National Institute of Standards and Technology
U.S. Department of Commerce

National Strategy for Trusted Identities in Cyberspace

Proposer's Conference
15 February 2012

NSTIC

Agenda

9:00 Welcome and Introduction

9:15 NSTIC Overview and Status Update

Jeremy Grant, Senior Executive Advisor for Identity Management

9:45 Pilots Program – Purpose and Scope

Jeremy Grant, Senior Executive Advisor for Identity Management

10:15 Overview of the Pilot Projects Federal Funding Opportunity

Barbara Cuthill, NSTIC Grants Lead

10:45 Break

11:00 Administrative Requirements

Barbara Cuthill, NSTIC Grants Lead

11:15 Questions and Answers

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National Strategy for Trusted Identities in Cyberspace

Jeremy Grant

NIST

NSTIC

What is NSTIC?

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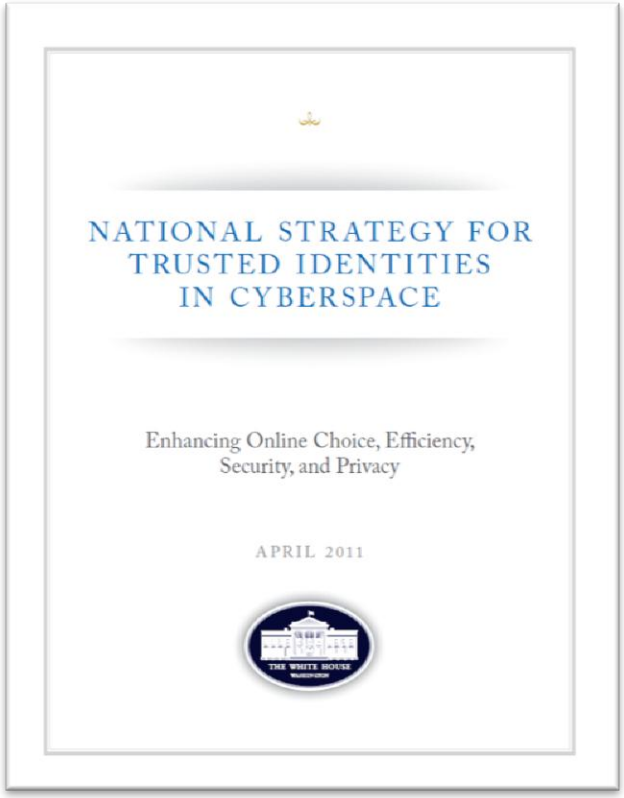
•Called for in President's Cyberspace Policy Review (May 2009):
a "cybersecurity focused identity management vision and strategy…that addresses privacy and civil-liberties interests, leveraging privacy-enhancing technologies for the nation."

Guiding Principles

- Privacy-Enhancing and Voluntary
- Secure and Resilient
- Interoperable
- Cost-Effective and Easy To Use

NSTIC calls for an **Identity Ecosystem**,
"an online environment where individuals and organizations will be able to trust each other because they follow agreed upon standards to obtain and authenticate their digital identities."



The Problem Today

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Usernames and passwords are broken

- Most people have 25 different passwords, or use the same one over and over
- Even strong passwords are vulnerable…criminals can get the "keys to the kingdom"
- Rising costs of identity theft
  - 8.1M U.S. victims in 2010 at a cost of $37 billion (Javel
- A common vector of attack
  - Sony Playstation, Zappos, Lulzsec, Infragard among dozens
    of 2011-12 breaches tied to passwords.

The Problem Today

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Table 8. Top 15 Threat Action Types by number of breaches and number of records

	Category	Threat Action Type	Short Name	Breaches	Records
1	Malware	Send data to external site/entity	SNDATA	297	1,729,719
2	Malware	Backdoor (allows remote access / control)	MALBAK	294	2,065,001
3	Hacking	Exploitation of backdoor or command and control channel	HAKBAK	279	1,751,530
4	Hacking	Exploitation of default or guessable credentials	DFCRED	257	1,169,300
5	Malware	Keylogger/Form-grabber/Spyware (capture data from user activity)	KEYLOG	250	1,538,680
6	Physical	Tampering	TAMPER	216	371,470
7	Hacking	Brute force and dictionary attacks	BRUTE	200	1,316,588
8	Malware	Disable or interfere with security controls	DISABL	189	736,884
9	Hacking	Footprinting and Fingerprinting	FTPRNT	185	720,129
10	Malware	System/network utilities (PsTools, Netcat)	UTILITY	121	1,098,643
11	Misuse	Embezzlement, skimming, and related fraud	EMBZZL	100	37,229
12	Malware	RAM scraper (captures data from volatile memory)	RAMSCR	95	606,354
13	Hacking	Use of stolen login credentials	STLCRED	79	817,159
14	Misuse	Abuse of system access/privileges	ABUSE	65	22,364
15	Social	Solicitation/Bribery	BRIBE	59	23,361

