

MODA-ML

Middleware tOols and Documents to enhAnce the
textile/clothing supply chain through xML

www.moda-ml.org

Presentation and status of the project
at October 2003



A project of the cluster
EUTIST-AMI (IST), www.eutist-ami.org



Summary: WHAT, HOW, WHY

The WHAT

- Creation of a common language for the telematic communication in the T/C supply chain (starting from EDIFACT/EDITEX)
- Quick development of series of documents (Templates) to fit specific data transactions out of the same semantic building blocks

The HOW

- Exchange of XML documents through the Internet
- Release of a SW tool of free use and very low entry threshold deployable in most B2B scenarios

The WHY

- Improve flexibility and service in a highly fragmented and etherogeneous industry chain



Introduction to the project

- European funding in the IST framework

- Take-Up Actions, programm IST, Action Line IV.2.5 “Computing, communications and networks take-up measures”
- Clustered in EUTIST-AMI (Middleware and Agents technology), www.eutist-ami.org

- Industrial Partners

- Corneliani
- Loro Piana
- Piacenza
- Successori Reda
- Vitale Barberis Canonico

- Technological Partners

- Domina
- ENEA
- Politecnico di Milano
- Progema Gruppo SOI
- IFTH (France)

- Scheduling

Kick-off:

July 2001

Intermediate results: Nov-2001, Jun-2002, Dec 2002

End:

April 2003



Summary

- The problem
- The Moda-ML approach
- The supported processes
- XML documents
- Dictionaries and methodology
- Transportation and trials (the SW)
- Scenarios...
- About the Project

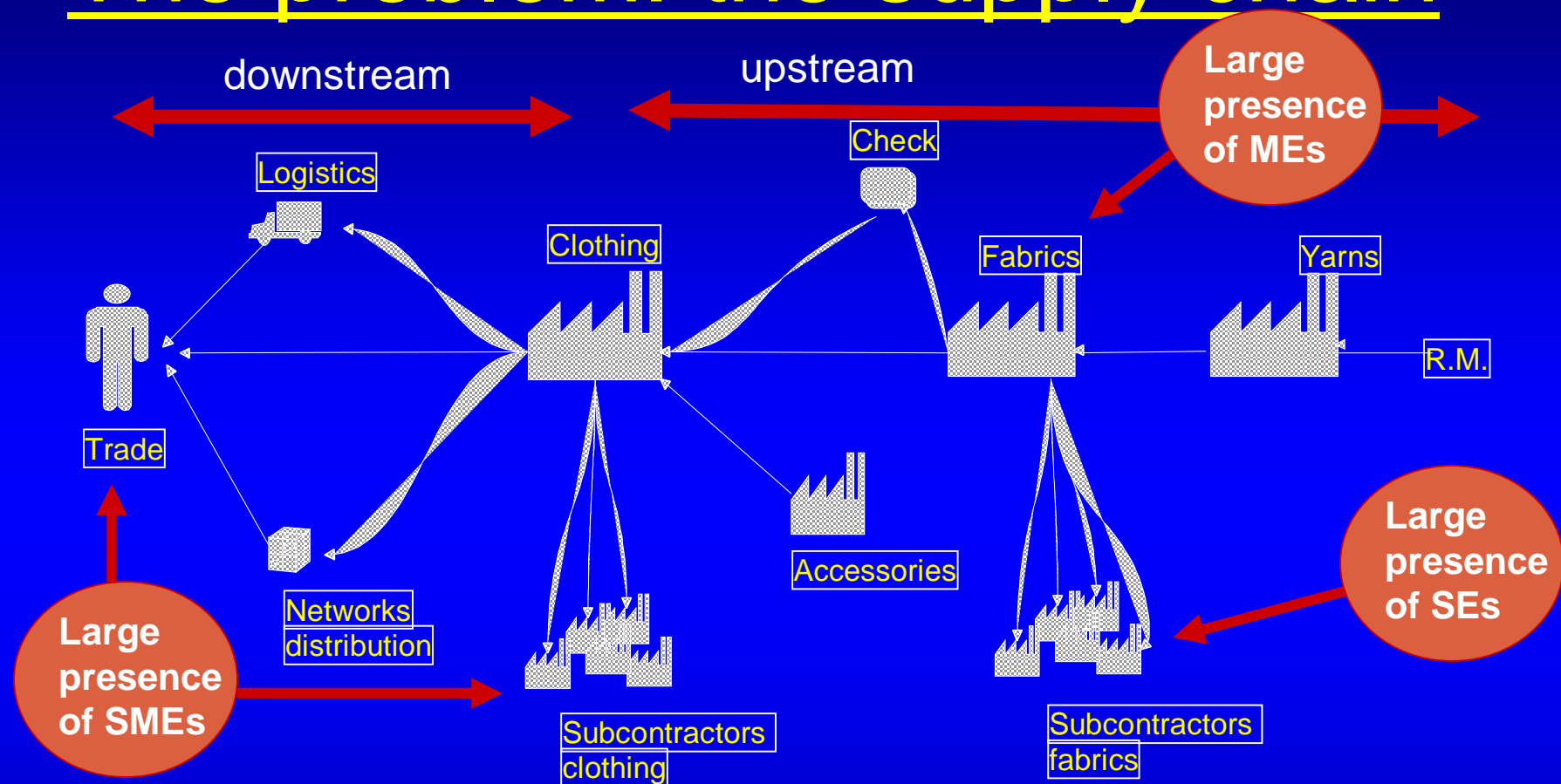


The problem

(www.moda-ml.org)



The problem: the supply chain



- 1 - Competitiveness depends upon performance of the whole supply chain
- 2 - Textile-Clothing chain is complex and heterogeneous (structural presence of SMEs)
- 3 - Flexibility and timeliness are decisive: responsiveness of the chain must be improved
- 4 - **SMEs** are necessary: add high specialisation and productive flexibility to the system
- 5 - Flow of data are hampered by the the inter-company interfaces

Co-operation in the T/C supply chain

- **Fabric suppliers offer to their customers**
 - - fast and accurate information through electronic documents
 - - views on the status of order
 - - technical information available on electronic format

- **Their customers may return**
 - - fast and accurate information through electronic documents
 - - anticipation on fabrics already included in the collection
 - - book production capacity



Expected benefits from data flow automation

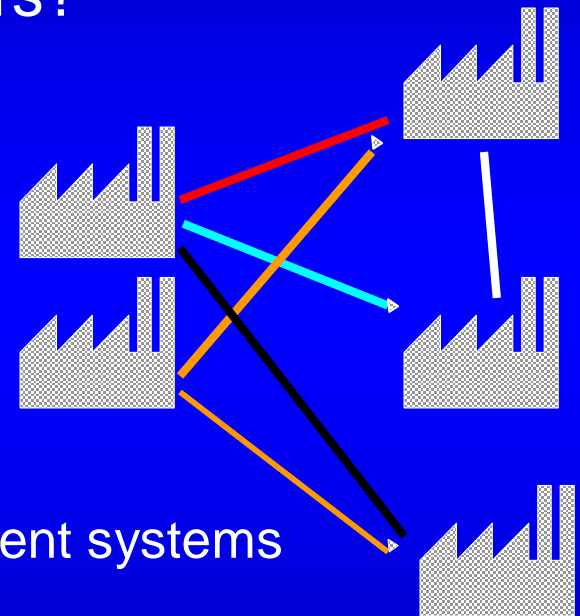
- Data of the purchase orders are available on digital systems without manual inputting
- Fabric supplier receives collection booking note from the clothing manufacturers and can improve its planning
- Clothing manufacturer receives the order status report and a digital defect map from the fabric supplier
- Sell-out data flow back along the supply chain
 - Reduction of costs and error per transaction
 - Better services to the customers
 - More information available for planning



How to exchange these data?

The interoperability issue

- How to exchange data with many partners?
 - Paper, fax, phone
 - Satellites of my ERP inside my partners
 - A data interface for each of my partner
 - Buy conversion services from a clearing house or an ASP
- ... or ...
 - use a **common language** between independent systems



- u It is very expensive **for a single firm** to establish and maintain a different interface toward each partner
- u Risk of exclusion for medium and small firms



The 'classic' EDI approach

EDI (Electronic Data Interchange) has been an answer in the world of the “mainframes” , files structured with an international standard (UN/ECE EDIFACT) through point-to-point connections or via VANS

Limitations:

- Lacking of a “global network” and only partial inter-operability between VANS
- Expensive technology and 'inherently' not flexible
- Technologic background poorly fitting the WEB

Legacy of classic EDI:

EDI is the result of a wide effort (also in terms of man-years) regarding

- Analysis and standardisation of data encoding
- Analysis and modelling of data exchange processes



EDITEX is the Textile/Clothing implementation of EDIFACT and is a common background for any new activity

The innovation from Internet: XML

- Powerful Meta-Language aimed to manage the digital documents in Internet (supported by W3C);
- it facilitates automatic management of the data structure focusing the semantic structure:
 - from DB/files like |502-116|150,25|15|2002-07-30|.....
 - to `<article>502-116</article><price>150,25</price><discount>15</discount><deliveryDate>2002-07-30</deliveryDate>`
- Simple to learn and read (by humans)
- Easily expandable to new data or new structure
- Standard tools to manipulate documents with low cost and widely diffused (validation, security, parsing, read and write of files, interfaces with relational DBs, etc.).



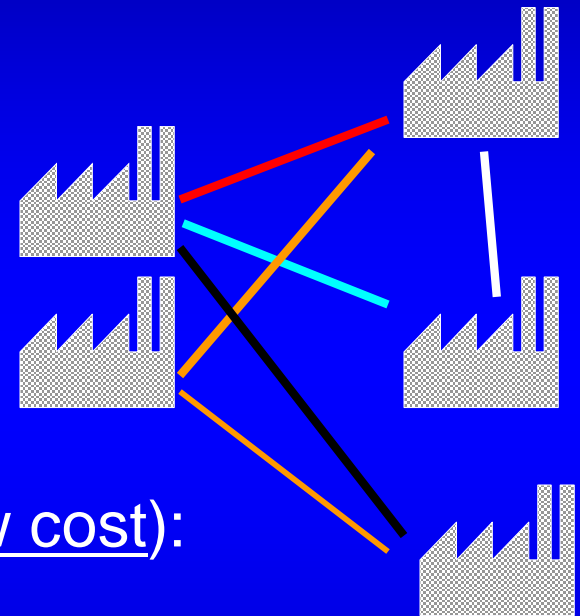
The risk of a 'BABEL' in the XML approaches..

Needs of interoperability

Need for a single common interface for M:N relationships

Possible answers:

- EDIFACT/EDITEX:
a common language, but not for SMEs
- XML and Internet (flexible, structured, low cost):
 - a) A 'do it by your self' approach
 - b) Frameworks:
ebXML, cXML (horizontal), MODA-ML (vertical)



XML

- To give “meaning” to data with a markup (TAG) (*)
- To define and automatically validate aggregates of data (documents) (DTD, SCHEMA)
- To control the representation of data (SCHEMA)
- To Transform digital documents, e.g. towards HTML (XSL)

```
<header>
  <msgnumber>AB001</msgnumber>
  <msgdata>20010726</msgdata>
  <reference>
    <order>AA047</order>
    <ourRef>fax-12-7-2001</ourRe
  </reference>
  ...etc. etc. ...
</header>
```

- Standard Interpreters and libraries (W3C) to manage the data widely available and supported (DOM, SAX, for example)

(*) The risk is to do it by yourself

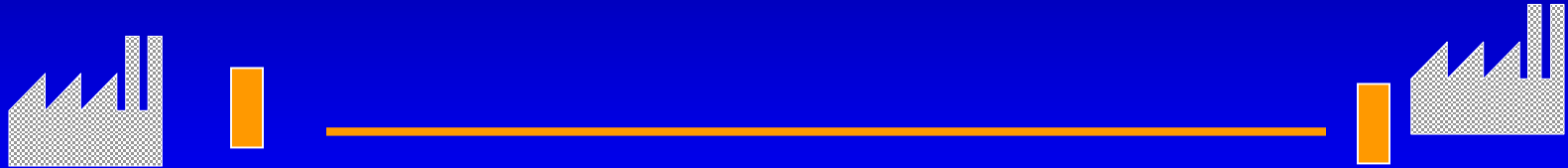


Costs and main obstacles

- To supply and successfully use these information, investments and efforts are needed on
 - Internal company information systems (and organisation)
 - **Interfaces** towards the rest of the world
 - **Agreements** with the commercial partners



Scambiare dati significa...

