

# Middleware Development in the EGI Era

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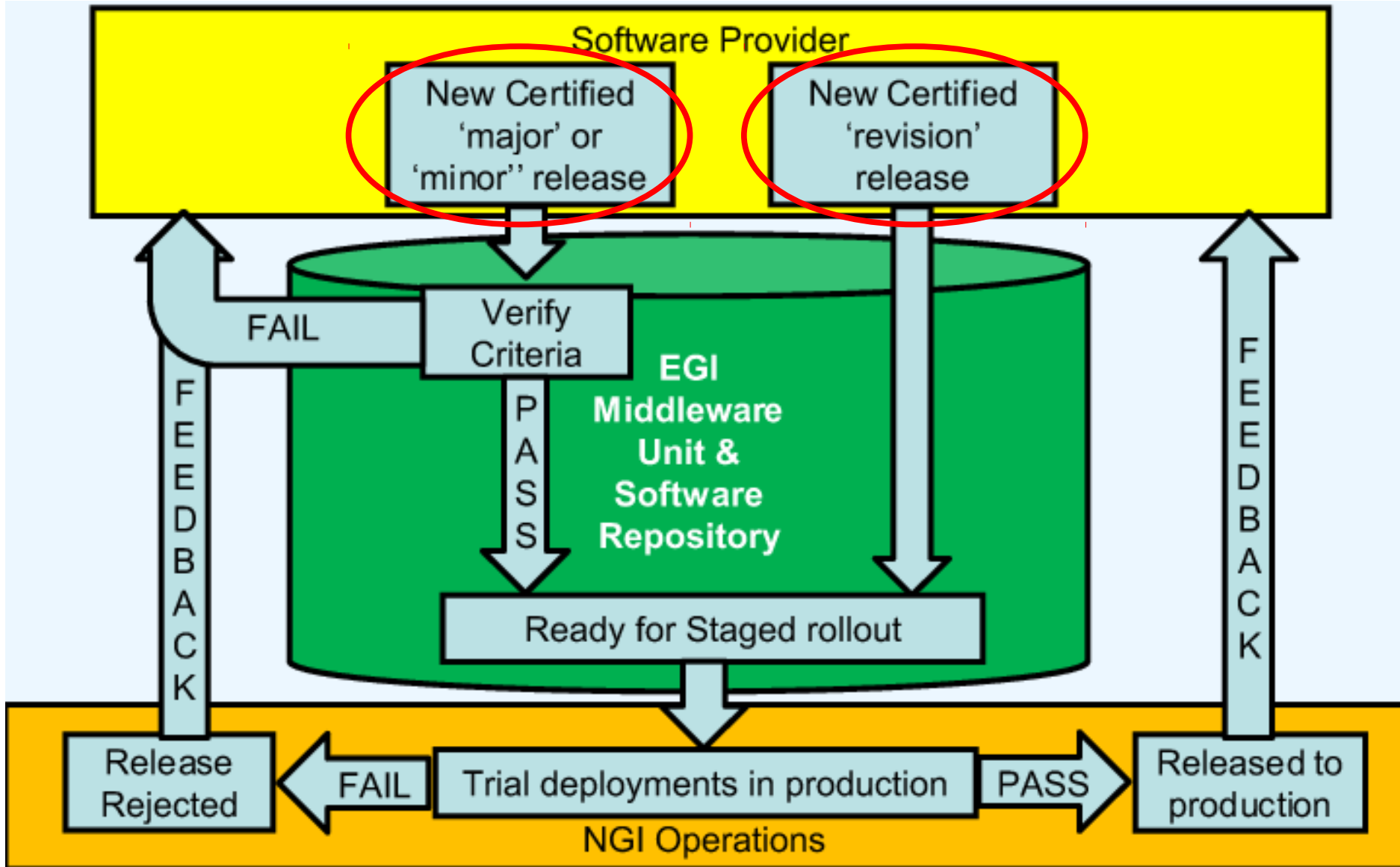
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- **Organizational framework for middleware management**
- **Focus on quality assurance**
- **Main expected developments**

