papiNet and EFETnet – The Yin-Yang-Yong of Business Interoperability

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Typical Standardisation Projects

- **Typical Standardisation Projects**
- The Art of Interoperability
- ebXML as „the Yong“
- Future Developments

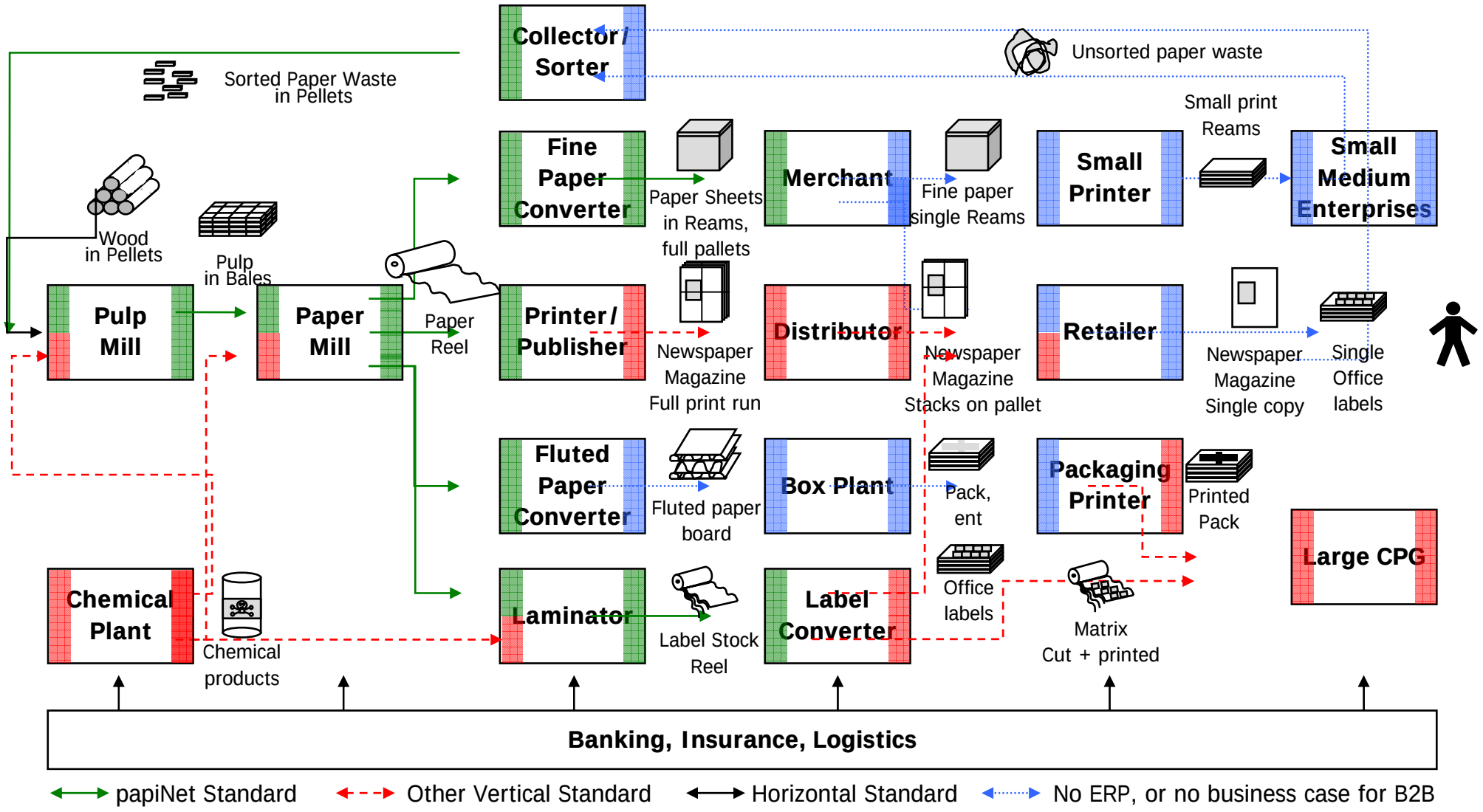
papiNet

direct paper commerce on the net

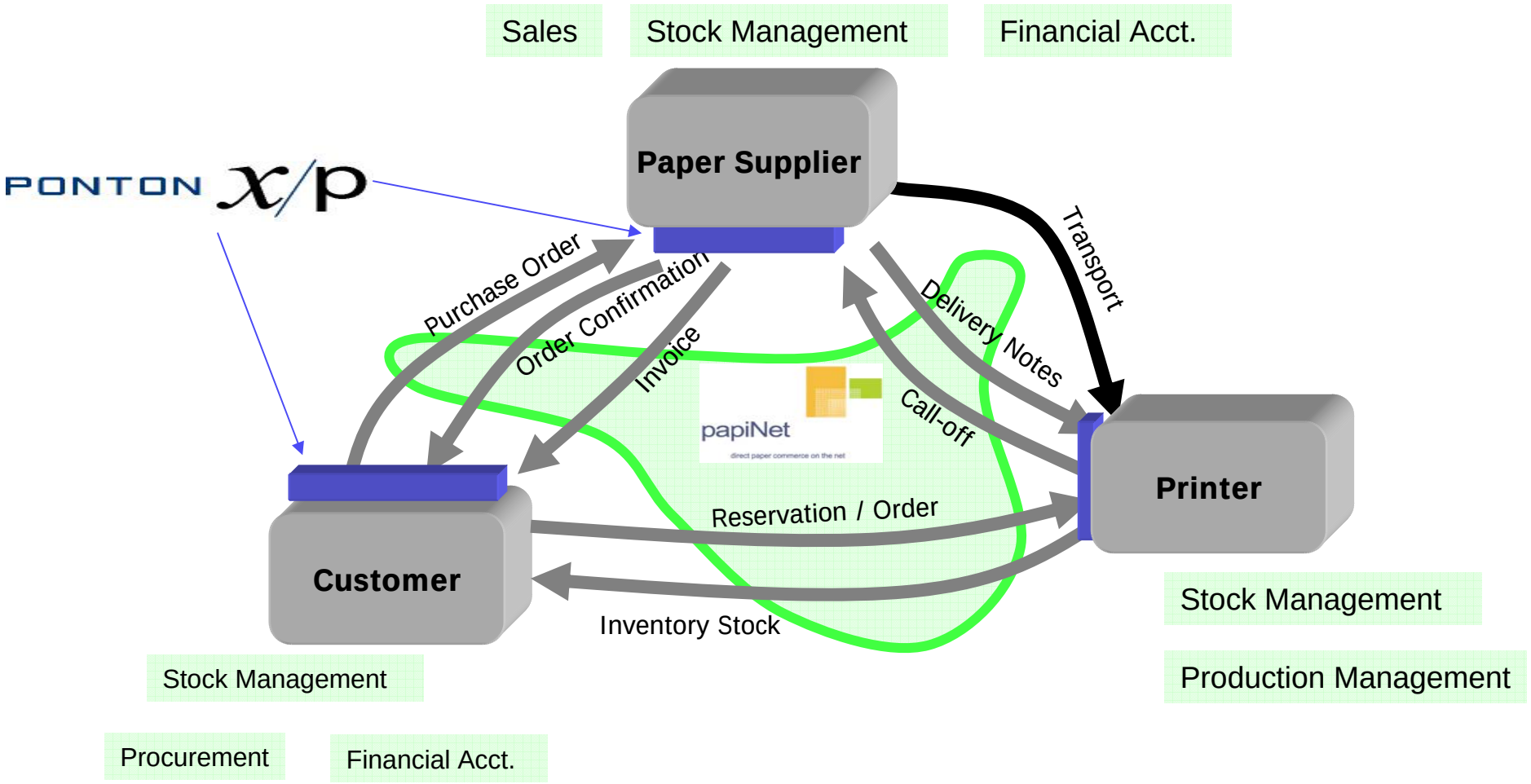
Secure and Reliable Exchange of Business Documents via Internet between Customers and Suppliers of Pulp- and Paper Products

Users of papiNet (Selection)

papiNet covers different sectors of the paper supply chain.



papiNet Users and Ponton X/P –
A typical 3-Corner Relationship



EFETnet – Well Connected

Elektronischer Austausch und Abgleich
von Handelsdaten für Europäische Energieunternehmen

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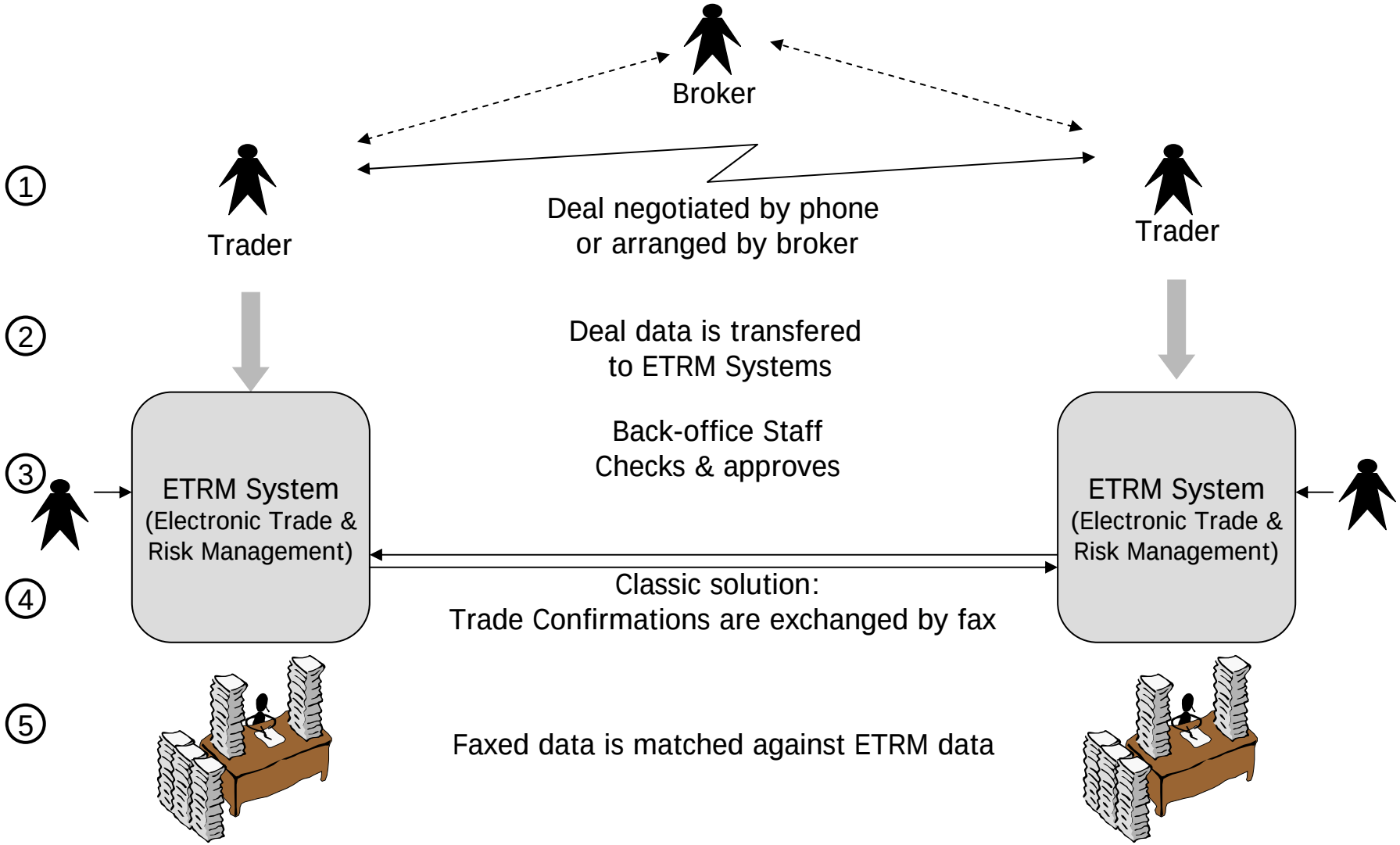
EFETnet Users & expected Users (as of June 2006)

