FASSI / AFIN Panel - Venice 2015

Internet-driven and Web-supported Software Integration: Cooperation in Distributed Teams

Chris Ireland
The Open University, UK

Panelists

- **Mihaela Iridon**, Candea LLC, USA
  - "Defining implementation processes and testing frameworks, sharing data and service contracts, and team collaboration in general."
- **Manuel Cabral Reis**, University of Trás-os-Montes e Alto Douro/IEETA, Portugal
  - "Web-based systems to help managing primary students' homework: teachers' & parents' cooperation."
- **Chris Ireland**, Open University, UK
  - "Challenges in distributed teams: shared design, partitioning the build, software architecture, configuration management, team management, methodology"

Cooperation Challenges

- Leadership (Central vs Distributed)
- Roles and Responsibilities (Clearly Defined vs Loose)
- Methodology (Approach: Structured vs Fluid)
- Language (Verbal and Design: One vs Many)
- Culture (Similarities and Differences)
- Decision Making (Dictate vs Consensus Building)
- Trust (Reliability?)

Software Integration Challenges

• Economies of Scale	Library of resources, etc.
• Disparate Resources	Resource identification
• Choice of a Resource	Resource selection
• Resource Control	Configuration management
• Resource Lifecycle	Change management
• Trust	Skills and communication
• Priorities	Time and Availability

Discussion Topics

- The use of a "mock up" as a way of identifying integration issues.
- Developing user friendly mobile apps: software development is not just about coding challenges.
- How to prepare graduates for jobs in software integration. Not just focus on programming skills but also implementation skills and industry knowledge.
- The status of programming as a career. Provide career opportunities within software development rather than moving into people management.
- The skills required of an integrator.

Panel on FASSI/AFIN Internet-driven and Web-supported Software Integration: Cooperation in Distributed Teams

Manuel J. Cabral S. Reis

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Escola de Ciências e Tecnologia (ECT)
Departamento de Engenharias

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- Schools as “distributed teams and organizations”.
- Different computer systems (hardware and OS):
  - desktop/laptop;
  - smartphone/iPhone;
  - tablets/iPADs;
  - ...

- Different types of apps:
  - office (create, edit, share documents);
  - sharing (e.g., dropbox);
  - social networks (e.g., facebook, twitter);
  - organizer & management (e.g., TeacherKit);
  - Learning Management Systems (also online);
  - Internet (google, (wiki)pedias, ...);
  - ...

- Web-based systems to help managing primary students' homework:
  - teachers' cooperation;
  - parents' cooperation;
  - teachers/parents communication and interactions.
- Really user-friend apps.