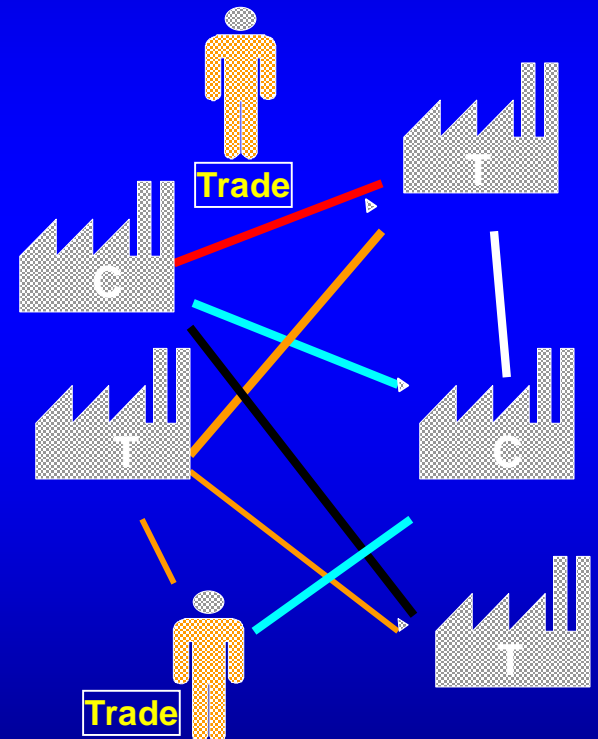
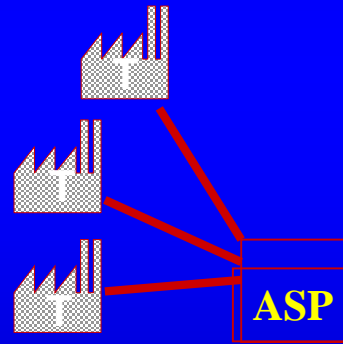
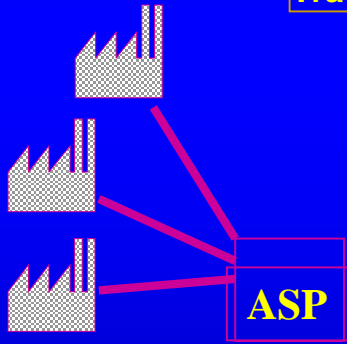
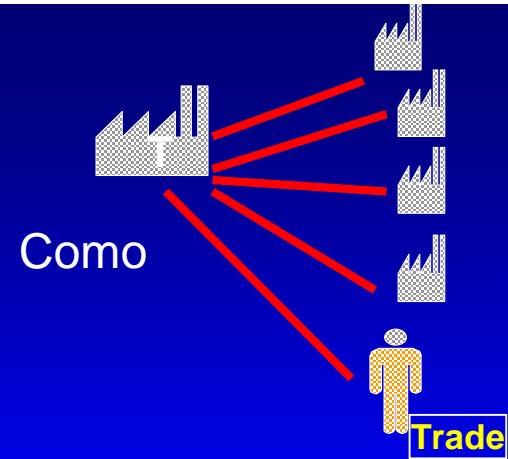
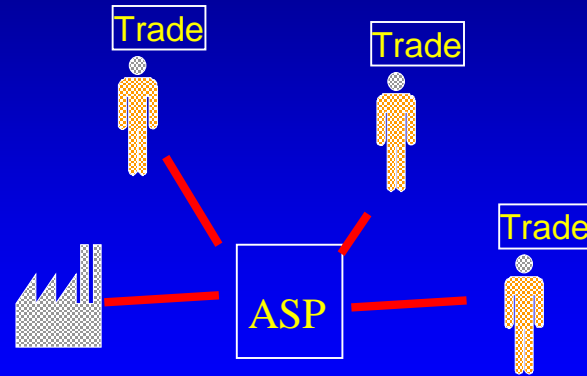
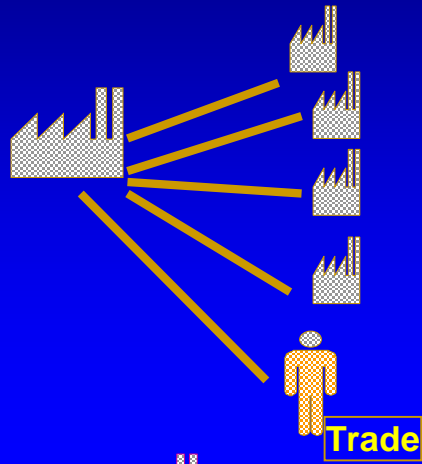


Problemi da risolvere (comunque)

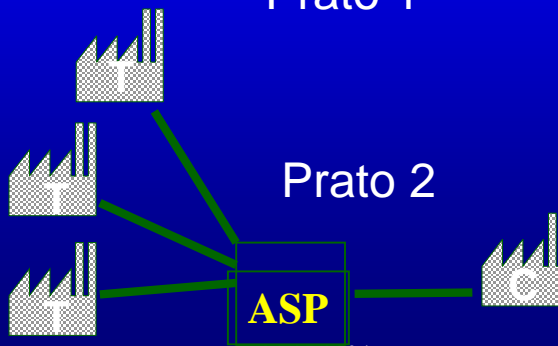
- 1) Adattare procedure interne per trattare automaticamente informazioni
- 2) Formato dati di scambio concordato
- 3) Protocollo di trasporto (sicuro e affidabile)
- 4) Accordi di collaborazione



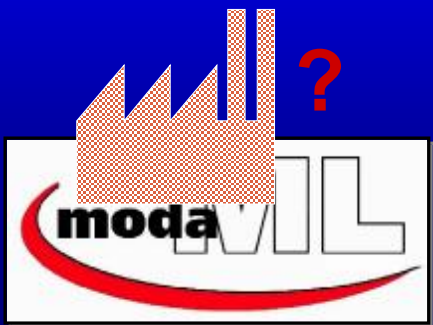
What is happening?



Prato 1



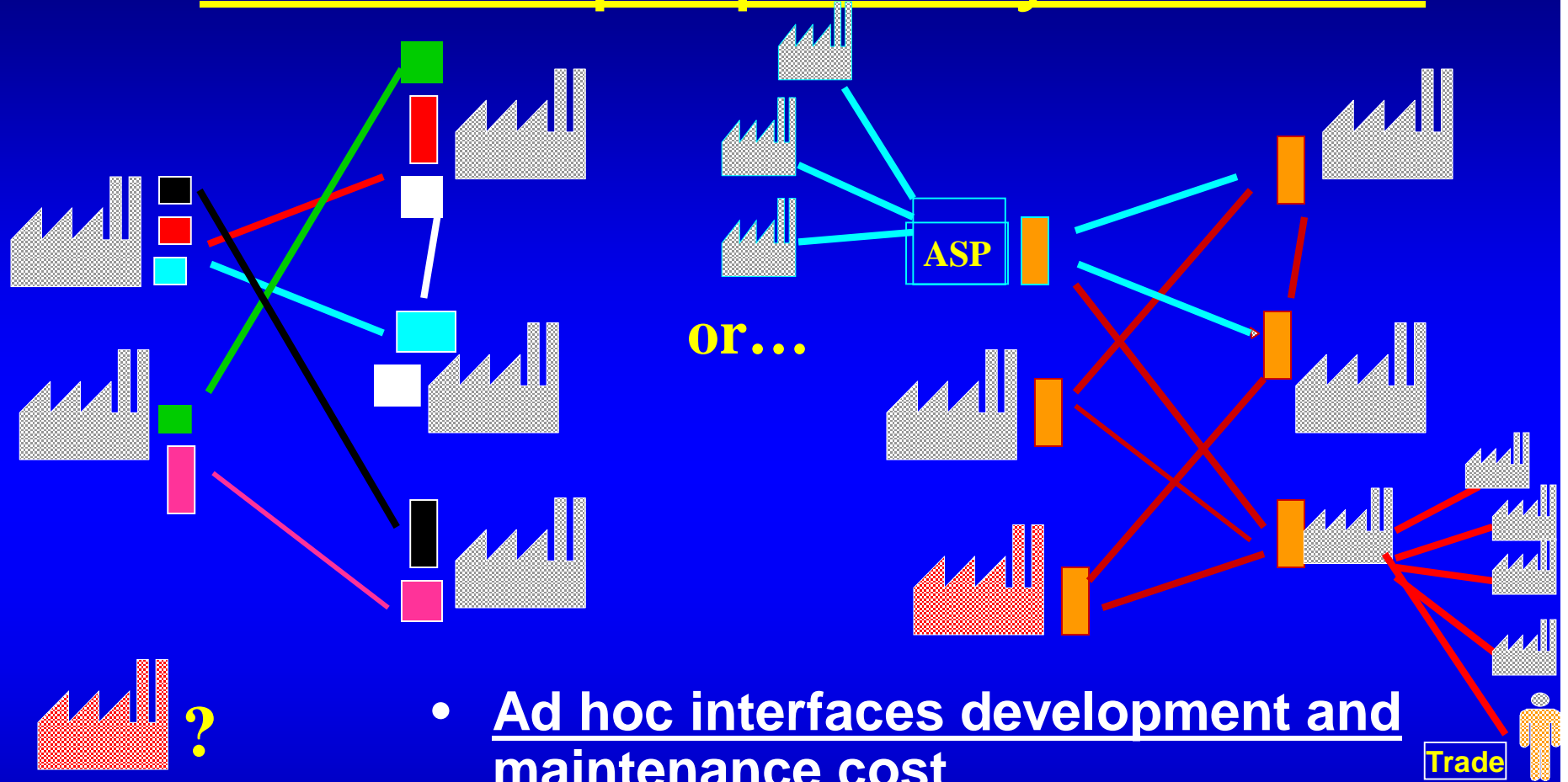
Prato 2



We need standards

- **B2B is performed by means of**
 - Closed communities
 - (i.e. marketplaces, technology supplier driven)
 - Hub-spoke models around a large scale enterprise
 - (extension of the Company Information System; a sort of colonisation)
 - Direct peer-to-peer
 - (self managed; is cost effective only using a common standard)
- **Risk of exclusion of SMEs** (lack of resources and skills)
- Request for technologies to keep together ERPs and small systems!
- A common standard is required to join many communities and many single enterprises

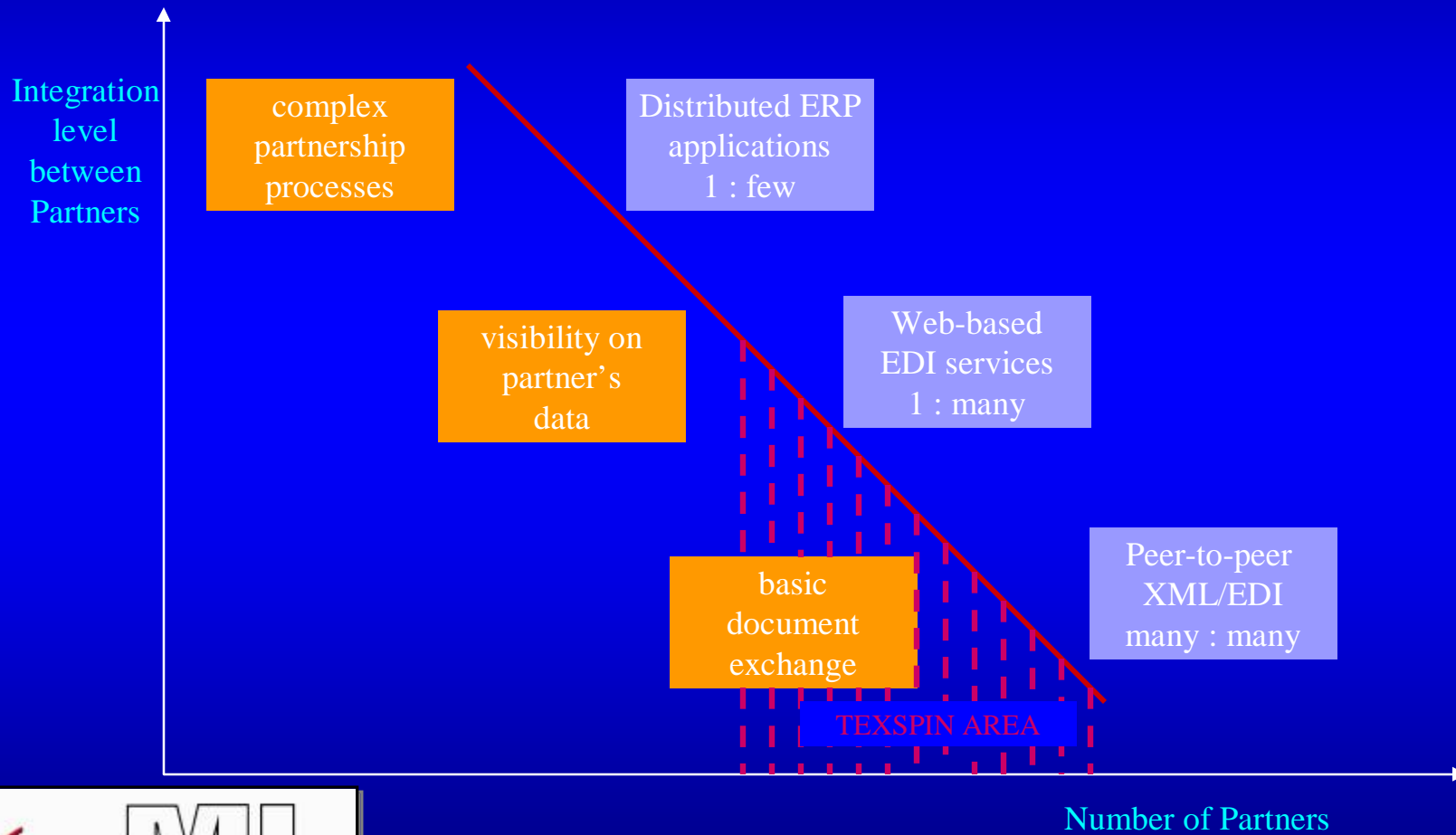
Costs of proprietary choices



- Ad hoc interfaces development and maintenance cost
- Lack of shared and consolidated software and tools
- High cost for new partners to join



E-business view (B2B)



The approach of MODA-ML

(www.moda-ml.org)



The T/C sectorial objective

- Automate the data flow of the chain without excluding SMEs
- Exchange new types of data to improve the integration of the supply chain
- Assure Interoperability between independent systems
 - Contribute to the creation of an European standard



Requirements

- Interoperability requires

Public, free, common languages and interfaces
(standards)

- SMEs requires

Easy to use, free, modules to enhance their independent
legacy systems

- Intercompany relationships are
many to many relationships and un-rulable by a single
firm

- Confidentiality requires

Architectures without commercial data on third party
databases

Long term technical objectives

- WEB enabled intercompany data flow
- Common set of XML documents
- Common exchange protocol
- Active participation of SMEs
(the fax as metaphore of simplicity)
- Suggestion of new practices in business process:
 - electronic maps of defects, status of orders (downstream)
 - sell out data (upstream)
 - pre-selection of articles (upstream)



