Electronic & Digital Signatures

A focus on Notarial Acts and eApostilles

Steve Roylance
Strategic Projects Director – GMO GlobalSign Limited

Liaquat Khan
co-Founder and Technical Director – Ascertia Limited

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HCCH HAGUE CONFERENCE ON PRIVATE INTERNATIONAL LAW CONFÉRENCE DE LA HAYE DE DROIT INTERNATIONAL PRIVÉ

Agenda

- Steve Roylance – Strategic Projects Director – A more personal introduction.
- GlobalSign - A reminder of what a Certification Authority (CA) is and value added.
- Customer Examples – Business Registry's & Competent Authorities.
- ‘Electronic & Digital Signatures’ – Let’s make sure we know the differences.
- “New” eIDAS regulations in Europe – A top level overview and applicability worldwide.
- “New” Workflow options for Competent Authorities – Signing in the Cloud! (eApostilles)
- Questions?

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Steve Roylance – A more personal Introduction

- **Strategic Projects Director - GMO GlobalSign Ltd.**

- 25+ years in the IT industry
- 50% of which has been in the Certification Authority (CA) Industry (Representing 3 well known CAs)
- Founder of the CABForum*

- OneClickSSL – Inventor - Patented Domain Authentication System
- GAuth™ - Inventor – Patented Registry Authentication System
- Technical Evangelist for PKI & Identity management, painter, golfer, husband and father.

**Together with Phillip Hallam-Baker formally of VeriSign*

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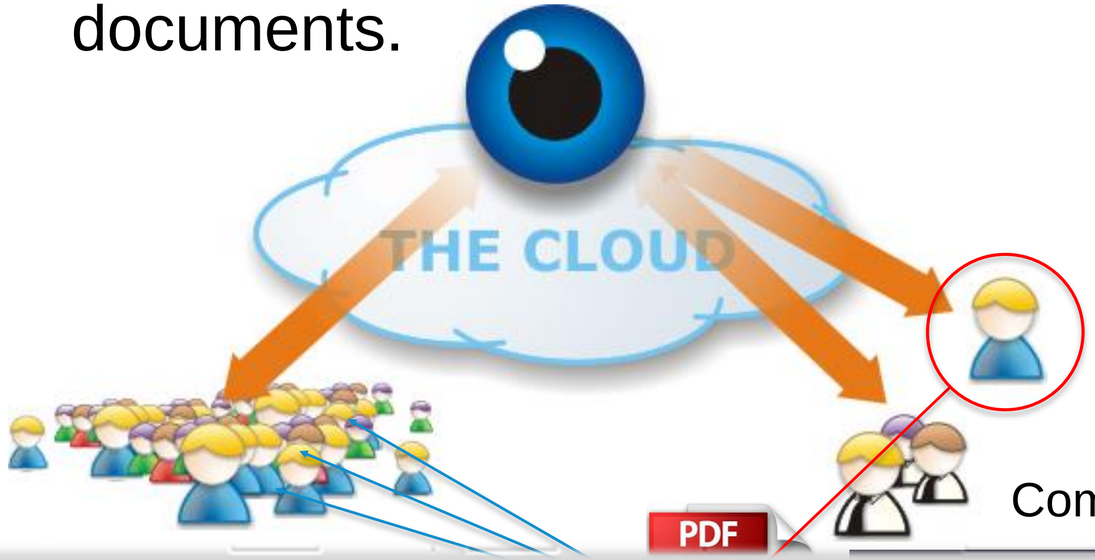
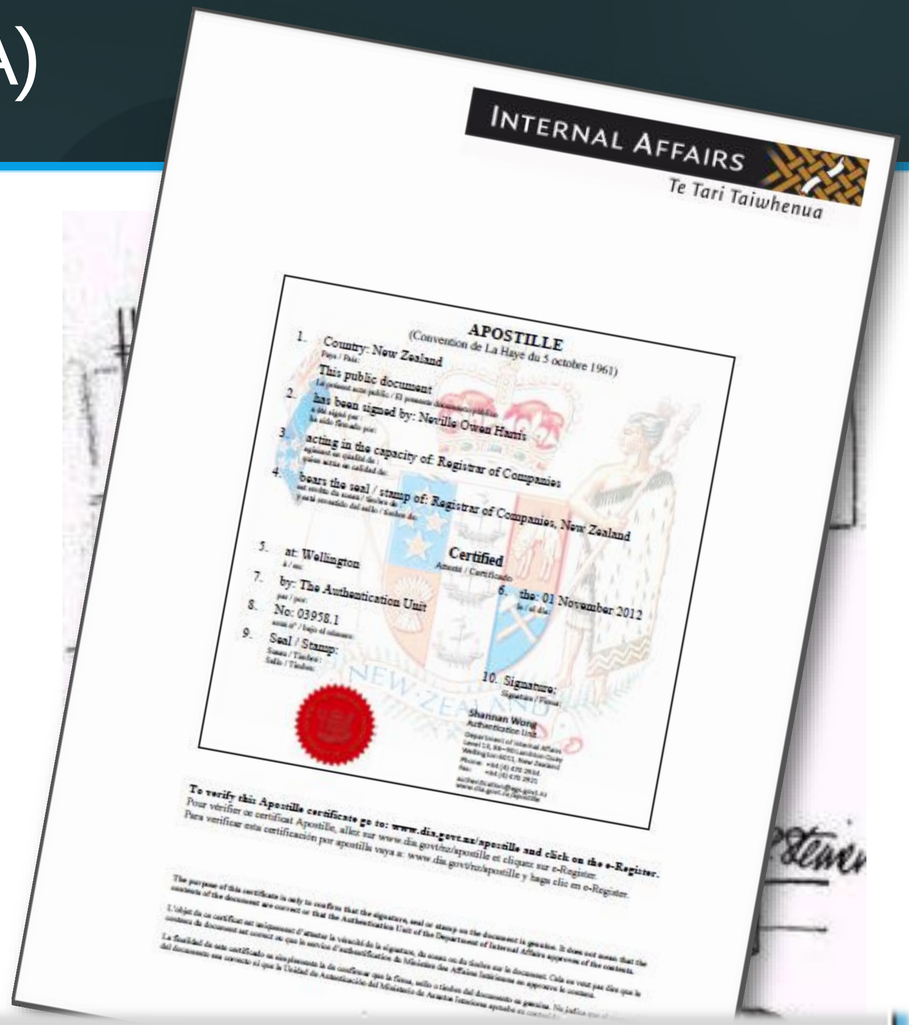
GlobalSign - What is a Certification Authority (CA)