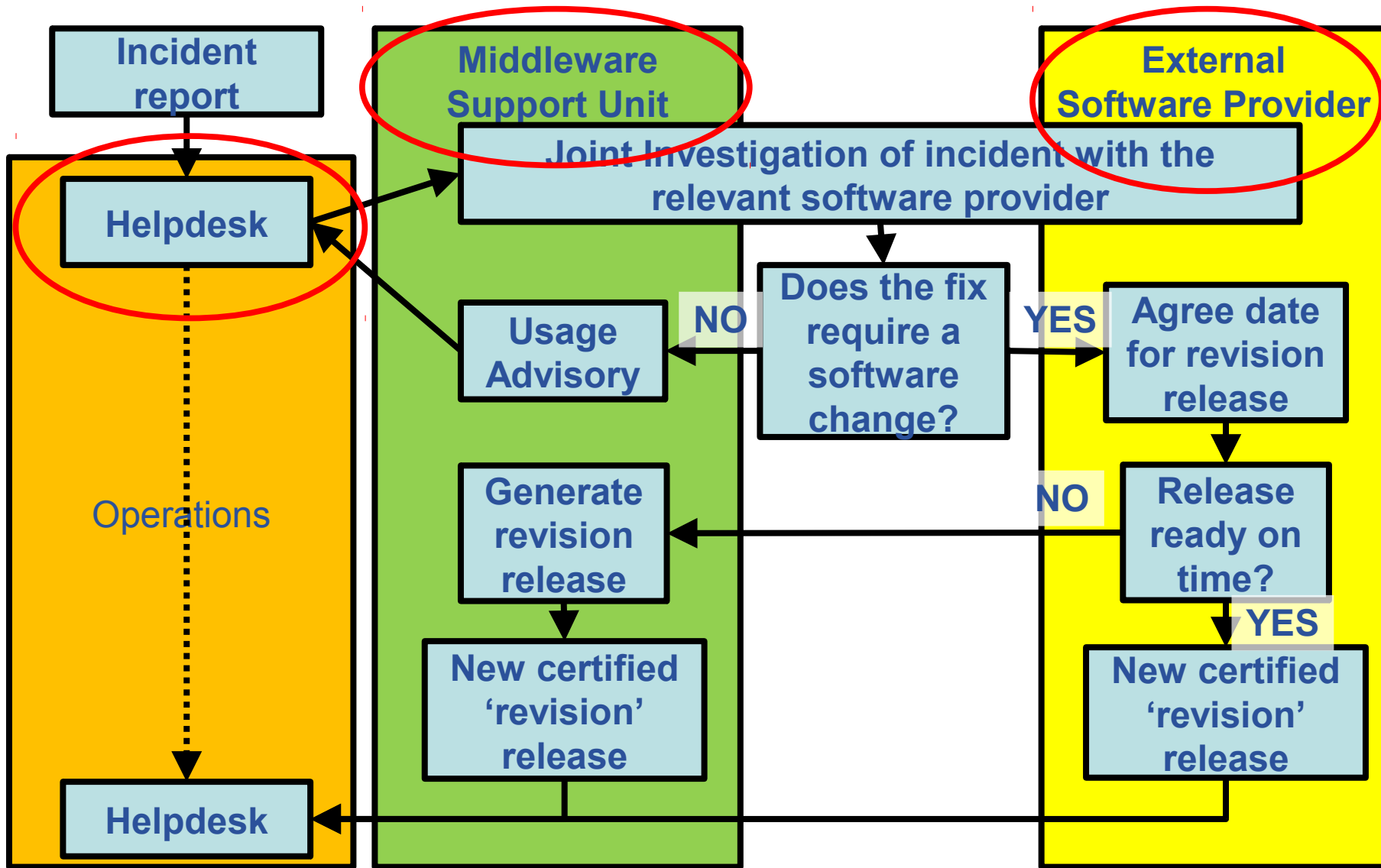
- **Pan-European Distributed Computing Infrastructure to support scientific research**
  - Integrated
  - Secure
  - Multi-disciplinary
  - Sustainable
  - ...
- **Federation of National Grid Initiative**
- **Coordination by a small legal entity EGI.eu**
  - being established in Amsterdam
- **Supported by the EGI-InSPIRE EU-funded (proposed) project**