18 companies live or with projects started

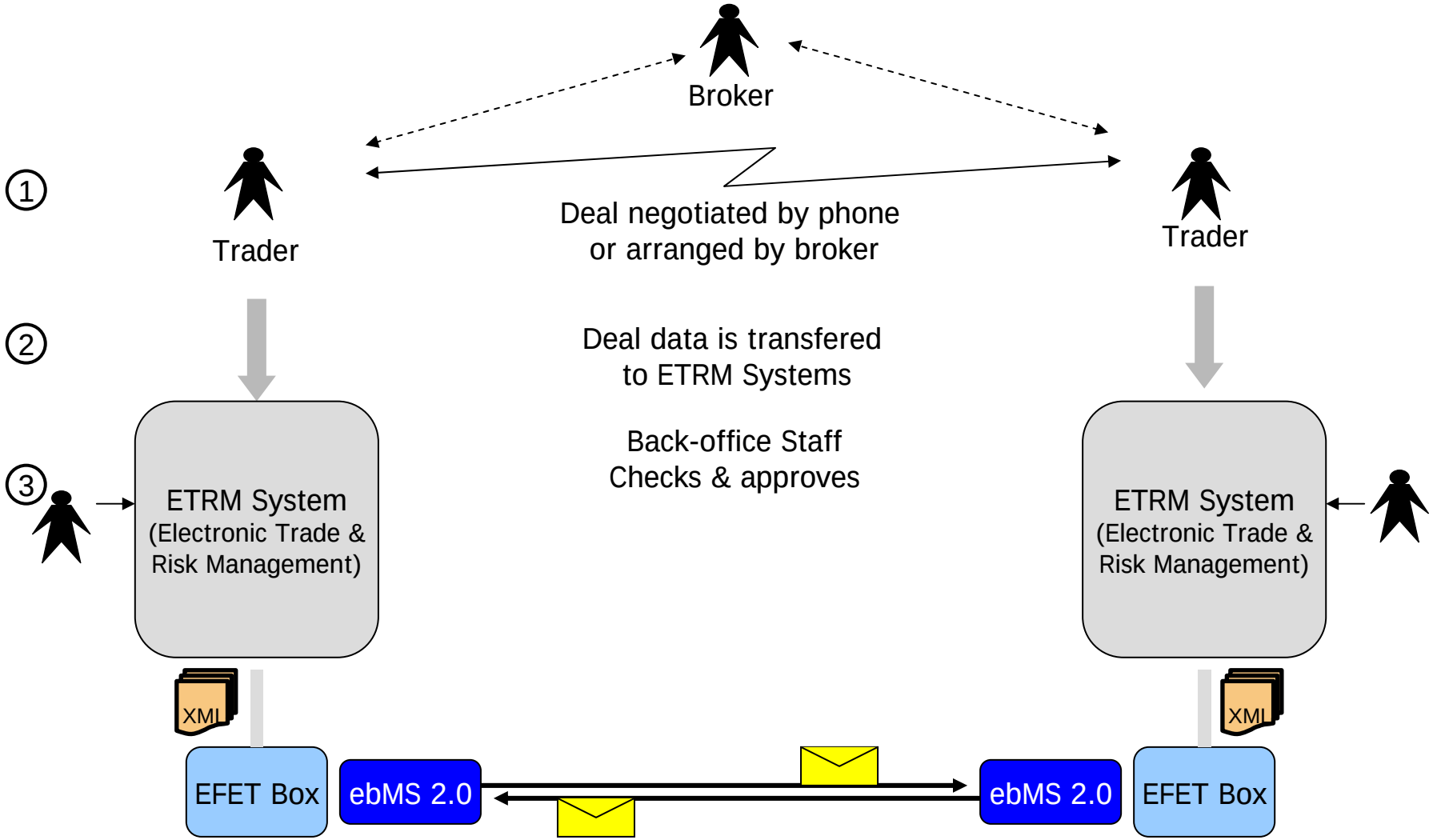
14 following developments

EFETnet Example: How does Energy Trading work?



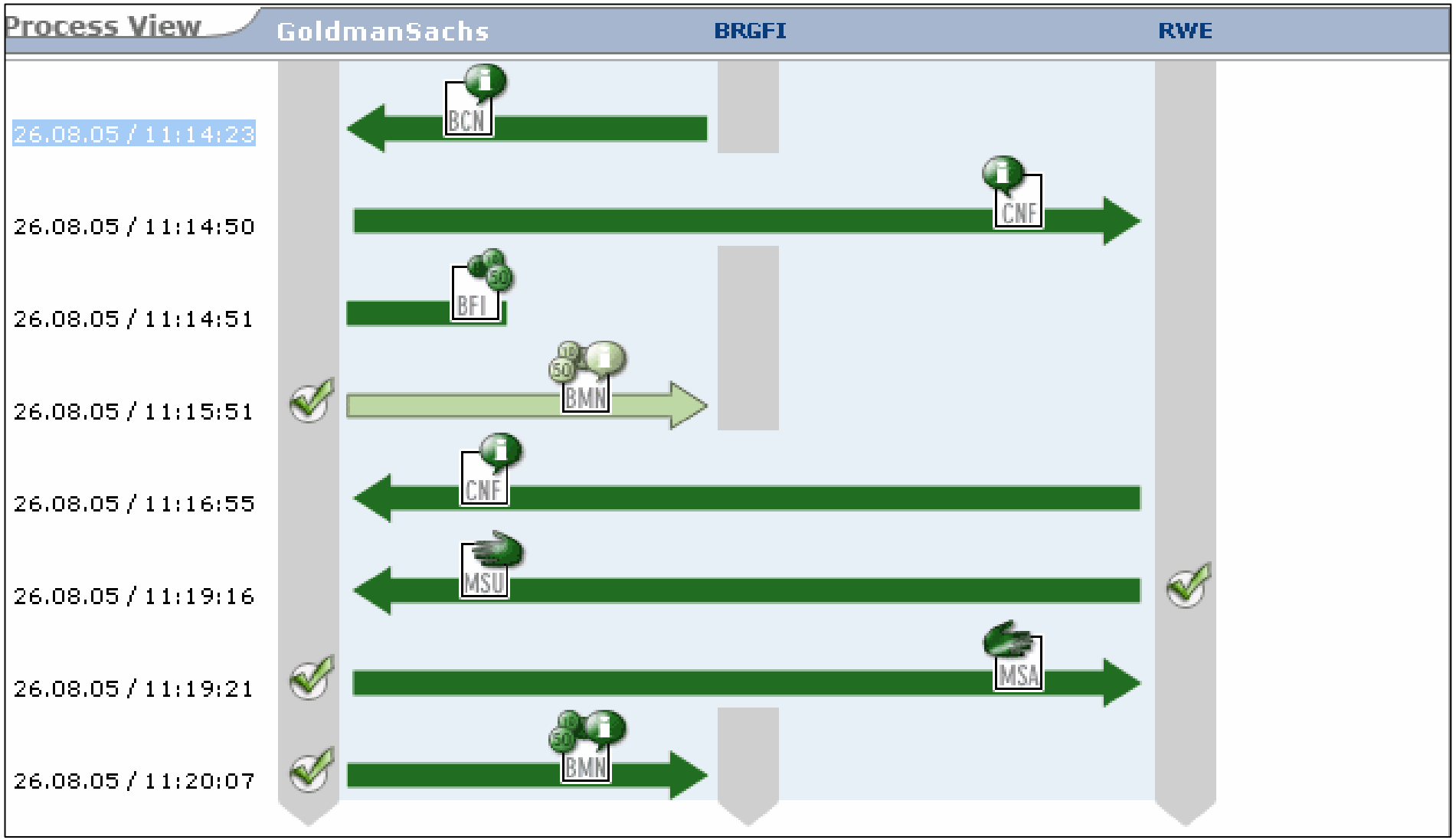
Manual work, media breaks, typos, high risk ➔ COST

EFETnet Example: How does Energy Trading work?

