Science in its Rightful Place:
Much Accomplished, Much Still to Do

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The new President's pledge in 2009

"We will restore science to its rightful place…"

Barack Obama, January 20, 2009

(Here "science" was short for "science, technology, & innovation— ST&I)

What he's done to keep the pledge

- Placed early priority on…
  - scientific integrity
  - STEM education & inclusion
  - open data & public access
  - tech innovation for economic recovery & growth
  - energy & climate change
  - advancing biomedicine & public health
  - strengthening international cooperation in S&T
  - rebalancing NASA in favor of science, advanced tech
  - exploiting modern IT and private-sector innovation talent to improve the responsiveness & effectiveness of gov't

Keeping the pledge (continued)

- Put a huge boost for ST&I in the Recovery Act, then protected annual ST&I budgets despite tight constraints
- Rebuilt White House leadership in ST&I and recruited top talent to other ST&I positions across Exec Branch
- Used the Presidential pulpit and the White House venue continuously to promote ST&I
  - Inaugural addresses; State of the Union speeches; 2 NAS annual meetings; multiple major speeches on ST&I around the country (on space, energy, manufacturing…)
  - White House Science Fairs; Astronomy Nights; celebrations of ST&I superstars (kids as well as Nobelists etc.)
- Launched unprecedented number of ST&I initiatives focused on national & global challenges

Initiatives on nat'l & global challenges

STEM EDUCATION
- Educate to Innovate
- STEM Master Teacher Corps
- 100kin10
- STEM Inclusion Initiative
- Computer Science for All

INFOTECH / COMPUTING
- ConnectED
- Big Data Initiative
- Nat'l Strategic Computing Initiative

INNOVATION FOR THE ECONOMY
- American Innovation Strategy
- Startup America
- Data.gov
- Challenge.gov
- Advanced Mfg Partnership / Nat'l Network for Mfg Innovation

BIOMEDICINE & HEALTH
- Neuroscience / BRAIN Initiative
- Combating Antimicrobial Resistance
- Precision Medicine Initiative (PMI)
- Cancer Moonshot

ENERGY & ENVIRONMENT
- New fuel-economy/CO_2 standards
- ARPA-E, Energy Innovation Hubs
- National Ocean Policy
- Arctic Initiative / AESC
- Pollinator Initiative
- Climate Action Plan & COP21

NAT'L SECURITY / INTERNAT'L S&T
- Cybersecurity Initiative
- Space Weather Strategy
- Science Envoys
- Mission Innovation

The unfinished ST&I agenda: a partial list

- Ensuring sufficient, safe, secure, sustainable, affordable food, water, & energy for all, while reducing GHGs
- Minimizing harm from changes in climate that are no longer avoidable
- Fashioning materials from abundant elements to substitute for current uses of scarce ones
- Understanding the brain & curing its ailments
- Controlling infectious & vector-borne diseases
- Defeating cancer
- Facilitating graceful aging
- Defending the planet from killer asteroids
- Sending humans into space not just to visit but to stay

Some persistent obstacles

- Inadequate funding for R&D (public & private)
- Inadequate translation of R&D advances into practical applications
- Under-representation of females & ethnic minorities in STEM fields
- Under-representation of ST&I talent in many Federal departments, agencies, and offices
- Poor public & policy-maker understanding of ST&I
  - the role of ST&I in meet societal challenges
  - the importance of basic research
  - the value of international cooperation

Some big opportunities on the path ahead

- Harness the full potential of partnerships (local/ state/federal, public/private/academic/civil-society, international) to overcome many of the obstacles.
- Continue the "infiltration" across the gov't of ST&I talent by aggressive recruiting, PIFs, AAAS fellows, etc.
- Apply research on "what works" in STEM inspiration, teaching, mentoring, & training to increase participation in STEM careers and create a science-savvy citizenry.
- Exploit recent advances in biomedical sciences & "big data" to drastically improve healthcare.
- Build on the momentum of COP21 and the recent rapid growth of renewable-energy deployments worldwide to fashion a global revolution in clean energy.

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