- **EGI maintains a middleware distribution to be used by service/resource providers and applications**
- **Dual definition of UMD**
  - A set of specifications
    - Functionality, performance, quality requirements, ...
  - A set of software components meeting the specifications
- **Components in UMD must**
  - Work well together
  - Be supported (SLA/SLD with software provider)

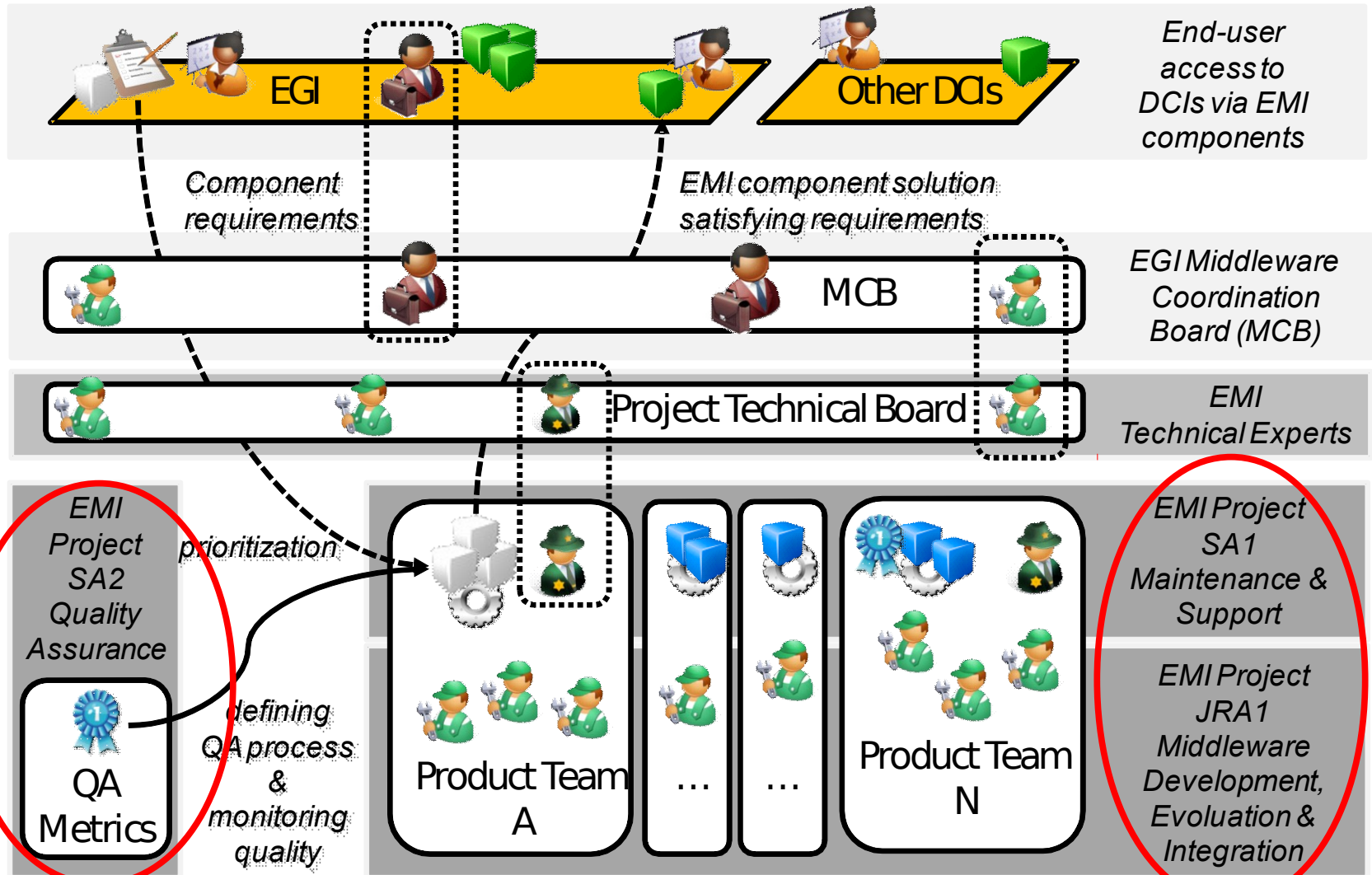
- **Advisory body in EGI to develop strategy and technical priorities concerning the maintenance, support and evolution of the technologies (including middleware) adopted for production use on the EGI e-Infrastructure**
- **Prioritizes requirements expressed by applications and operations and endorses the UMD roadmap**
- **Representatives (mainly) from**
  - Software providers
  - NGIs and resource providers
  - User communities