Source: 2011 Data Breach Investigations Report, Verizon and USSS

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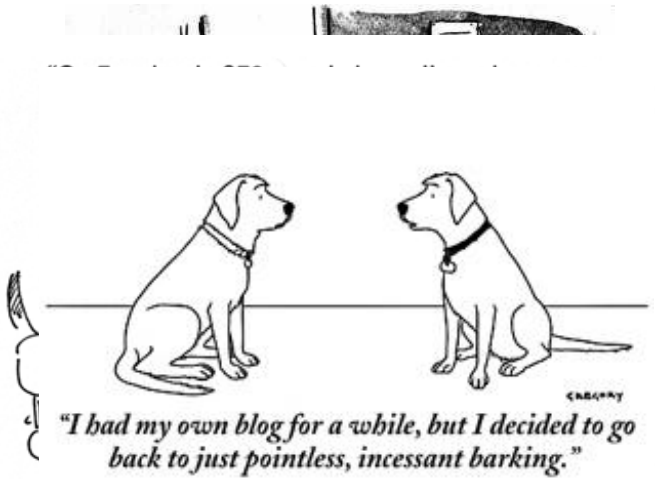
Identities are difficult to verify over the internet

- Numerous government services still must be conducted in person or by mail, leading to continual rising costs for state, local and federal governments
- Electronic health records could save billions, but can't move forward without solving authentication challenge for providers and individuals
- Many transactions, such as signing an auto l
are still considered too risky to conduct online due to liability risks



New Yorker, June 5, 2005

The Problem Today

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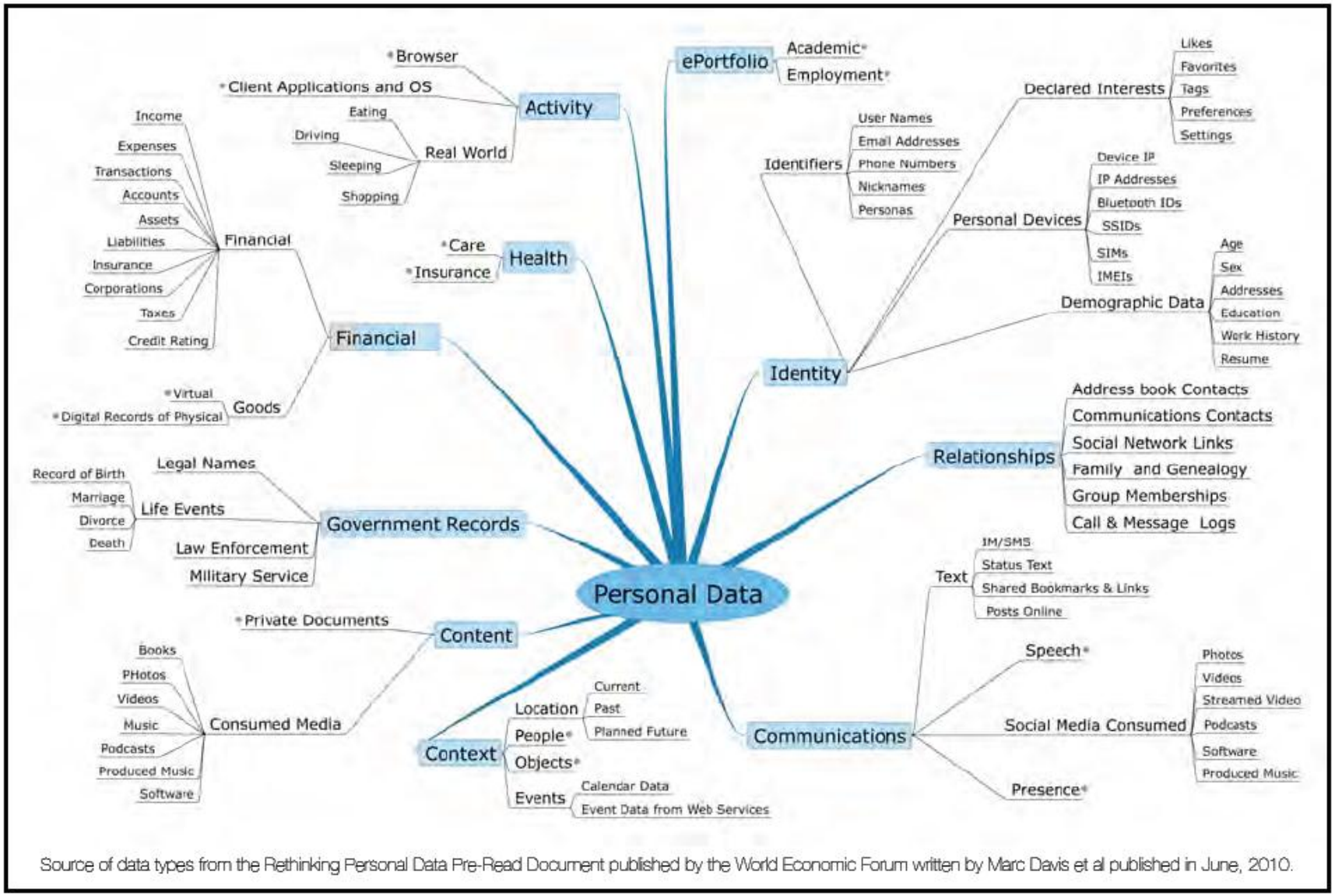
Privacy remains a challenge

- Individuals often must provide more personally identifiable information (PII) than necessary for a particular transaction
  - This data is often stored, creating “honey pots” of information for cybercriminals to pursue
- Individuals have few practical means to control use of their information

Personal Data is Abundant…and Growing



Source of data types from the Rethinking Personal Data Pre-Read Document published by the World Economic Forum written by Marc Davis et al published in June, 2010.

