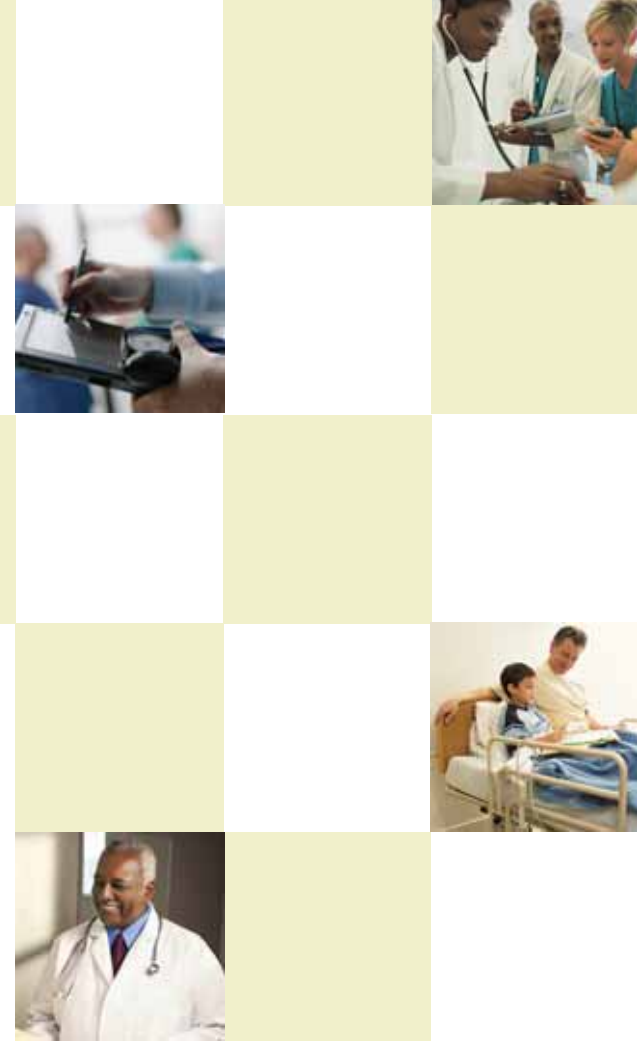




SAFE-BioPharma Association
Signatures And Authentication For Everyone



Digital Signatures and Electronic Submissions: How SAFE Can Increase Information Liquidity

Mollie Shields Uehling, President and CEO

The Impetus for SAFE.....



- ▶ Revolution in life sciences and medical technology:
 - Changing the way we live
 - Expensive, complex, geography, many players

- ▶ Need to improve safety, quality, development times:
 - Paper costs: 40% of R&D costs; 33% all healthcare costs
 - Increasingly complex industry
 - Katrina experience
 - Wall Street imperative: reduce cost structure

- ▶ Need to improve efficiencies, reduce costs;
 - Shift to eClinical
 - eRegulatory processes
 - eHealthcare, e.g., UK, France, US:

There is a pressing need to better allocate healthcare resources to deliver more new medicines to patients, faster and safely.

Example: Costs of Credentialing Investigators



- ▶ Industry spends > \$1 billion per year on independent identity credentialing models
 - Over 200,000 clinical investigators sites
 - 1,500 contract research organizations
 - 1,000 university medical centers
 - 1,000 medical labs
 - Approximately ~700,000 individual users
 - All use independent proprietary credentials for remote access to information systems
- ▶ Approximately 40% of annual R&D costs attributed to paper based business processes (\$9 Billion in US alone)

There is a clear business case for electronic signatures & records

The Vision. . .



- ▶ What would the world be like if we could conduct
 - business electronically with the same certainty of paper?

- ▶ What would our business processes be like if we could
 - Eliminate wet signatures?
 - Digitally sign documents the same way we do paper?
 - Trust people's identities without ever meeting them?
 - Eliminate multiple passwords, passcards?
 - Interoperate regardless of technology or vendor?

- ▶ How much faster? How much more productive?