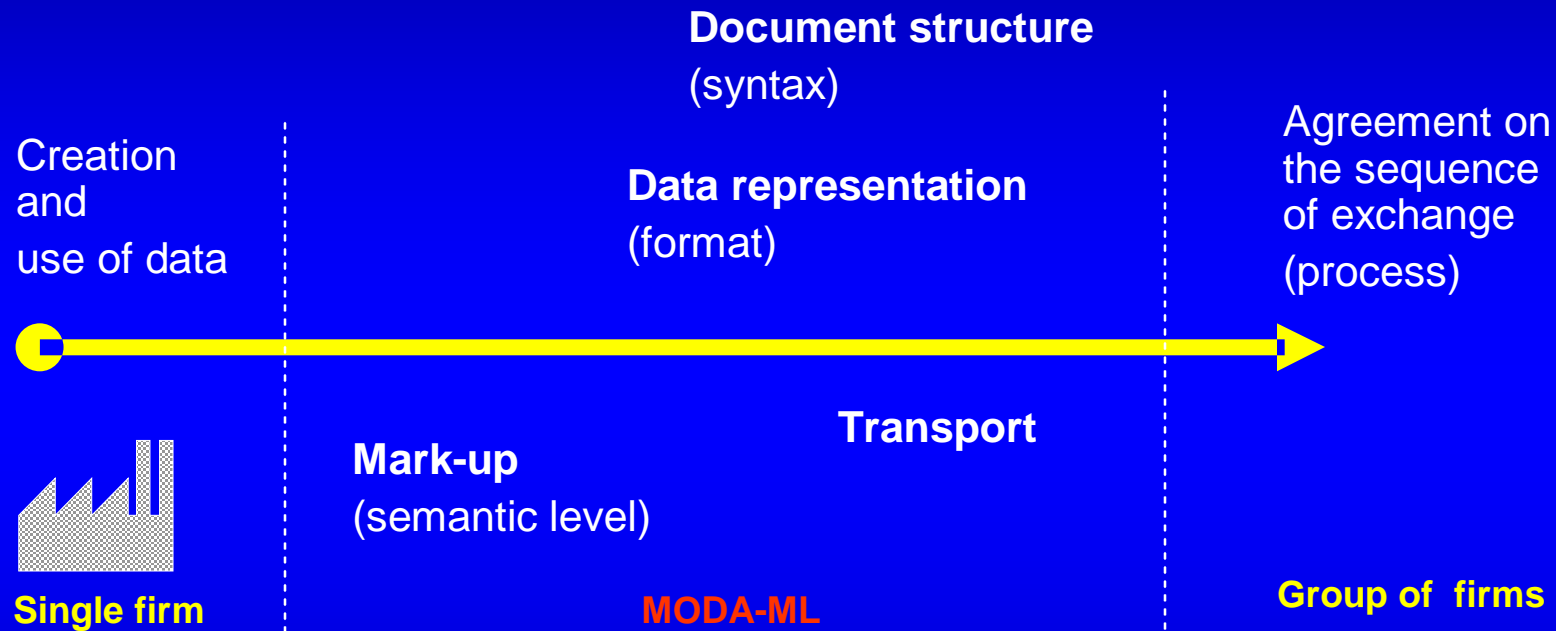
The objectives of MODA-ML

To exchange data with XML documents and public Internet protocols

- 1 - "Modellisation of collaborative processes"
- 2 - "A set of types of XML documents described with XML Schema, User Guides, Dictionary of terms"
by means of: Document Factory Tools and Methods
- 3 - "A Software based on the transport specifications of ebXML to send, receive, monitor and validate the data exchange"
- 4 - "Participate the creation of an European Standard"



The role of MODA-ML service to co-operation processes



- 1 - Definition of a set of type of XML documents and related dictionary of terms
- 2 - Definition of a transport protocol and development of demo software
- 3- Creation of awareness and consensus

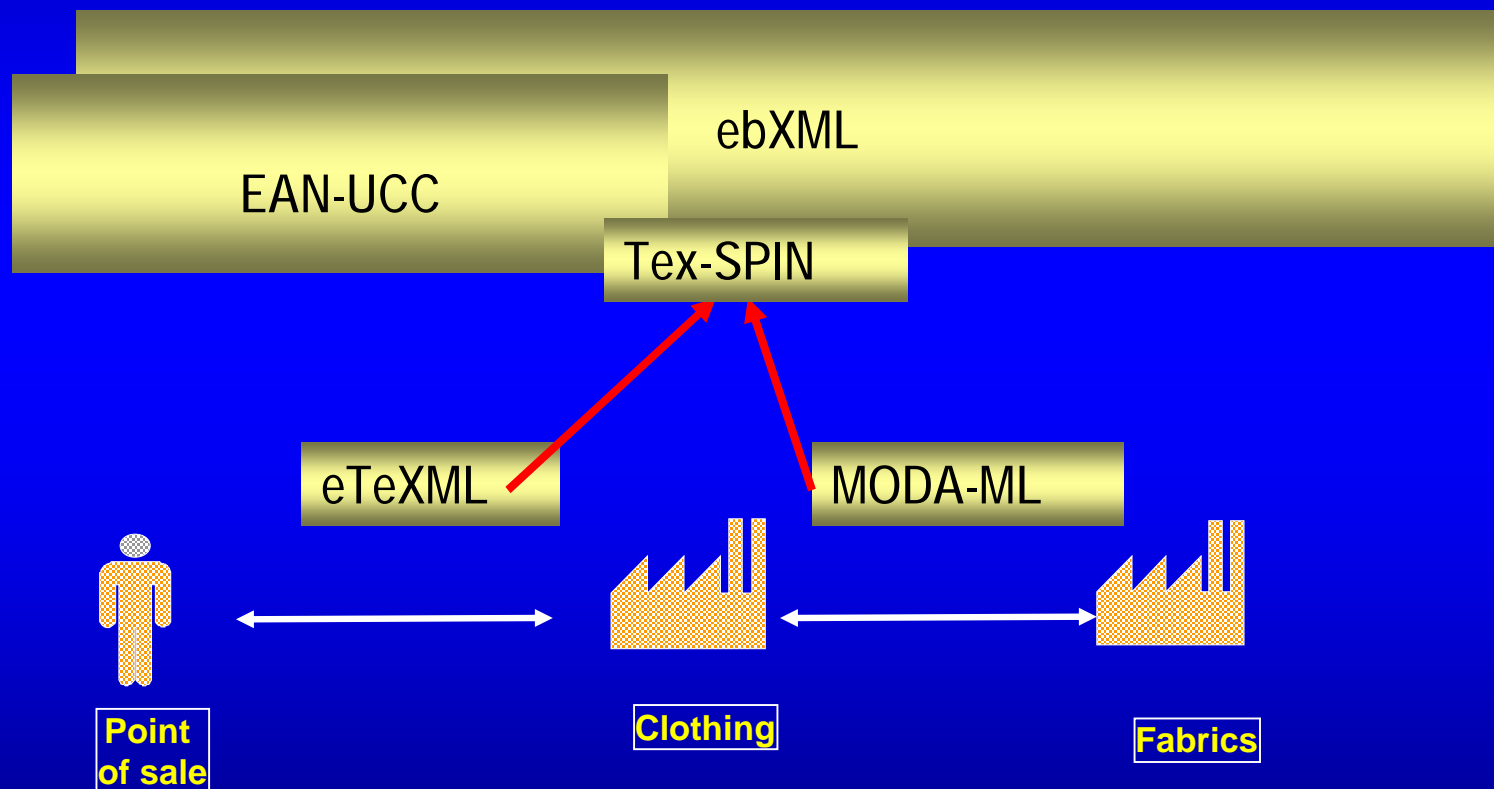
Other existing approaches or initiatives

- **EDITEX** (implementation of EDIFACT)
 - not fitting the WEB infrastructure, 'inherently' not flexible, costly tools,
 - not human readable messages
 - MODA-ML starts from its legacy of process modelling
- **ebXML** (XML based, but still incomplete)
 - ebXML provide a general framework to build sets of documents,
 - MODA-ML is a sectorial set aiming to become ebXML compliant (when defined)
 - other proprietary frameworks
- **Web Services** (no formal specifications)
 - not aiming at a common semantic framework; no tools for process modelling;
 - overlapping the transportation specifications of ebXML;
 - not fitting sectorial m:n relationships;
- **eTex-ML** (XML based, T/C sector)
 - similar to MODA-ML, but focused on Clothing-Retailer ring of the chain; no transport;
- **Tex-Spin** (CEN/ISSS, XML/EDI, T/C sector)
 - Results of MODA-ML and eTex-ML to build a common pre-normative platform



Standardisation scenario

- TC Sectorial initiatives: eTeXML, MODA-ML
- Horizontal frameworks: ebXML, EAN-UCC, ...



Challenges:

avoid overlapping, be harmonised, be conforming,
still remain flexible and easy to use and improve...

Supported processes

(www.moda-ml.org)



Results: process modellisation

ebXML terminology: processes, activities, transactions (documents)

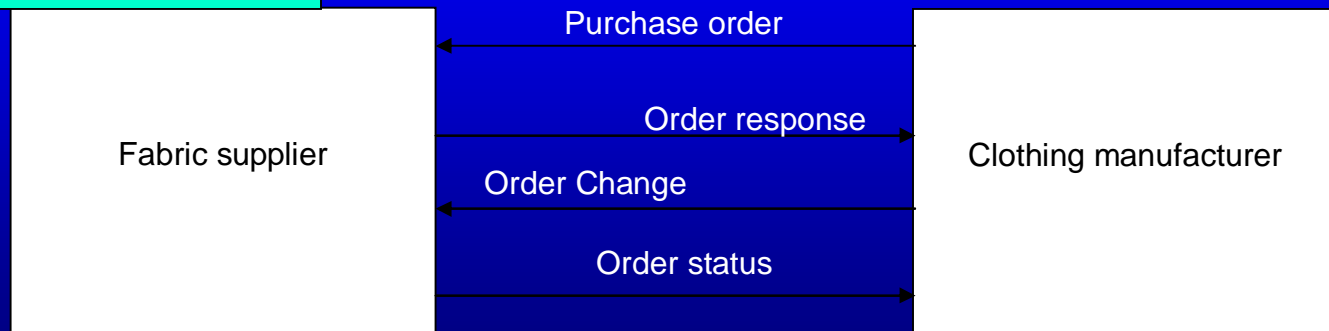
Actors: Fabric supplier, Clothing manufacturer

Process: supply of fabrics

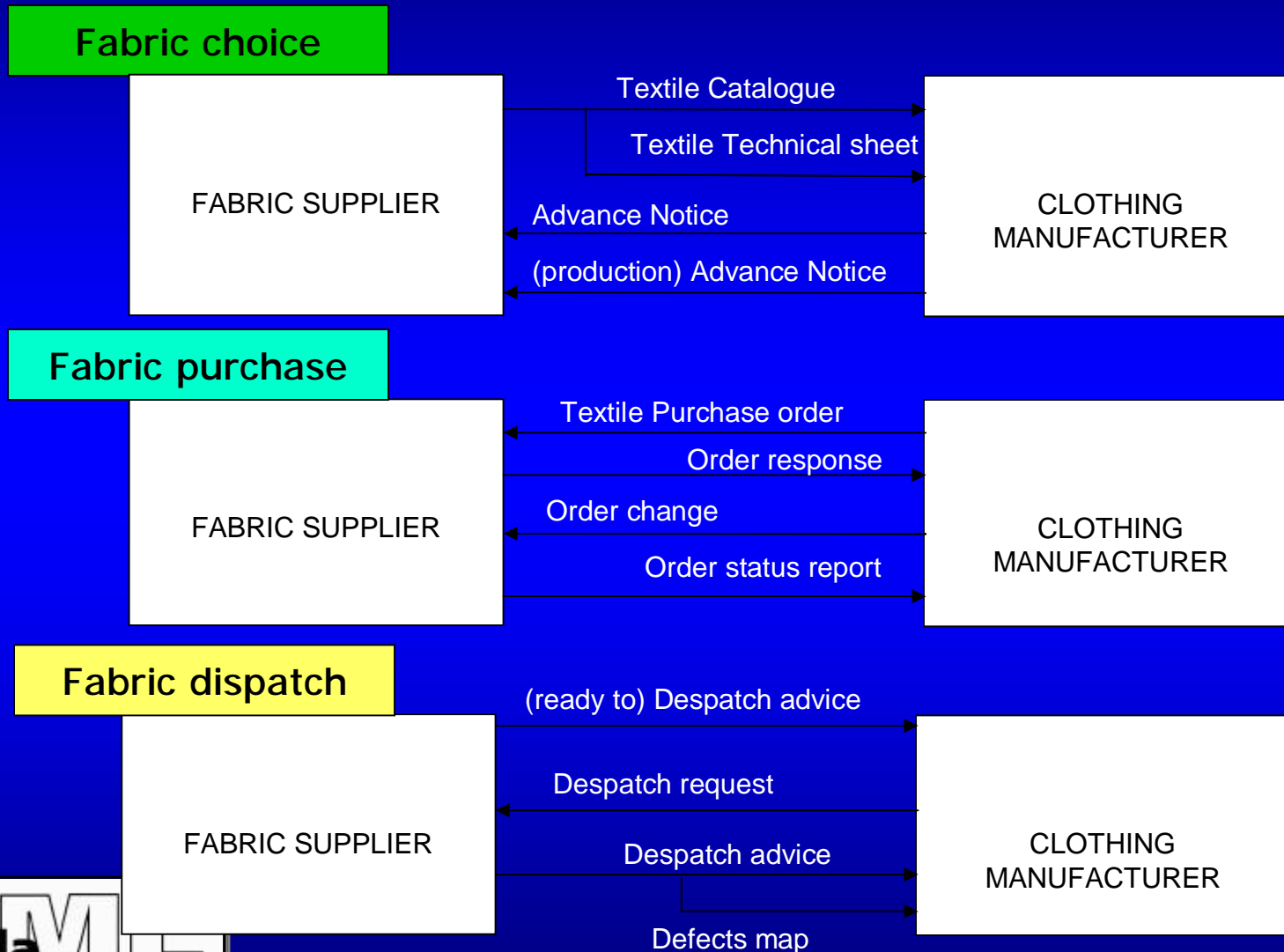
Activities: choice of fabrics, purchase of fabrics, despatch, return for defects

Transactions: purchase order, order response, ..

