



PIV Pilot Usability Lessons Learned

Mary Theofanos
Visualization & Usability Group
Information Access Division
Information Technology Laboratory



Comprehensive
National
Cyber-Security
Initiative:
Research and
Development





Usability Research Goal:

To enable policy makers and system implementers to make better decisions

PIV Pilot study objectives

- Investigate and gain insight on the impact of this new system on worker performance
- Explore attitudes people have about this new authentication approach that may affect uptake.
- Learn whether there are differences in users' expectations and attitudes of the system prior to first use and ongoing use.



What did the Pilot involve?

26 NIST employees (of 100 Pilot users) over 10 weeks that used the PIV card and pin to:

- Log in to their computer
- Digitally sign email
- Encrypt email
- Access a web application to register visitors



What information did we collect?

- Daily emails surveys (diary)
- Periodic interviews
- Direct observation
- Pre and post surveys

Did you use the PV card to login today?

If not why not?

Did you have problems?

What did we learn?

Installation and Training

- Streamline the PIV update certificate process
- Develop a strategy for coordinating technical support for users of PIV cards and readers.
- Provide a variety of training opportunities to accommodate the wide variety of learning styles that users have

What did we learn?

Work Environment and Form Factor

- One size does not fit all. A wide range of devices should be evaluated and be made available for users to choose
- Continue to support use of username and passwords to address forgotten, stolen and lost PIV cards.
- Refrain from mandating a PIN that changes frequently
- No clear policy on when to encrypt/decrypt or digitally sign an email
- Clear guidance on how to choose between certificates.
- All web applications should use PIV

What did we learn?

Work Environment and Form Factor

- One size does not fit all. A wide range of devices should be evaluated and be made available for users to choose
- Continue to support use of username and passwords to address forgotten, stolen and lost PIV cards.
- Refrain from mandating a PIN that changes frequently
- No clear policy on when to encrypt/decrypt or digitally sign an email
- Clear guidance on how to choose between certificates.
- How do you use PIV for multiple computers at one time
- All web applications should use PIV

Users Views of PIV Security

- Users develop mental models of security that are inaccurate
 - No concept that possessing the card is part of the overall security mechanism (multi-factor)

Reinforces the importance for security to be as transparent as possible and to maximize direct benefits to users

User Acceptance

- Users who interacted with the usability team were much more accepting than others users in pilot
 - 1) used their PIV cards more during the pilot ; and
 - 2) are much more likely to continue using their PIV cards for accessing their computers

Consider creating user groups to allow development of in-house expertise related to PIV use.

Wrong Approach:
Aw, they'll get used to it



Contact Information

Mary Theofanos

maryt@nist.gov

Emile Morse

emorse@nist.gov