- ▶ How much more accurate?

- ▶ How much faster and safer could industry deliver medicines to patients?

What Are the Barriers?



▶ Regulatory Concerns

- Good clinical, lab, safety, and manufacturing practices; global digital signature requirements; privacy protection; data quality; regulatory compliance, audit, and acceptance

▶ Legal and Risk Management Concerns

- Global operations; legal liabilities; regional acceptance; intellectual property protection

▶ Trust Concerns

- Digital identity; consistency across trading partners; data integrity

▶ Infrastructure Concerns

- Reuse of current investments; vendor support; interoperability with trading partners; multiple overlapping standards

Each business should not have to resolve the problem independently

The Solution: The SAFE Standard



▶ Business

- Operating Policies
- Agreements (Member, Issuer)
- Processes



- ***Accept digitally signed transactions***
- ***Agree to limited liability caps***
- ***Agree to dispute resolution process***
- ***Agree to US, EU, other legal & regulatory requirements***
- ***Agree to self-audit & meet SAFE requirements***

▶ Technical

- Certificate Policy
- Specifications
- Guidelines & Guidance



- ***Manage identity life cycle***
- ***Comply with referenced standards***
- ***Follow security, audit & control requirements***

What is the SAFE-BioPharma Association?



- ▶ An industry sponsored association
- ▶ Focused on supporting the health industry's migration from paper to electronic transactions
- ▶ Built upon:
 - Common operating policies
 - Digital signature & signed e-record standard (including infrastructure & practices)
 - Legal & liability risk management framework
- ▶ To provide:
 - Increased business & process efficiency
 - Legally enforceable & regulatory compliant identity credentials
 - Globally acceptable digital signatures on electronic record transactions
 - Ease of interoperation between community members

SAFE-BioPharma Association



▶ Not for profit entity:

- Issued digital signature standard in 2004 under PhRMA
- Created industry association in mid-2005
- Not about financial return to SAFE; return delivered to members through the use of the system
- Ensure open access to all within the broad healthcare industry

▶ Provides:

- Delivery & maintenance of common global standard
- Standard-related services including credentials to clinical investigators
- Leverage for application enablement and certification
- Member support

▶ Seeks to minimize financial impact to participants

- Shared-services
- Shared-liability
- Mutual problem solving
- Shared costs via annual participation fees and fees-for-services

The SAFE Community of Participants



BioPharma Members

- AstraZeneca – Founder
- Bristol-Myers Squibb – Founder
- GlaxoSmithKline – Founder
- Genzyme
- Johnson & Johnson – Founder
- Merck – Founder
- Nektar
- Organon
- Pfizer – Founder
- Procter & Gamble – Founder
- Roche
- Sanofi-Aventis – Founder

Government Agencies

- National Cancer Institute
- Food & Drug Administration
- European Medicines Evaluation Agency
- Irish Medicines Board
- Medicines Evaluation Board – Netherlands
- EOF: Greece
- Veterinary Medicines Directorate: United Kingdom

Research Sites & IRB's

- Memorial Sloan Kettering
- Mayo Clinic
- City of Hope National Medical Center
- Women & Infants Hospital of Rhode Island
- H Lee Moffitt Cancer Center
- Sidney Kimmel Cancer Institute
- Shulman & Associates
- Western IRB

Association Partners

- Pharmaceutical Research & Manufacturers Association
- European Federation of Pharmaceutical

SAFE Participation Drivers



Members

Merck, J&J, Roche, AstraZeneca, Sanofi-Aventis, BMS, Pfizer, Nektar, Organon, Genzyme, GlaxoSmithKline, P&G

Drivers

- Shared cost model, and experience
- Cost avoidance
- Interoperability at scale
- Broad application
- Risk management infrastructure

Business Partners

Labs, Investigators, CROs, Bio-Techs, Manufacturing Supply Chain, Sales

Drivers

- Simplified end user experience, standard interoperability requirements
- Community of practice
- Improved and lower cost partner interactions
- Operational value added services

Government, Regulatory Agencies, Associations (EU, USA, ASIA PAC)

PhRMA, EFPIA, FDA, EMEA, NCI

Drivers

- Standard Compliance
- Cost Avoidance
- Less Paper
- Interoperability at scale
- Broad application

SAFE
community:
↓
over \$400b in
annual
revenues !