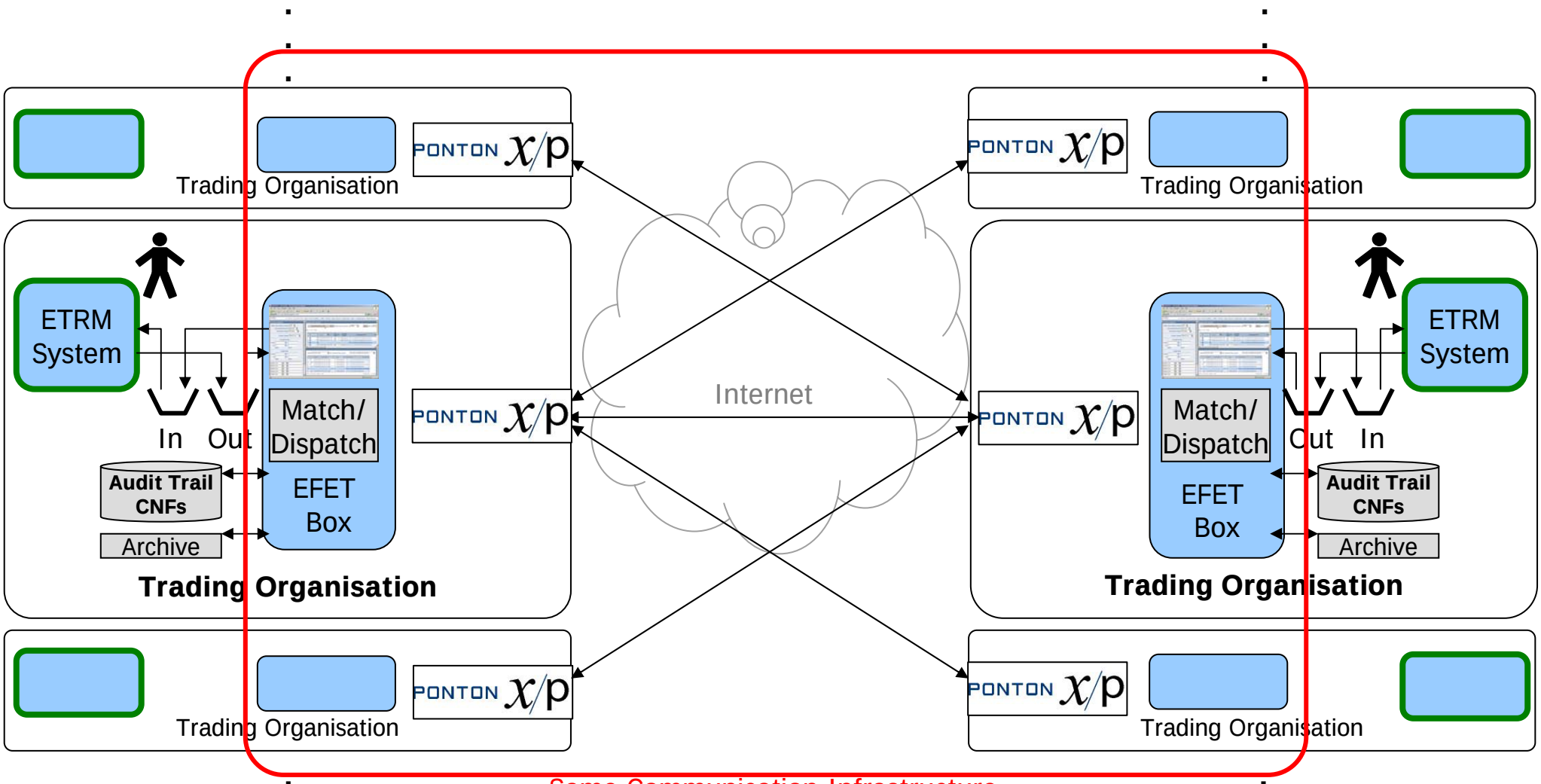


New solution: Standardised exchange
of XML documents using ebXML

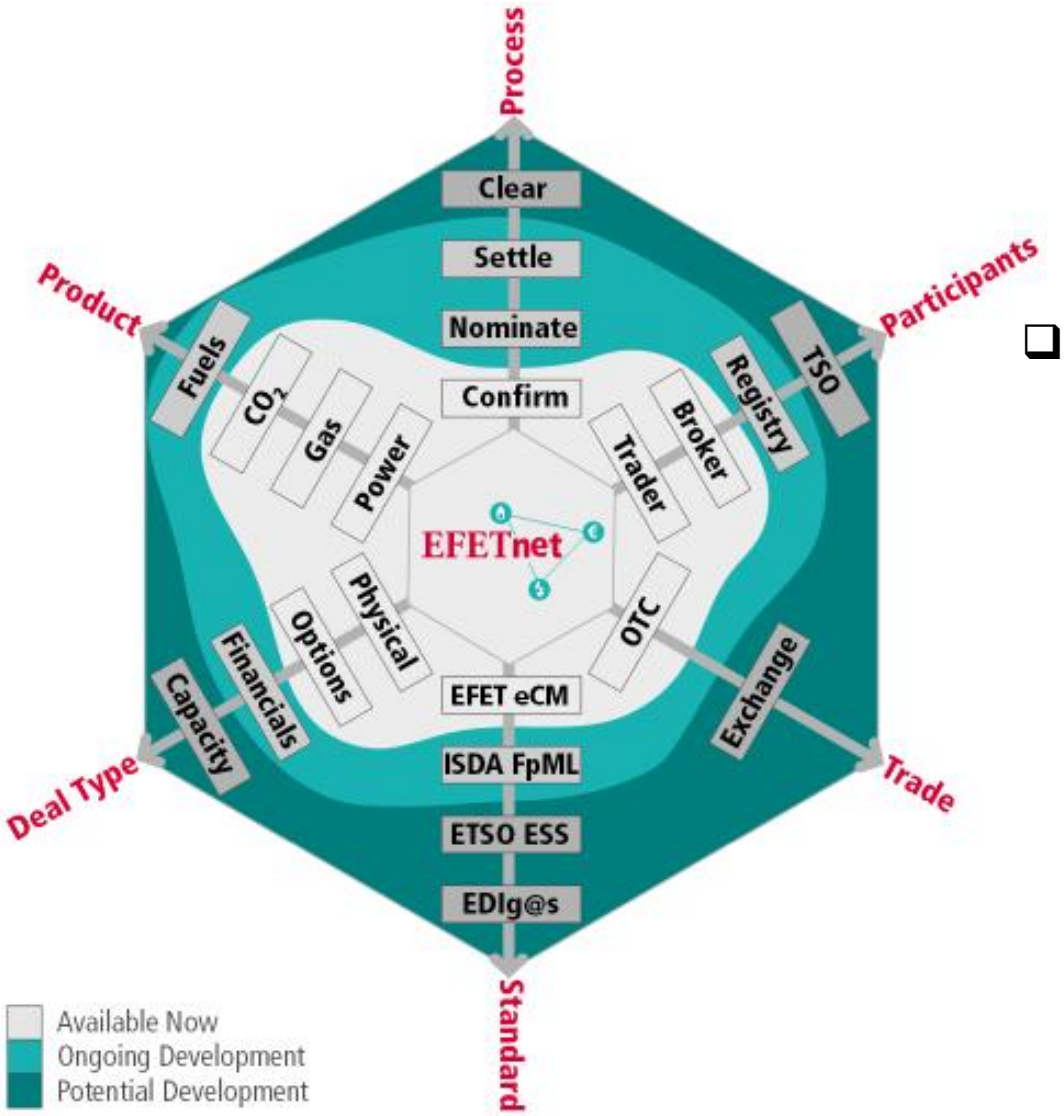
Electronic Confirmation Matching
(Screenshots)



Borderline of the EFETnet Software



Next steps in standardisation



- Next Steps:
  - Commodities
  - Spanish Swaps
  - Electronic Position Matching
  - Nominations
  - EUA Registry related process
  - Settlement / Clearing

Typical Standardisation Projects

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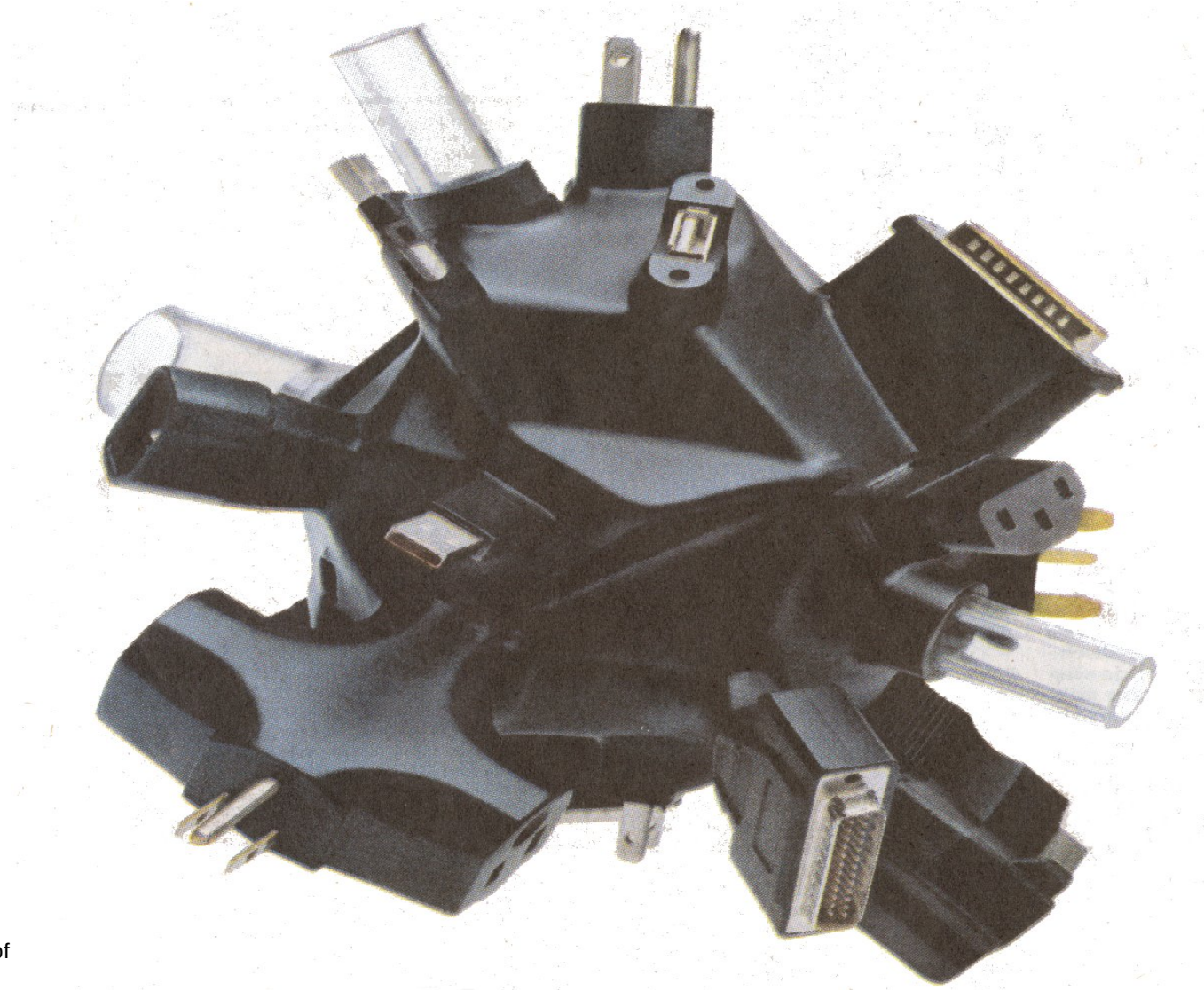
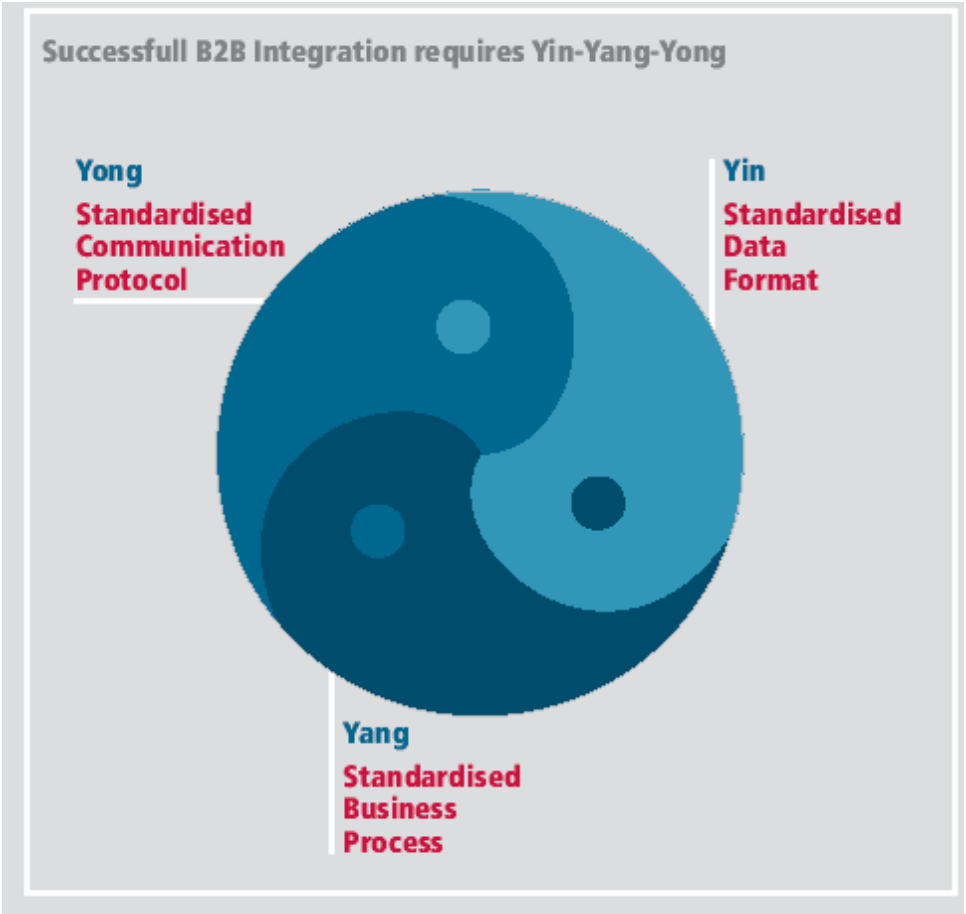
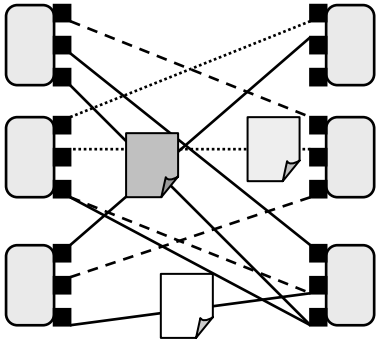
The ad-hoc Response to Absense of Standards:



„Yin-Yang-Yong“ - B2B Integration requires harmonisation of processes, data formats, *and* protocols.

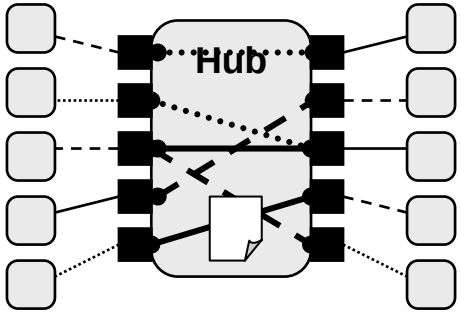


The main benefits of B2B integration are realized with a common standard for *complete* interoperability.



