



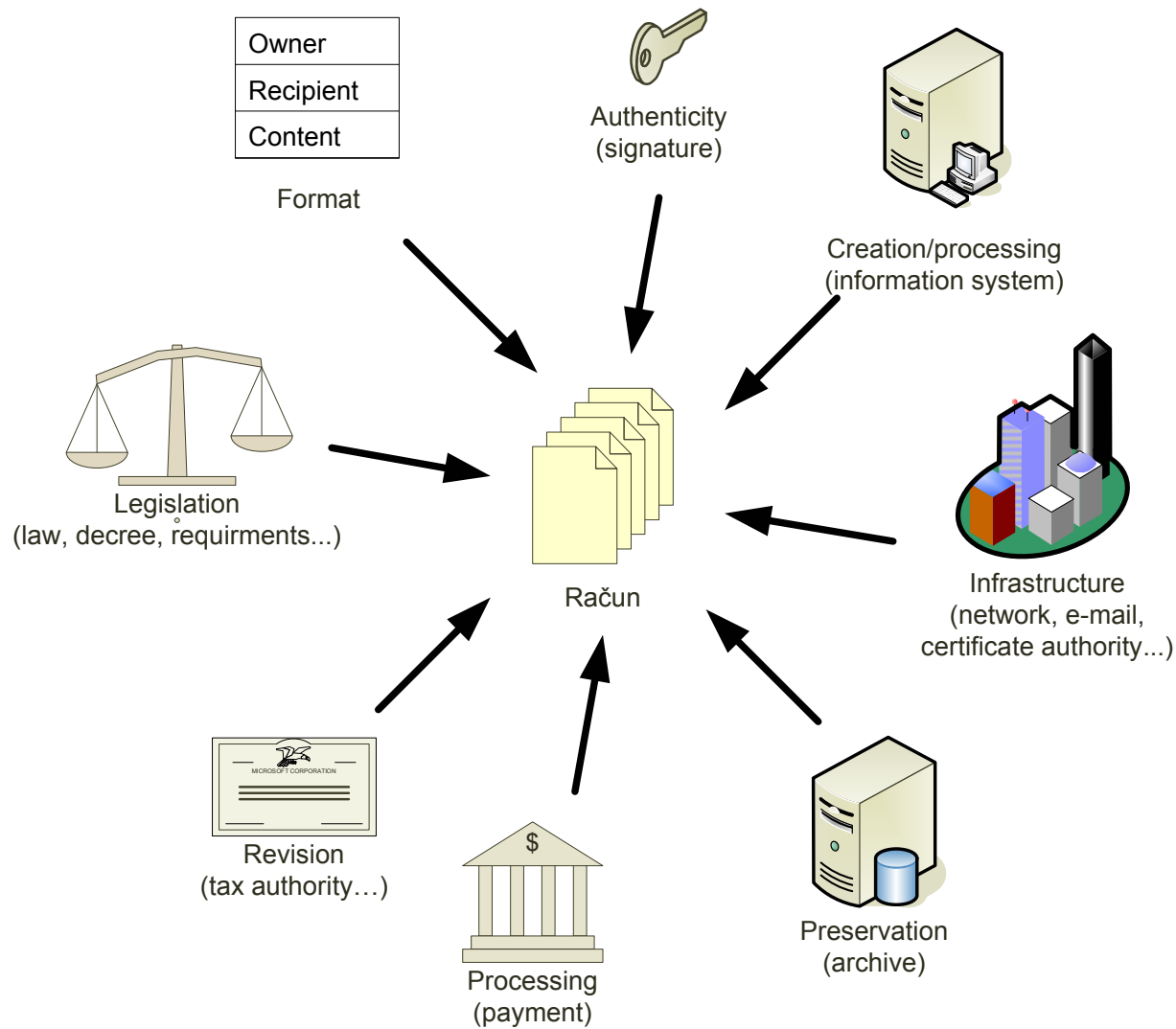
FORMAL E-DOCUMENTS AND E-SIGNATURES

Long-term validity and probative value of e-documents

Introduction

- E-business evolution
 - Electronic communication
 - Electronic messaging
 - Electronic signing
 - Electronic archiving
- Recognition of process dematerialization
 - Technology
 - Standards
 - Legislation
- Perspective
 - Probative value of e-documents