Vendor Partners

Issuers, Applications providers, Systems Integrators

Drivers

- Access to a channel
- Customer driven product enhancements
- Leadership advantage
- New business opportunities

SAFE-BioPharma Association



Standards Body	Shared Services Company	Healthcare Industry Association
<ul style="list-style-type: none"> ▶ Standard Development & Maintenance ▶ Certification standards & administration: <ul style="list-style-type: none"> –Members –Products –Issuers ▶ Alignment to HL7, CDISC, IHE, ICH, EAP ▶ Standards Working Groups ▶ Regulatory relationships: <ul style="list-style-type: none"> –FDA; EMEA 	<ul style="list-style-type: none"> ▶ Vendor partner program ▶ Operation of bridge ▶ Cross-cert of Federal Bridge (USPTO, HHS, EPA, etc.) <p style="text-align: center;">Driving/Incubating Innovation</p> <ul style="list-style-type: none"> ▶ Credentials Issuance Model & Pricing for Investigators ▶ Directory of Users ▶ Member Implementation support and tool development ▶ Vendor audits ▶ Tech Devel: USSI, Profiler, Remote 	<ul style="list-style-type: none"> ▶ Stakeholder outreach ▶ Education & advocacy ▶ Policy engagement ▶ Member engagement and information exchange: <ul style="list-style-type: none"> –implementation tools ▶ Industry awareness & engagement ▶ Collaborative projects <ul style="list-style-type: none"> –E.g., NCI Firebird ▶ Media: local, national, trade, international

Using SAFE



Why is a credential needed?



- ▶ **Very high level of identity trust**
 - Identity authentication is face-to-face;
 - Documentation same as that required for employment
 - Required to cross-certify with Federal Bridge – access to HHS, EPA, USPTO, other Federal agencies, and Education Bridge (medical research institutions)

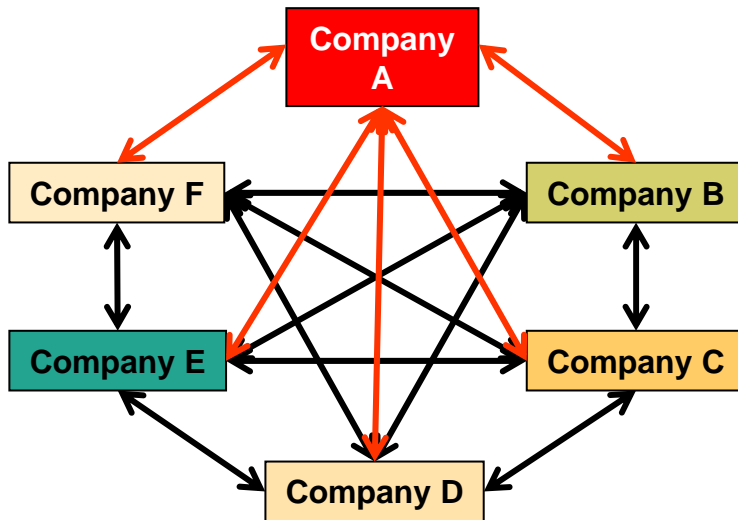
- ▶ **Very secure**
 - Utilizes modern cryptography and information technology
 - Difficult to compromise

- ▶ **Legally enforceable**
 - Non-repudiable electronic signature is mathematically, directly related to the data (signature)
 - Stronger evidence in legal proceedings
 - Closed user system
 - Bound by contracts
 - Defined obligations and responsibilities

