNOLOGY – The Competition

Global R&D Spending

Country	GDP 2004	R&D as % GDP	R&D 2004	R&D 2005	R&D 2006
U.S.	11,200	2.7	302	312	321
China	7,262	1.5	109	125	140
Japan	3,745	3.2	120	123	126
India	3,319	1.4	46	53	58
France	1,981	2.2	44	44	45
Germany	2,362	2.2	52	53	54
UK	1,782	2.0	36	37	38

Billions \$

Source: R&D Magazine, Battelle, OECD, World Bank

TECHNOLOGY – The Competition

Sources of R&D Funding

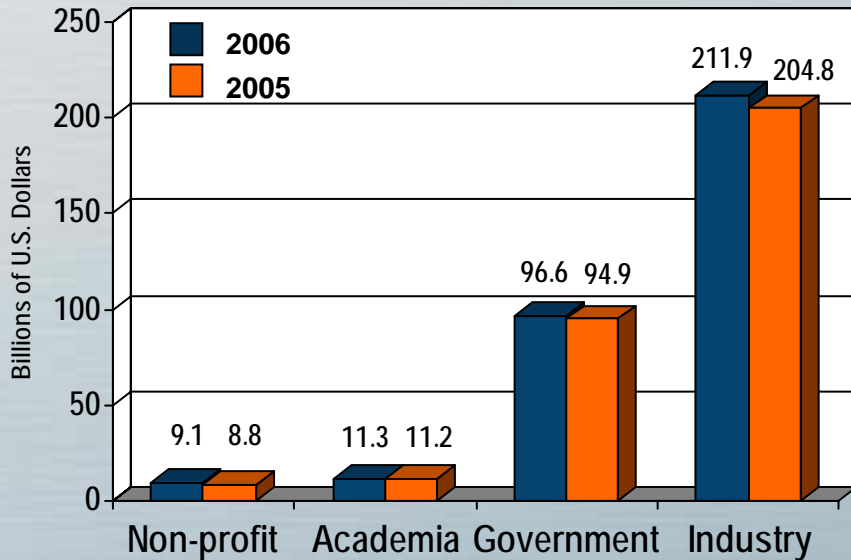
Country	Industry (%)	Government (%)	Academia (%)	From Abroad (%)
U.S.	61.2	31.3	7.3	-
China	57.6	33.4	6.3	2.7
Japan	73.9	18.2	7.5	0.4
India	23.0	74.7	2.3	-
France	52.1	38.4	1.5	8.0
Germany	65.4	31.9	.4	2.3
UK	46.7	26.9	5.9	20.5

Source: R&D Magazine, Battelle, UNESCO

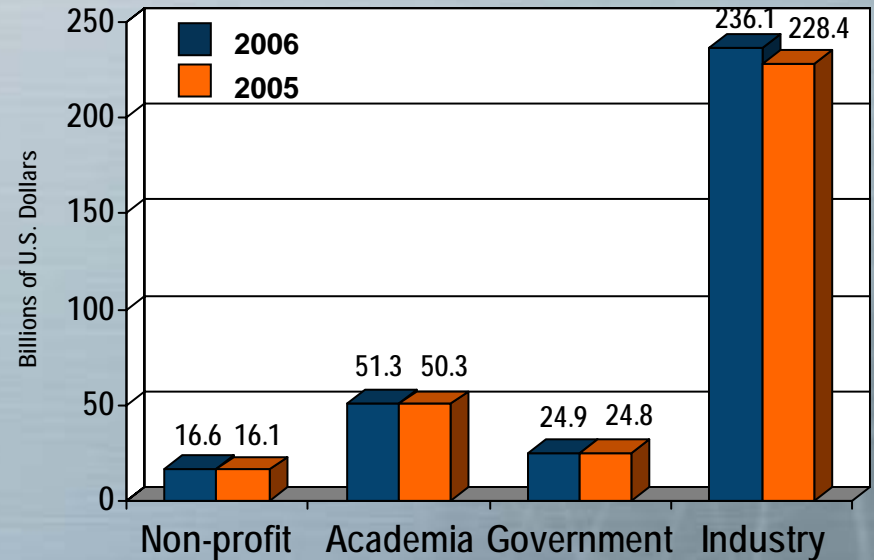
TECHNOLOGY – U.S. R&D Funding

- U.S. funding is forecast to increase 2.9% in 2006 to \$329 billion.
- Two-thirds of all R&D is driven by the industrial sector, which rises 3.5%.
- Globalization, the federal deficit, and staffing will affect future funding.
- Growth of defense R&D funding has slowed and will likely reverse.
- Ratio of Development/Research continues to increase