Model 1:
„Spaghetti Communication“
- No Standard
- Messaging Software Standard
- No Hub
- # Converters = # Participants x N

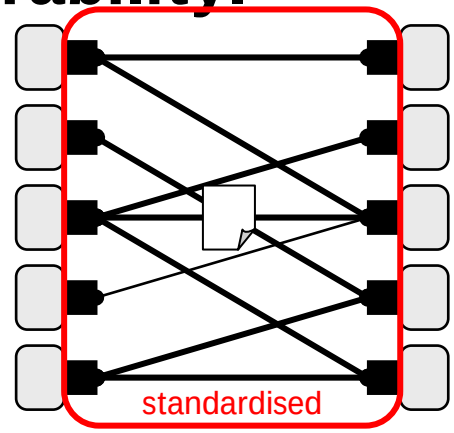
⊖ **High** investment (many converters)
⊖ **High** integration costs (no document standard, one adaptor only)
⊕ **Low** transaction costs (no Hub)



Model 2:
„Central Hub“
- Document Standard
- Messaging Software Standard
- Hub
- # Converters = No. Participants

⊖ **High** investment (central SW / Org.)
⊕ **Low** integration costs (Hub operator takes care)
⊖ **High** transaction costs (Hub)

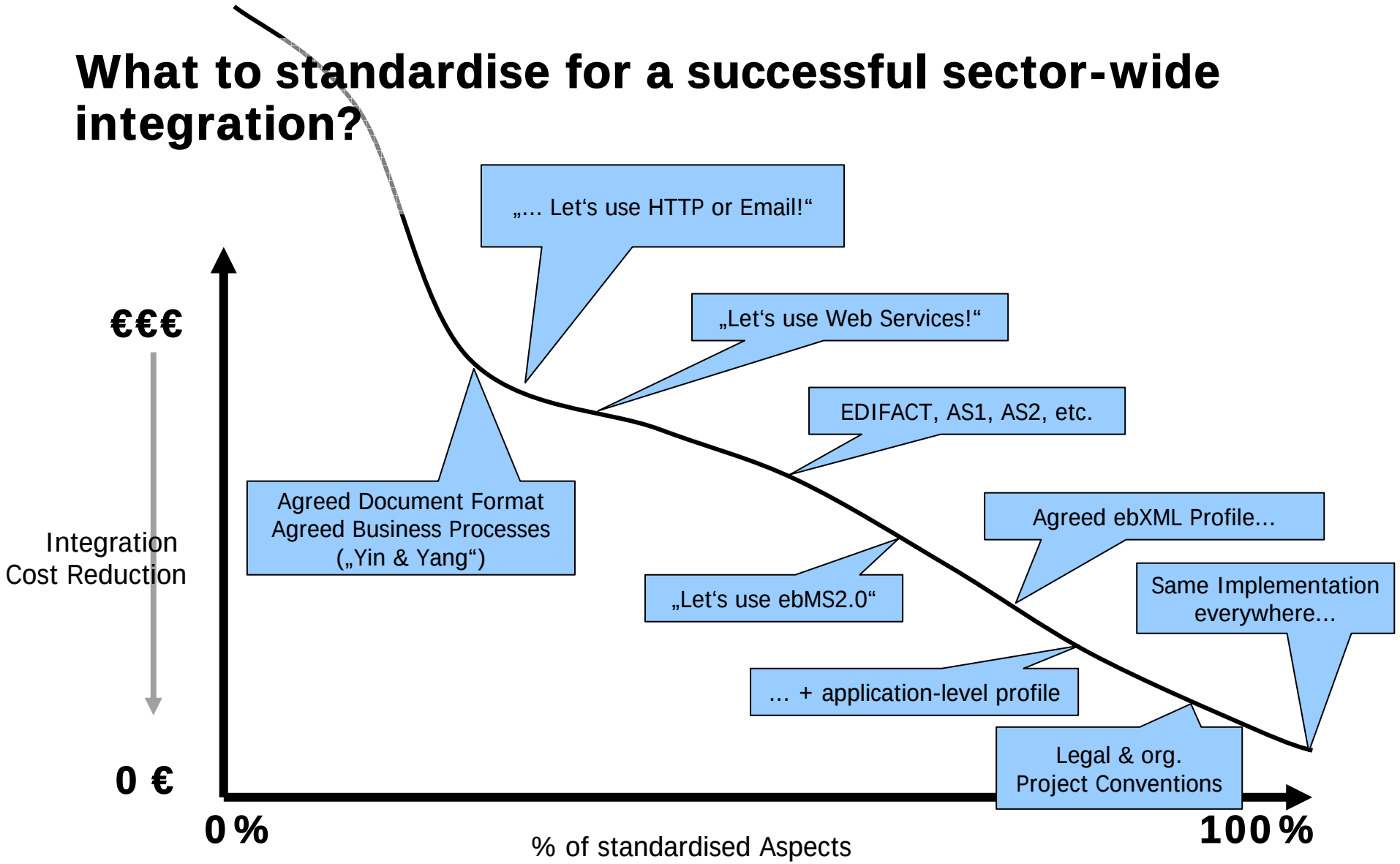
But:
If centralisation is inevitable, a hub is the only solution



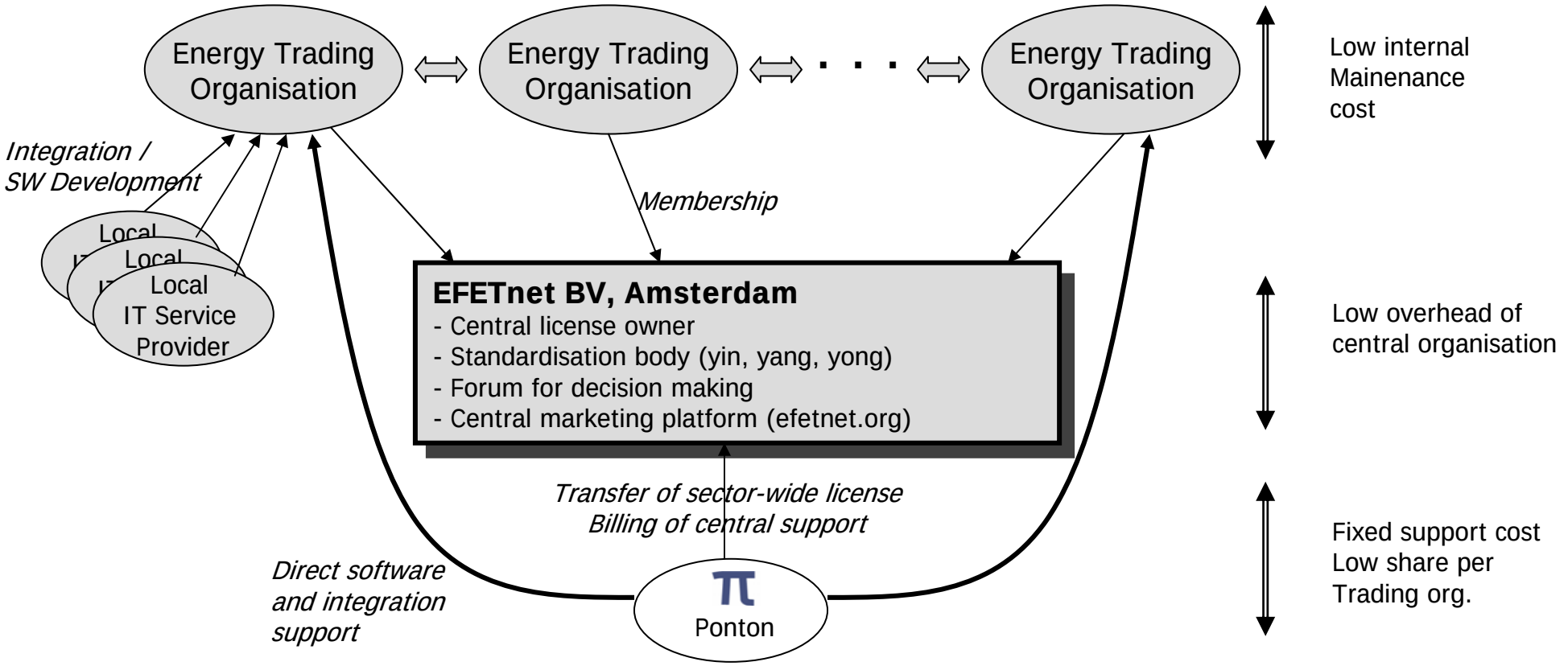
Model 3:
„Full Standardisation“ / “Yin/Yang/Yong”
- Document Standard
- Interoperable Software
- No Hub
- # Converters = # Participants

⊕ **Low** investment (shared SW costs)
⊕ **Low** integration costs (document standard, one adaptor only)
⊕ **Low** transaction costs (no Hub)

What to standardise for a successful sector-wide integration?



Organisation of EFETnet



Typical Standardisation Projects

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- **ebXML as „the Yong“**
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Just some examples...

- **Public Health Information Network** (PHIN, www.cdc.gov/phin) in the USA: Use of ebXML for the communication between business partners in the health sector.
- **UK National Health Service (Project NPfIT).** The National Programme for IT, which is being delivered by the new Department of Health agency NHS Connecting for Health. Over the next ten years, the National Programme for IT will connect over 30,000 GPs in England to almost 300 hospitals and give patients access to their personal health and care information, transforming the way the NHS works.
- **ebXML-based e-health Infrastructure of the Norwegian public health insurance.**
- **UK Tax- and Customs Authorities.** Use OASIS Tax XML and ebXML
- For more see, e.g.: http://www.ebxml.org/case_studies

ebXML components

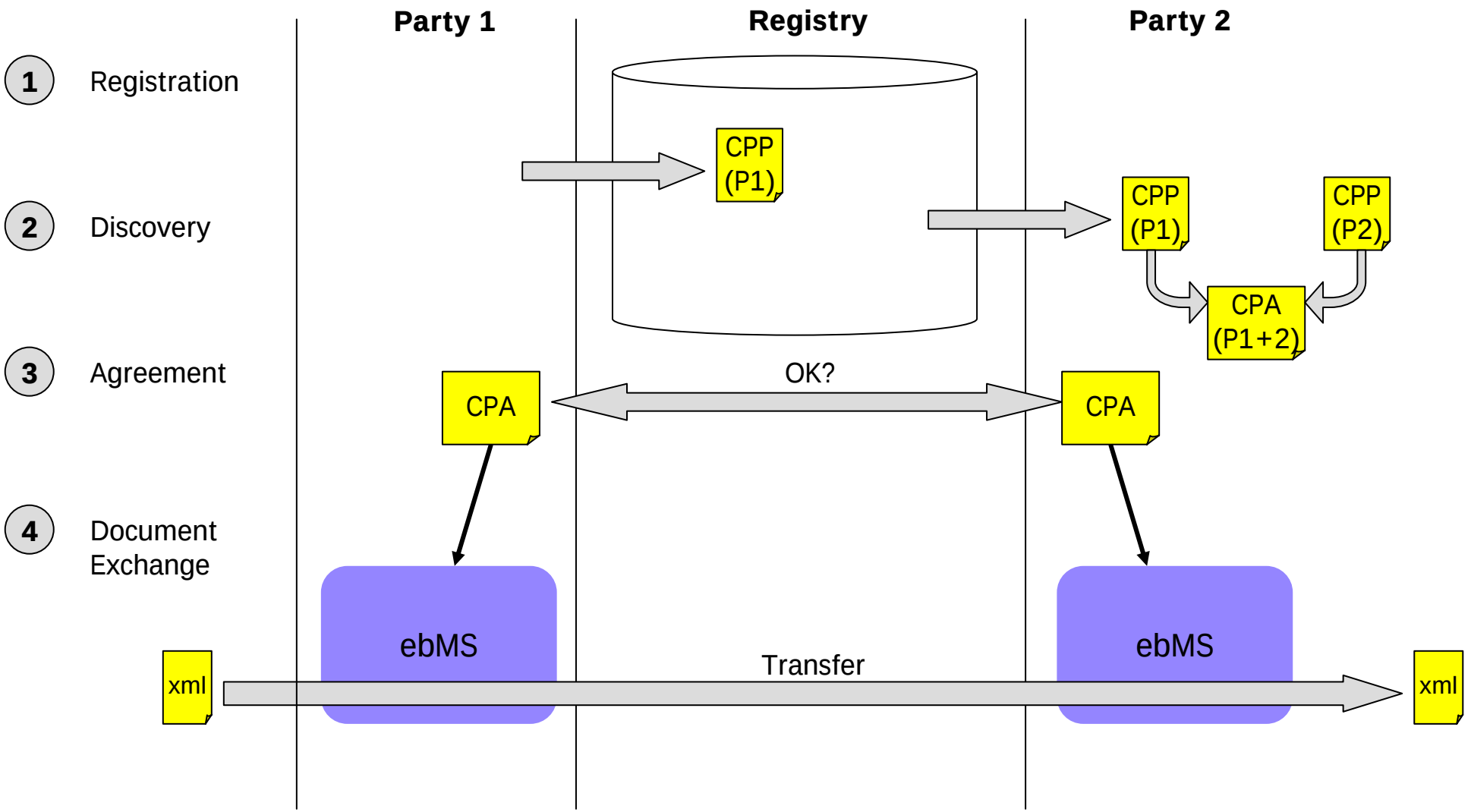
- **Message Services (ebMS)**
  - The operational workhorse for the exchange of messages