Software Systems Integration

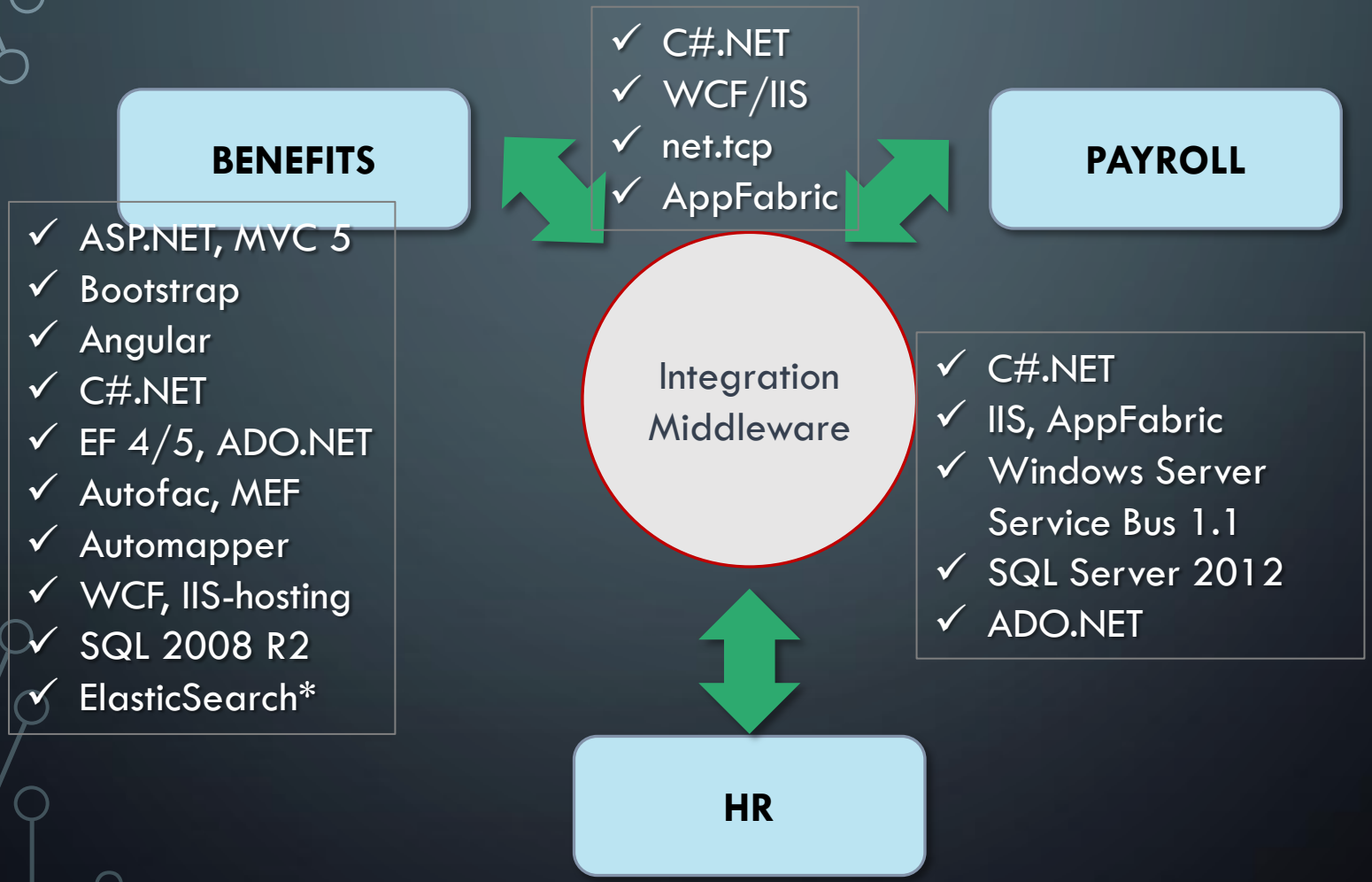
Technology, Processes, and People

Mihaela Iridon, Ph.D.
Cândea LLC (USA)

Technology Perspective

- Service-Orientation
  - Microsoft
    - WCF
    - Web API
- Service Contracts: Operation and Data
  - Clean, Stable, Extensible
  - Operation Contract Stability:
    - General-purpose operations: “HandleNotification”
  - Data Contract Stability:
    - Serialized data: HandleNotification(string notification)

Microsoft-Centric Implementation



Integration (Boundary) Shape

- Symmetric Topology (Client-Client)
  - Broker-based architecture (hub-and-spoke)
  - Bus architecture
  - Integrators are all peer clients in the overall system, communicating via an integration middleware
- Asymmetric Topology (Client-Server)
  - Specialized technology or service providers; also S/PaaS
  - Example: Alcatel's Genesys – call center technology
    - Hardware abstraction
    - Technology abstraction
    - Service abstraction

Teams' Collaboration Perspectives

- **Case 1**: Enterprise Integration: integrating existing systems
  - One team per integration slice
  - One (small) team for integration middleware
  - Shared access to project epics, stories, tasks, bugs
  - Daily standups*
- **Case 2**: Completely separate application lifecycle for platform provider and integrator entity
  - Interaction with support team (higher tier of support/developers of platform)

Alleviating Dependencies & Maintaining Development Progress

- Unit testing
  - Integration components
  - Integration paths and couplings (joints)
  - Models and behavior
- Simulation of components to integrate with
- Simulation of domain-specific data
  - Example: message/data generators
- Simulation of integration middleware
- Dependency injection to mock both data and behavior
- Code generation/automation