E-documents and e-business

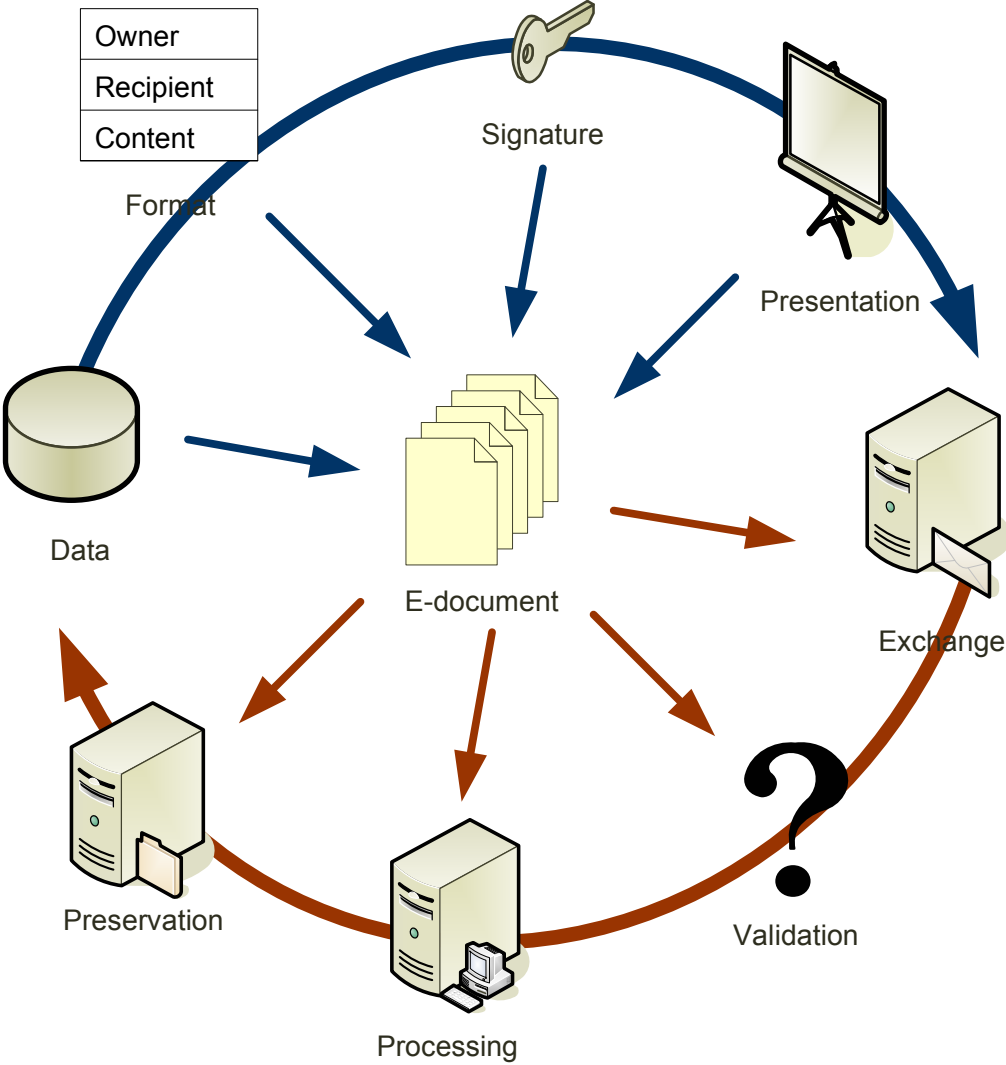


Formal and legal value of e-documents

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Delivering trust in e-business