We will focus on this

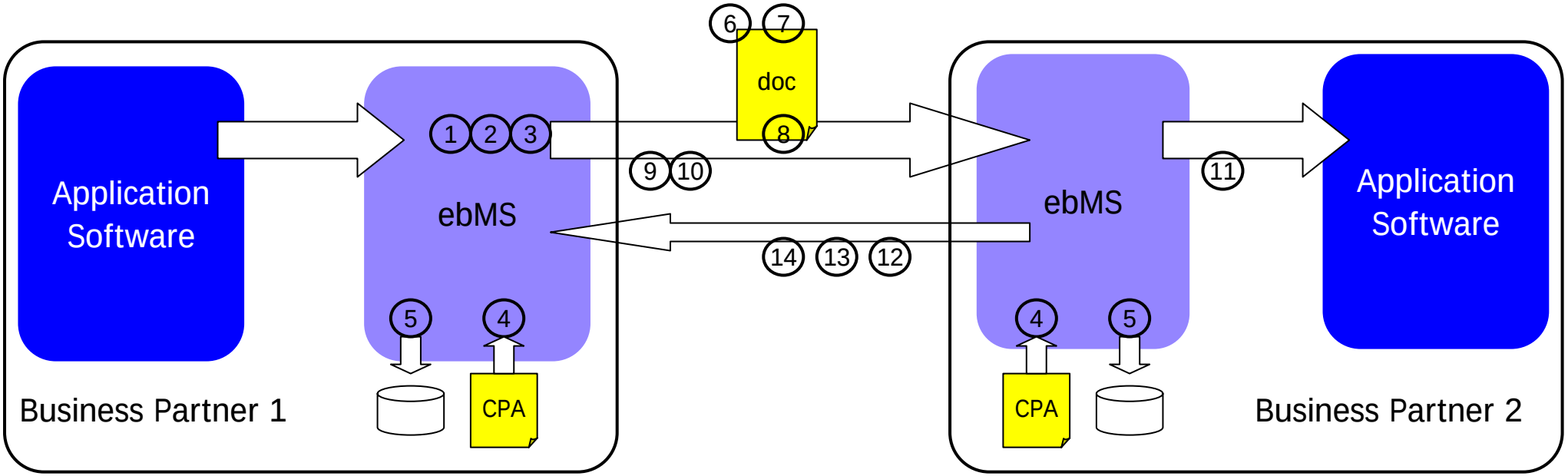
- **Collaboration Protocol Profile & Agreements (CPA / CPP)**
  - To describe communication capabilities of business partners (CPP) and the agreed parameters for bilateral communication (CPA)
- **Business Process (BPSS)**
  - To define roles, rules, payload document types and the process flow
- **Registry Services / (RegRep / RIM)**
  - The central location where CPPs of business partners are stored
- **Core Components (CCTS / UBL)**
  - A standard set of XML document components that can be re-used for the standardisation of vertical XML Schemas

Compared with other communication protocols (http, smime, AS1, AS2 etc.), ebXML standardised the complete business integration and collaboration process

Commercial Phases and their ebXML Support

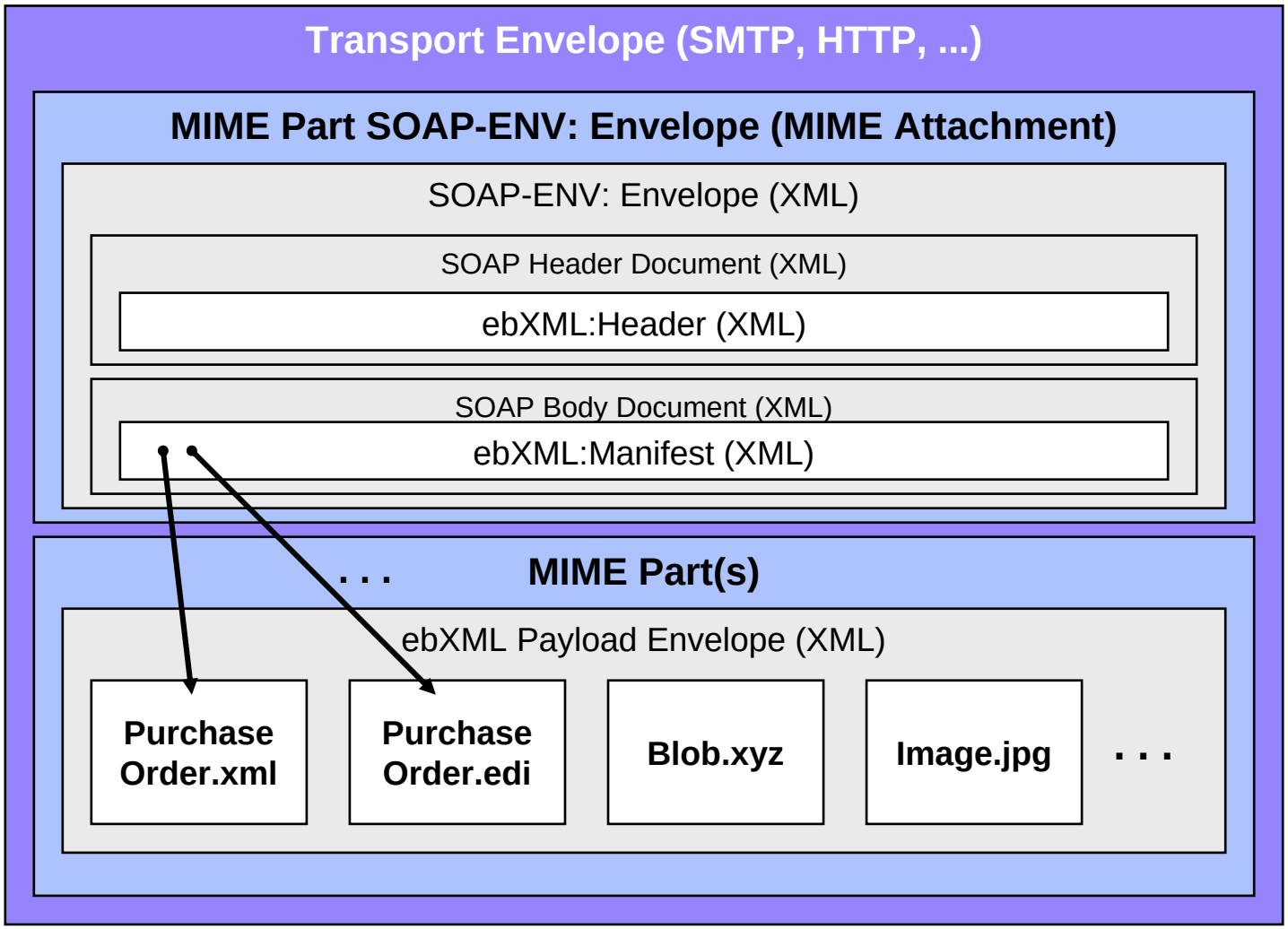


ebMS 2.0 Interoperability Goals



1. Support an arbitrary number of code types to identify business partners
2. Retry transfer X times after Y seconds → ebXML RetryInterval
3. Allow for transparently using transport protocols such as http(s) or smtp / smime
4. High-level configuration of transport protocols in the CPA
5. Persistent storage of payload, signatures, etc.
6. Sign payload document → XML Signature
7. Document encryption
8. Standardisation of MIME structure and character encoding
9. Synch vs. Asynch communication mode
10. Ping / Pong service for standard way of connection testing
11. Avoid multiple delivery in case of re-sending → ebXML duplicate elimination
12. Reliable communication: Allow for ebMS- level acknowledgements
13. Avoid non-repudiation of receipt → Signed Acknowledgement
14. Standard list of error codes

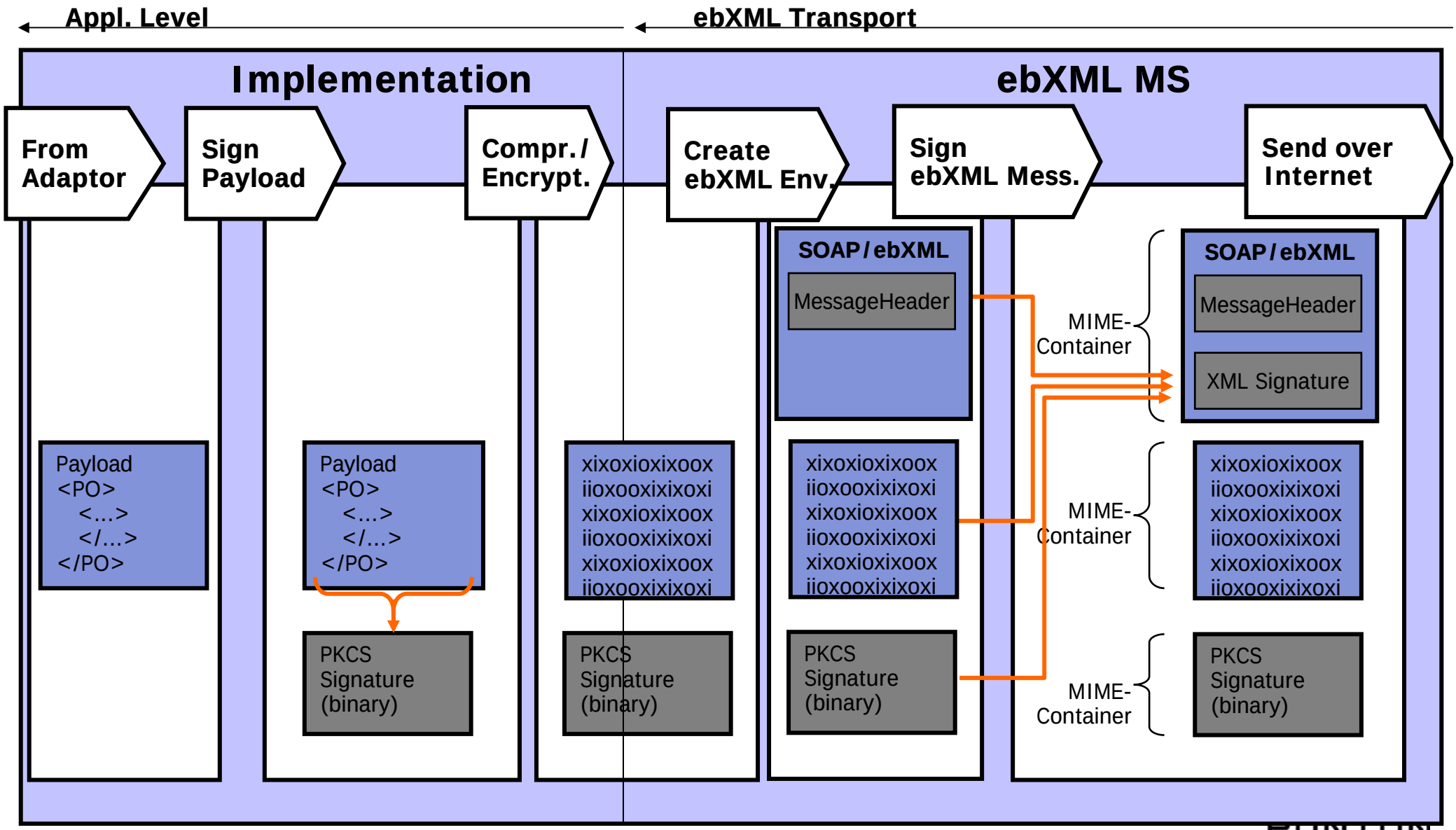
ebXML 2.0 Message Service Envelope Structure