Trusted Identities provide a foundation

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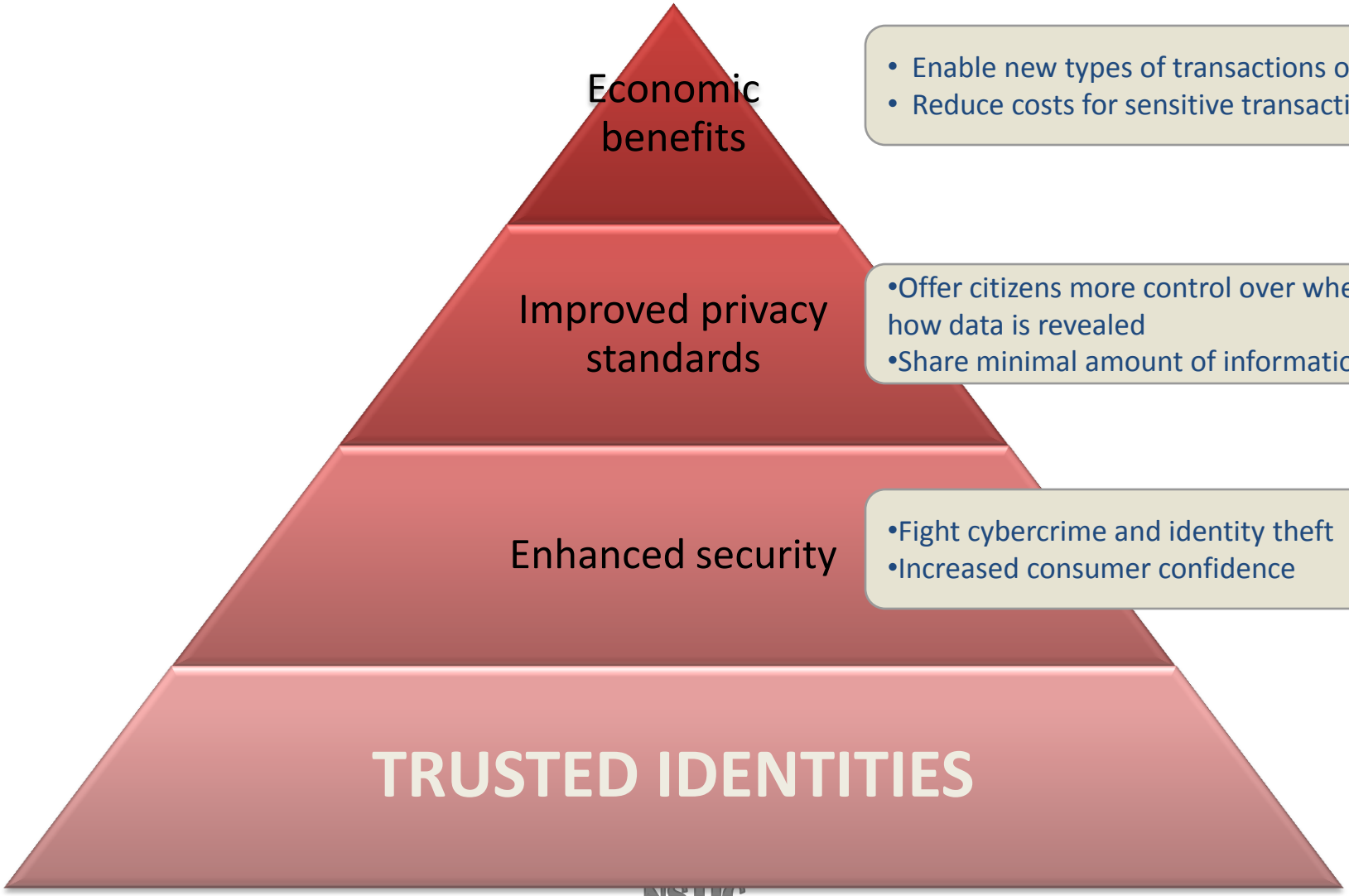

- Enable new types of transactions online
- Reduce costs for sensitive transactions

- Offer citizens more control over when and how data is revealed
- Share minimal amount of information

- Fight cybercrime and identity theft
- Increased consumer confidence

January 1, 2016

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The Identity Ecosystem: Individuals can choose among multiple identity providers and digital credentials for convenient, secure, and privacy-enhancing transactions anywhere, anytime.

Apply for mortgage online with e-signature

Online shopping with minimal sharing of PII

Trustworthy critical service delivery

Secure Sign-On to state website

Security 'built-into' system to reduce user error

Privately post location to her friends

NSTIC

We've proven that Trusted Identities matter

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DoD Led the Way

- DoD network intrusions fell 46% after it banned passwords for log-on and instead mandated use of the CAC with PKI.

But Barriers Exist

- High assurance credentials come with higher costs and burdens
- They've been impractical for many organizations, and most single-use applications.
- Metcalfe's Law applies – but there are barriers (standards, liability, usability) today that the market has struggled to overcome.

What does NSTIC call for?