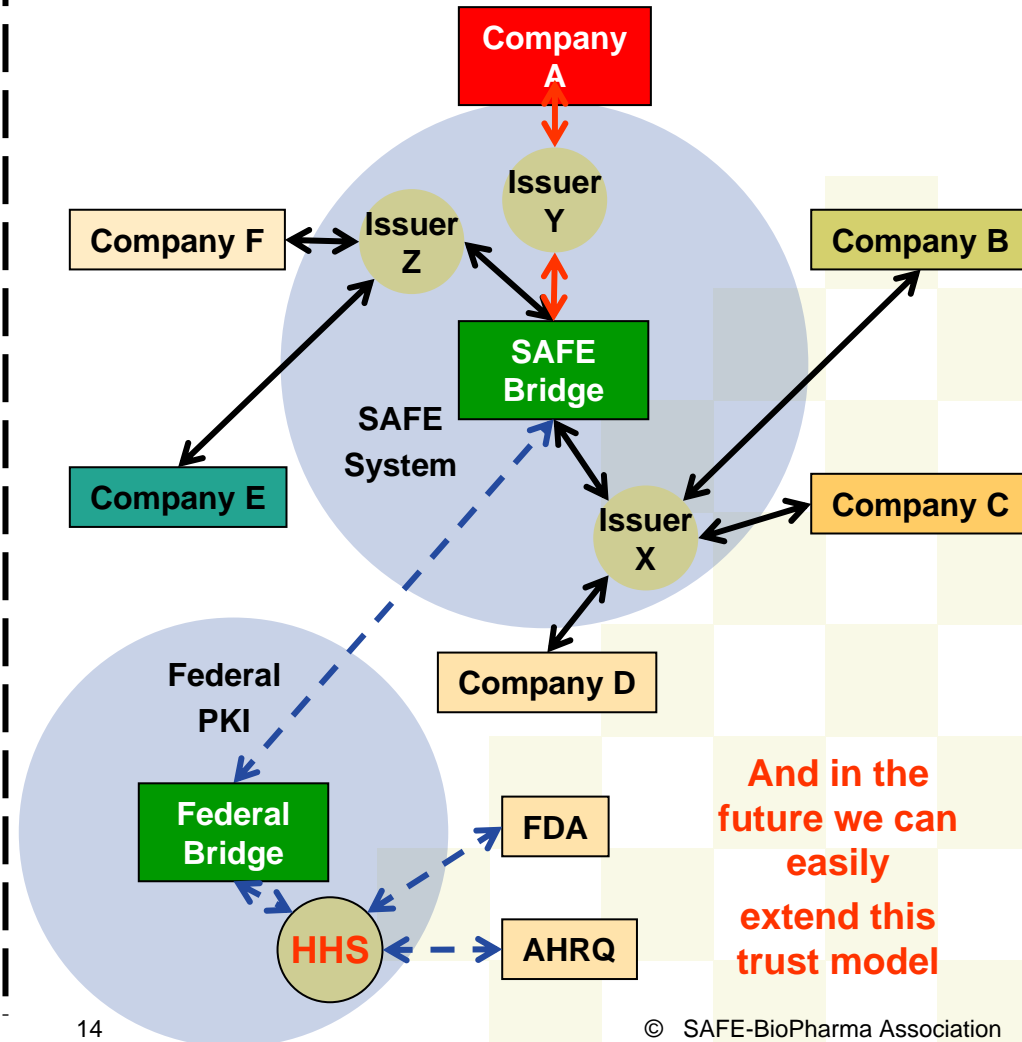
- ▶ **Surrounded by comprehensive technical and policy framework of SAFE ruleset**