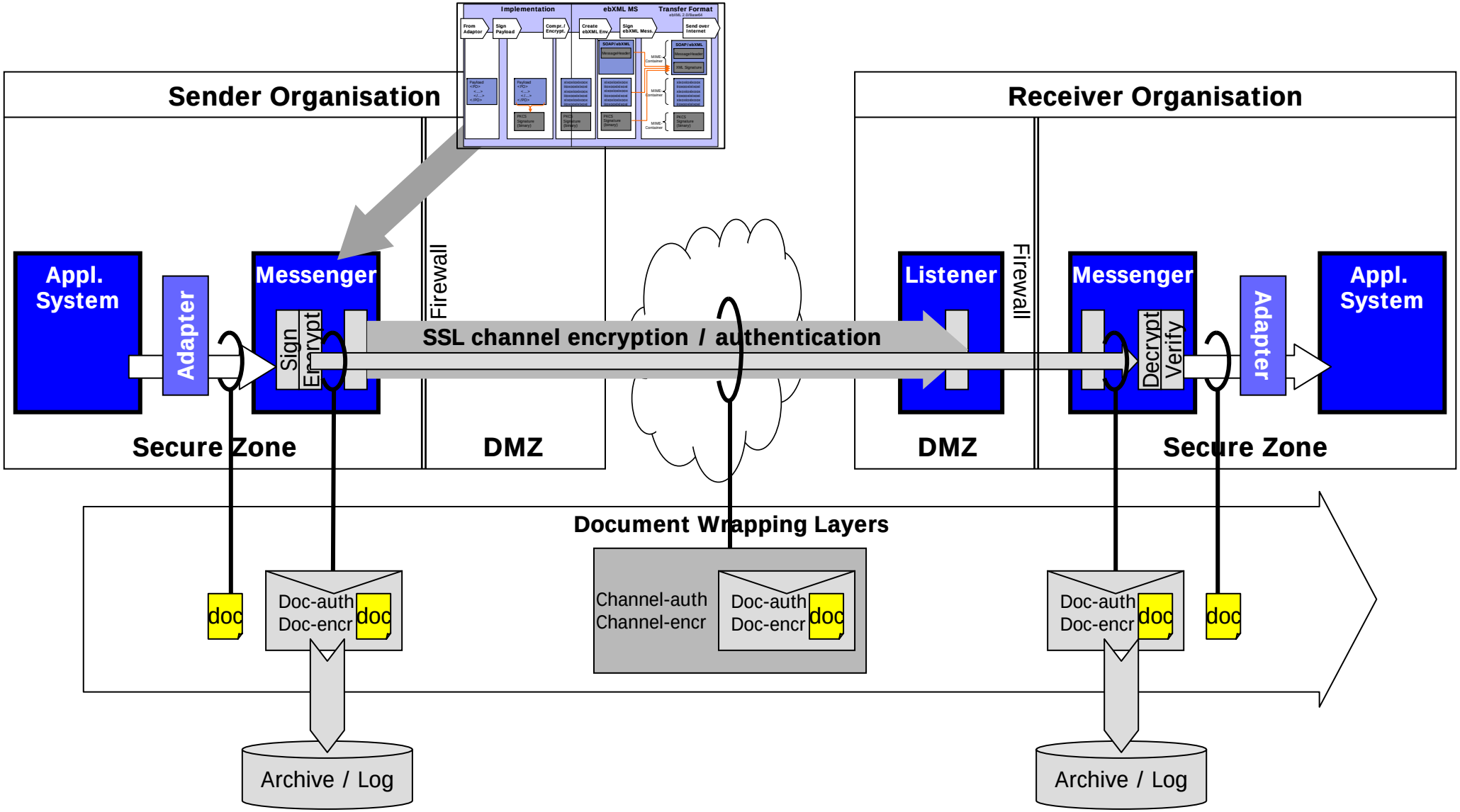
ebXML Header Example

```
<?xml version="1.0" encoding="UTF-8" ?>
- <soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/envelope/">
  - <soap-env:Header>
    - <eb:MessageHeader xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd" soap-
        env:mustUnderstand="1" eb:version="2.0">
      - <eb:From>
          <eb:PartyId eb:type="PontonCertificate">MegaMerzTest</eb:PartyId>
        </eb:From>
      - <eb:To>
          <eb:PartyId eb:type="PontonCertificate">papitest</eb:PartyId>
        </eb:To>
        <eb:CPAId>www.papiNet.org/data/CPABasicHTTP.xml</eb:CPAId>
        <eb:ConversationId>CID-1060359487745@yourcompany.com</eb:ConversationId>
        <eb:Service eb:type="papiNet">Production</eb:Service>
        <eb:Action>CallOff</eb:Action>
      - <eb:MessageData>
          <eb:MessageId>MID-1060359487655@yourcompany.com</eb:MessageId>
          <eb:Timestamp>2003-08-08T16:18:07</eb:Timestamp>
          <eb:TimeToLive>2003-08-08T16:21:07</eb:TimeToLive>
        </eb:MessageData>
        <eb:DuplicateElimination />
      </eb:MessageHeader>
      <eb:SyncReply xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd" soap-
        env:mustUnderstand="1" eb:version="2.0" soap-env:actor="http://schemas.xmlsoap.org/soap/actor/next" />
      <eb:AckRequested xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd" soap-
        env:mustUnderstand="1" eb:version="2.0" eb:signed="true" />
    + <xp:ProcessingDirectives xmlns:xp="http://www.ponton-consulting.de/xmlpipe/processing-directives" soap-
        env:mustUnderstand="0">
    + <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
    </soap-env:Header>
  - <soap-env:Body>
    - <eb:Manifest xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
        eb:version="2.0">
      - <eb:Reference xmlns:xlink="http://www.w3.org/1999/xlink" xlink:href="cid:MID-1060359487655@yourcompany.com.xml"
          xlink:role="http://www.papinet.org/ebXMLAttachment/Roles/BusinessDocument">
          <eb:Schema eb:location="http://www.papinet.org/data/CallOffV2R00.xsd" eb:version="V2R00" />
          <eb:Description xml:lang="en">papiNet Payload</eb:Description>
        </eb:Reference>
      - <eb:Reference xmlns:xlink="http://www.w3.org/1999/xlink" xlink:href="cid:MID-1060359487655@yourcompany.com.sig"
          xlink:role="http://www.papinet.org/ebXMLAttachment/Roles/BusinessDocumentSignature">
          <eb:Description xml:lang="en">Signature</eb:Description>
        </eb:Reference>
      </eb:Manifest>
    </soap-env:Body>
```

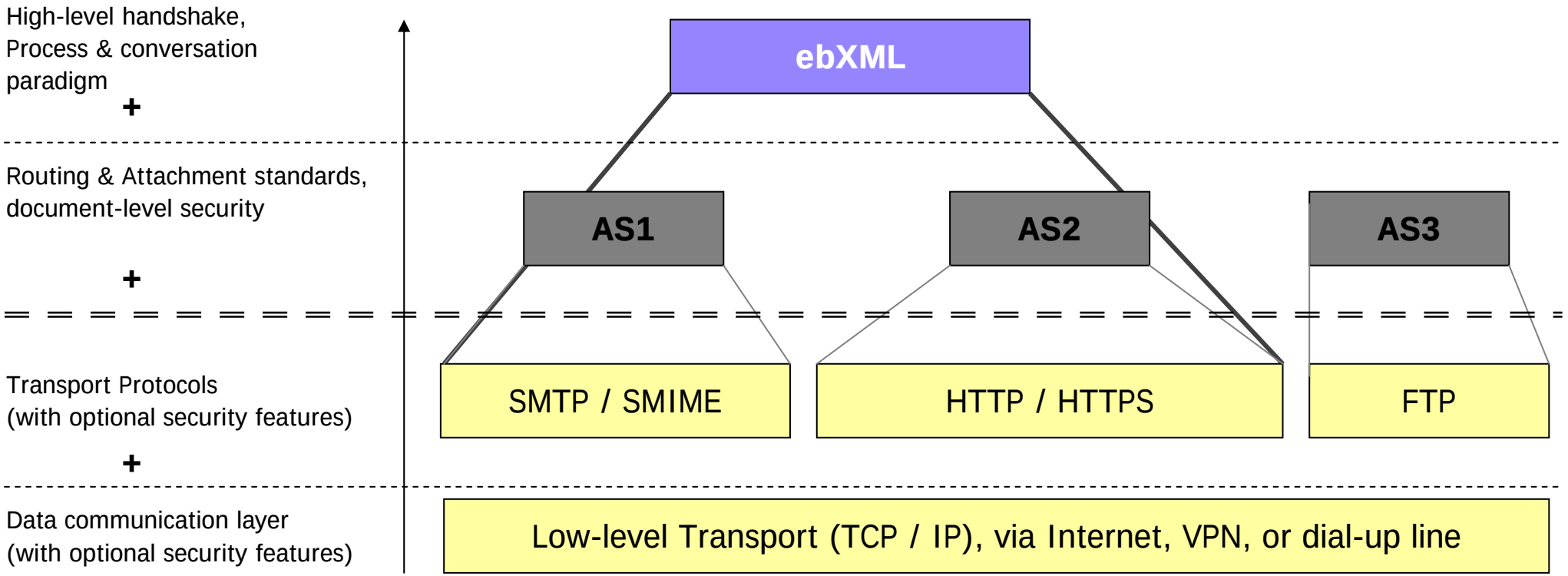
Processing of an XML Document for ebXML Transfer



Security Aspects for Integration



ebXML vs. other Communication Protocols



ebXML vs. other Comm. Standards

High-level security and processing features

On Top Of:

Transport Protocols (with optional security features)

	ODETTE FTP	AS1	AS2	AS3	ebXML
Security (Message)					
Encryption	None	Optional (S/MIME)	Optional (S/MIME)	Optional (S/MIME)	Optional (XML Encryption, S/MIME, any application level encryption)
Message Integrity (Signing)	None	Optional (S/MIME)	Optional (S/MIME)	Optional (S/MIME)	Optional (XML Signature, S/MIME, any application level integrity checks)
Authentication	Yes	Optional	Optional	Optional	Optional
Non-Repudiation	Yes	Optional (MDN)	Optional (MDN)	Optional (MDN)	Optional (ebXML acknowledgements)
Supported Transport Protocols	FTP, SFTP	SMTP, SSMTP	HTTP, HTTPS	FTP, SFTP	SMTP, SSMTP, HTTP, HTTPS, FTP, SFTP
Firewall issues?	Direct connection from sender to receiver must be allowed. Special Port (3305 - odette-ftp)	See SMTP, SSMTP	See HTTP, HTTPS	See FTP, SFTP	See SMTP, SSMTP, HTTP, HTTPS, FTP, SFTP
Reliable messaging					
Response handling	Simple ack that file has been received or not.	MDN with detailed processing results	MDN with detailed processing results	MDN with detailed processing results	ebXML acknowledgement with detailed processing results
- Response required	Yes	Optional	Optional	Optional	Optional
- Signed response	No	Optional	Optional	Optional	Optional
- Synchronous response	Yes	Not supported	Optional	Not supported	Optional
Retry handling	Restart of tranfers supported.	Not defined	Technically supported, but implementation	Not defined	Defined
Time-to-live of messages	Not supported	Not supported	Not supported	Not supported	Supported
Duplicate elimination	Not defined	Not defined	Recommended	Not defined	Supported
Auditing and traceability	Yes	Yes	Yes	Yes	Yes
Timestamps in messages	No	Yes	Yes	Yes	Yes
Message Routing	No	No	No	No	Optional (Multihop)
Partial Transmission	No	No	No	No	No
Message Prioritisation	No	No	No	No	Optional (Message ordering)
Scalability	Implementation specific	Implementation specific	Implementation specific	Implementation specific	Implementation specific
Defined profile and agreement	No	No	No	No	ebXML CPP + CPA
exchange	No	No	No	No	ebXML Registry

	SMTP	SSMTP	FTP	SFTP	HTTP	HTTPS
Security						
Encryption	None	Only between sender and local server if supported.	None	Yes	None	Yes
Authentication	Only between sender and local server if supported.	Only between sender and local server if supported.	Optional (Cleartext)	Optional	Optional (Cleartext)	Optional
Synchonous Transmission	No	No	Yes	Yes	Yes	Yes
Firewall issues	Only connection to mailserver required	Only connection to mailserver required	Direct connection from sender to receiver required. Proxies may not support ftp.	Direct connection from sender to receiver required. Proxies may not support ftp	Normally allowed. Proxy servers supported.	Often allowed. Proxy servers supported.