- A **Trusted Third Party** (TTP) that mediates trust between entities who wish to use the Internet to ‘transact’ or ‘verify the authenticity’ of signed documents.



Competent Authority



Customer Examples – Business Registries & Competent Authorities

Bolagsverket
Swedish Companies Registration Office

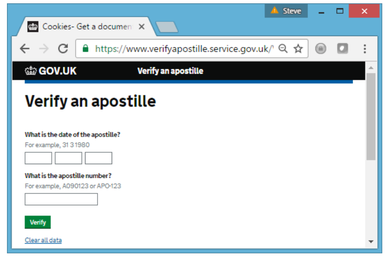
Bolagsverket uses GlobalSign's Certified Document Services solution to digitally Sign e-Certificates of registration for ALL companies registered through the Swedish Companies Registration Office in Sweden.

INTERNAL AFFAIRS
Te Tari Taiwhenua

The Department of Internal Affairs in Wellington NZ uses GlobalSign's Certified Document Services solution to digitally Sign eApostilles in line with requirements of the Hague Convention and best practice from the HCCH.
They also protect their eRegister with ExtendedSSL.

GOV.UK

The FCO uses a GlobalSign SSL/TLS Certificate on the 'Verify an apostille' website to help visitors know they are on the legitimate web site for this purpose. Ideally this will soon move to ExtendedSSL to make this even easier.



cro COMPANIES REGISTRATION OFFICE
AN OIFIG UM CHLÁRÚ CUIDEACHTAÍ

CRO uses GlobalSign's Certified Document Services solution to digitally Sign extracts for ALL companies registered through the Companies Registration Office in Ireland in compliance with new 2014 Companies Act.
They also protect www.cro.ie with ExtendedSSL.