How SAFE Simplifies Trust Relationships

Prior to today establishing trust meant individual agreements



As of today we can bridge trust and reduce complexity



And in the future we can easily extend this trust model

Signing with a SAFE Credential



A screenshot of a Microsoft Internet Explorer browser window displaying the USSI (Universal Safe Signing Interface) application. The browser's address bar shows the URL "https://www.safesign.org/uss/sp". The application interface includes a sidebar with navigation options like "Profile", "My Signature Book", and "Upload Document". The main content area is titled "USSI INTERFACE" and contains a form for signing a document. The form fields include: "Document" (Please Sign 157217.pdf), "Certificate" (George.S.Rathbun), "Signature Field" (SIGNATURE OF INVESTIGATOR), "Reason" (I attest to the accuracy and integrity of this document.), and "Comment" (Dear Doctor, Please sign). At the bottom of the form, there are four buttons: "REVIEW DOC", "SIGN DOC", "CANCEL", and "REJECT". The SAFE logo is visible in the bottom right corner of the application window. The Windows taskbar at the bottom shows the system tray with the time 11:24 AM and the text "© SAFE-BioPharma Association".

Signer:

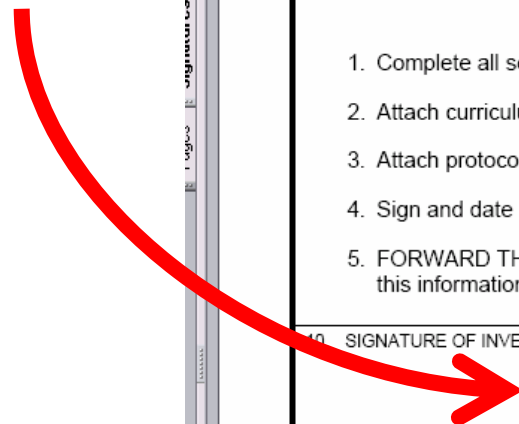
1. Selects document to sign
2. Acknowledges SAFE signature rules
3. Provides reason for signing (if needed)
4. Inserts hardware token
5. Enters pass phrase to complete signing operation

Validating a SAFE Signature



SAFE-BioPharma Association
Signatures And Authentications For Electronic

Just Click
On it ...



Internet Explorer

Address: https://www.safesign.org/ussi/sp/downloads/Please_Sign_157216.pdf?ID=2220&RSTR=q99p0ujl6ssvl2j&MODE=SIGNED&TEST=test.pdf

INSTRUCTIONS FOR COMPLETING FORM FDA 1572
STATEMENT OF INVESTIGATOR:

1. Complete all sections. Attach a separate page if additional space is needed.
2. Attach curriculum vitae or other statement of qualifications as described in Section 2.
3. Attach protocol outline as described in Section 8.
4. Sign and date below.
5. FORWARD THE COMPLETED FORM AND ATTACHMENTS TO THE SPONSOR. The sponsor will incorporate this information along with other technical data into an Investigational New Drug Application (IND).

10. SIGNATURE OF INVESTIGATOR	 Mark A Nelson For Demonstration Purposes Only	11. DATE
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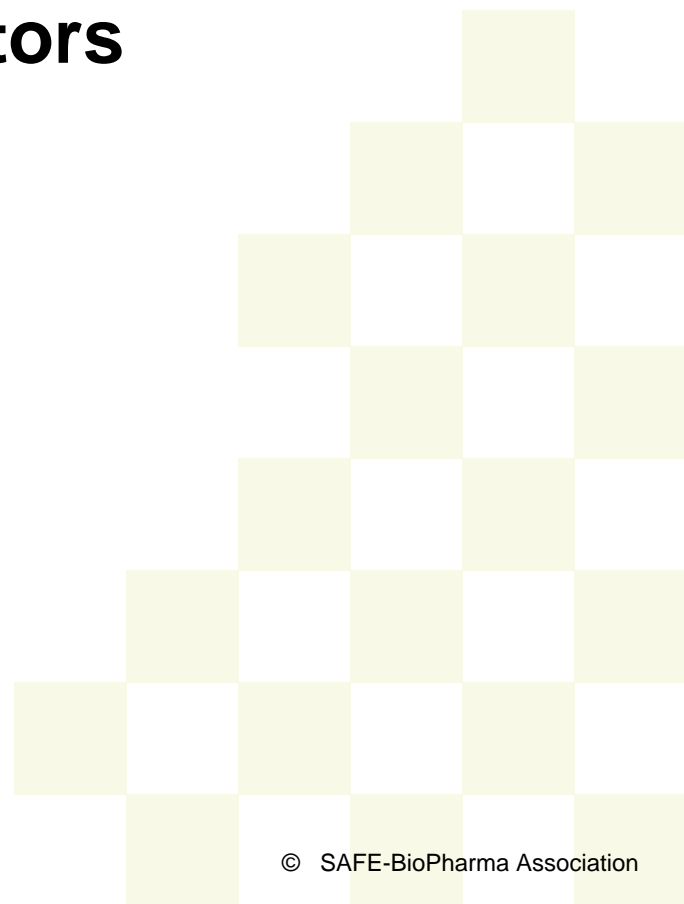
(WARNING: A willfully false statement is a criminal offense. U.S.C. Title 18, Sec. 1001.)