# Incident Resolution Workflow



- Proposed middleware project





- **Support and maintenance**
- **Sustainability**
  - e.g. inject packages in Linux Distributions (e.g. Fedora, Debian)
- **Consolidating and simplifying the existing solutions by developing and integrating common core functionality, especially in the security area, and implementing common standards across all middleware distributions**
  - EMI is a joint collaboration between the major European middleware providers: ARC, dCache, gLite and UNICORE
- **Developing new services and functionality to address usability and interoperability issues and improve support for the operational aspects of grid service provision**

- **Usability and transparency for users**
  - Integrate existing AuthN and AuthZ Infrastructures (AAI), through online CAs
- **Leverage industry standards**
  - SSL/TLS in place of GSI
  - SAML assertions besides X.509 proxies
  - XACML-based policies
- **Common security components in all services**

- **Reduce the number of CE implementations or at least...**
- **Adopt common interfaces**
  - Make emerging OGF standards suitable for production use
    - BES, JSDL
- **Improve support for parallel execution**
  - MPI
- **Improve inter-working between HTC and HPC**
  - Application workflows exist that use both

- **Evolve Storage Resource Management (SRM) specification**
  - Uniform interpretation
- **Adopt industry-standard local- and wide-area access protocols**
- **Adopt industry-standard security protocols**

- **Make life easy for applications**
- **Overall review of clients and APIs for all services**
  - Evaluate the *Simple API for Grid Applications (SAGA)* specification
- **Provide standard portlets to build application portals and gateways**

- **Messaging**
  - Adapt and adopt existing off-the-shelf MSG solutions
  - All MW services should migrate to the new MSG system
- **Accounting**
  - Refine and adopt OGF standards for the distribution and collection of Usage Records
  - Introduce storage accounting
  - Based on the messaging infrastructure
- **Service monitoring and management**
  - Uniform solution largely non-existent
  - Investigate, adapt and adopt off-the-shelf solutions

- **Virtualization is already employed at several Grid sites and it's been made accessible to users**
  - Make this capability mainstream, production quality and uniform
- **Clouds (as IaaS) provide a more primitive abstraction wrt the Grid as we know it**
  - Grid sites may be built/expanded on top of it
  - Some applications may profit from it directly
- **Integrate a cloud-like offering in the general Grid infrastructure**

- **Middleware development in the EGI era will be modeled after a contractual relationship between customers (operations and applications, through EGI) and software providers**
- **Further shift towards stability and quality assurance**
- **Middleware development driven by requirements/wishes/desires negotiated among all the stakeholders**
- **Usability and simplification are important drivers**
  - Adopt common interfaces
    - possibly standard
    - possibly industry-standard