U.S. R&D Funding Sources

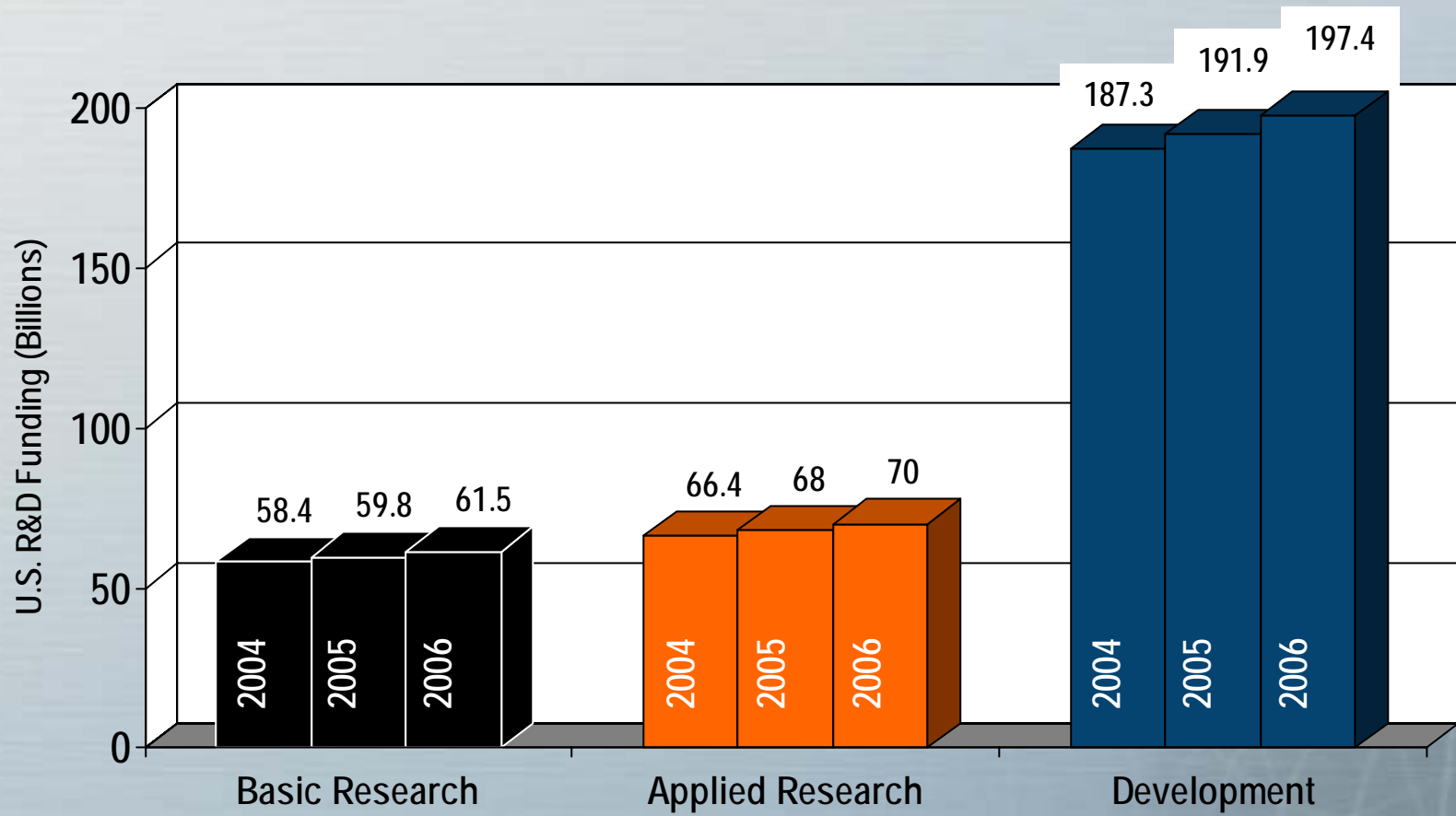


U.S. R&D Execution



TECHNOLOGY – Big “D”, Little “R”

Increasing Trend to Development



TECHNOLOGY – Federal R&D Appropriations

Government Agency	FY2005	FY2006	Change
Dept. of Defense	71.566	73.039	2.1%
Health and Human Services	29.084	29.023	-0.2%
NASA	10.705	11.367	6.2%
Dept. of Energy	8.614	8.608	-0.1%
National Science Foundation	4.057	4.123	1.6%
U.S. Dept. of Agriculture	2.403	2.394	-0.4%
Dept. of Homeland Security	1.243	1.281	3.1%
Dept. of Commerce	1.148	1.131	-1.5%
Dept. of Transportation	0.744	0.841	13.0%
Dept. of Veterans Affairs	0.784	0.805	2.7%
Dept. of Interior	0.615	0.629	2.2%
Environmental Protection Agency	0.572	0.573	0.2%
Dept. of Education	0.297	0.258	-13.0%
All Other	0.727	0.692	-4.8%
Total	132.560	134.765	1.7%

Source: AAAS (Billions \$)

TECHNOLOGY – Federal 2006 R&D Highlights

- DOD initially requested an overall cut in FY06 – Congress provided \$1.5B increase (+2.1%)
- DOD appropriation contains a 1% rescission for all previously approved R&D appropriations
- DOD projections reveal 10% cut through FY09
- DOE programs were cut 0.4% in FY06. Support for some science–user facilities was cut as much as 60%
- DHS R&D budget increases 3.1% to \$1.3B.
 - \$210M for Rad/Nuc countermeasures (+71%)
 - \$376M for Biological countermeasures (+3.7%)

TECHNOLOGY – Issues

- Impact of anticipated federal deficit on discretionary R&D spending
- Increasing shift from research funding to development funding
- The rise of international R&D competitors
- Evidence that U.S. educational system is not producing the necessary talent for competitive R&D

TECHNOLOGY – Panel Members

- DOE MG (Ret) John Doesburg
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Assoc. VP for Research, Univ. of Tennessee

- DHS S&T Dr. Jeff Stiefel
PEO for Chem-Bio Security Programs

- DTRA COL Ben Hagar
Deputy, Joint S&T Office for Chem-Bio Defense

- JPEO-CBD Mr. Ed Wack
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