Food and Drug Administration
CDER (HFD-94)
12229 Wilkins Avenue
Rockville, MD 20852

Please DO NOT RETURN this application to this address.

**Validation: Confirms Integrity
of Signed Document & Validity
of Signer's Digital Certificate**

SAFE and Regulators



SAFE Compliance Working Group



- ▶ SAFE Member reps with QA/Compliance/Regulatory backgrounds
- ▶ FDA Participation
 - CDER/Division of Scientific Investigations
 - Part 11 Council
 - CIO
 - CBER
- ▶ Jointly-developed SAFE/FDA Auditor Familiarization Program
- ▶ Products
 - Inspection Techniques Manual for Auditors
 - Auditor Familiarization Training Materials
 - Regulatory Compliance Matrix
 - Functional Validation Scenarios & Validation Checklists
 - Internal SOP Matrix

The FDA's goal is to eliminate paper from application receipt and review processes. A completely paperless application process must be supported by implementation of legally binding electronic signatures.

SAFE provides that solution.

▶ Participants

- SAFE Evaluation Team: EMEA, GSK, Organon, Pfizer

▶ Deliverables – 3Q06

- Technical
- Functional validation audit scenarios and validation checklists
- Compliance matrix
- EMEA review of legal acceptability – EU and Member States
- EMEA statement acknowledging auditability

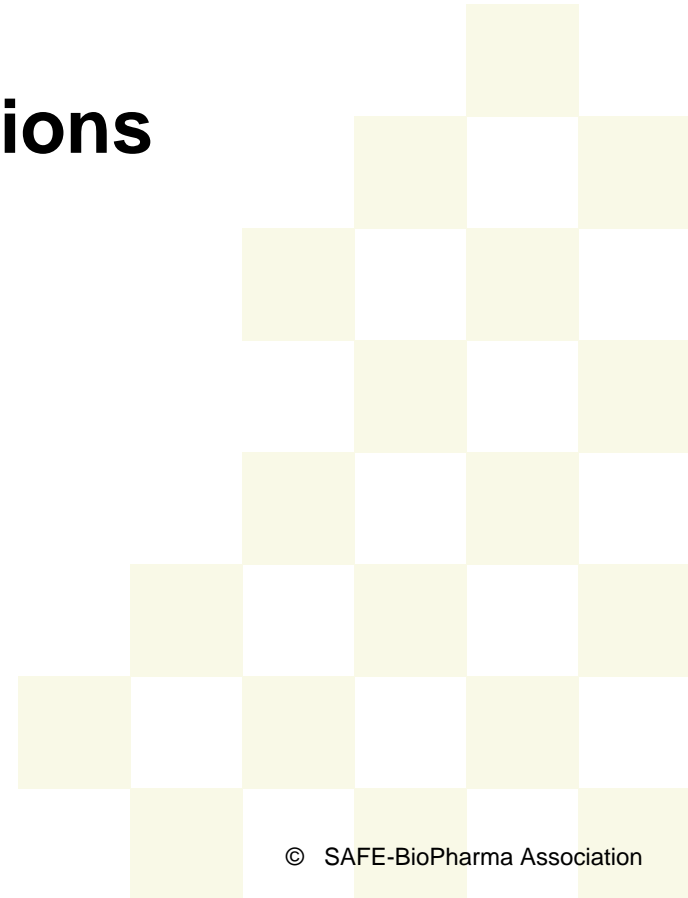
▶ SAFE EU Advisory Council

- EU and Member State regulations
- SAFE project implementations in the EU



The SAFE Evaluation Team (EMEA, EFPIA, Companies) determined that SAFE meets EU Electronic Signature Directive requirements.

