What the Participants Said

Forum discussions considered the implications of new data-related technologies and developments that are revolutionizing the basic three-step innovation process in the figure below. As massive amounts of varied data become available in many fields, data generation (step 1 in the process) is transformed. Continuing technological advances are bringing more powerful analytics and changing analysis possibilities (step 2 in the process). And approaches to new decision making include intelligent machines that may, for example, guide human decision makers. Additionally, data may be automatically generated on actions taken in response to data analytic results, creating an evaluative feedback loop.

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Forum participants
• saw the newly revolutionized and still-evolving process of data and analytics innovation (DAI) as generating far-reaching new economic opportunities, including a new Industrial Revolution based on combining data-transmitting cyber systems and physical systems, resulting in cyber-physical systems—which have alternatively been termed the Industrial Internet, also the Internet of Things;
• warned of an ongoing and potentially widening mismatch between the kinds of jobs that are or will be available and the skill levels of the U.S. labor force;
• identified beneficial DAI impacts that could help efforts to reach key societal goals—through defining DAI pathways to greater efficiency and effectiveness—in areas such as health care, transportation, financial markets, and “smart cities,” among others; and
• outlined areas of data-privacy concern, including for example, possible threats to personal autonomy, which could occur as data on individual persons are collected and used without their knowledge or against their will.

The overall goal of the forum’s discussions and of this report is to help lay the groundwork for future efforts to maximize DAI benefits and minimize potential drawbacks. As such, the forum was not directed toward identifying a specific set of policies relevant to DAI. However, participants suggested that efforts to help realize the promise of DAI opportunities would be directed toward improving data access, assessing the validity of new data and models, creating a welcoming DAI ecosystem, and more generally, raising awareness of DAI’s potential among both policymakers and the general public. Participants also noted a likely need for higher U.S. educational achievement and a measured approach to privacy issues that recognizes both their import and their complexity.