ebXML vs. Web Services

Application Arena

B2B Market, Global Multi-enterprise

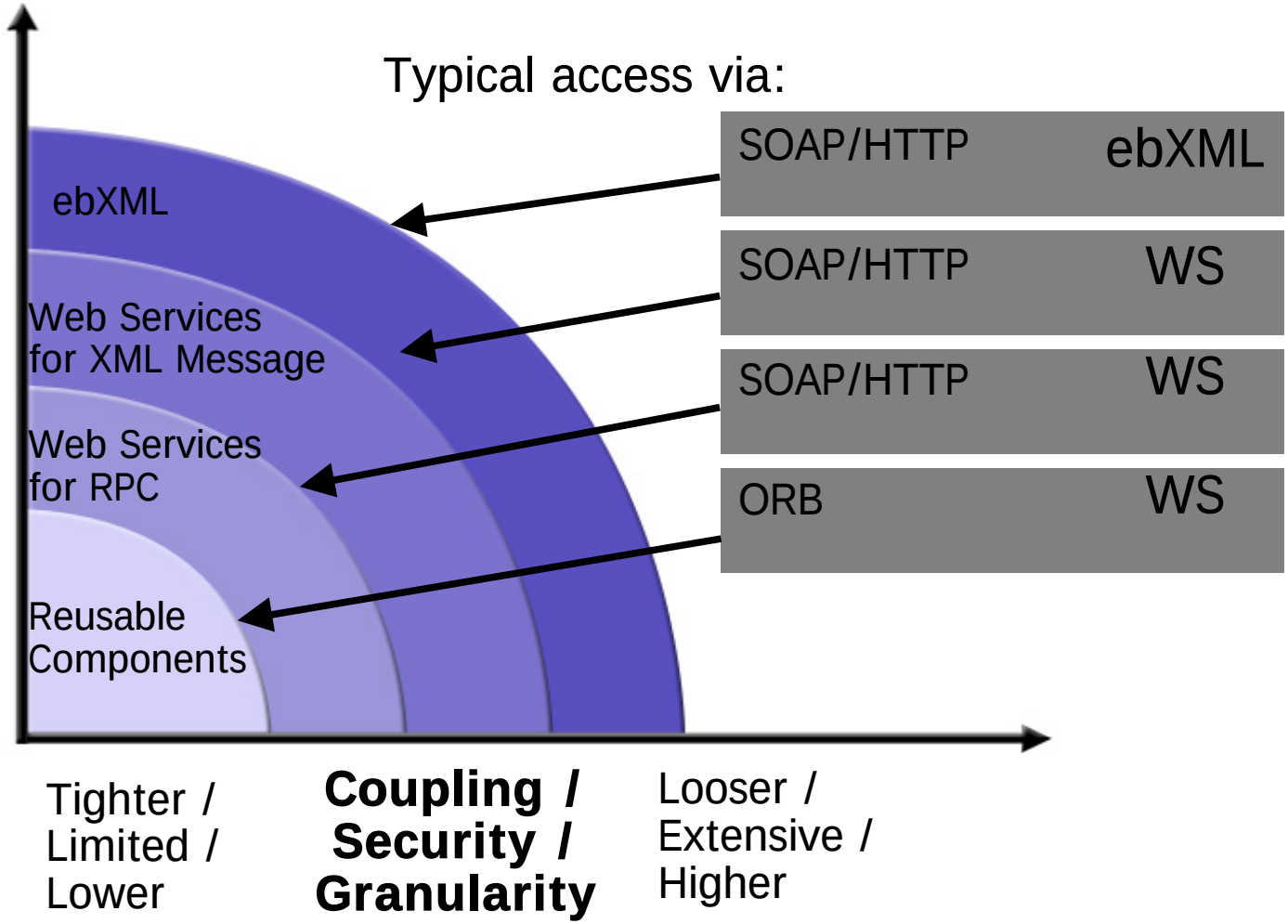
ebXML

WS

Small A2A Integrated Apps

Homogeneous Application

Communication Approach



Any Questions?

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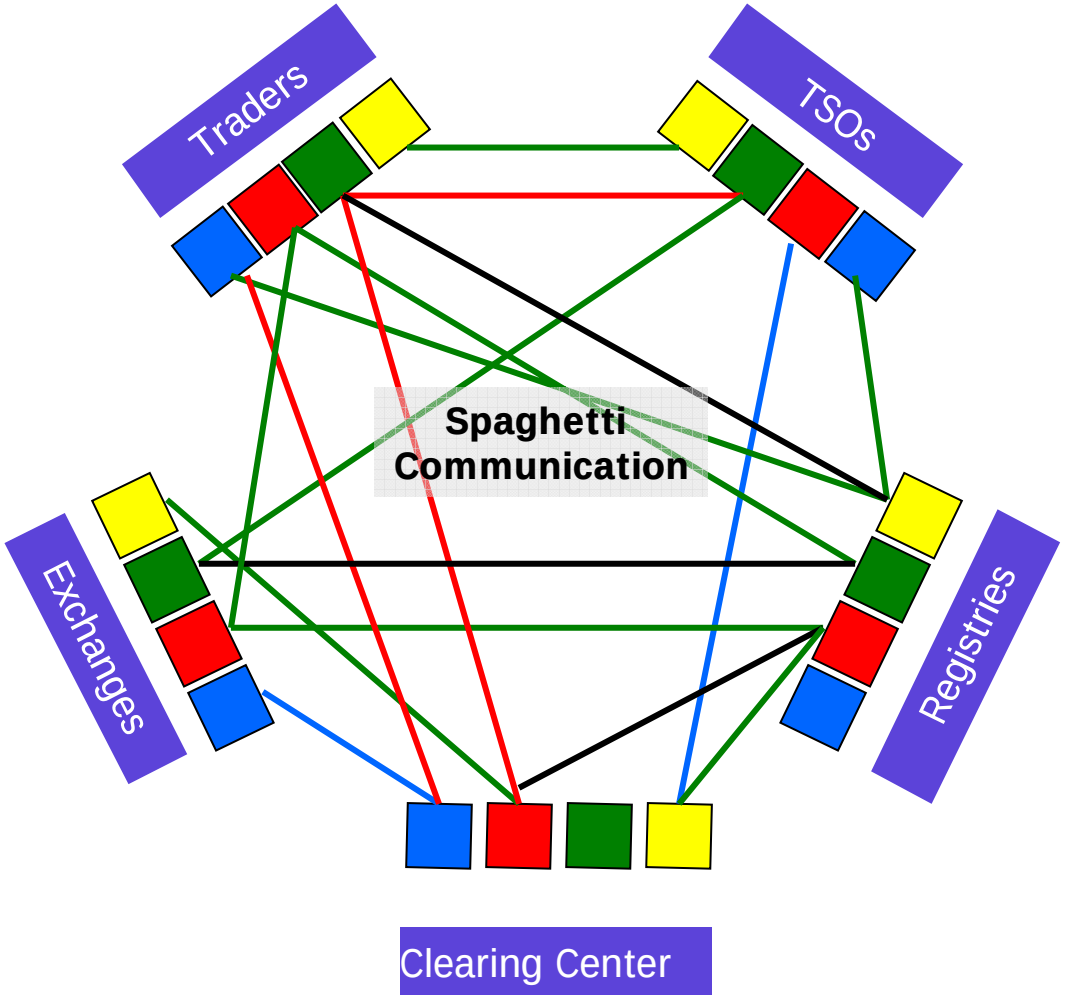
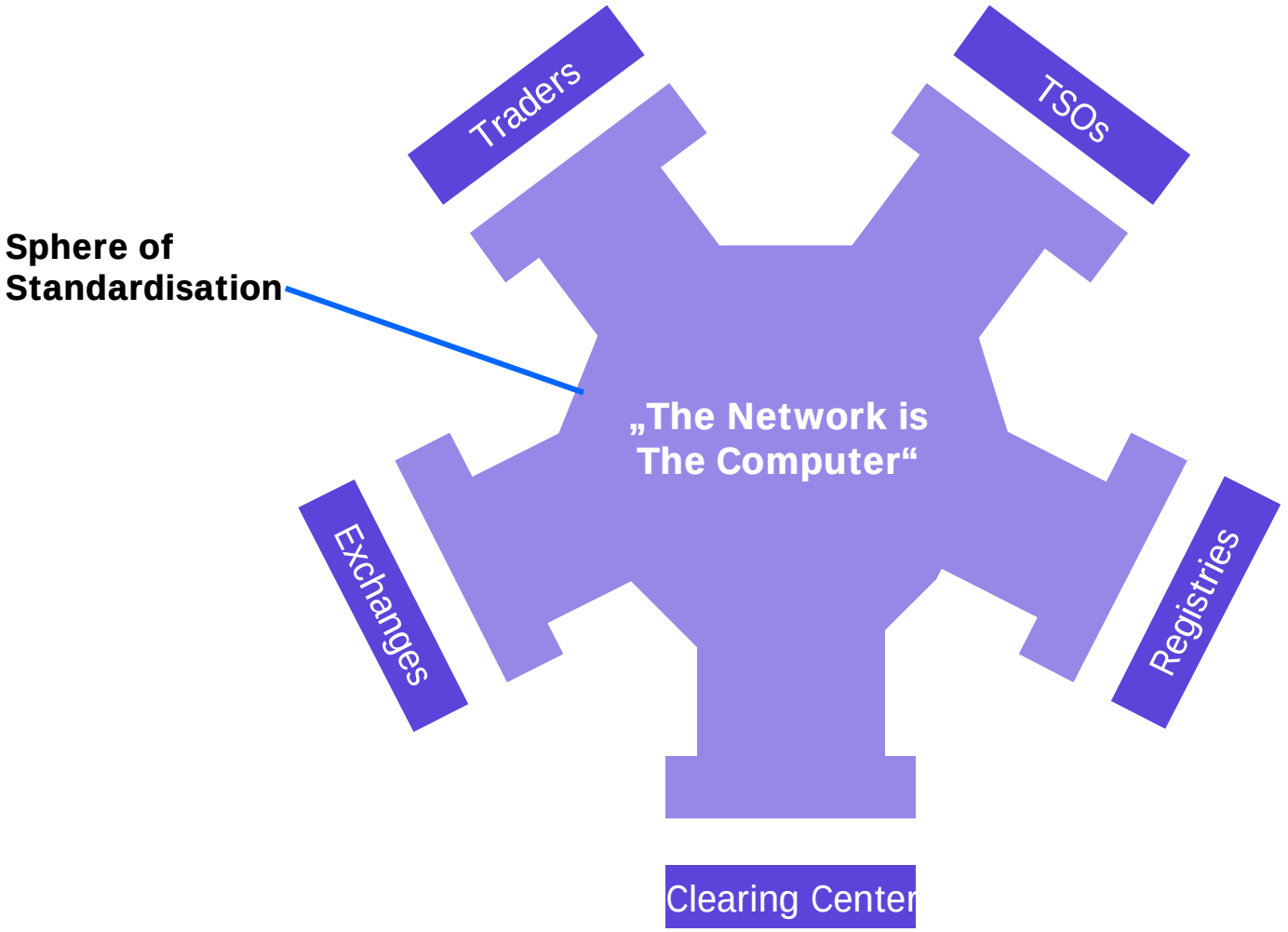
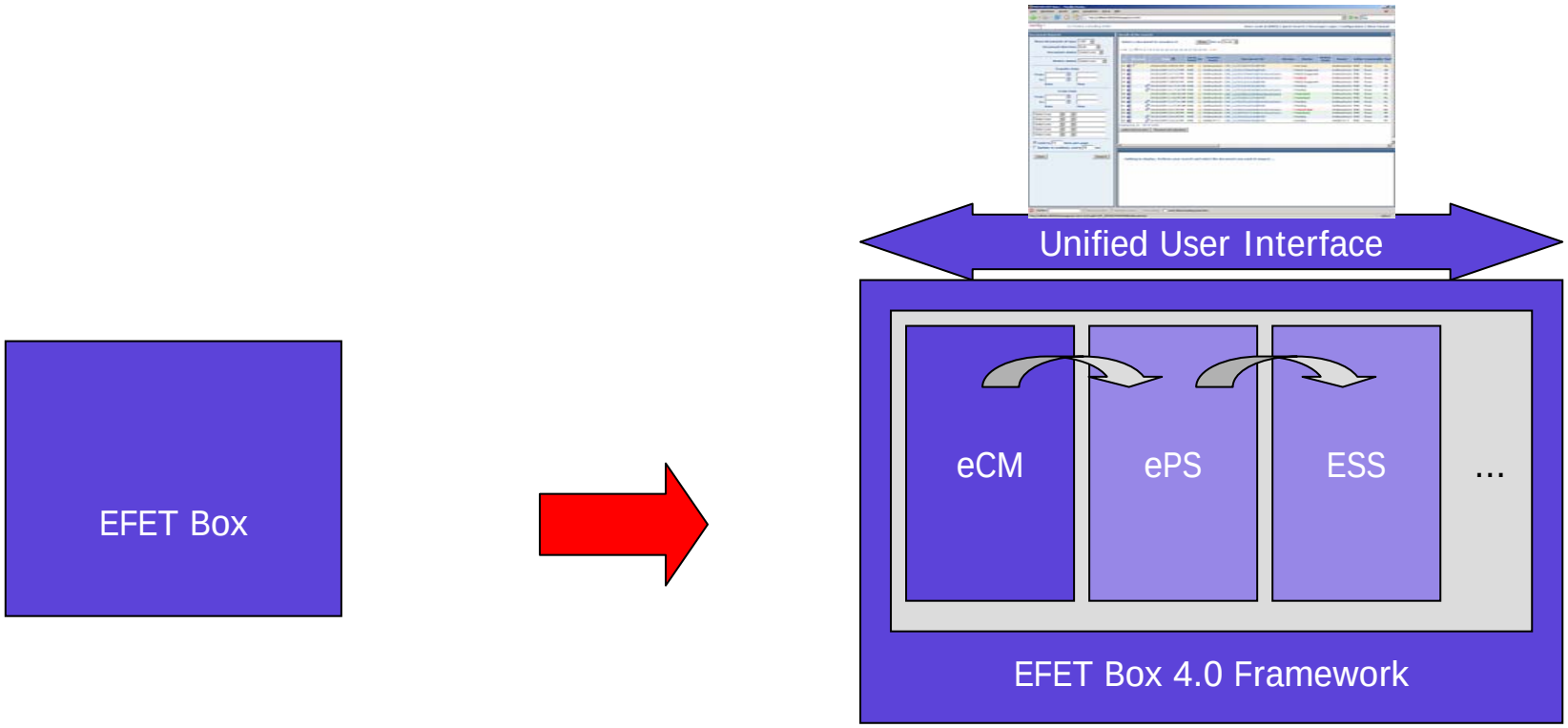
Today‘s Situation beyond the circle of trading organisations: No Yin, no Yang, no Yong