Business process dematerialization



E-documents and legislation

- E-document as a formal mean of business/government processes
 - Year 2000
 - Electronic commerce and electronic signature law (ZEPEP)
 - Official procedure law (ZUP)
 - Year 2003
 - Annex to Value added tax law (ZDDV)
 - Year 2004
 - Annex to Electronic commerce and electronic signature law (ZEPEP-A)
 - Annex to Official procedure law (ZUP-C)
 - Annex to Notary law (ZN-C) – elimination of all exceptions
 - Year 2006
 - Document and archive material preservation and archives law (ZVDAGA)

Legislation principles

- Electronic commerce and electronic signature law
 - Defines
 - Electronic means
 - Electronic messages
 - Electronic systems
 - Electronic communication
 - Electronic signatures
 - Etc.
 - Prohibits
 - Discrimination of electronic form against physical form
 - Under specific conditions equalizes
 - Electronic form and physical form
 - Electronic signature and handwritten signature

Legislation principles

- Document and archive material preservation and archives law
 - Defines
 - Archives (private, national, cultural...)
 - Archival processes
 - Recognizes
 - Digital form
 - Transformation from paper to digital form
 - For digital form requires the use of
 - Specific document format
 - Suitable storage media
 - Trustworthy integrity protection

E-form equality

- E-form equality
 - E-form is equal to physical form if data is accessible and usable for later use (readable)
- When original is requested, e-form is to be used if
 - Data is accessible and usable for later use
 - Data is stored in original form or form authentically representing original form
 - Data origin, recipient, time and location is identifiable
 - Data alteration or deletion is undoubtedly traced or proof of integrity is available

E-signature equality

- E-signature equality
 - When secure means for creating electronic signature(s) and qualified digital certificate(s) are used, electronic signature is equal to handwritten signature and has equal proof of evidence
- Electronic signatures
 - Subjects
 - Physical persons
 - Organizations
 - Types
 - Electronic signature
 - Secure electronic signature

E-form domination

- Milestones in e-form prevalence
 - Year 2006
 - Electronic and physical document versions to be published as formally recognized forms
 - In case of version difference – electronic form prevails
 - Year 2007
 - Information publishing in electronic form only
- Electronic preservation
 - As of March 2006 undoubtedly recognized by Slovenian legislation

Electronic preservation

- Technical challenges
 - Resistance of electronic media on long term basis
 - Challenges of environment change due to technology progress
 - Long term stability and readability
- Legislative challenges
 - Transformation from physical to electronic form
 - Preservation of data availability and readability – transformation between electronic forms

Advantages of e-preservation

- **Increased security**
 - Multiple copies on distributed locations
 - Access control
- **Increased availability**
 - Simplified access
 - Remote access
 - Multiple access
- **Increased serviceability**
 - Efficient searching and indexing
 - Revision control (access, changes, modifications, etc.)

Formal recognition of e-preservation

- Principles of e-preservation
 - Durability and reproduction
 - Integrity and authenticity
 - Availability and accessibility
- Stages
 - Law
 - General requirements
 - Decree
 - Specific requirements
 - Common technical requirements
 - Organizational and technical requirements

Long term preservation

- Retention period
 - Five years at least
- General principle
 - Transformation to format for long term preservation required
- Technical requirements
 - Format and preservation methods defined and updated on regular basis

E-preservation infrastructure

- Preservation infrastructure
 - Software
 - Hardware
- Preservation services
 - Enabling services
 - Supporting services
- Preservation infrastructure and services provision
 - Provider registration
 - Required
 - Supervised by inspection
 - Provider accreditation
 - Voluntary
 - Supervised by state archive

Procedures

- Preservation accepted for
 - Transformed standard (e.g. paper based) documentation
 - Genuine e-documentation
- Phases
 - Definition of documentation capture and preservation
 - Definition of internal procedures and rules
 - Documentation preservation and preservation process supervision
 - Modification and completion of internal rules (when required)

Rules and procedures

- Internal rules and procedures
 - Defined by any organization preserving documentation
 - General and required elements of internal rules defined by state institutions
- Rules preparation and execution
 - Paper based operation
 - Combined operation
 - Electronic based operation
- Rules guidelines
 - Reasonable, accurate and interpretable
 - Adapted and tuned to organization (needs)
 - Manageable and supervised
 - Supervision of supervisors?