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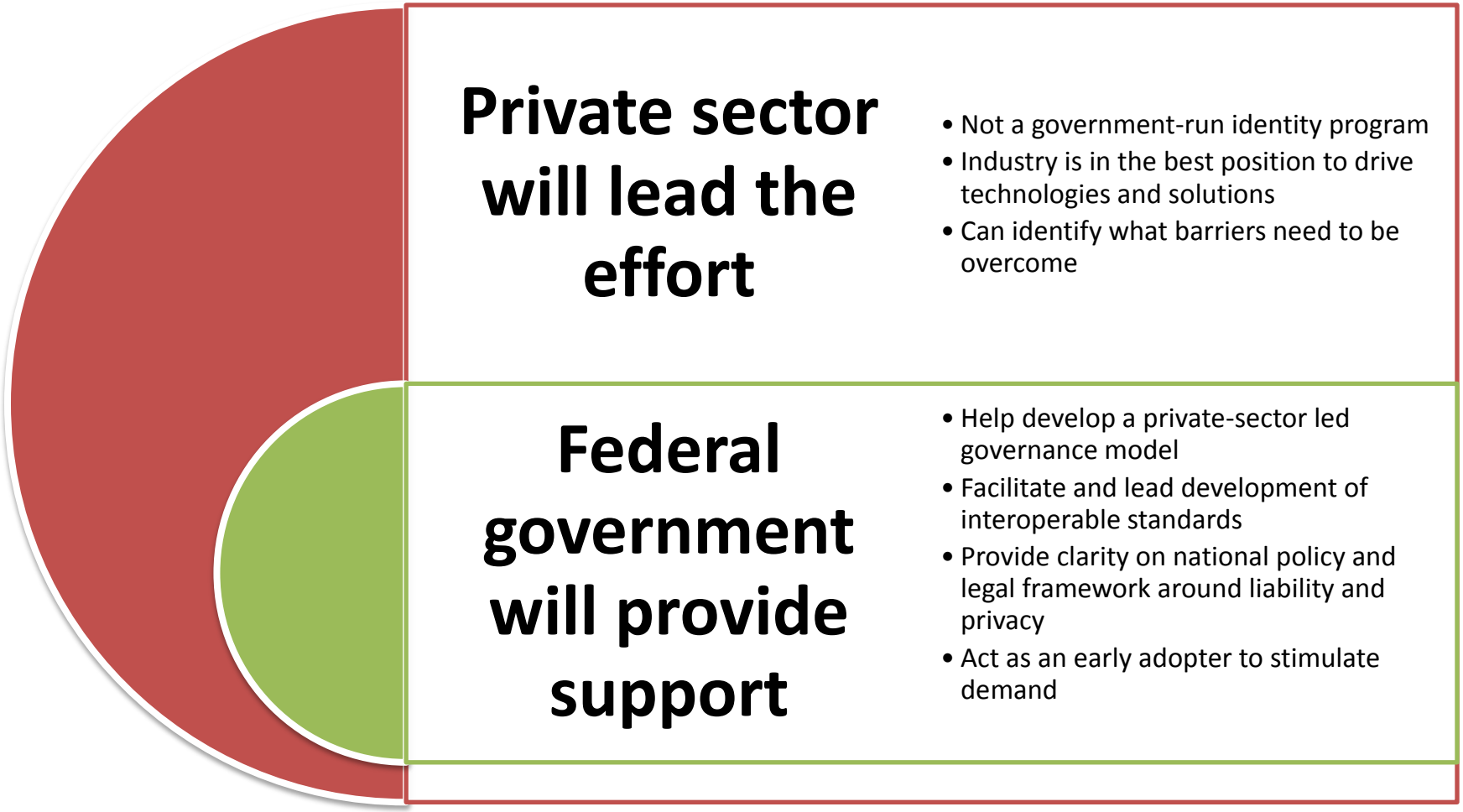

Privacy and Civil Liberties are Fundamental

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- **Increase privacy**
  - Minimize sharing of unnecessary information
  - Minimum standards for organizations - such as adherence to Fair Information Practice Principles (FIPPs)
- **Voluntary and private-sector led**
  - Individuals can choose not to participate
  - Individuals who participate can choose from public or private-sector identity providers
  - No central database is created
- **Preserves anonymity**
  - Digital anonymity and pseudonymity supports free speech and freedom of association

NSTIC National Program Office

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- Charged with leading day-to-day coordination across government and the private sector in implementing NSTIC
- Funded with $16.5M for FY12

Next Steps

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Convene the Private Sector

- Create an Identity Ecosystem Steering Group
- New 2-year grant to fund a privately-led Steering Group to convene stakeholders and craft standards and policies to create an Identity Ecosystem Framework

Select Pilots

- FFO recently published for $10M NSTIC pilots grant program
- 5-8 awards expected by late summer
- Challenge-based approach focused on addressing barriers the marketplace has not yet overcome

Government as an early adopter to stimulate demand

- Ensure government-wide alignment with the Federal Identity, Credential, and Access Management (FICAM) Roadmap
- Increased adoption of Trust Framework Providers (TFP)