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Alternative formats for *Signing*

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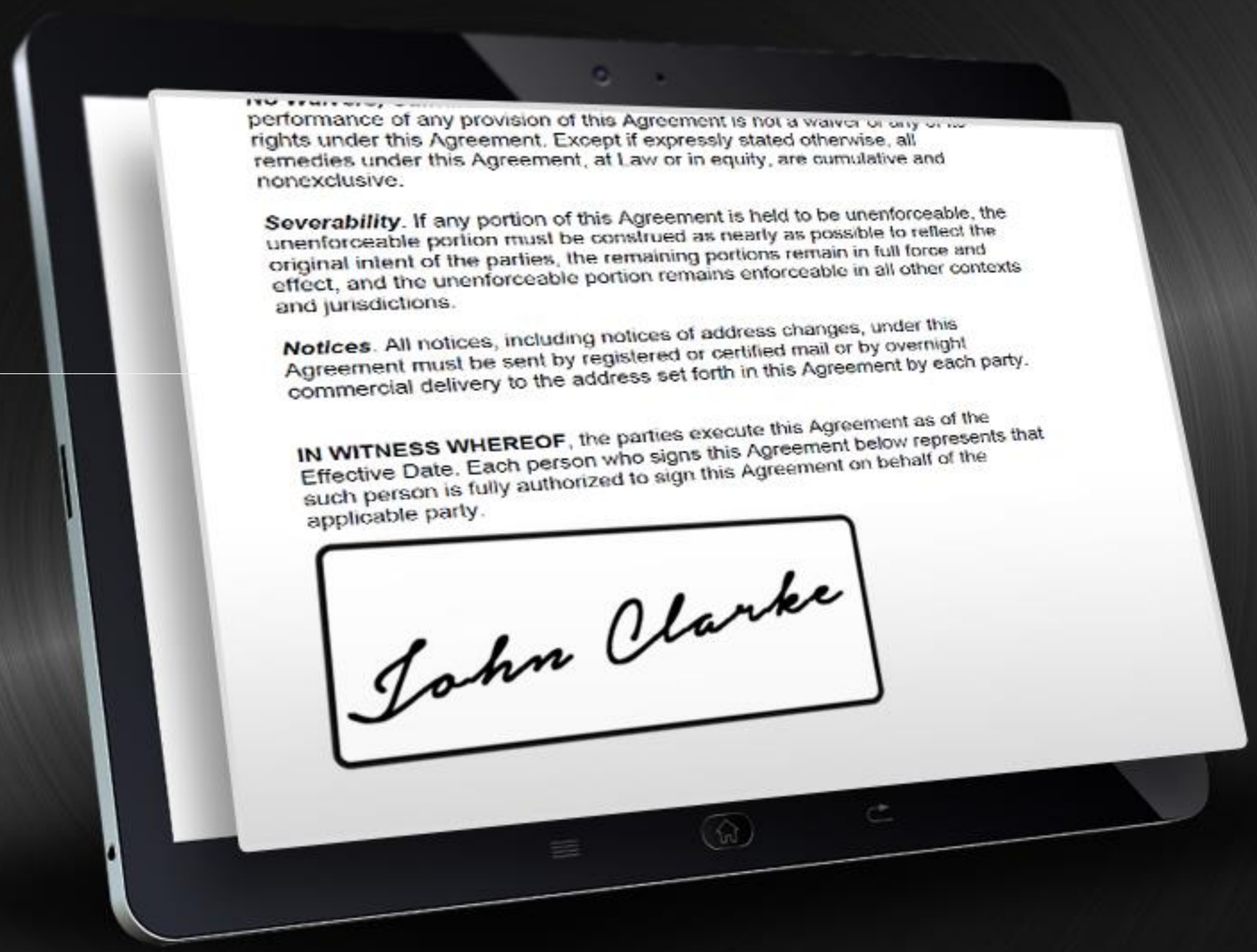
Basic e-signatures

Signer makes their “mark” on the document



Properties:

- No protection of the document itself
- Signer can claim e-signature was copied from another document
- Signer can claim document was changed after e-signing
- Signer can claim that this is not their signature

Different levels of signatures

All can be accepted in court

Higher-levels provide greater trust and non-repudiation

Higher levels add complexity and cost

Support different levels of signatures and select level based on specific business use case

Meeting the “EU” definition for Advanced Electronic Signatures

Advanced Electronic Signatures are:

- Uniquely linked to the signer
- Capable of identifying the signer
- Created using means that the signatory can maintain under their sole control
- Linked to the data to which it relates in such a manner that any subsequent change of the data is detectable