Example: Purchase of fabrics



Results 1: process Fabric supplying



Fabric choice

IMPROVEMENT OBJECTIVES

- **digital transmission of technical data of the fabrics**
- **in advance information to the fabric supplier of the articles effectively inserted in the Collection**
 - as for quality (firstly)**
 - as for quantity (subsequently)**



Fabric purchase

IMPROVEMENT OBJECTIVES

- electronic exchange of Order (Order Response, Change and deletion)
- Clothing manufacturer has the view of the status of his orders and can adjust its production plans



Fabric despatch

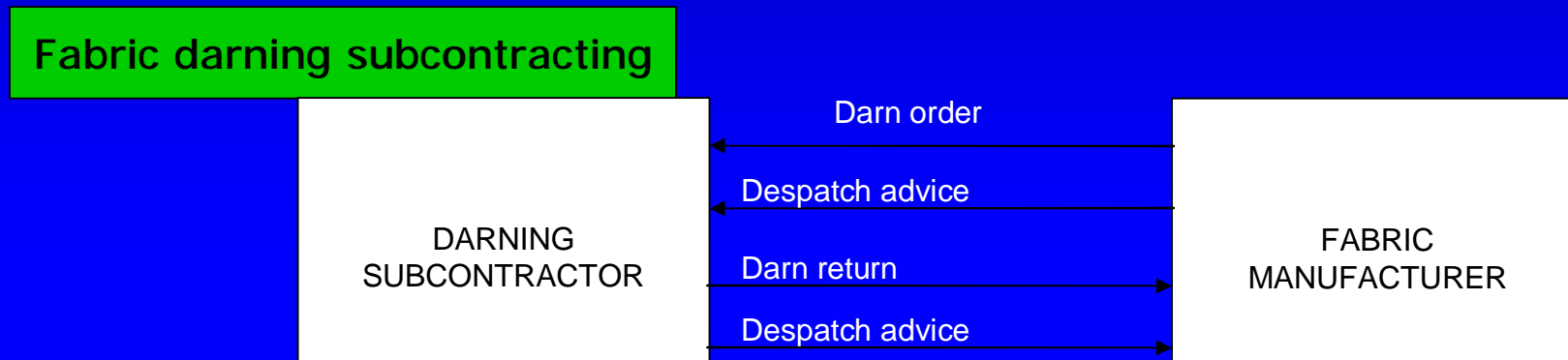
IMPROVEMENT OBJECTIVES

- the Clothing Manufacturer can plan the delivery of the already available Fabric
- the Clothing Manufacturer receives early information on Fabric that is being dispatched (quantity, quality, pieces codes, map of defects)
- the Fabric supplier receives early information about discarded pieces with an acceleration of the Reject process procedure



Results 2: process Fabric production

Until today only one activity: subcontracting Fabric darning



Subcontracting darning

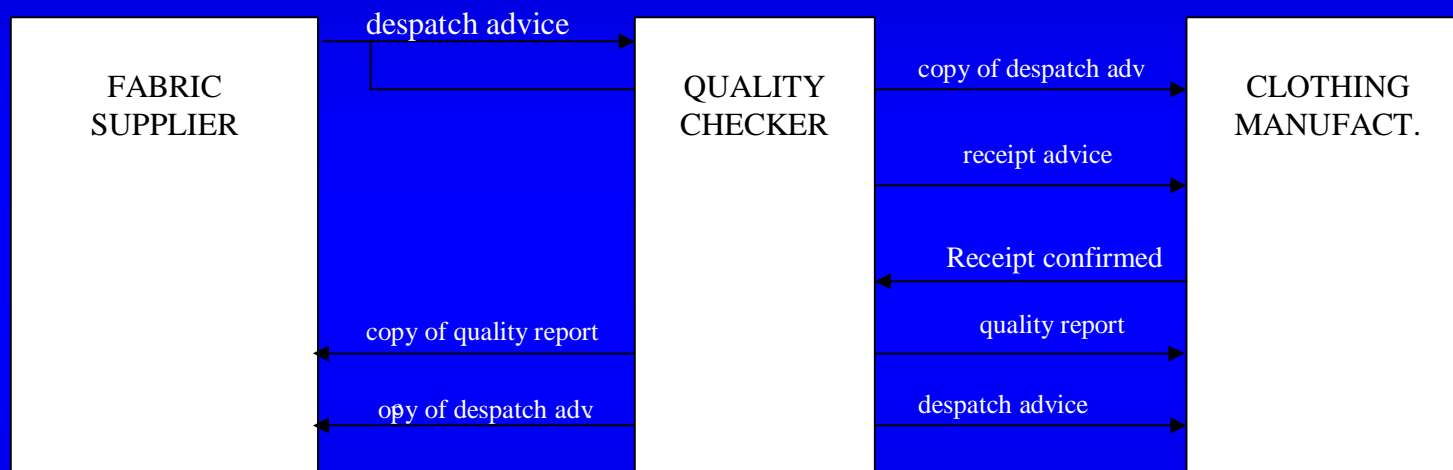
IMPROVEMENT OBJECTIVES

- the Fabric Manufacturer can deliver to the darning subcontractor the map of the defects and a list of planned worktable in electronic format
- the Darning Subcontractor receives early information (despatch advice) and automatically manageable information and send back updated information
- the Fabric Manufacturer may view the darning activity as a department of its extended enterprise

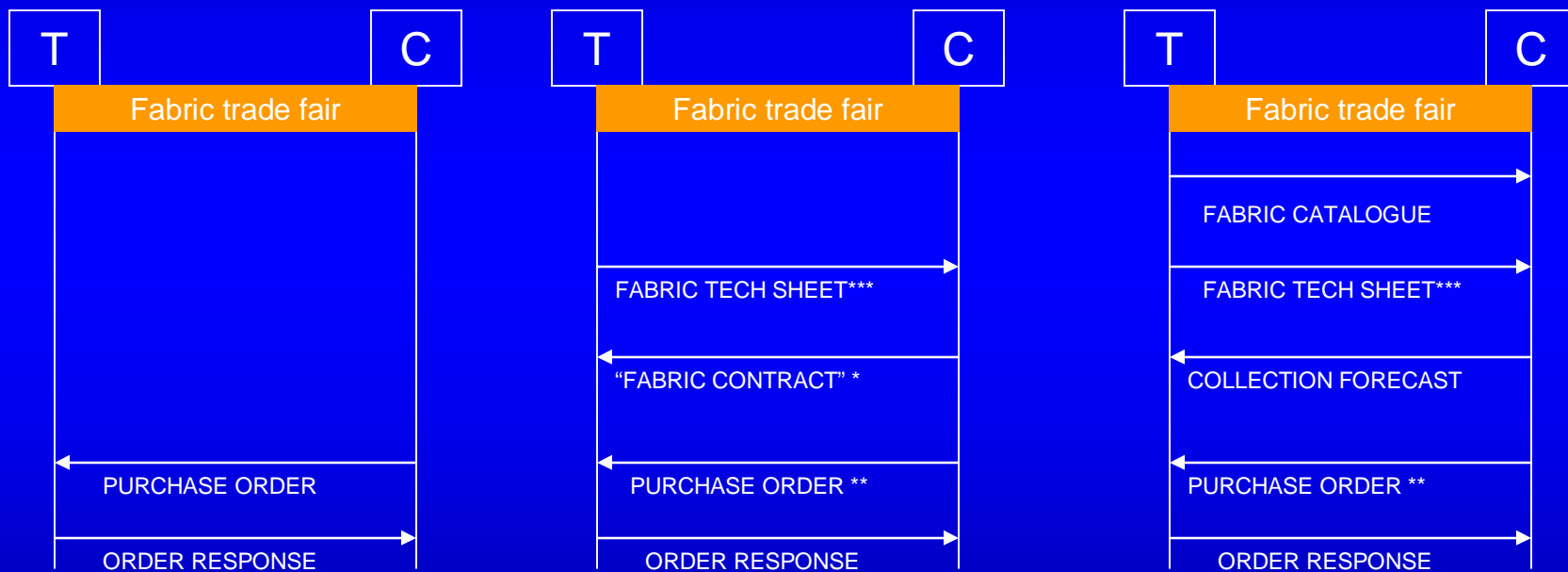


Results 3: process Fabric checking

Only draft analysis



The proposed EDI models are not business scenarios themselves, but can be used to support different business scenarios, like ...



- * provides master data about fabric articles and payment/delivery terms (msg Fabric Catalogue)
- ** reduced version (like simple-eb)
- *** commercial information on the fabric to the customer, not for fabric production purposes



Results: Resume

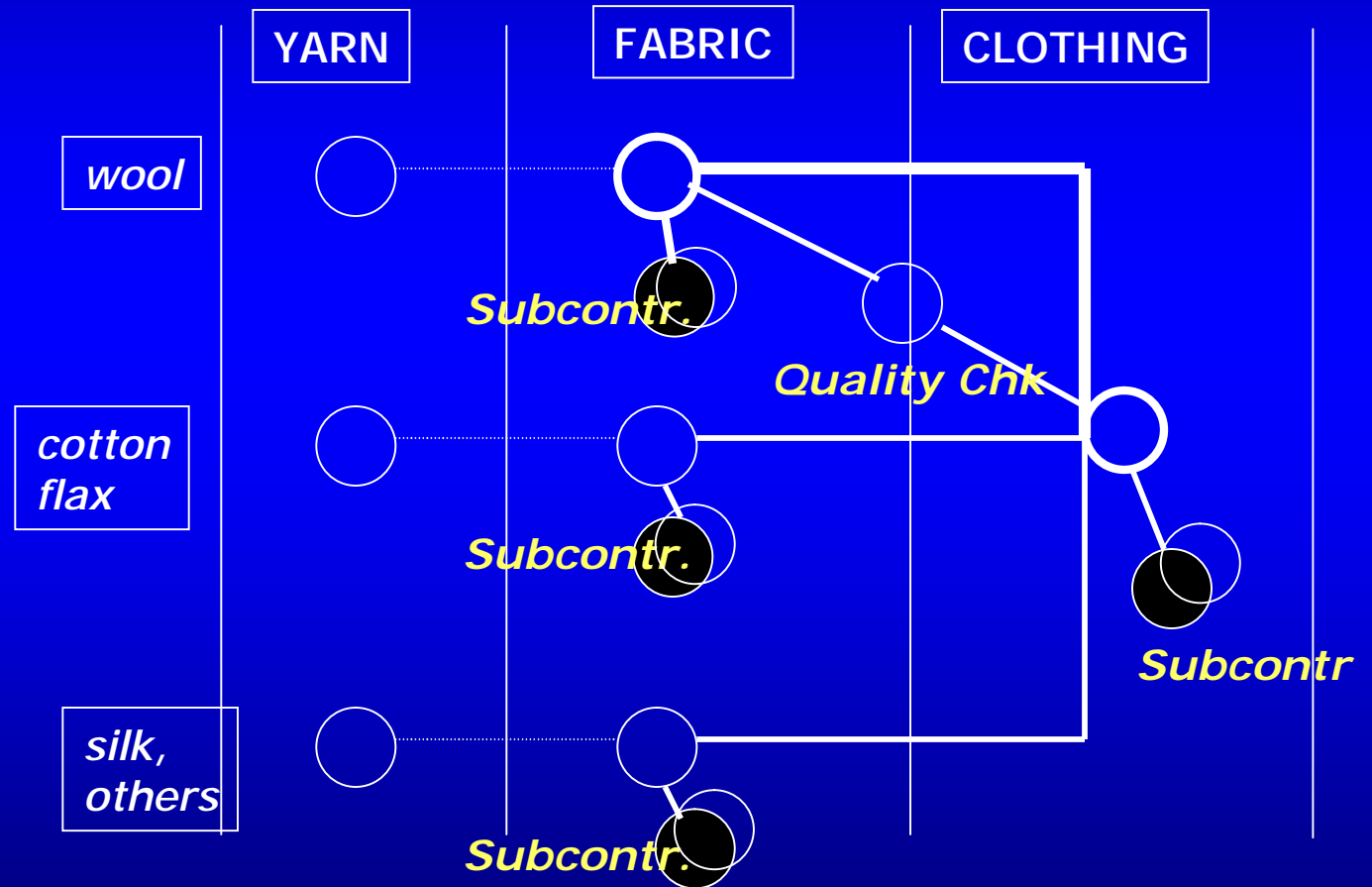
Results of the project

Applicative Scenario

present



potential



Processes: Future

- Next steps:

silk and cotton,
clothing - trade,

- What is lacking

yarns, subcontractors,...
district supply chain ...