The Time is Now

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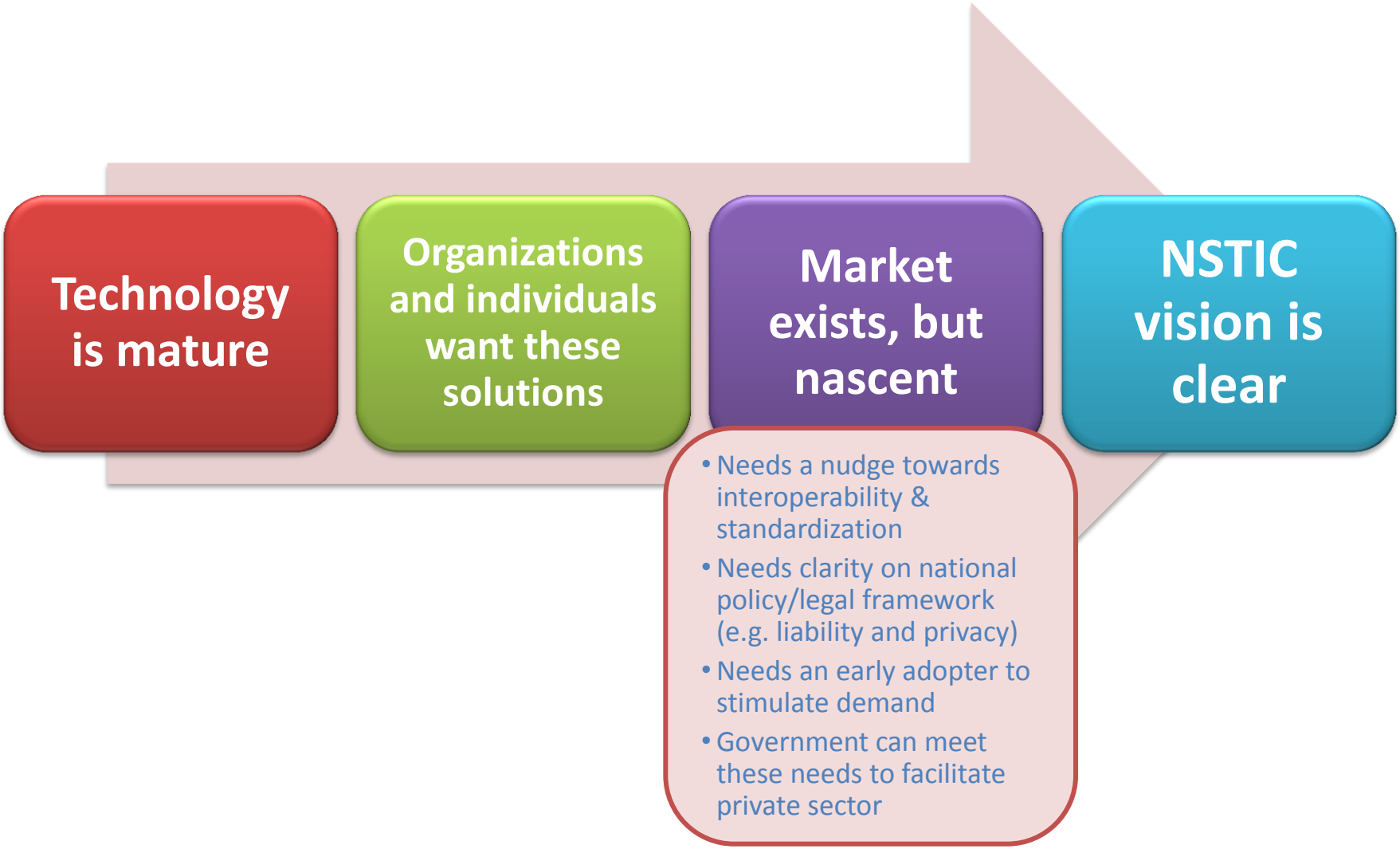

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Pilots Program – Purpose and Scope

Jeremy Grant

NIST

NSTIC

Pilot Overview

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- **Purpose**
  - Advance the NSTIC vision, objectives and guiding principles
  - Demonstrate innovative frameworks that can provide a foundation for the Identity Ecosystem, and tackle barriers that have, to date, impeded the Identity Ecosystem from being fully realized.

Pilot Overview

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- ***"Make something happen that otherwise would not"***
  - Pilots should test or demonstrate new solutions, models or frameworks that do not exist in the marketplace today…
  - …and that would be unlikely to exist – at least in a way that supports NSTIC – without this pilot funding

Focus on Barriers

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•The identity solutions marketplace has struggled, in part, due to a number of barriers that market forces alone have been unable to overcome. These barriers include, but are not limited to:

- A lack of commonly accepted technical standards to ensure interoperability among different authentication solutions.
- No clarity on liability and other complex economic issues (i.e., "who is liable if something goes wrong in a transaction?" "How – if at all – should transactions be monetized?")
- No common standards for privacy protections and data re-use.
- Challenges with usability of some strong authentication technologies.

Focus on Barriers

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- The NSTIC National Program Office (NPO) seeks to overcome these barriers, in part, through funding pilot programs that provide creative solutions to address one or more of these barriers and demonstrate the feasibility of solutions to them in a manner consistent with the NSTIC vision and guiding principles.

- These pilots can thus provide a foundation upon which the Identity Ecosystem can be constructed.

A Challenge-based Approach

- The FFO lays out 12 objectives that are "challenges" for potential proposers to solve.

- Proposers are not limited to addressing these 12 challenges in their proposals – there are certainly other notable challenges which may be worthy of attention.
  - The 12 objectives do provide a starting point for proposers to consider.

Examples

1. Demonstrate the feasibility of the Identity Ecosystem, via projects that link multiple sectors, including multiple Identity providers and relying parties.
2. Create and demonstrate solutions that can help public and private sector entities alike more easily jumpstart adoption of trusted strong authentication technologies in lieu of passwords at public-facing websites. For example, identity exchange hubs that can quickly validate and process strong credentials for relying parties.