Content

- Internal rules summary
 - Internal organization and personnel
 - Preservation physical infrastructure
 - Documentation capture and transformation
 - Short term preservation
 - Selection, transformation and long term preservation
 - Deleting and shredding
 - Continuous performance
 - Supervision and audit
 - Implementation, transition and mass capture
 - Internal rules update

Certification

- State institution (state archive) may certify internal rules, when compliant to
 - Law
 - Decree
 - Common technical requirements
- Revision of internal rules defined by institution
- Rules and procedure samples
 - Defined by state institution
 - Implemented by organization
 - No certification needed

Legal impacts

- Equality to physical form (ZEPEP)
- Proof of evidence (ZEPEP)
- Relation to original copy (ZVDAGA)
 - Equality with original copy (according to certified internal rules and procedures)
 - Evaluation of equality to original copy according to internal rules and procedures (in case of non-certified internal rules and procedures)
 - Evaluation of equality to original copy (in case of non-existing internal rules and procedures)

Implementation

- Public sector
 - Certified internal rules
 - Accredited providers only
 - Special conditions (according to Official procedure law)
- Commercial sector
 - Certified internal rules
 - Registered and accredited providers

Capture and transformation

- Capture
 - Trustworthy capture
 - Integrity of captured information (meta information, content, etc.)
- Transformation
 - Trustworthy transformation (internal and external revision)
 - Integrity of transformed information (meta information, content, etc.)

Long term preservation format

- Requirements for long term sustainability
 - Trustworthy transformation to format for long term preservation
 - Continual and periodic re-transformation using up to date formats
 - Integrity protection of transformed data
- Formats
 - Regular format
 - Long term “resistant” format
 - Content related
 - Quantity related
 - Defined by state institution

Proposed formats example

- Graphic material
 - TIFF, SVG, LZW, CCITT, etc.
- Audio/visual material
 - MPEG-2, MPEG-3, MPEG-4
- Documentary material
 - PDF/A, XML
- Other material
 - N/A?

Format and content issues

- Value decomposition with long term preservation
 - Electronic signatures
 - Time stamps
- Electronic signature
 - Time limited validity
 - Formal restrains (limited lifetime of digital certificates – usually up to 5 years)
 - Cryptographic restrains (weakness of mathematical algorithms used – to be replaced every 10 years)
- Time stamps
 - Analogue constrains to electronic signatures
 - Recognized mean to prolong the validity of electronic signatures and/or time stamps

Security issues

- Secure e-preservation
 - Access control
 - Integrity protection
 - Accessibility and availability
 - Redundancy and back up
 - Other information technology security requirements

Guidelines

- E-preservation infrastructure set up
 - Technology definition
 - Transformation definition
 - Operation requirements and risk assessments
 - Internal rules and procedures definition and accreditation
- Document material transformation
 - Transformation of existing material
 - Simultaneous transformation
- E-preservation infrastructure and service management
 - Technology maintenance
 - Organizational maintenance

Milestones

- Year 2000
 - Equalization of physical and electronic form
- Year 2005
 - Electronic form precedence
- Year 2006
 - Preservation dominance in electronic form
- Future steps
 - Confirmed basic regulation (ZVDAGA)
 - Decree and Common technical requirements adoption (as of July 2006)
 - Registration and accreditation of technology and service providers (as of September 2006)

Questions

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