XML documents

(www.moda-ml.org)



List of documents

Textile Catalogue	The (price) list of products offered for sale	Textile→Clothing
Fabric Technical Sheet	The technical characteristics and properties of the fabric article	Textile→Clothing
Textile Advance Notice	The anticipation of articles included in the Clothing Manufacturer's collection and of foreseen volumes of production that clothing manufacturers will request (no details on colours and variants)	Textile←Clothing
Textile purchase order	The order placed by the Clothing Manufacturer	Textile←Clothing
Textile Order response	The response provided by the Fabric Supplier	Textile→Clothing
Textile Order change	The order change initiated by the Clothing Manufacturer	Textile←Clothing
Textile Order status report	The status of the fabric order reported by the Supplier	Textile→Clothing
Textile Dispatch request	The request/scheduling of the dispatch of parcels made by the Clothing Manufacturer	Textile←Clothing
Textile Dispatch advice	The anticipation of the dispatch of the parcels by the Supplier	Textile→Clothing
Textile Quality Report	The report of the defaults and other non-conformities of the goods, as provided by the Supplier or by an independent Quality Controller	Textile→Clothing
Invoice	Invoice for the supplied material	Textile→Clothing
Textile darn order	The specifications of the darning operation required for each piece; includes allowed worktime, position and type of faults; it could contain or refer to a despatch advice	Textile → Darning
Textile darn return	The returning information about the darning operations; include the worktime spent, the position and type of faults and the associated information about the position, the initial status, the worktime and the final status	Textile ← Darning



MODA - ML

(www.moda-ml.org)

IMPLEMENTATION GUIDE

TRANSACTION

comInfo 0-1
 @endUse [Optional] [Default= PR]
 @JC [Optional]
 @prodInfo [Optional]
 season 0-1
 delDate 0-1
 specDate 0-1
 fabricWdt 0-1
 @um [Optional] [Default= CMT]
 pieceLng 0-1
 @um [Optional] [Default= MTR]
packInfo 0-1
 @code [Optional] [Default= ML]
 pieceWrp1 1-1
 pieceWrp2 0-1
 piecePck 0-1

Process: Fabric supply
 Activity: Purchase

Version: 2.6
 Date of release: 28/05/02 13.55.04
 Document code: OF41-001



comInfo 0-1	Commercial informations miscellaneous trade informations, refer or to the single item - note: here must be specified those vali <i>TEXOrder/comInfo)</i>
@endUse [Optional] [Default= PR]	end use indicator specifies the final use of the material - base type: string, cod. table: NT4 <i>(XPath: TEXOrder/comInfo/@endUse)</i>
@JC [Optional]	illustrated confirmation indicator specifies if the "illustrated confirmation" is needed - base type: boolean <i>(XPath: TEXOrder/comInfo/@JC)</i>
@prodInfo [Optional]	product info indicator

Guides and dictionary

MODA-ML Dictionary - Microsoft Internet Explorer

File Modifica Visualizza Preferiti Strumenti ?

MODA-ML Dictionary Search MODA-ML Dictionary

In XML tags type names

2 records found

Inst. type	Instance	Type	Description
Element	<inspayTerms>	Instalments payment terms	payment conditions for payment by instalments
Element	<payTerms>	Payment terms	payment conditions

<inspayTerms> - MODA-ML Dictionary - Microsoft I...

Operazione

<inspayTerms>

Type: Instalments payment terms, payment conditions for payment instalments

Base type: none (complexType)

Child	Min	Max	Aggregation note
payTerm	1	1	
payMode	0	1	

Attribute Use Default Aggregation note

Attribute	Use	Default	Aggregation note
part	re		
code	op		

Operazione comple

code (Attribute)

Type: coding system, coding system used in this context for the coded data

Base type: string

Enumeration table: NT3 - General coding qualifier

*NT3 - General coding qualifier

Code	Meaning
MD	mutually agreed
ML	recommended by MODA-ML

Results: example of messages/1

Process: Fabric supplying

Actors: Fabric suppl. –Cloth man.

- Activity 1: fabric choice
- Activity 2: fabric purchase
- Activity 3: fabric dispatch

- Order
- Order Response
- Order change

CONSIGNEE	INVOICEE	IMPORTER
CODETEX SRL via dei tribunali 44 33333 Collaudopoli ITALY IT34567890123	FINBIANCHI SPA via dei Finanziari 99 44444 Dollaropoli ITALY IT45678901234	EXPORT SPA via Indipende 00000 Topoli ITALY UK23459871
	Dept.: FORNITORI Person: Ulisse	Person: Roge

Note: THIS IS A DEMONSTRATIVE DOCUMENT AND EVERY REFERENCE TO FEATURED COMMERCIALY AVAILABLE PRODUCTS IS MEANINGLESS

Note: prima della consegna contattare Sig. Omero

Payment options:

Pay term: PAYMENT 60 DD AFTER END MONTH RECEIPT INVOICE **Mode:** bank transfer

Pay term: Pochi ma subito...

Pay term: PAYMENT AT END MONTH RECEIPT INVOICE **Mode:** bank transfer

Return: CARRIAGE PAID (named place of destination) - to CODETEX

Use: test cut **Illustrated confirm:** Yes **Technical na**

Piece height: 170CM **Piece height:** 100CM

XML viewed in a Browser with the help of a style sheet XSL



Data are in the XML document,

A common XSL file describe its translation in HTML

Results: example of XML and XSL

www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrder.xml - Micro

Visualizza Preferiti Strumenti ?

Cerca Preferiti Multimedia

http://www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrder.xml

GNEE	INVOICEE	IMPORTER
TEX SRL tribunali 44 Collaudopoli 7890123	FINBIANCHI SPA via dei Finanzieri 99 44444 Dollaropoli ITALY IT45678901234	EXPORT SPA via Indipende 00000 Topoli ITALY UK23459871
	Dept.: FORNITORI Person: Ulisse	Person: Roge

THIS IS A DEMONSTRATIVE DOCUMENT AND EVERY REFERENCE TO FEATURED COMMERCIALY AVAILABLE PRODUCTS IS MEANINGLESS
prima della consegna contattare Sig. Omero

nt options:

m: PAYMENT 60 DD AFTER END MONTH RECEIPT INVOICE Mode: bank transfer

m: Pochi ma subito...

m: PAYMENT AT END MONTH RECEIPT INVOICE Mode: bank transfer

CARRIAGE PAID (named place of destination) - to CODETEX

test cut	Illustrated confirm: Yes	Technical pa
S/S 2002	Delivery: 30/10/2001	Disposal:
weight: 170CMT	Piece length: 100MTR	

```
<?xml-stylesheet type="text/xsl"
href="taor02B.xsl"?>
```

```
<fabricOrder tipOrd="chiuso">
```

```
<header>
```

```
<msgNumber>AB001</msgNumber >
```

```
<msgData>20010726</msgData>
```

```
<reference>
```

```
<order>AA047</order >
```

```
<nsRif>fax-12-7-2001</nsRif>
```

```
</reference>
```

```
<supplier>
```

```
<id>IT12345678901</id>
```

```
<company>Textil Rossi</company>
```

```
<street>via verdi 13</street >
```

```
<town>Tessutopoli</town>
```

```
<country>IT</ country >
```

```
<zip>11111</zip>
```

```
</supplier>
```

...



Results: example of messages /3

XSL
Purchase
order

http://www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrder.xml - Microsoft Internet E...
 File Modifica Visualizza Preferiti Strumenti ? http://www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrder.xml

CONSIGNEE	INVOICEE	IMPORTER
CODETEX SRL via dei tribunali 44 33333 Collaudopoli ITALY IT34567890123	FINBIANCHI SPA via dei Finanziari 99 44444 Dollaropoli ITALY IT45678901234 Dept.: FORNITORI Person: Ulisse	EXPORT SPA via Indipendenza 29 00000 Topolinia ITALY UK23459871111 Person: Roger

Note: THIS IS A DEMONSTRATIVE DOCUMENT AND EVERY REFERENCE TO FEATURES OF
COMMERCIALY AVAILABLE PRODUCTS IS MEANINGLESS
Note: prima della consegna contattare Sig. Omero

Payment options:

Pay term: PAYMENT 60 DD AFTER END **Mode:** bank transfer
MONTH RECEIPT INVOICE

Pay term: Pochi ma subito... **Discount:** 25

Pay term: PAYMENT AT END MONTH **Mode:** bank transfer **Discount:** 10
RECEIPT INVOICE

Return: CARRIAGE PAID (named place of destination) - to CODETEX

Use: test cut	Illustrated confirm: Yes	Technical paper: Yes
Season: S/S 2002	Delivery: 30/10/2001	Disposal: 30/10/2001
Piece height: 170CMT	Piece length: 100MTR	
Packaging: Rolled, whole width, single item - On wooden stick, right side inside		
Wrapping: Wrapped, both sides open		

Provide following goods please

	Line ref.	Code	Units	Q.ty	Price	Dis.%	Delivery
1*	2	EAN International	yrd pz	12.50 2	8500		30/09/2001
		art col A4545/23423-33 230-108-56					
2	4	Supplier Buyer	mtr	25	9500		
		art col 124 C09					
		add P1288/92 added					

ML 46




Results: example of messages /4

XSL
Order
status
report

http://www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrdStatus.xml - Microsoft Inter...

File Modifica Visualizza Preferiti Strumenti ?

Indirizzo http://www.moda-ml.net/moda-ml/repository/istanze/V2002-2/en/TEXOrdStatus.xml Vai Collegamenti >>



Textiles Rossi spa
via del cidamino 13
11111 Tessutopoli
ITALY
IT12345678901

Dear Sirs **Bianchi Confezioni spa**
via del mughetto 99
22222 Abitopoli
ITALY
IT23456789012

TEXTILES ORDER STATUS REPORT (Complete)

Number: A07	Date: August 30 2001
Your request: RAO001	Our ref.:

Note: THIS IS A DEMONSTRATIVE DOCUMENT AND EVERY REFERENCE TO FEATURES OF COMMERCIALY AVAILABLE PRODUCTS IS MEANINGLESS

Note: Il presente stato di avanzamento non include il materiale in c/lavoro presso Terzi

We notify the order status of the following goods

Ord. n.	Line	Code	000	100	200	250	300	350	400	
Supplier			Buyer							
1	AB001	1 art	123	P1288/90						
Units: MTR Deliv.: 30/09/2001 Prev: 30/09/2001										
Units: MTR Deliv.: 30/09/2001 Prev: 30/10/2001			Subiamo ritardi dall'importatore							
Quality controller										
2	AB001	2 art dis	124 D02							
Units: MTR Deliv.: 30/10/2001 Prev: 30/10/2001			150							
Units: MTR Deliv.: 30/10/2001 Prev: 30/11/2001			50							
EAN International			Buyer							
3	AB005	1 art col	124 C09	P1288/92						



XML Purchase order

Moda-ml

Example from XML/EDI:

```
<?xml version="1.0"?>
<!DOCTYPE ORDER SYSTEM "order.dtd">
<ORDER RefNo="0001">
<BGM>128576</BGM>
<DTM1>19970812</DTM1>
<RFF IDType="CT" FileID="652744" Line="112"/>
<NAD Of="BY" EAN="5012345678900"/>
<NAD Of="SU" EAN="6012345678900"/>
<LIN LineNo="1">5012345678900</LIN>
<QTY>900</QTY>
<DTM2>19970812</DTM2>
</ORDER>
```

1 - Different criteria and styles
to obtain human readability

fabricPurchaseOrder

@ *POType* (*standard* | *blanket* | *calloff*) [*required*]

header (Header) 1-1

msgnumber 1-1

msgdate 1-1

...

body (Body) 1-1

item (Item) 1-N

@ *nrif* [*optional*]

lineN 1-1

texProdCod (TexCod) 1-2

@ *codIssuer* (*supplier/customer/ean*) [*required*]

art 1-1

pattern 0-1

color 0-1

add 0-1

selvedge (Selvedge) 0-1

slvText 1-1

slvCol 0-1

treatments (Treatments) 0-1

surfTreat 0-1

finishCyc 0-1

oneLot 0-1

mtrMark 0-1

qty 1-2

@ *um* (*mtr/yr/pz*) [*required*]

price 0-1

@ *um* (*mtr/yr/pz*) [*optional*]

percentDisc 0-1

trdParty (Nad) 0-1

@ *role* (*consignee*) [*required*]



2 – Use of Schema to
strictly validate content

Methodology and 'Document factory'

(www.moda-ml.org)



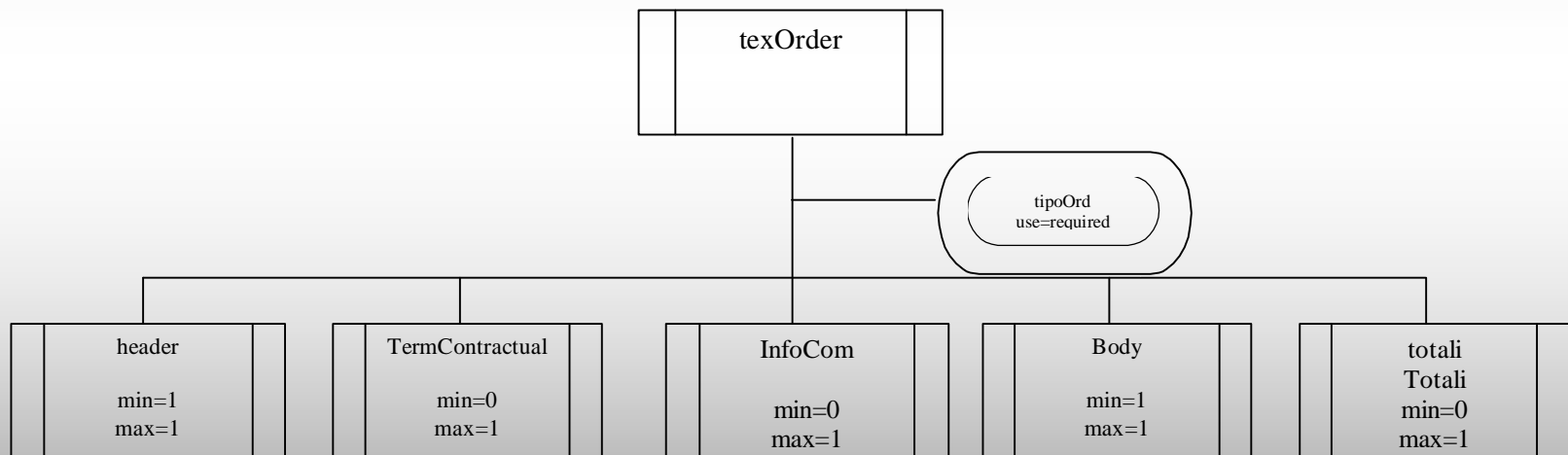
Document building principia

- Contents of the messages:
 - international coding (ISO, ecc.), bilateral coding
 - semantics aligned with most accepted standards (EDITEX)
- Structure of the XML document:
 - modular and reusable
 - dictionary of terms and complex components (msgid, supplier)
 - document as aggregation of complex components (header, body, ..)
- Aiming to use XML Schema for validation
 - Schema for strict validation
 - Reduction of ad hoc sw development
 - Simplification of maintenance