Regulations

- As of July 2016 the new eIDAS Regulation supersedes the older 1999 EU Directive on electronic signatures.
- The UK this is covered in a document issued by the Department for BE & IS (Electronic Signatures and Trust Services

https://goo.gl/dbPCxy

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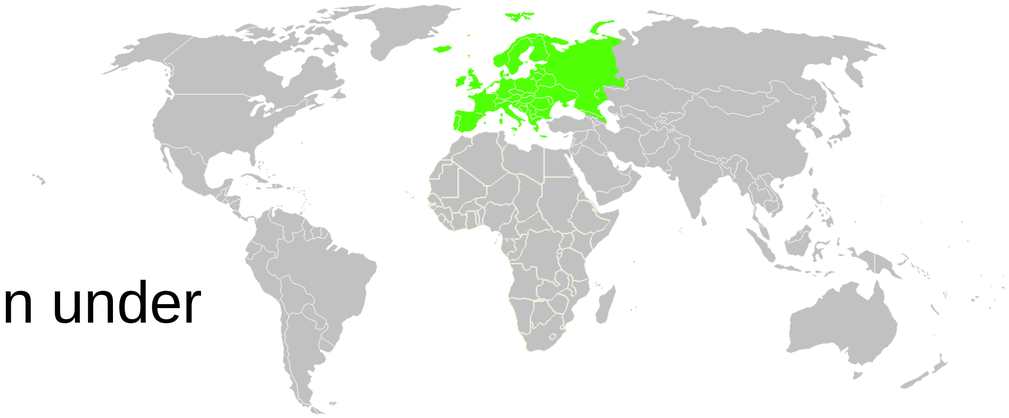
Meeting the worldwide definition of Advanced Electronic signatures

Advanced Electronic Signatures are:

- Uniquely linked to the signer
- Capable of identifying the signer
- Created using means that the signatory can maintain under their sole control
- Linked to the data to which it relates in such a manner that any subsequent change of the data is detectable



Other Worldwide Regulations encompassed by AdES

- UETA - Uniform Electronic Transactions Act (1999)
- ESIGN Act - Electronic Signatures in Global and National Commerce Act (2000)
- etc

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Understanding the Basic security properties of digital signatures

Signer authentication

- Proof of who actually signed the document. i.e. digital signatures linking the user's signature to an actual identifiable entity.

Data integrity

- Proof that the document has not been changed since signing. The digital signature depends on every binary bit of the document and therefore can't be re-attached to any other document

Non-repudiation

- The signer should not be able to falsely deny having signed their signature. That is, it should be possible to prove in a court that the signer in fact created the signature.

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Looking again & applying ‘Digital Signature’ properties to AdES

Advanced Electronic Signatures are:

• Uniquely linked to the signer	Yes if through a “unique” public/private key pair.
• Capable of identifying the signer	Yes through a certificate containing the public key
• Created using means that the signatory can maintain under their sole control	Yes but dependent on the platform ‘Signing’ the document. (e.g. Adobe Acrobat, SigningHub etc.)
• Linked to the data to which it relates in such a manner that any subsequent change of the data is detectable	Yes, but dependent on the platform ‘Verifying’ the document. (e.g. Adobe PDF reader, SigningHub etc.)