Examples

4. Create and demonstrate a viable framework, capable of being accepted by all stakeholders, that provides certainty on liability and other economic issues.
5. Create and demonstrate a viable framework, capable of being accepted by all stakeholders, that provides a strong set of user-centric privacy protections for all Identity Ecosystem participants.
6. Demonstrate that privacy-enhancing technologies can support viable business

Examples

- 7. Demonstrate interoperability across multiple-solution stacks (i.e., smart cards, one time passwords, other technologies) in an identity ecosystem.
- 8. Create and demonstrate better user-centric frameworks for enabling the exchange of specific attributes associated with identities.
- 9. Expand the acceptance and use of trust frameworks and trusted third party credential providers by new Relying Parties.

Examples

- 10. Demonstrate that end-user choice can align with usability through innovative presentations of choice and new types of interfaces.
- 11. Demonstrate how advances in usability and accessibility can improve user uptake of strong authentication technologies.
- 12. Demonstrate the role public sector entities can play in helping individuals prove their identity to private sector credential providers and/or relying parties.

Funding

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- A total of $10,000,000 may be made available in FY 2012
- We anticipate awarding five (5) to eight (8) awards.
- New awards are expected to range from approximately $1,250,000 to $2,000,000 each with project performance periods of up to two (2) years
- Initial funding only provided for first year

Funding

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- **A note on the ranges:**
  - With regard to the $1.25-2M range: proposers may request smaller or larger amounts – the range above is simply what we forecast.
  - Two years is the maximum we would consider for a period of performance – entities who can demonstrate meaningful outcomes in a shorter timeframe should propose to do so.

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Overview of the Federal Funding Opportunity

http://www.nist.gov/director/oism/index.cfm

Contents

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- Eligibility
- Cost-Share
- Structure and Timeline
- Evaluation Process
- Evaluation Criteria
- Selection Factors
- Abbreviated Proposal Contents
- Full Proposal Contents

Who is an eligible proposer?

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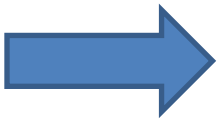
- Accredited institutions of higher education;
- Hospitals;
- Non-profit organizations;
- Commercial organizations; and
- State, local, and Indian tribal governments



located in the United States and its territories.

Who is not eligible?

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- Individuals;
- Federal government entities; and
- Entities located outside the U.S.

Cost-Share

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- Cost-share is not required

Competition Structure and Timeline

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- Abbreviated Proposals due March 7, 2012
- Finalist notifications – March 22, 2012
- Full Proposals due April 23, 2012
- Selections – July, 2012
- Earliest Potential Start Date – September 1, 2012

Abbreviated Proposal Evaluation Process

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- **Administrative Review**
  - **Eligibility**
  - **Completeness**
  - **Responsiveness to the Scope**
- **Technical Review**
  - **Uses the Evaluation Criteria**
  - **At least three independent reviews**
- **Proposals ranked using average scores**
- **Selection made using rank and selection factors**

Full Proposal Evaluation Process

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- **Administrative Review**
  - **Eligibility**
  - **Completeness**
  - **Responsiveness to the Scope**
- **Technical Review**
  - **Uses the same Evaluation Criteria**
  - **At least three independent reviews**
- **Evaluation Panel reads proposals and technical reviews and ranks the proposals**
- **Selection made using rank and selection factors**

Evaluation Criteria

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- Rationality and Feasibility (0 to 40 points)
- Merit of Contribution (0 to 30 points)
- Qualifications of Personnel and Ability to Deliver (0 to 20 points)
- Resource Availability and Planning (0 to 10 points)

Rationality and Feasibility

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- **Rationality and Feasibility (0 to 40 points).** Coherence of the proposer's approach and the extent to which the proposal effectively addresses the NSTIC Guiding Principles. Factors that may be considered include:

1. demonstration of long-term commitment to project success;
2. demonstrated alignment of pilot to NSTIC guiding principles;
3. the thoughtful integration of usability principles and user-centered design;
4. how enhancement of end-user privacy is designed into the project;
5. the ability to address differences between conformity and interoperability;
6. the ability to identify clearly, technology versus policy interoperability efforts;
7. the ability to address identified barriers to the Identity Ecosystem and provide a foundation to address one or more of them;
8. the likelihood that the pilot would be successful;
9. the likelihood that the pilot, if successful, could continue into production; and
10. the quality and comprehensiveness of a plan to transition a pilot into ongoing operations, i.e., "production."

Merit of Contribution

- **Merit of Contribution (0 to 30 points).** Potential effectiveness of the proposal and the value it would contribute to furthering the development of the Identity Ecosystem in accordance with the NSTIC Guiding Principles. Factors that may be considered include:

1. the likelihood that the proposed project will help meet NSTIC near-term or long-term benchmarks;
2. the contribution of the project to development of the Identity Ecosystem Framework;
3. the number of end users potentially impacted by the proposed project; and
4. the ability of the proposed project to develop new or strengthen existing digital identity services.