Example of message structure: PURCHASE ORDER TO THE FABRIC SUPPLIER

Fabric Order



DOCUMENTS FACTORY

(thanks to the features of the dictionary)

Principia and Tools to create families of XML documents

- Dictionary of terms (simple and complex) shared between docs
- Automatic support to Guidelines creation and management
- Automatic support to Schema creation and management



Creation of many specific documents to fit and strictly validate different data exchanges

Inter-frameworks comparison

(the mapping problem)

Comparison with other frameworks can be based on 4 axis

- Semantics and coding (Dictionary of terms)
- Use cases (exchange processes) description
- XML coding (structure and naming)
- Transport protocols



A Dictionary view: Basic Business Information Entities

BBIE Moda-ML (by TAG)				
MODA-ML TAG	Dictionary entry	Object class	Property term	Represent.
AAbody	AA body			
AAheader	AA header			
AAitem	Aaitem			
abi	abi identifier	bank	ABI	identifier
accountN	bank account identifier	bank	account	identifier
act	action code	message line	action	code
added	article's additional identifier	fabric	additional	identifier
amount	line item amount	message line	amount	amount
anticipDeduct	anticipation deduction amount	anticipation	deduction	amount
apparelCode	Apparel product code	product	identification	identifier
APPDesAdvise	Apparel Despatch Advise			
application	application measure	test	applied conditions	value
art	article identifier	fabric	article	identifier
bankIT	IT bank identifier	bank	identification	identifier
buyer	Buyer	buyer	identification	details

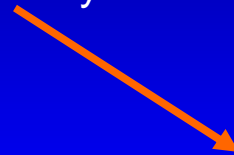
To simplify maintenance and comparison with other dictionaries each dictionary element has been catalogued with

- object class
- property term
- representation



Document factory architecture

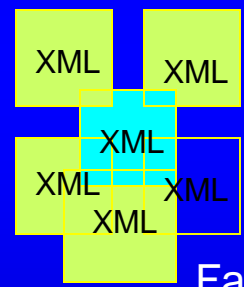
Modelling and analysis



GUIDE → User

SCHEMA → MSH, Parser

XSL → Browser, MSH



Families of XML documents with shared and reusable elements

Categorised Views
For Maintenance, comparison
and mapping with other framework



Resume: documents, tools, methodology

- SCHEMAS: Define the document types (grouped in a Namespace)
 - mandatory validation rules (structure, cardinality, etc.)
 - automatic validation
 - optional or repeated parts management
- XSLs: Define the layout with a browser
 - fully customisable (MODA-ML offers examples)
 - Could support tag translation towards other formats (not of the content)
- Implementation Guides: Describe the semantic of the document
 - use cases of the document type (process/activity scenario)
 - description and use of each element
- Dictionary: supports the creation of Schemas and Guides



Methodology (e.g. fast creation of variants)

Transport and demonstrative SW

(www.moda-ml.org)



Message Transportation



- Transportation protocols (ebXML)
 - SMTP (e-mail) or HTTP or FTP
 - SOAP
 - Security (XML signature, etc)
- Transportation and Integration software
 - Message sending
 - XML content management



Project results: SW prototype

- Purpose
 - Functional demonstration of the data exchange
 - Test of the ebXML Transport specifications.
- Results
 - 'Sample' code for developers of solutions
 - Easy to use, free and source available
- Two SW modules
 - Message Handler ebXML, MSH (SMTP and
 - Message Content Manager, MCM (ODBC)

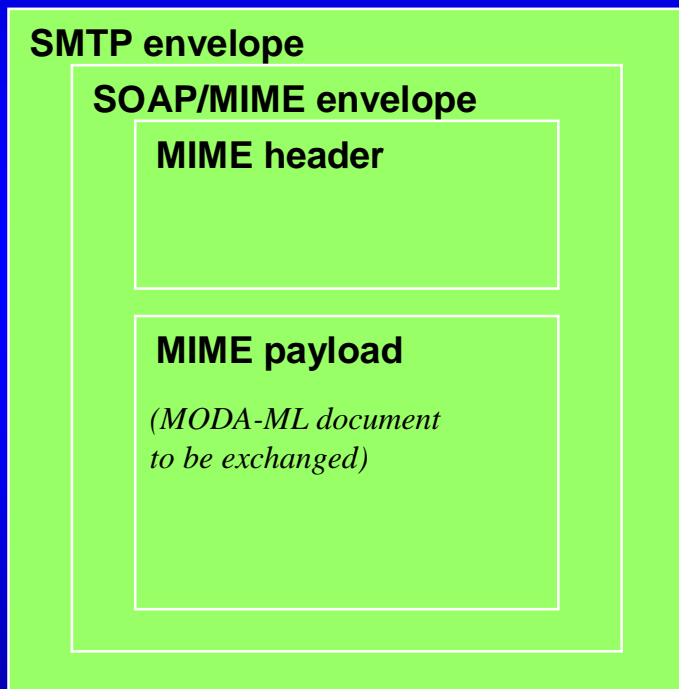


Message Service Handler 1.1.7

- Demonstrator (of the simplicity) of the Messaging System (MSH)
- Messaging service requirements of ebXML,
 - Based on SMTP and SOAP, plus ebXML functions
 - Tracking of sending and reception, error handling
 - Validation with XML Schema, display with XSL
 - Enabled for cryptography and digital signature
- Minimal requirements (visual basic and database ODBC)
- Reception/Sending of XML documents (polling of a directory),
could be the front-end for the Company
Information Systems



Message Service Handler 1.1.7 /2



- Generalised 'manager' of ebXML messages (message independent) via eMail server
- Manual/automatic loop; the FAX paradigm to send/receive;
- Check messages with XML Schema (mandatory)
- Handles Acknowledgements and Errors; uses SOAP and SMTP or SMTP;
- Log of messages (ODBC data base), view through XSL, electronic signature

Next release (public release 1.1.8):

- transmission configuration via ebXML CPA
- FAX channel,
- connection with MCM via TCP-IPsocket



31/05/2004

MODA-ML

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Manual check

MSH interface

Send Messages Check Messages

InBox Messages

Counter	Message Number	Message Type	Message Date	From	To	Sc
✉ 1377	AB001	TEXOrder	Mon, 28 Jan 2003 13:31:23 ...	marzocch@libero.it	marzocch@libero.it	ht
✉ 1375	-	Ack	Tue, 28 Jan 2003 13:27:50 ...	marzocch@libero.it	marzocch@libero.it	ht
✉ 1373	R11	TEXDesAdvise	Tue, 28 Jan 2003 13:13:23 ...	marzocch@libero.it	marzocch@libero.it	ht

*Status:
Valid,
Signed, ...*

Type

Date

Sender

OutBox Messages

Counter	Message Number	Message Type	Message Date	From	To	Sc
✉ 1378	-	Ack	Tue, 28 Jan 2003 13:36:01 ...	marzocch@libero.it	marzocch@libero.it	ht
✉ 1374	-	Ack	Tue, 28 Jan 2003 13:27:50 ...	marzocch@libero.it	marzocch@libero.it	ht
✉ 1372	R11	TEXDesAdvise	Tue, 28 Jan 2003 13:13:23 CST	marzocch@libero.it	marzocch@libero.it	ht

*Status:
Sent,
Ack
received...*

- ✓ Hide Soap Header
 - Hide Ack Message
 - ✓ Hide SMTP detail window
 - Auto Print send/receive notification
- Settings...

General | SMTP | XML References | Directories

Default Subject:

Default Doc Extension:

Save Settings Close

General | SMTP | XML References | Directories

SOAP Envelope Stylesheet :

Order Stylesheet :

Order Response Stylesheet:

Envelope Schema URL:

Save Settings Close

General | SMTP | XML References | Directories

Server POP3 :

Server SMTP :

UserName :

Password :

Save Settings Close

General | SMTP | XML References | Directories

Message Polling Directory:

Ack and Error reply directory:

Save Settings Close



Present Transport Module interface/2: settings

Message Content Manager MCM 1.1.7

- Integration system demonstrator SW
 - Only four documents of the order activity (order cycle)
 - Based on ODBC database (MS-Access) and VisualBasic
 - Dataentry user interface and XML documents creation and storage
 - Possibility to directly access to the database via ODBC (not suggested)
 - Creates the XML document (exchanged with the transport system)



- Should be substituted by the functionalities developed for the company information system

ML ModaML - Ordine a tessutaio v1.1.19

Busta **Testata** | Info Commerciali | Term Contratt. | Articoli | Totali | Settings

Message

Num. Messaggio :

Data Messaggio :

Valuta Messaggio :

Tipo Ordine : aperto chiuso

Riferimenti

Ordine num. :

Listino num. :

Contratto num. :

Rif. generico :

Nota :

Abilita TerzaParte

Terza Parte

Destinatario Merce

Ruolo : Destinatario Fattura

Spedizioniere

Agente

Importatore

Collaudatore

ID :

Divisione :

Contatto :

Rag.Soc. :

Strada :

Cap :

Città :

Prov. :

Nazione :

Cliente

ID :

Divisione :

Contatto :

Rag.Soc. :

Strada :

Cap :

Città :

Prov. :

Nazione :

Fornitore

ID :

Divisione :

Contatto :

Rag.Soc. :

Strada :

Cap :

Città :

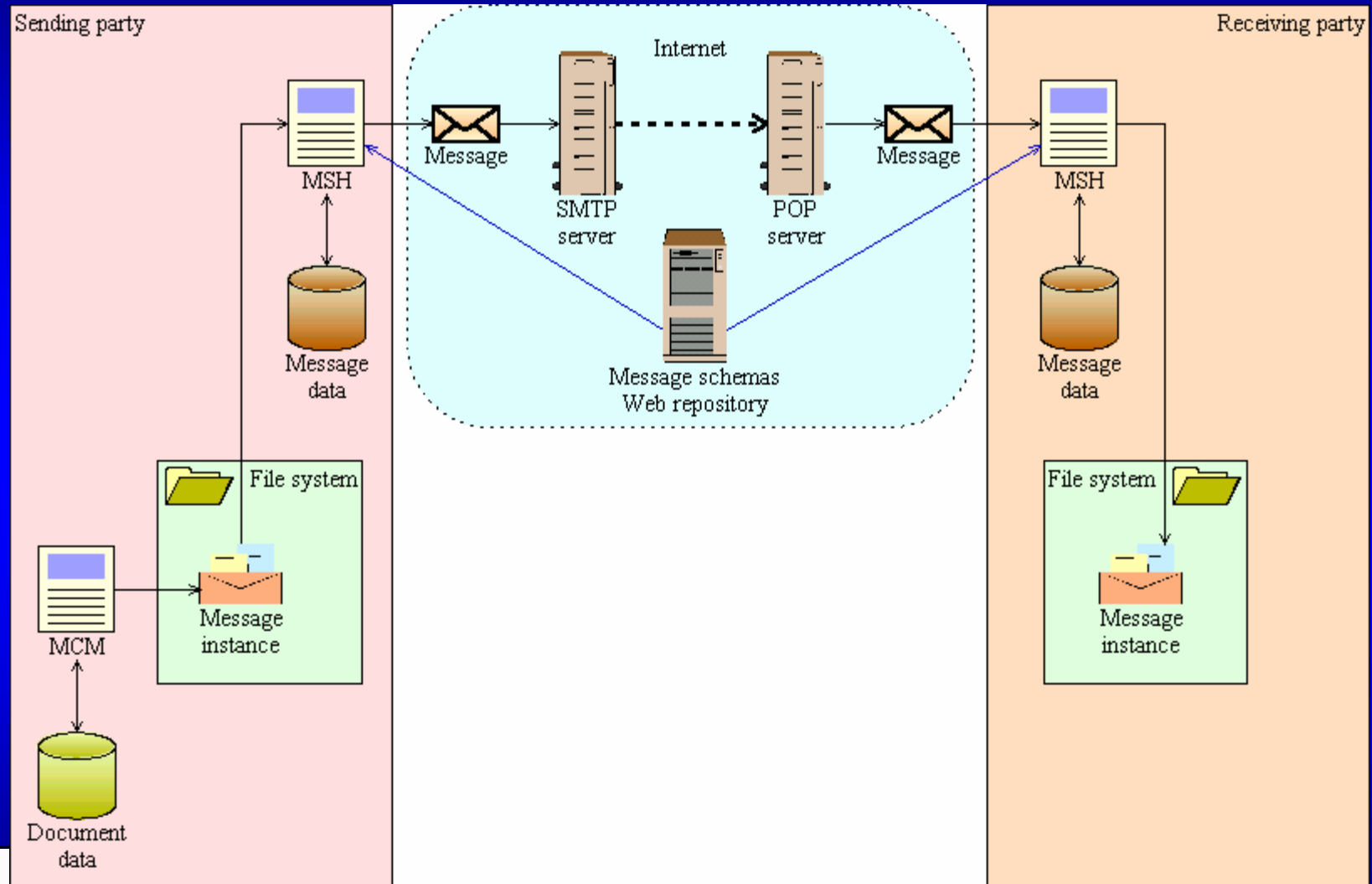
Prov. :

Nazione :