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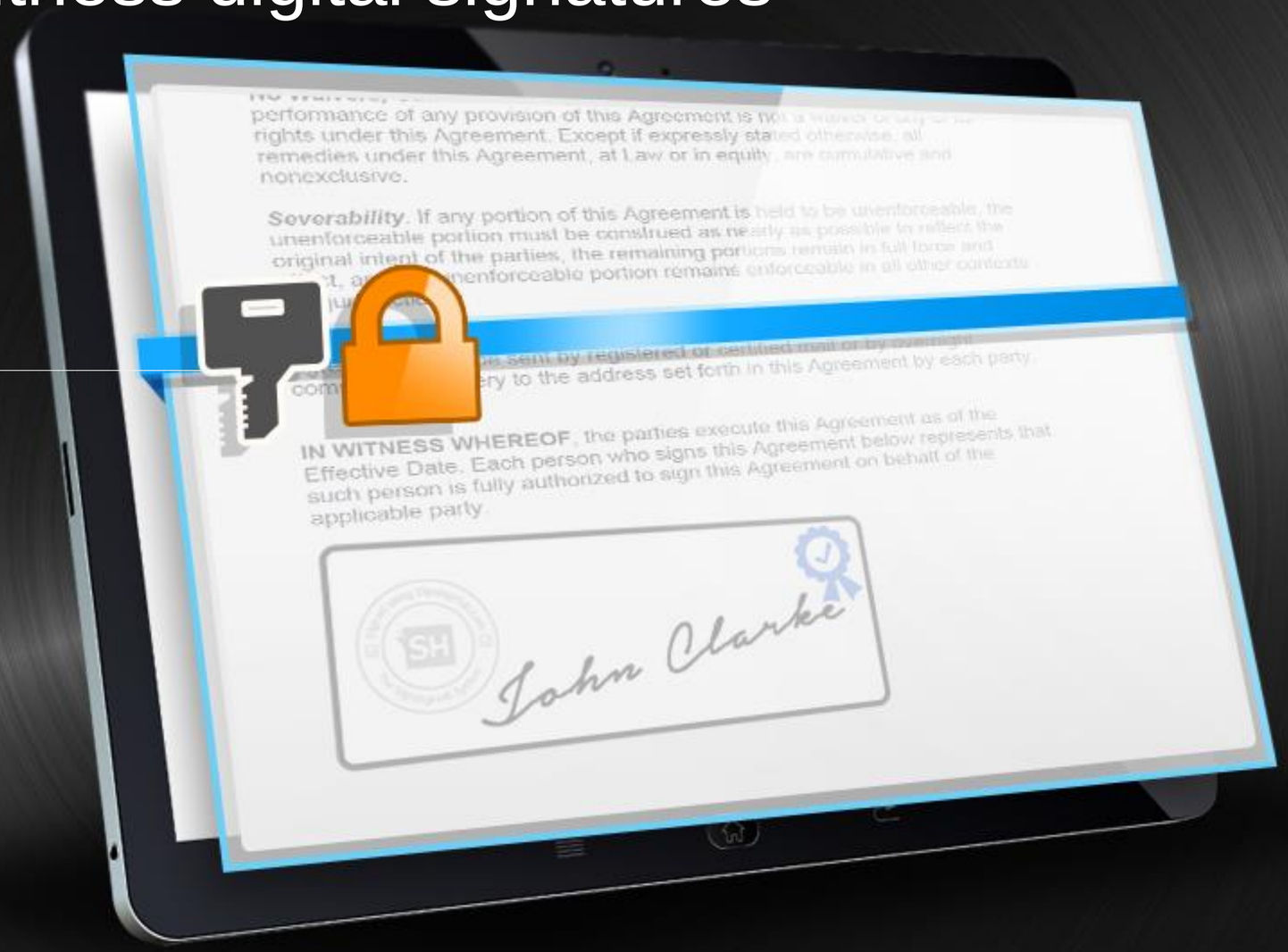
E-Signatures with witness digital signatures

After e-signing, the whole document is digitally signed using a central authority's private signing key