Qualifications of Personnel and Ability to Deliver

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- **Qualifications of Personnel and Ability to Deliver (0 to 20 points).** Professional accomplishments, skills and training of the proposed personnel to perform the work described in the project. Factors that may be considered include:

(1) the qualifications of key and supporting personnel;

(2) demonstration of the ability to achieve positive outcomes in pilot programs and similar endeavors; and

(3) stakeholder outreach and coordination.

Resource Availability and Planning

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- **Resource Availability and Planning (0 to 10 points**). Extent to which the proposer has access to the necessary facilities and overall support to accomplish the project objectives. Factors that may be considered include:

1. the degree to which requested resources are appropriate for the proposed project's scope;
2. the quality of organizational resources proposed to be used on the project;
3. the rationality of acquisition plans;
4. the plan to obtain and/or leverage additional or external resources or support as needed to complete the project and/or to engage in post-project commercialization to move the project results into routine use;
5. the effectiveness of the organizational proposed team structure if contracts and/or sub-awards are included; and
6. proposed collaborations with other Identity Ecosystem stakeholders.

Selection Factors

- The availability of Federal funds.
- The project duplicates other projects funded by NIST, DoC, or by other Federal agencies.
- Proposer's performance under current or previous Federal financial assistance awards.
- Diversity of technical approaches to providing a foundation for the Identity Ecosystem, and tackling barriers that have, to date, impeded the Identity Ecosystem from being fully realized.

Abbreviated Proposal Contents

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- **SF-424, Application for Federal Assistance.**
  - Signed by an authorized representative of the proposer organization
  - FFO number 2012-NIST-NSTIC-01 in item 12
  - All other information provided
- **Abbreviated Project Narrative**
  - Word-processed document
  - No more than five (5) double-spaced pages
  - Includes sufficient information to address the evaluation criteria

Full Proposal Contents

National Institute of Standards and Technology
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- **SF-424, Application for Federal Assistance.**
  - Signed by an authorized representative of the proposer organization
  - FFO number 2012-NIST-NSTIC-01 in item 12
  - Requires
    - Central Contractor Registry Number (CCR)
    - Dun and Bradstreet Number (DUNS)
    - Employer Identification Number (EIN)

CCR, DUNS and EIN numbers are required for award and for filing proposals electronically through grants.gov. For a start up without any of these numbers, it can take weeks to get all three.

Full Proposal Contents – Cont.

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- **SF-424A, Budget Information - Non-Construction Programs.**
  - The budget should reflect anticipated expenses for each year of the project of no more than two (2) years, considering all potential cost increases, including cost of living adjustments.)
- **SF-424B, Assurances - Non-Construction Programs**
- **CD-511, Certification Regarding Lobbying**
- **SF-LLL, Disclosure of Lobbying Activities (if applicable)**

Full Proposal Contents - Continued

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- **Full Technical Proposal.**
  - Word-processed document
  - No more than twenty-five (25) pages
  - Responsive to the program description and the evaluation criteria
  - Contains the following:
    - Executive Summary
    - Project Approach
    - Statement of Work
    - Qualifications
    - Resource Availability

National Strategy for Trusted Identities in Cyberspace

Administrative Requirements

Contents

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- Budget Information
- Payment
- Partnering Tools – Contracts and Sub-awards
- Intellectual Property
- Human Subjects and Software Testing
- Expectations and Reporting Requirements for Cooperative Agreements

Budget Information - Cost Principles

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- 48 CFR Part 31 (For-profits) – http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title48/48cfr31_main_02.tpl

- 2 CFR Part 220 - Educational Institutions (OMB Circular A-21) - http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title02/2cfr220_main_02.tpl

- 2 CFR Part 225 - State and Local Governments - http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title02/2cfr225_main_02.tpl

- 2 CFR Part 230 - Non-profits (OMB Circular A-122) - http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title02/2cfr230_main_02.tpl

Budget Information
Allowable Costs - examples

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- Direct Costs of the Technical Work
  - Salaries of technical personnel on the project
  - Equipment used on the project (pro-rated)
  - Materials and supplies
- Travel to Identity Ecosystem Steering Group Meetings to report on the project
- Companies – Costs of a project audit at the end of each project year

Budget Information
Indirect Costs

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- Indirect costs with an approved indirect cost rate agreement are allowable costs

- Indirect cost rate agreement must be with the recipient's cognizant Federal agency

- DoC General Indirect Cost Rate Program Guidelines for Grantee Organizations, June 2011 http://www.nist.gov/tip/upload/doc_indirect_cost_rate_program_guidelines_for_grantee_organizations_june_2011.pdf

Budget Information
Disallowed Costs - examples

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- Profit and Fees
- Proposal Writing/Development
- Contingency Fees
- Any cost disallowed by the cost principles
- Any cost not required for the technical work proposed on the grant

Payment

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- All awards are paid electronically through the Automated Standard Application for Payment (ASAP) system managed by the US Treasury
- Will be required to enroll if not already

Payment – For new grantees

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- Institutions with no prior history of receiving Department of Commerce awards will be required to
  - Furnish a copy of an audited financial statement or certified company audit
  - Obtain an Accounting System Certifications (Guidance on what is to be included in the Certification can be obtained from the NIST Grants and Agreements Management Division at 301-975-8088)

Partnering Tools

- Contracts
  - Principal purpose of the relationship is the acquisition, by purchase, lease, or barter, of property or services (DoC Grants Manual)
- Sub-awards
  - An award of financial assistance made under an award by a recipient to an eligible sub-recipient or by a sub-recipient to a lower sub-recipient (DoC Grants Manual)

Partnering Tools – Sub-awards

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- In a sub-award, all the terms and conditions of the award flow down to the sub-recipient, and the recipient is responsible for the compliance of the sub-recipient.
- For example, no profit or fee may be charged on a sub-award.