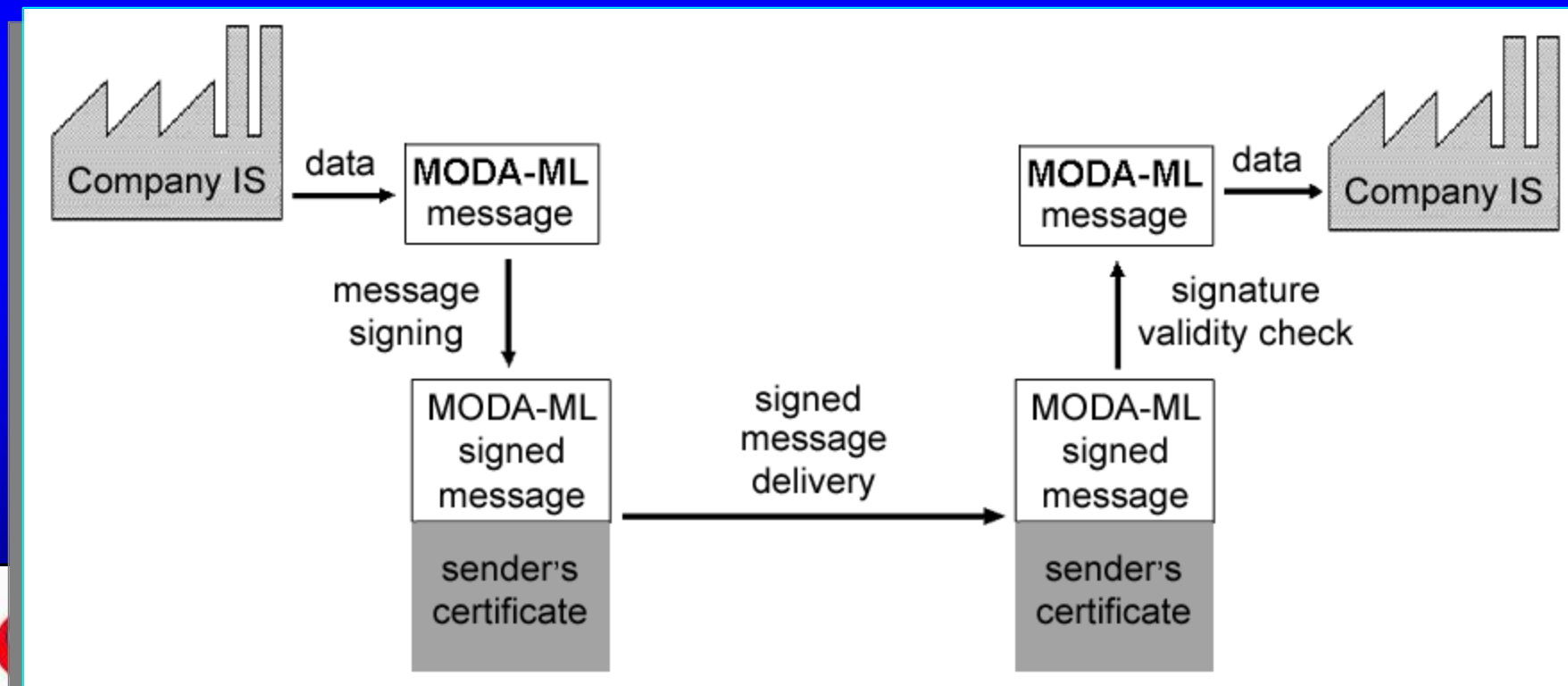
Present Integration Module interface

Basic SW architecture



Security

- Signatures are compliant with W3C's **XML Signature** standard.
- Signing algorithm (**RSA**) and certificate encoding (**X.509**) satisfy European laws on digital signatures.
- In the near future it will be supported **cryptography** and **S/MIME** signatures, in order to provide different security levels that address companies' **security** and **flexibility** needs.

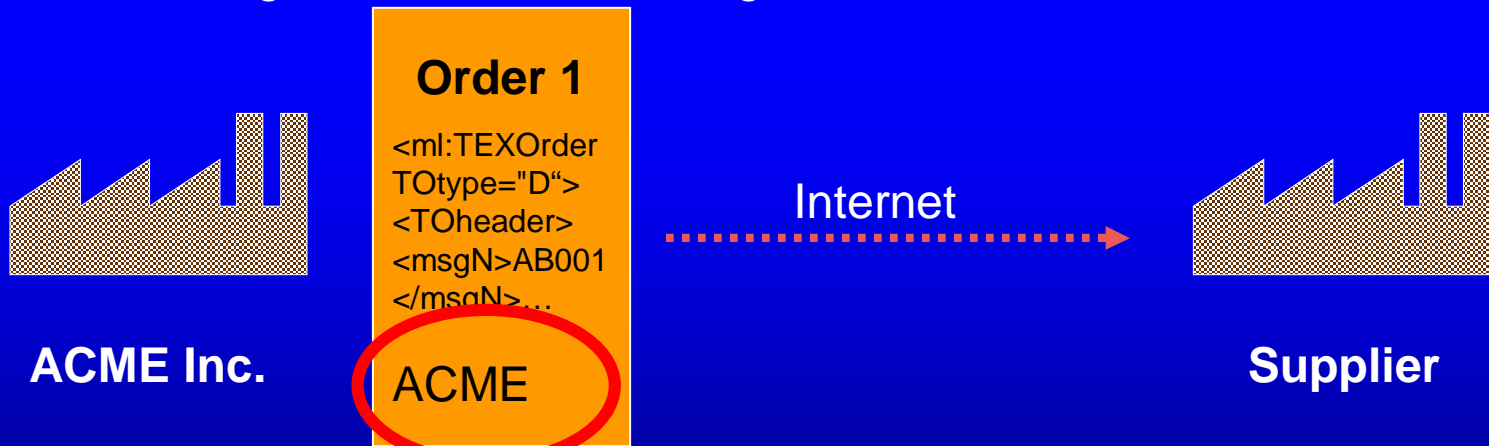


Message signature: what for?

Example: ACME is ordering 100.000 mt of top quality fabric

- ACME is sure that nobody can change his order without being discovered.
- Supplier is sure that ACME (and nobody else) is asking for a new order.

Signed electronic message



Electronic Signature

Message signature/2: what for?

Order 1

```
<ml:TEXOrder  
TOtype="D">  
<TOheader>  
<msgN>AB001  
</msgN>...
```

ACME

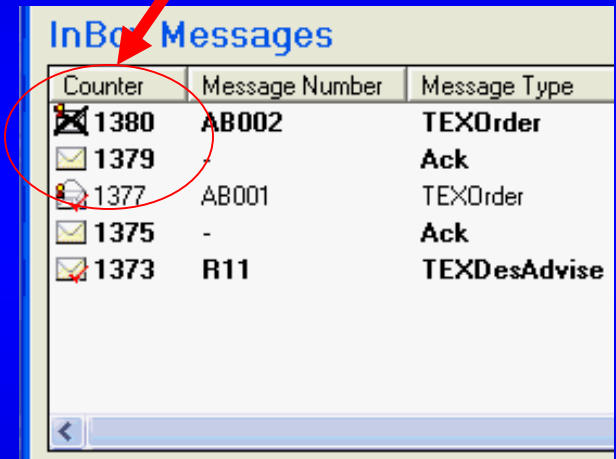
Order 1

```
<ml:TEXOrder  
TOtype="D">  
<TOheader>  
<msgN>AB001  
</msgN>...
```

ACME?

Use cases:

- **Pirate sends a duplicate of ACME's message (*)**
- **Pirate changes message data, but leaves signature untouched.**
- **Pirate writes a message, declare a wrong identity (e-mail address) and signs with his own certificate.**
- **Pirate changes message data and signs them using an **hacked certificate.****



Counter	Message Number	Message Type
<input checked="" type="checkbox"/> 1380	AB002	TEXOrder
<input type="checkbox"/> 1379		Ack
<input type="checkbox"/> 1377	AB001	TEXOrder
<input type="checkbox"/> 1375	-	Ack
<input checked="" type="checkbox"/> 1373	R11	TEXDesAdvise



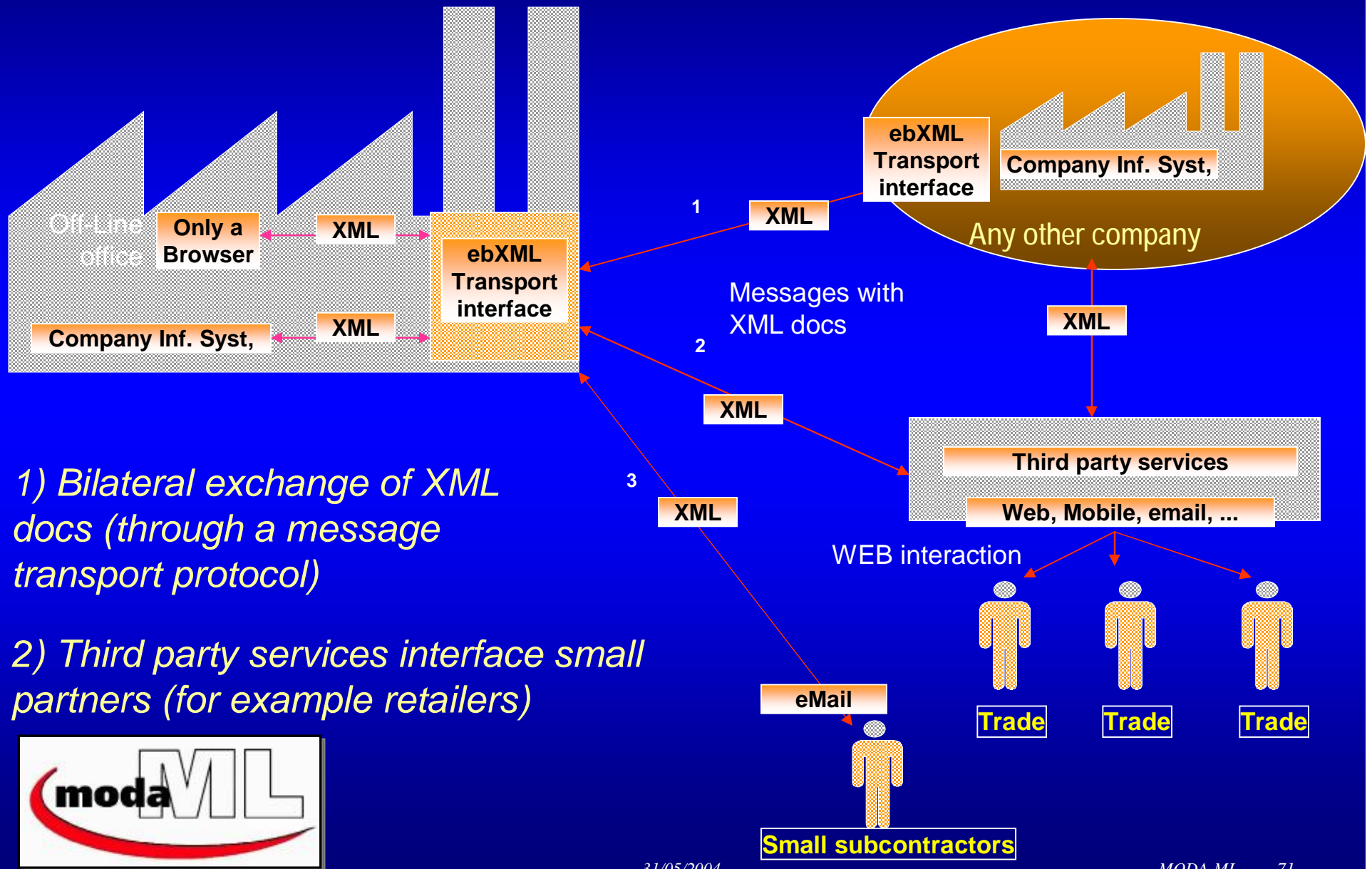
(*) to be managed by the Company information system, it is only a duplicate

Scenarios...