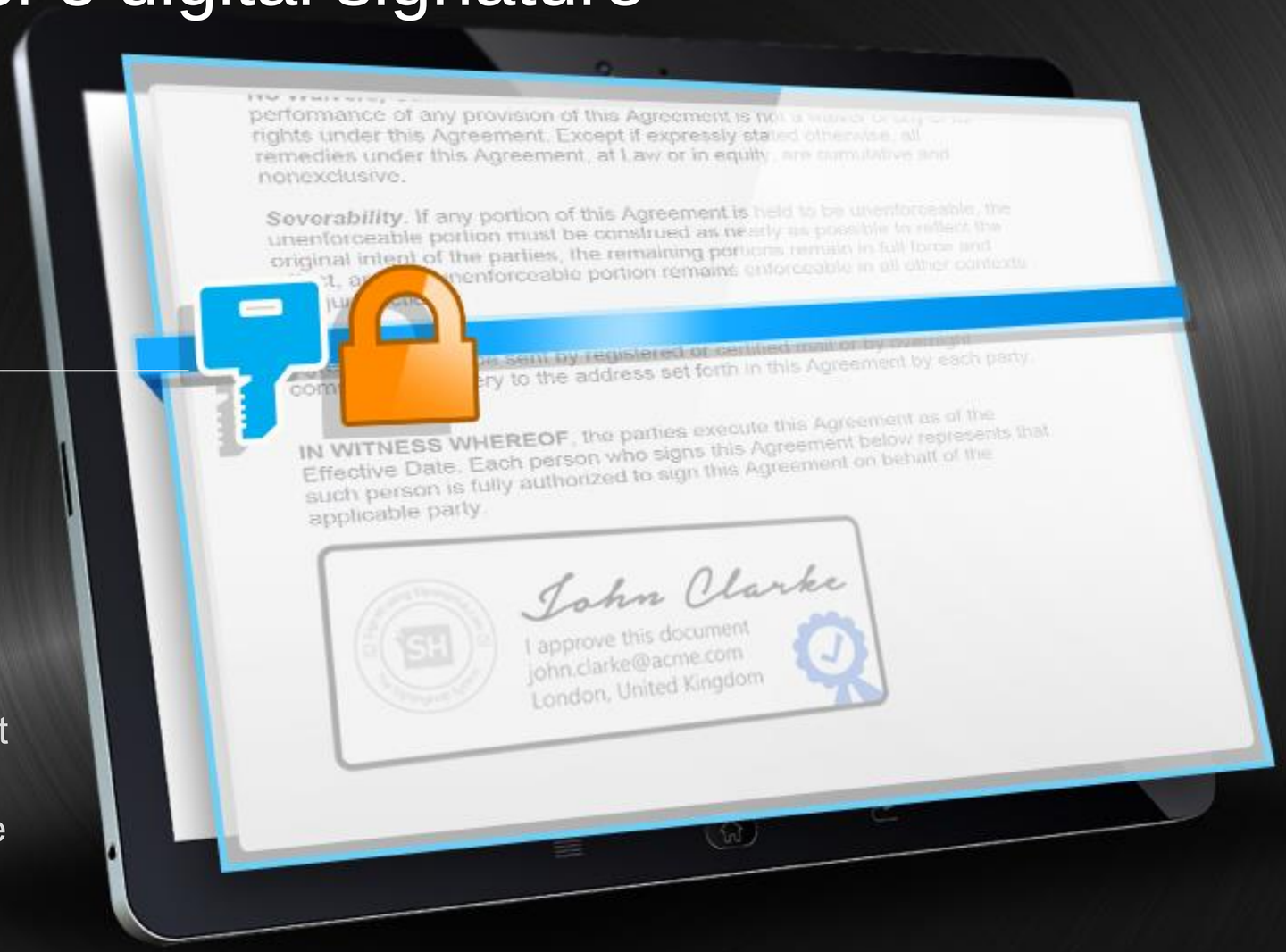


Properties:

- User authentication is **not** bound with the document (since user did not sign with their own key)
- Document cannot be changed without detection since its digitally signed by the corporate key

E-Signature with user's digital signature

After e-signing, John digitally signs the whole document using his private signing key

