17. Presentation of “I-ESA 2007 Conference”, TXT, 28-30/03/2007
Introduction

- SMEs got little focus regarding business interoperability up until the last couple of years
- SMEs (small, medium and micro enterprises) are the largest group of businesses in Europe - more than 90% of companies fall into the 'SME' category, with nearly 60% being micro businesses having less than 10 employees
- ABILITIES is designed around SMEs and research institutions representatives of 5 New Member States that represent 5 test-bed channels.
- The project’s aim is to build a comprehensive solution for SMEs in Enlarged Europe by studying, designing and implementing an B2B enterprise interoperability solution involving a federated architecture based on adaptive and intelligent UBL active messages to support complete Order-to-Invoice processes of SMEs
- The main focus are SMEs: the resulting solution must be usable and suitable for them.

What is Federated Architecture?

- Integrated vs. unified vs. federated
  - Integrated: standard model form that all connected parties conform to.
  - Unified: common meta-level model providing a means for establishing semantic equivalence
  - Federated: in the most rigid case no standard model neither a common meta model exists, and models among involved parties must be taken as encountered.
    - In real world some degree of integration or unification exists to help the communication process.
Why Federated Architecture?

- The problem of interoperability has been split into two distinct sub-problems:
  1. Interoperability at the level of business document format
  2. Interoperability at the level of business document content
- Integrated approach
  - For SMEs with limited or no IT skills nearly impossible to implement a solution involving harmonization with a standard model form
- Unified approach
  - At the level of document formats → OK with SMEs
  - Interoperability at the level of document content cannot be strictly metamodel based. Various forms of on-the-fly mediation involving programmed or human intelligence is necessary → difficult for SMEs
- Federated approach
  - The system initially tries to deal with the business flow between two partners using a preprogrammed logic. However, when a condition or situation is reached, which cannot be automatically resolved, or if the common understanding between the two partners cannot be reached ABILITIES provides alternative - most commonly non structured ways - to handle such conflicts

Need for Groupware and Multimedia in Business Interoperability

- In a federated architecture some level of inexactness is allowed
  - Content of a business document may not be 100% understandable by the receiving partner.
- Mutual understanding, however, has to be achieved otherwise cannot successfully make business
- Conflicts arising from different interpretation of business data must be handled in a federated solution using some non-structured way
  - Multimedia: adds another level of information to business data that may be more understandable than written text
  - Groupware: discussions on problematic business documents helps achieving mutual understanding
Abilities Architecture

Collaboration Module

- Phases of collaborative work
  - Notification
  - Initialisation
  - Agreement on collaboration parameters
  - Collaborative work
  - Generation of collaboration result

- Notification manager
  - Works as a notification broker: handles notifications coming from other modules and forwards it to user using the preset protocol (SMS, email, etc.) (Phase handled: notification)

- Invitation manager
  - Deals with the initialisation of collaborative work sessions (Phases handled: Initialisation, Agreement on collaboration parameters)

- Collaboration result manager
  - Used for managing the production of a formal result at the end of a collaborative work session (Phase handled: Generation of collaboration result)
ABILITIES Consortium PUBLIC

Collaboration Module Details

Notification Manager

- Notification provides a way for user to be aware of execution of business processes and to be informed of malfunctioning instantly
  - An image is attached to a UBL message
  - A negotiation session has failed
  - An Order document received from company X
- Notification Manager deals with transmitting internal Abilities notification to users
  - Internally notification are received as WS-Notifications and converted to an email, SMS, skype chat message etc. to make it user friendly and ubiquitous
Invitation Manager

- Deals with the organization of ad-hoc collaboration session between two business partners
- Design time: setup of collaboration tools supported by user (ICQ ID, Skype ID, discussion forum URL, telephone number)
- Run time: deals with the initialisation of collaborative work sessions (Phases handled: Initialisation, Agreement on collaboration parameters, i.e. what tool to use and when)

![Diagram of Invitation Manager process]

Collaboration Result Manager

- Deals with the production of a formal result at the end of a collaborative work session. Stored by Abilities for later reference for the involved parties.

![Diagram of Collaboration Result Manager process]
Multimedia Content Manager

- Abilities provides a feature to enhance UBL business documents with multimedia
  - Images, videos, sounds, interactive content
  - Type for these exists in UBL, but Abilities is the first known application to provide support for this

- MM in UBL is used to make contents of UBL itself understandable in situations when the textual content itself could be misunderstood by the receiving business partner.

MM Content Manager Operation - 1

- Design Time
  - **Store**: stores a multimedia object in the repository. A multimedia object is a picture, sound, video or text with associated metadata describing the object (representation and content)
  - **Delete**: deletes a multimedia object.
  - **Update**: changes content or descriptive data of a multimedia object.
  - **Get**: retrieves a specific multimedia object.
  - **Search**: lists multimedia objects matching the defined conditions
  - **Share**: makes a multimedia object accessible from remote sites according to a set of sharing options

- Execution Time
  - enrichment of UBL documents with MM content and accessing MM objects
  - Functions provided
    - **Access**: allows authorised parties to download/view/play a multimedia object
    - **ExportForUBL**: generates a representation of the multimedia object that is suitable for embedding in UBL documents
    - **ExportForAccess**: generate a reference to a shared multimedia object in a format that can be included in a UBL document
Central vs. Partner Provided MM Repositories

The Multimedia Content Manager API is implemented by Abilities’ Central Repository, but the MM Content Manager can also work with a partner provided repository assuming the necessary Web Service interfaces are implemented there.

Automatic Negotiation Service

- Considered part of the collaborative work support
- Abilities partners can define negotiation rules at business message creation time, which is executed when the document reaches the target partner

Design Time: NEGOTIATION RULES DESIGNER
- Userfriendly editor for negotiation rules based on JAVA technology
- Provides templates to facilitate users design
- Rules are stored in XML format
- Rules applied on UBL standard fields only

Run Time:

- JAVA/ESO Interface
- Negotiation Engine
- DROOLS
Summary

- Abilities implements an interoperability bus based on a federated architecture for SMEs
- The federated feature of the application requires means to resolve misunderstanding arising from the inexact nature of the selected architecture
- Collaborative work support and multimedia enrichment helps implementing the federated architecture
- The project is at the end of implementation phase
  - Integration, test bed implementation and validation of Abilities in the test beds come next

Thank you for your attention!

Questions?

Additional information:
- http://services.txt.it/abilities/project.html - Project Website
- http://www.viewzone.org/abilities/ - Portal describing and tracking project relevant standards
- Contact: claudia.guglielmina@txt.it