Partnering Tools – Contracts

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- In a contract, intellectual property requirements and other terms flow down to the contractor.
- Standard profits and fees may be charged as they would for other customers

Intellectual Property

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- Covered by Department of Commerce Financial Assistance Standard Terms and Conditions
- Follows Bayh-Dole Act
- "The recipient has the right to own any invention it makes …The recipient may not assign its rights to a third party without the permission of DOC unless it is to a patent management organization (i.e., a university's Research Foundation.) The recipient's ownership rights are subject to the Government's nonexclusive paid-up license and other rights." (DoC, Financial Assistance Standard Terms and Conditions, Term M.04)

http://www.osec.doc.gov/oam/grants_management/policy/documents/DOC_Standard_Terms_and_Conditions_03-01-2008.pdf

Human Subjects in Research

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- *human subject* - a living individual about whom an investigator conducting research obtains (1) data through intervention or interaction with the individual or (2) identifiable private information
- *research* as a systematic investigation, including research, development, testing and evaluation, designed to develop or contribute to generalizable knowledge

  – From "The Federal Policy for the Protection of Human Subjects (the Common Rule), adopted by the Department of Commerce (DOC) at 15 C.F.R. Part 27

Human Subjects in Research and Software Testing

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- Uses of human subjects in research can include (but are not limited to):
  - Use of existing data sets collected from individuals for testing purposes
  - Collecting biometric data for testing purposes
  - Surveys or focus group discussions for requirements solicitation
  - Bringing in members of the user community for software testing

Approvals for the Use of Human Subjects in Research

- NIST reserves the right to make an independent determination of whether an applicant's research involves human subjects.
- If NIST determines that a project involves human research subjects, the proposer will be required to provide additional information in writing about that part of the proposal for review and approval.
- If an award is issued, no research activities involving human subjects shall be initiated or costs incurred under the award until the NIST Grants Officer issues written approval.
- Retroactive approvals are not permitted.

Human Subjects in Research
Some Key Characteristics

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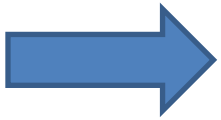
- Is the data provided from a commercial source?
- Is the data to be used pre-existing?
- Was the data collected for this specific project or for other purposes?
- Is the data anonymous?
- Does any of the data come from individuals who may need special protection (i.e., children)?
- Does the data involve public behavior?



Answers to these questions help NIST determine how to proceed with the approval process for the research involving human subjects.

Institutional Review Boards (IRB)

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- Registered with the Office of Human Research Protections of the Department of Health and Human Services
- Information regarding how to register an IRB with OHRP and obtain a Federal Wide Assurance (FWA) for the use of human subjects can be found at http://www.hhs.gov/ohrp/assurances/index.html.

Human Subjects in Research - Approval Process Continued

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- Research using human subjects or data from human subjects for which Institutional Review Board (IRB) approval may not be required (note: if a proposer has an IRB, the IRB will need to make a determination)
  - Generally pre-existing anonymous data
  - NIST will seek detailed written information on the use of human subjects or data from human subjects
  - NIST will make an independent determination on what documentation is required for approval

Human Subjects in Research Approval Process

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- Research for which Institutional Review Board (IRB) approval is required
  - Must have copy of the protocol that has been (or will be) submitted to the IRB
  - Proposer must have or work with an IRB that is registered with the Office of Human Research Subjects Protections (OHRP) of DHHS
  - Proposer must have a Federal Wide Assurance from OHRP

Expectations and Requirements

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- Administrative Requirements - 15 CFR Part 14, Uniform Administrative Requirements for Grants and Cooperative Agreements with Institutions Of Higher Education, Hospitals, Other Non-Profit, and Commercial Organizations - http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=3dd74c477a3314a30e1d8c581b93db16&rgn=div5&view=text&node=15:1.1.1.1.19&idno=15
- DoC Financial Assistance Standard Terms and Conditions, March 2008 - http://www.osec.doc.gov/oam/grants_management/policy/documents/DOC_Standard_Terms_and_Conditions_03-01-2008.pdf
- Financial Assistance Award Form - http://ocio.os.doc.gov/s/groups/public/@doc/@os/@ocio/@oitpp/documents/content/dev01_002513.pdf
- Special Award Conditions specific to NSTIC and specific cooperative agreement

Reporting Requirements

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- **Financial Reports -** SF-425, Federal Financial Report in triplicate each calendar quarter
- **Performance (Technical) Reports -** a technical progress report in triplicate each calendar quarter and a final technical progress within 90 days after the end of the award
- **Patent and Property Reports –** as required the recipient may need to submit property and patent reports (patent reports use iEdison.gov)
- **Reporting progress to NSTIC Steering Group twice a year**

Audits

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- **Required at the end of the first year and the end of the project**
- **Consistent with OMB Circular A-133, "*Audits of States, Local Governments, and Non-Profit Organizations*," and the related *Compliance Supplement* - *http://www.whitehouse.gov/sites/default/files/omb/assets/a133/a133_revised_2007.pdf***

Questions??

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