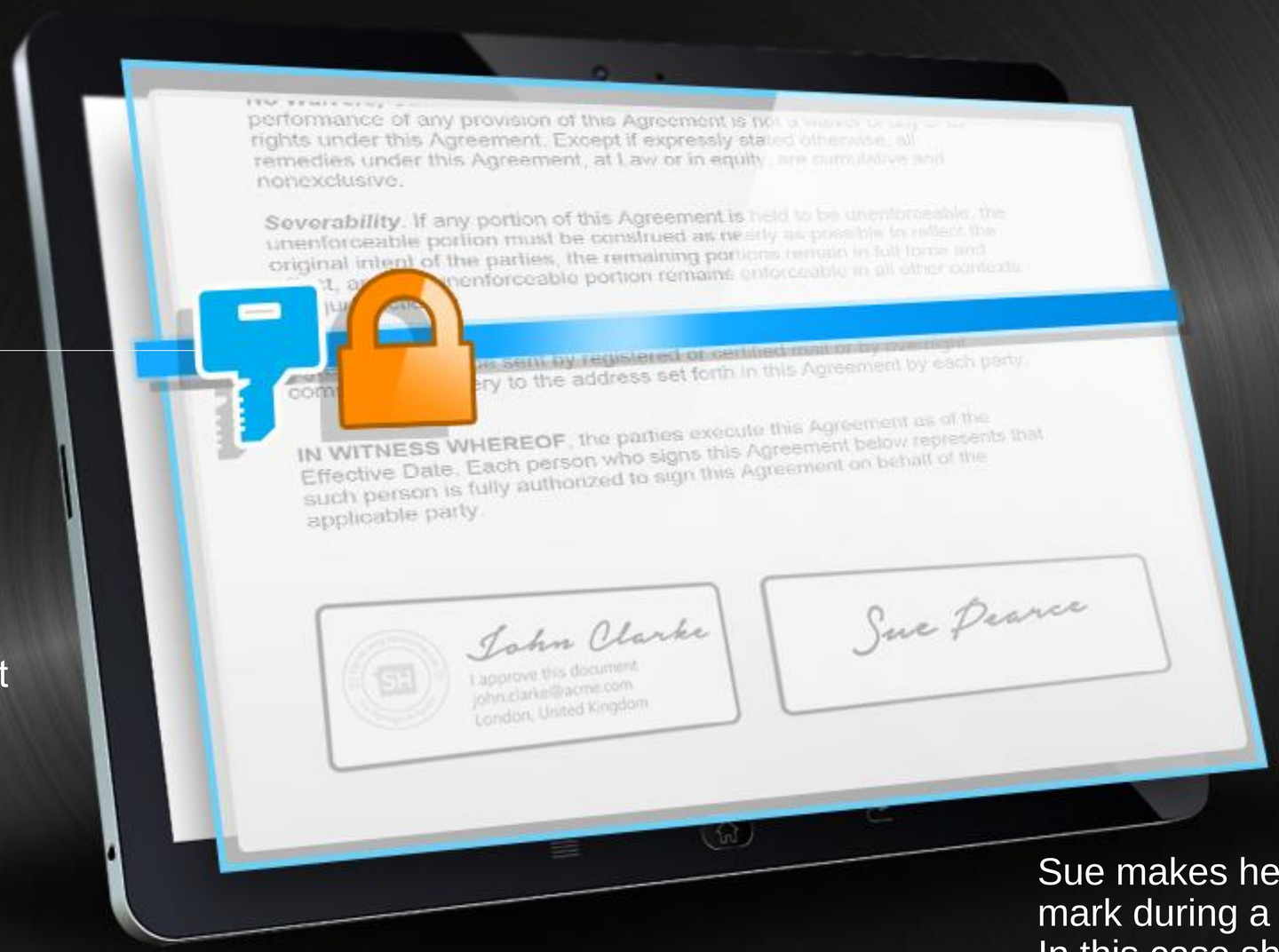


Properties:

- User's identity bound with the document (no one else can sign on behalf of this user)
- Document can't be changed without detection
- Signer can't deny having signed the document

In-Person Signing

John witnesses the in-person signature with his own e-signature mark and digital signature



Sue makes her e-signature mark during a live meeting. In this case she is not registered on the system

Properties:

- John's identity bound with the document
- Document can't be changed without detection
- Additional information in the document may indicate who the in-person signer was

Where to hold user signing keys?

- **Locally**
  - Smartcard/USB token – strong security but complex for user & costly
  - Software container – security issues
- **Centrally**
  - ideal for signing on any device, anywhere
  - Using keys protected by an HSM, or using keys held in an encrypted DB
- **Mobile** (the future)
  - Software apps
  - Secure hardware elements

Support all the options, let the business, security & regulatory requirements decide which is best for the use case!

Long-term verification

- Documents need to verified 10, 20, 30+ years…sometimes indefinitely!
- At the time of verification, certificates will be expired, certificate status information will no longer be available
- Cryptographic algorithms will have weakened since signing and may no longer trusted!

Use long-term verifiable signature formats which can be extended over time with fresh evidence (PAdES Part 4 and XAdES-A formats)

Alternative workflows for *Signing*

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What a Notary needed circa 2007 – 2014 (plus knowledge)

Signature Capture Device

LAN

Scanning of Originals

Laptop

Signing Keys (linked to the identity Certificate)

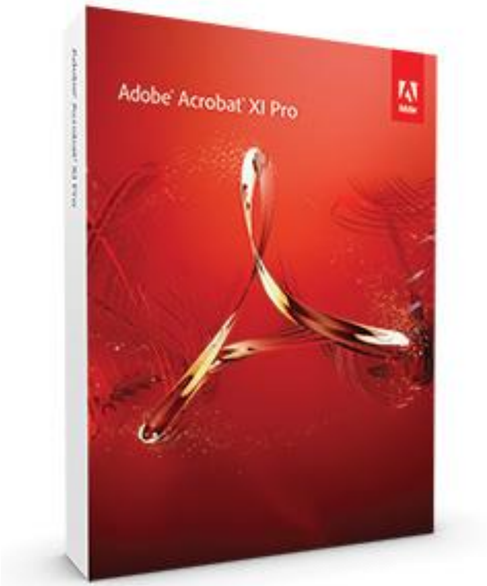
E-mail clients…

Gmail by Google

Windows Live Hotmail

YAHOO! MAIL

GMX



PDF manipulation and signing

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What a Notary needs in 2016 – A SigningHub Account & Phone..

Cloud Based Signing Service (SigningHub)

- PDF conversion (All major formats)
- Key Storage (Azure Key Vault)
- Digital Certificates for Signing (GlobalSign)
- Optional Electronic / In person signing options
- Public/Private Cloud options allowing confidentiality or closed loop control (Addressing PII Concerns)
- Automated Allocation of Digital Certificates to Notaries by the Competent Authority.

iPad/iPhone (or equivalent smartphone).