(www.moda-ml.org)



Scenarios of data exchange



1) Bilateral exchange of XML docs (through a message transport protocol)

2) Third party services interface small partners (for example retailers)



Type of firms

- Medium/large sized with complete and structured information systems (3)
- Small and medium companies with incomplete or poorly integrable information systems (2)
- Very small enterprises, without information system, only use browser or e-mail (1)



How firms can integrate Moda-ML

(3 alternatives for different kind of firms)

- To Read/Write XML files:

1 - Read only: any browser

2 - use integration module (supporting order activity only, but free source) filling manually the form or via ODBC

3 – Use of DBMS/XML mapping modules (*)

3 – Ad hoc developed modules of Company Information System (*)

- Send/Receive XML files (three alternatives):

1 - E-Mail client (OutLook or Eudora) (no ack)

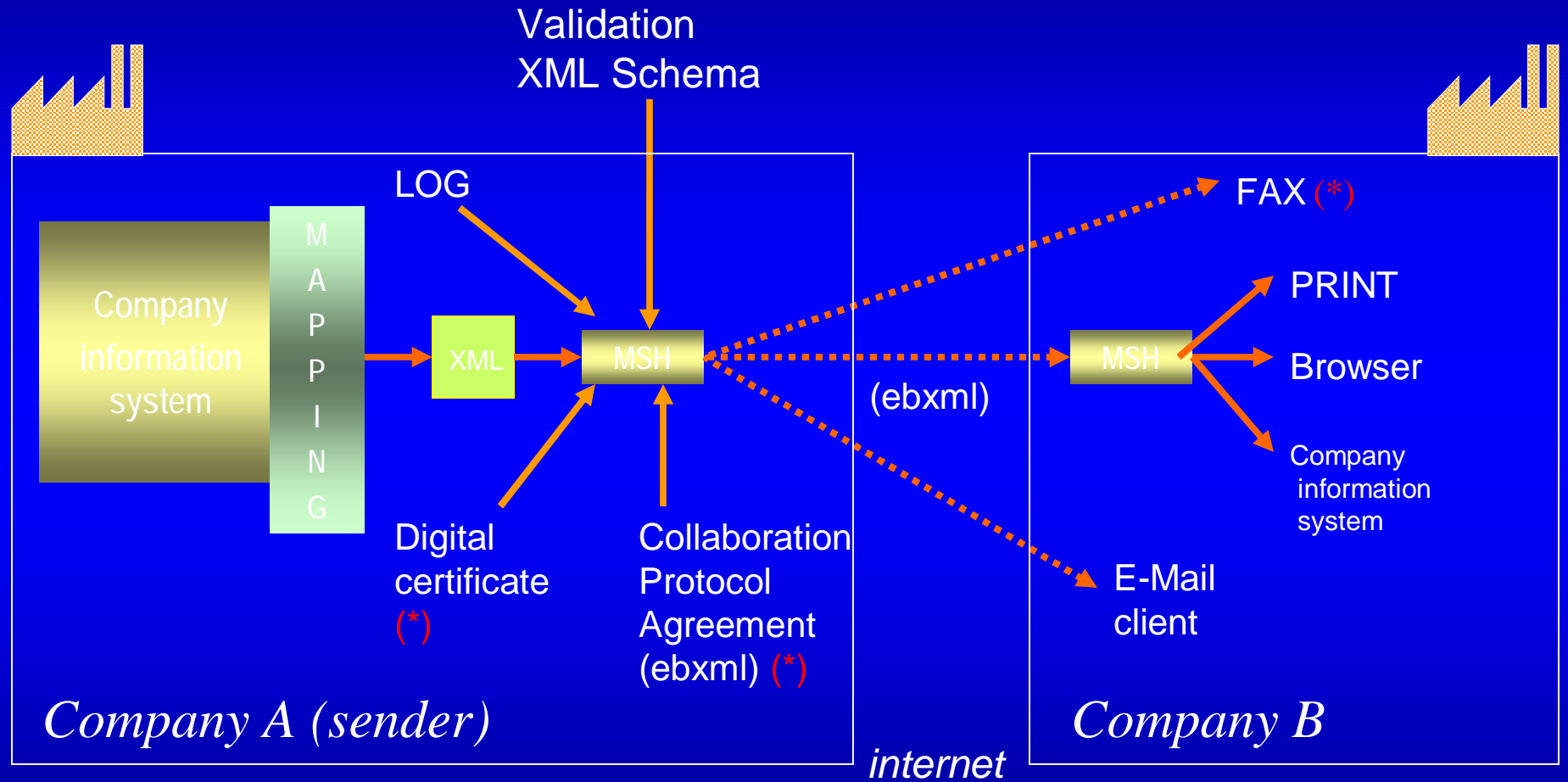
2 - Message Handler (MSH)

3 - Ad hoc developed modules supporting SOAP/ebXML (*)



(*) not supported by MODA-ML,
it is work for the software houses and solution providers

Sending messages with MSH (peer-to-peer approach)



(*) optional

Benefici Industriali

• Risparmi:

- 80% costo per operazione
- 40.000 €/anno SW manutenzione (*)

• Facile uso e setup:

- Royalty free
- Facile installazione

• Integrazione legacy:

- Nessun vincolo architettuale
- Un giorno per tipo documento (se c'è supporto Workflow ed XML Mapper)

• Nuovi servizi:

- Avanzamento ordine/Avviso spediz.
- Mappa dei difetti (certificato)
- Previsioni di collezione



(*) calcolato su azienda di tessuti reale di medie dimensioni

2. The TexSpin initiative

TEXSPIN (www.cenorm.be/iss, www.atc.gr/texspin)



The TexSpin initiative

- **TEXSPIN** is a **CEN/ISSS** Workshop (www.cenorm.be/iss), funded by CEN/ISSS
(European Committee for Normalisation/Information Society Standardisation System)
- A sectorial standardisation initiative aiming to provide a framework for the (B2B) integration of the european **Textile/Clothing/Distribution** chain
- Starting point was EDITEX (EDIFACT)
- Technological objective has been to establish a pre-normative -low cost but scalable- platform for the B2B exchanges in the T/C sector based on **XML** and **Internet** technologies

Co-ordinated by **EURATEX** (European Apparel and Textile Organisation)

Partners: Euratex, ATC (GR), IFTH (F), NYC(F), ENEA(I)

Discussion: Three public plenary sessions with about 150 participants

Final Results: **June 2003**; Final **CWA** published in autumn **2003**



TexSpin activities

- TEXSPIN started from two experiences:
 - eTeXML (focused in France on link *manufacturing - retailing*)
 - MODA-ML (focused in Italy on *manufacturing integration*)
- TEXSPIN managed public discussion via CEN/ISSS WS
(and since the beginning about 200 firms have been directly contacted; web sites; many magazines and newspaper articles)
- Future planned action: awareness actions and pilots with technology providers as well as industry

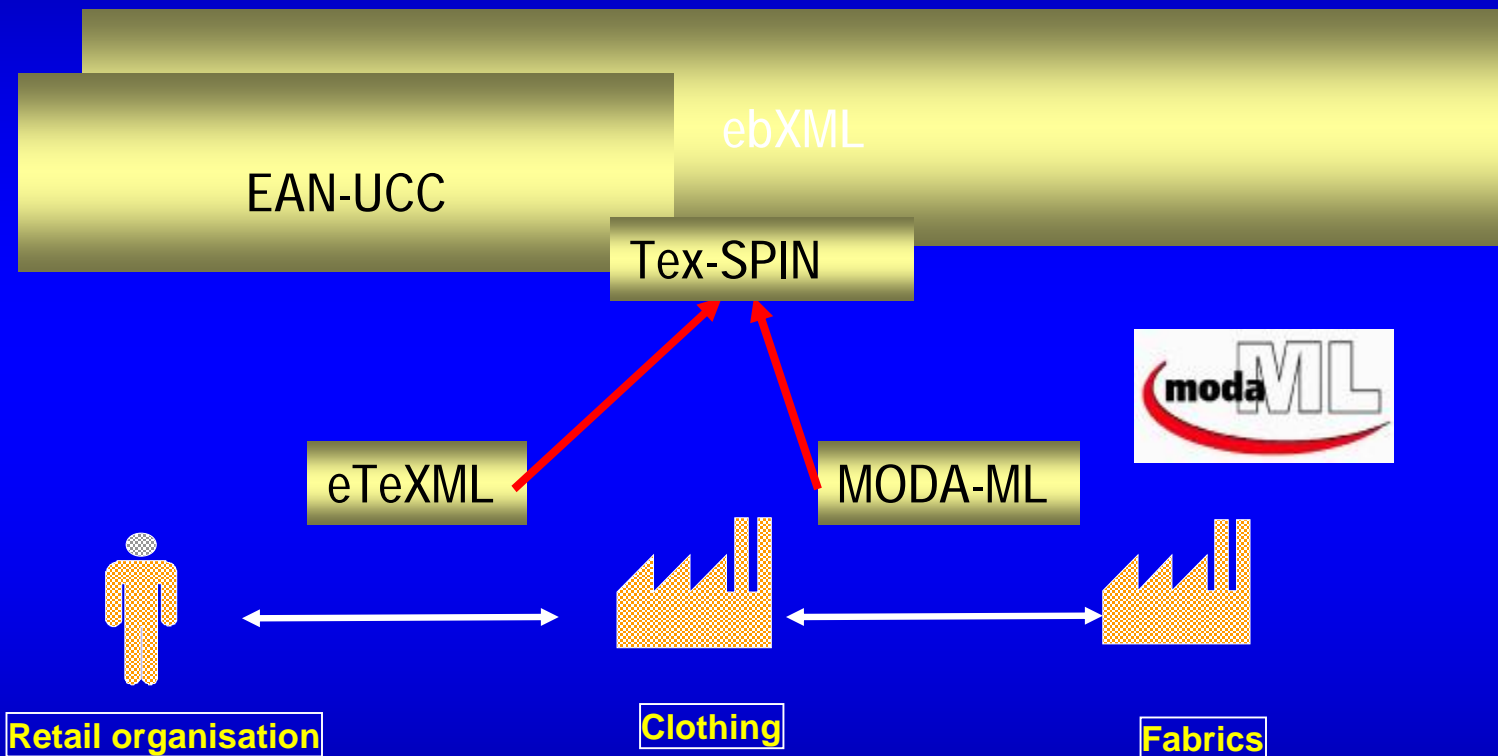
TexSpin results

- Set of 19 templates of XML messages:
 - Retailer- Clothing manufacturers (5)
 - Fabric manufacturer – Clothing manufacturer (12)
 - Fabric manufacturer – (Fabric) Subcontractors (2)
 - Others in the future... (yarn supplying,...)
- Experienced two models of exchanges:
 - A Web Service application to receive/send XML docs and convert them to EDIFACT messages
(+ human interface; www.nyc.fr/texspin);
downstream with eTeXML
 - Direct peer-to-peer without third party services, based on free SW module (MSH) compliant with ebXML transport specifications (including e-signature);
upstream with MODA-ML
- New EDITEX/EANCOM compatible EDIFACT messages



Standardisation scenario

- TC Sectorial initiatives: eTeXML, MODA-ML
- Horizontal frameworks: ebXML, EAN-UCC, ...



The DOWNSTREAM priorities are

- efficiency of data exchange
- normalisation of product description
- compact messages and universal coding

The UPSTREAM priorities are

- efficacy and richness of data
- flexibility of product description

Again about the project

(www.moda-ml.org)



The project: scheduling

- **November 2001** • Architectura and first group of documents are approved
- **June 2002** • Prototype for the ring Fabric - Clothing
- **April 2003** • Complete prototype with FabricSupplier-Clothing Manufacturer ring and sample of FabricSupplier-DarnSubcontractor ring



Dissemination (January 2003)

Initiatives

- Web site (7.000 hits), only repository
- Mailing (700), participation to fairs and events
- Industry trade organisations (SMI, Euratex, ATI)
- Linkages (ETexML, TEX-SPIN, CEN/ISSS, MyFashion.eu)
- European Trademark registration

Feedbacks

- Newsletter subscription (400)
- Focus groups (45 persons)
- Direct contacts (industries and solution suppliers)
- Articles on magazines and newspapers (Italy 15, France 3)

Joining other projects:

Quick Response I. 388, Penelope, Texspin



Contribution and participation

Information

- WEB site, www.moda-ml.org
- Project Newsletter

Partecipation

- Focus group of industries and technology suppliers
- Experimentation of documents and tools



Focus groups

When

- Since January 2002 have been activated

Which

- Fabric-Clothing,
- Clothing-Trade

How

- Firms can download documents to test them
- Written Feedbacks (overviews or punctual)
 - Reduced effort in plenary meetings



Could we be successful?

- **Qualified partnership**

- **Partners:** ENEA, Fratelli Corneliani, Succ. Reda, Loro Piana, Lanificio Piacenza, Vitale Barberis Canonico, Politecnico di Milano, Progema Gruppo SOI, Domina e l'istituto francese IFTH
- 'super partes' technology partners, already involved in EDITEX, TA2000
- European linkages: TEX-SPIN, workshop CEN

- **Representativeness**

- **The European textile/Clothing sector is the world leader**
- **Industry trading associations are involved**
- **The project is addressed to and involves both firms and technology suppliers**



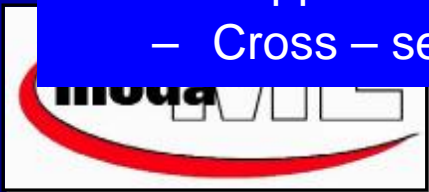
Industrial partnership

- **Leader of TexSpin is Euratex** (European T/C industry association); further national industry trading associations
- **Directly involved industries in pilots and TexSpin related activities:** Chantelle (F), Fratelli Corneliani (I), Lanifici Piacenza, Loro Piana, Vitale Barberis Canonico, Successori Reda (I), other 45 industries in the Moda-ML focus group in Italy (*it is open...*) and many others in the EDITEX user group in France
- **TexSpin2 in the future:**
 - Improvements (new rings of the chain, intersectorial, public dictionary ...)
 - Involvement of further solution suppliers in Italy, Spain, Germany, Romania
- **Capacity of attraction:** results released in June 2003,
 - 110 Firms in three consortia in Biella and Prato have already decided to adopt the results of TexSpin upstream (as well as their technology suppliers).
 - Groups in France: Simone Perele, Barbara, Triumph, Aubade, LDB, Rousseau
 - Link with EANnet.fr (hub for company searching products)
 - Other initiatives and contacts are running (Como and TextbileItaly, others...)



Technology and methodology

- Reference to ebXML initiatives and CEN/ISSS activities
- Close co-operation with **EAN-UCC** about interfaces/coding towards Retail organisations
- Public specifications available for Software Developers
- A Methodology has been developed to fastly support the development of new messages out of the common dictionary
- Many research initiatives will continue the activities towards:
 - Improvement of the supply chain coverage (raw materials, dyeing,..)
 - Support to extended enterprises paradigm and new organisational concepts
 - Support to small communities
 - Cross – sectoral exchanges



Conclusions

- A methodology to create a common vertical sector language exploiting XML, easy to use and maintain
- An architecture and a set of tools to support interoperability, also for SMEs
- A demonstrative SW to face transport issues
- Open issues:
 - Self adapting interfaces: UML/XMI modellisation, transportation improvement (CPA)
 - Supports for the diffusion and automatic test of compliancy
 - Relationship between general models and customised models
 - Extensions to other supply chains, or T/C processes



References:

- TEXSPIN (www.cenorm.be/iss, www.atc.gr/texspin)
- MODA-ML (www.moda-ml.org)
- ETEXML (www.nyc.fr/texspin)
- CEN/ISSS Report on eBusiness standards
<http://www.cenorm.be/sh/eBiz>



Thanks for your attention!