SAFE Implementations



SAFE-NCI Firebird Operational Pilot



- ▶ **1572 Investigator statement:**
 - Most voluminous and redundant submission to FDA (220,000-240,000/year)
 - Investigator CV, financial statement, trial protocols, IRB, sub-investigators
- ▶ **Business case for pharma:**
 - With Firebird, average annual savings of switch from paper to electronic:
 - Large pharma: \$491,825
 - Mid-sized pharma: \$323,000
 - Small pharma: \$158,825
- ▶ **Firebird – Federal Investigator Registry for Bioinformatics Registry Data**
 - Electronic investigator profile management
 - 1572 templates & related workflows
 - For electronic submission and review by the FDA
 - Governed by NCI-FDA MOU
- ▶ **Participants:** NCI & contractors, AstraZeneca, Genzyme, Pfizer, Merck, Sanofi-Aventis, Amgen
- ▶ **SAFE is the identity authentication and digital signature application**
- ▶ **Timeline for pilot completion: December 2006**

SAFE Member Implementations



- ▶ **Pfizer:**
 - eLab Notebooks
 - Regulatory submissions

- ▶ **AstraZeneca:**
 - Regulatory submissions through FDA's Electronic Submissions Gateway

- ▶ **Merck:**
 - Product sampling

- ▶ **J&J:**
 - All J&J digital signatures are SAFE signatures

- ▶ **P&G:**
 - Enterprise digital signature solution

- ▶ **BMS:**
 - Business partner identity authentication

SAFE Implementation Support for Members

SAFE Implementation Tools



- ▶ Whitepaper on how to implement a SAFE project – written by members who have done it!
- ▶ Communications – how to educate internal customers about SAFE and obtain a business sponsor
- ▶ How to select projects of greatest value (ROI) to your organization
- ▶ Project planning tools
- ▶ Regulatory compliance checklists
- ▶ Policy mapping guidelines
- ▶ Other implementation tools SAFE members have developed and are using
- ▶ Access to Members who are implementing SAFE projects

Growing SAFE-Enabled Applications – SAFE Vendor Community



SAFE Premier Partners

- ✓ Adobe
- ✓ Aladdin
- ✓ Arcot
- ✓ Bearing Point
- ✓ CoreStreet
- ✓ Cybertrust
- ✓ Hitachi
- ✓ IBM
- ✓ IDBS
- ✓ Northrop Grumman
- ✓ Strategic Identity Group