- Hi resolution camera for document scanning.
- 3G or 4G Connection or Wifi / Hotspot.
- Optional stylus or pen for signing on some models

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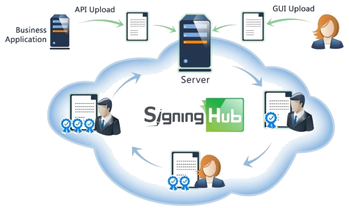
What a Competent Authority can now implement in 2016…



Business Application
(3rd party)

Standard connectors

Mobile Apps
(+SDK)

SigningHub

Web Services

Workflow Engine

User Manager

Audit Trail

Enterprise Manager

Signing Manager

Document Manager

ADSS Server

Sign & Verify Service

CA/RA Service

OCSP/SCVP Service

TSA Service

Built-in Complete PKI

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CA

VA

TSA

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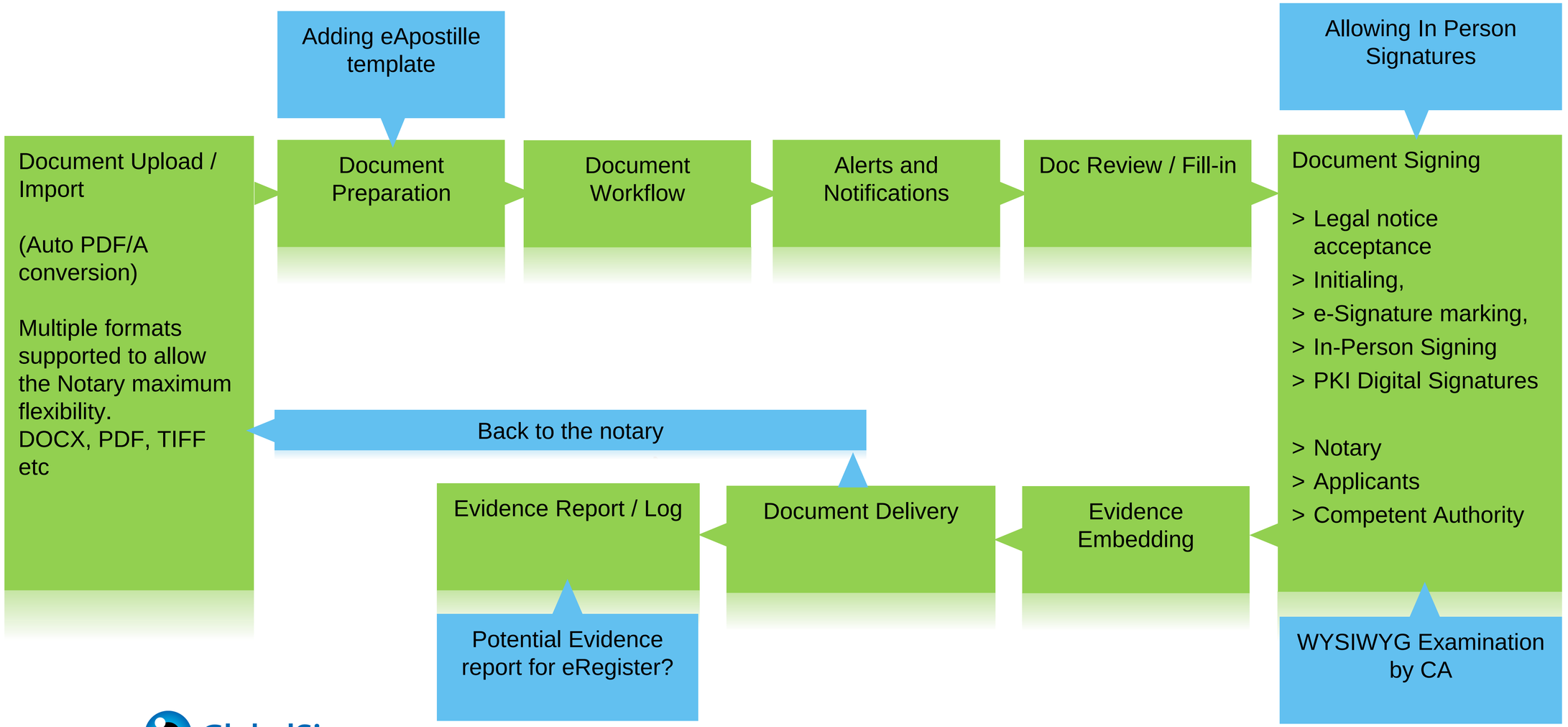
What a Competent Authority can achieve in 2016…



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Thank you for your attention. Please direct questions to:-

steve.roylance@globalsign.com

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