„The network is the Computer“
(Sun Microsystems, ca. in 2000)



Today's EFET Box vs. Future Design



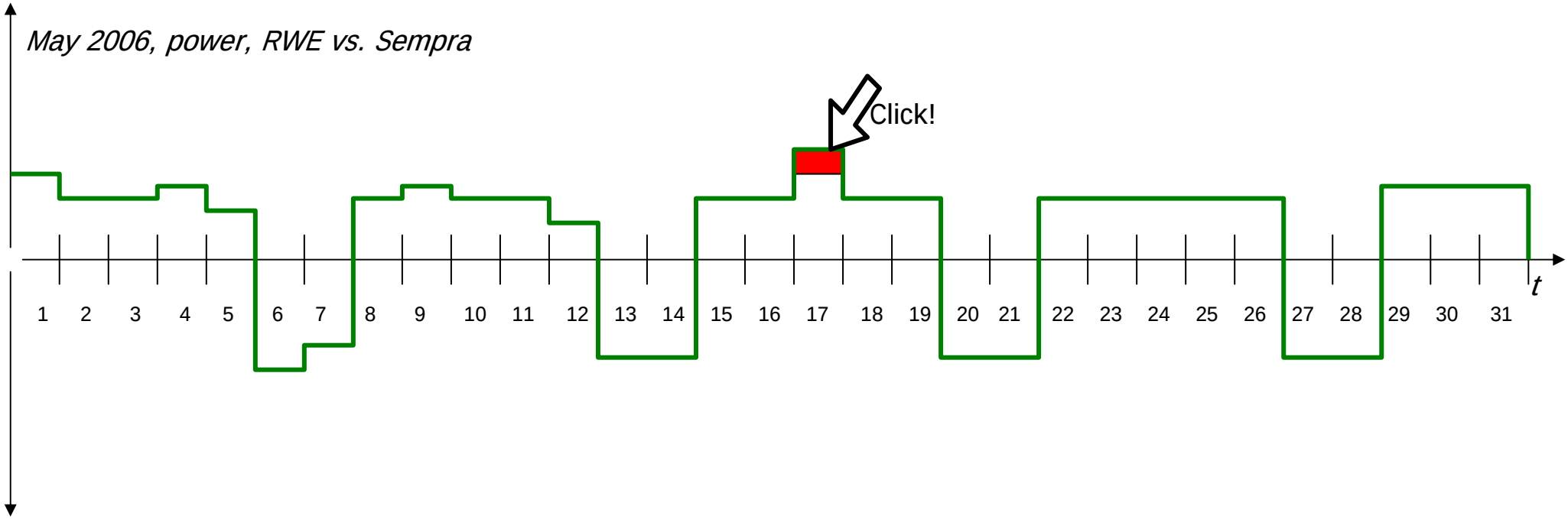
Today: Only eCM

Tomorrow: Support the full Deal Live Cycle

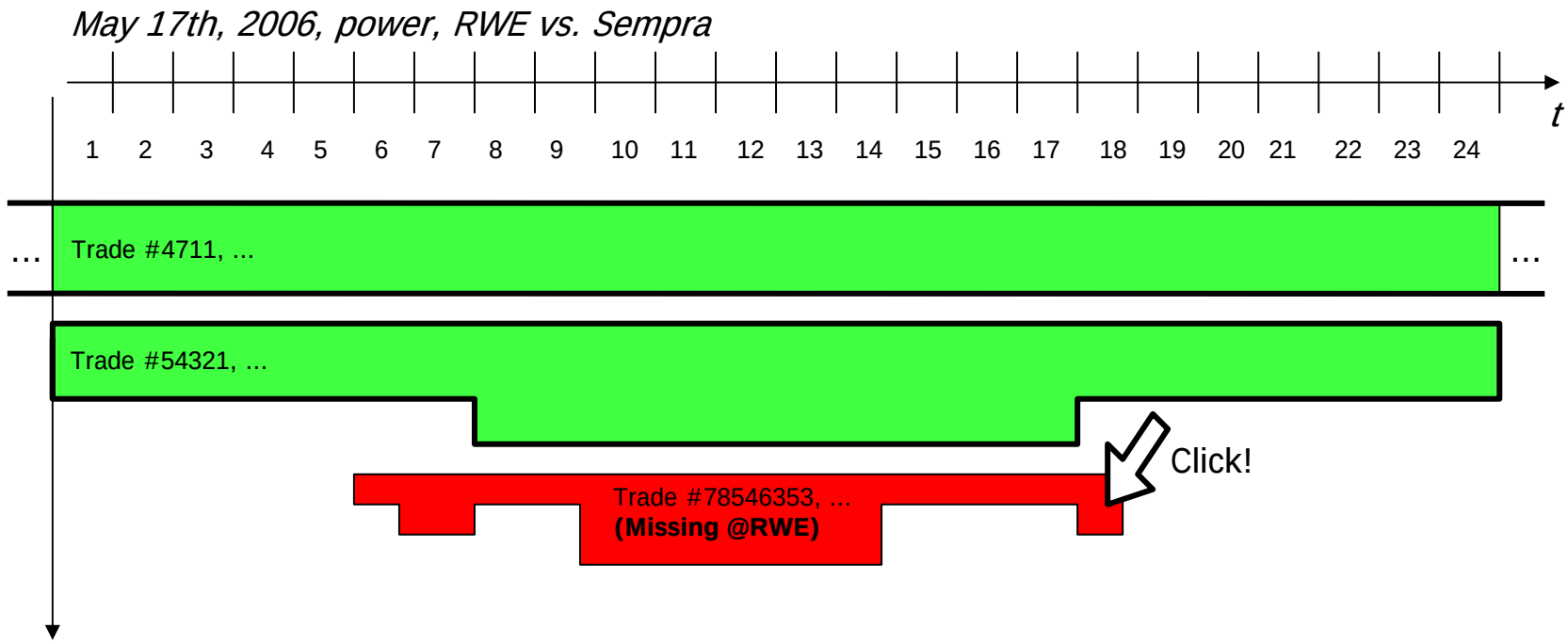
Base Component

Optional Component

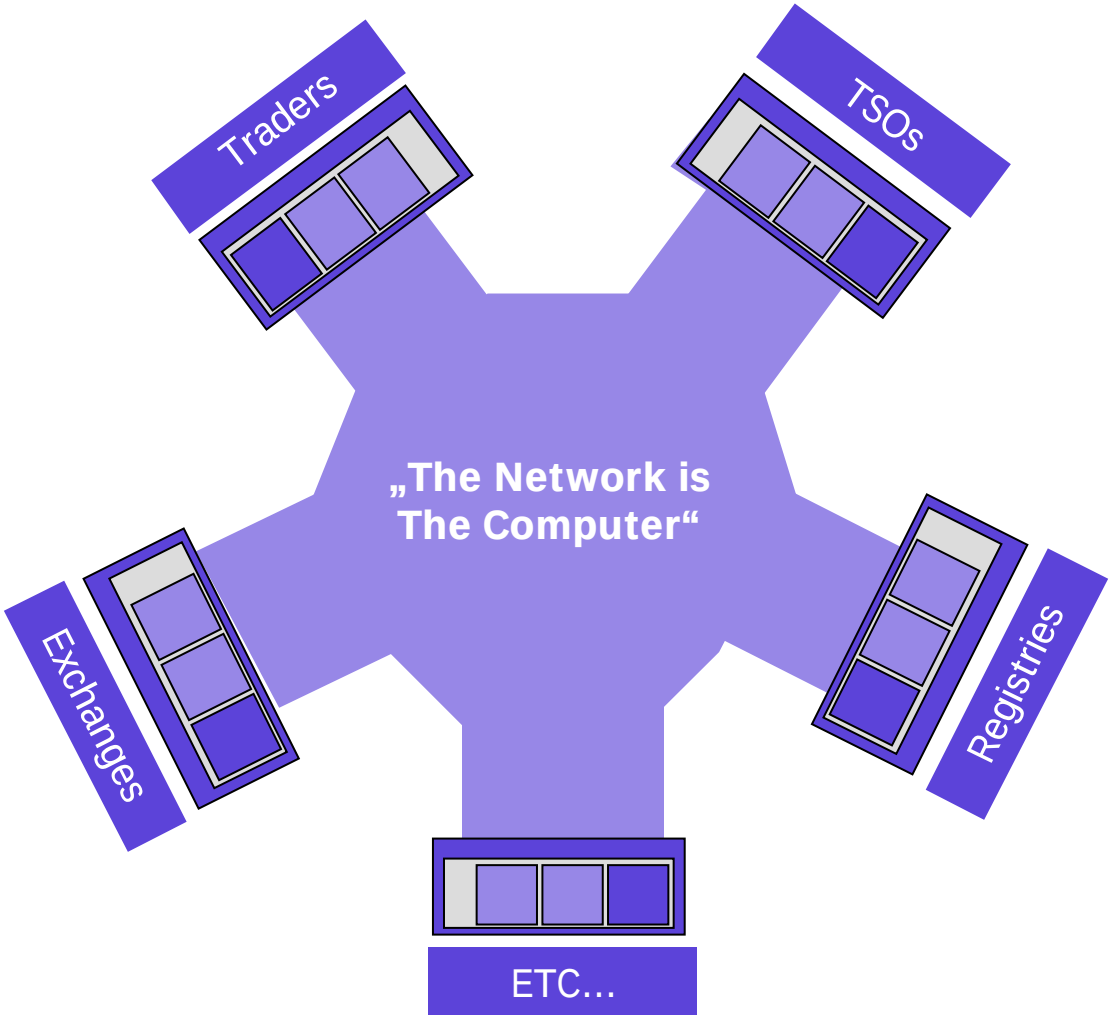
Example: Aggregated ePS match result



Detailed ePS mismatch analysis



„Plug and Play“ for all communication partners of the energy trading world



Further Outlook

- CO2 Registry Integration
- TSO Scheduling / Minute Reserve
- Energy Market Ecosystem for Communities (→ Uni Karlsruhe)
- eInvoicing
- …

Conclusions

- Yin-Yang-Yong: Business Interoperability is more than just IT
- Network Economy:
  - Find a crystallization point,
  - Drive standardisation as far as possible,
  - then fine-tune the economic parameters
  - – and let the system grow!
- Very important:
  - There is nothing better in business than an intelligent customer!