SAFE Partners

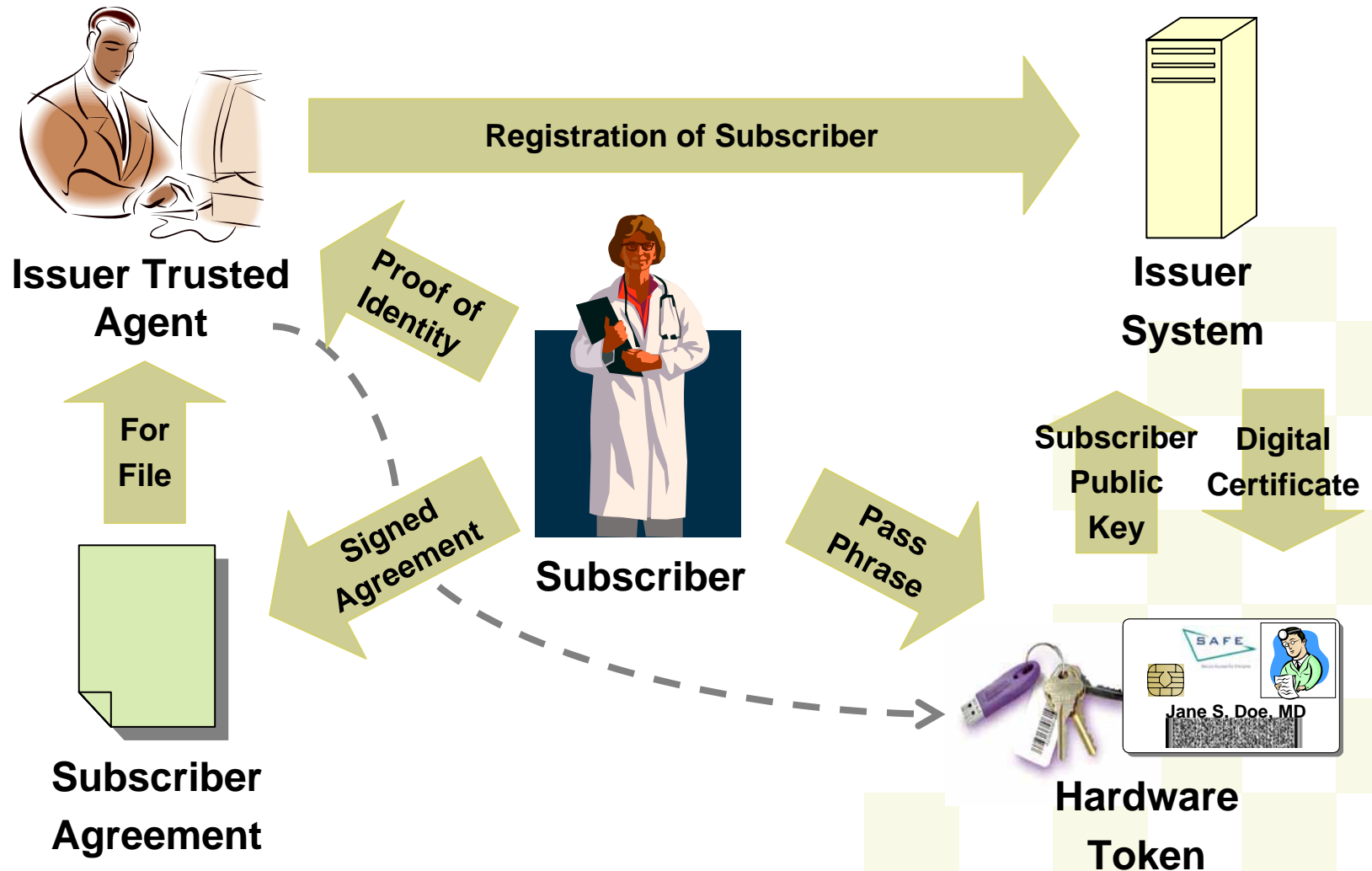
- ✓ Algorithmic Research (ARX)
- ✓ DataLabs
- ✓ Open Text

SAFE Issuers

- ✓ Citibank
- ✓ Cybertrust
- ✓ IdenTrust
- ✓ J&J
- ✓ SAFE-BioPharma

In the works: Microsoft Office 2007 and Documentum

Issuing SAFE Credentials



is the only global standard for healthcare community interoperability that enables trusted, secure, legally enforceable, paperless healthcare regulatory and business transactions



Imagine a Future.....



- ▶ Patient visits physician
- ▶ Registered with the swipe of a card
- ▶ Physician enters info on integrated point of care device, orders tests, prescribes, enrolls patient in clinical trial – all electronically
- ▶ Lab tests submitted and reported electronically
- ▶ Medicines are manufactured in batch and sent via electronic order
- ▶ Claims submitted and paid and records kept electronically
- ▶ Clinical trial data managed, signed and submitted electronically
- ▶ Patient carries personal health record.....

Becoming a SAFE Member



<http://www.safe-biopharma.org>

Mollie@SAFE-BioPharma.org

