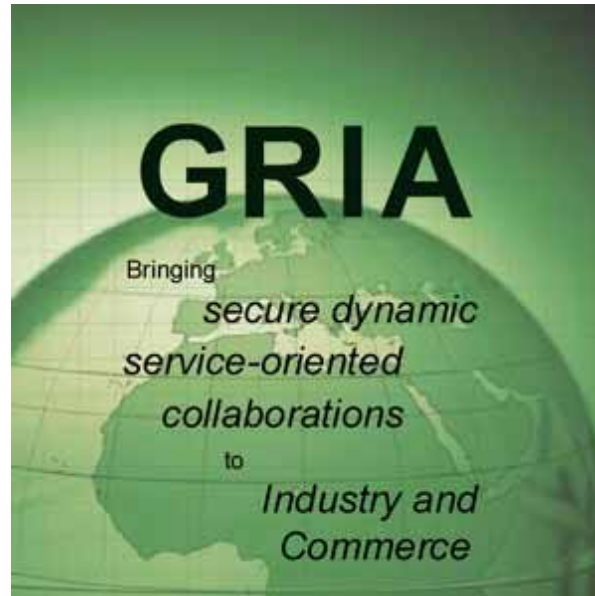


GRIA

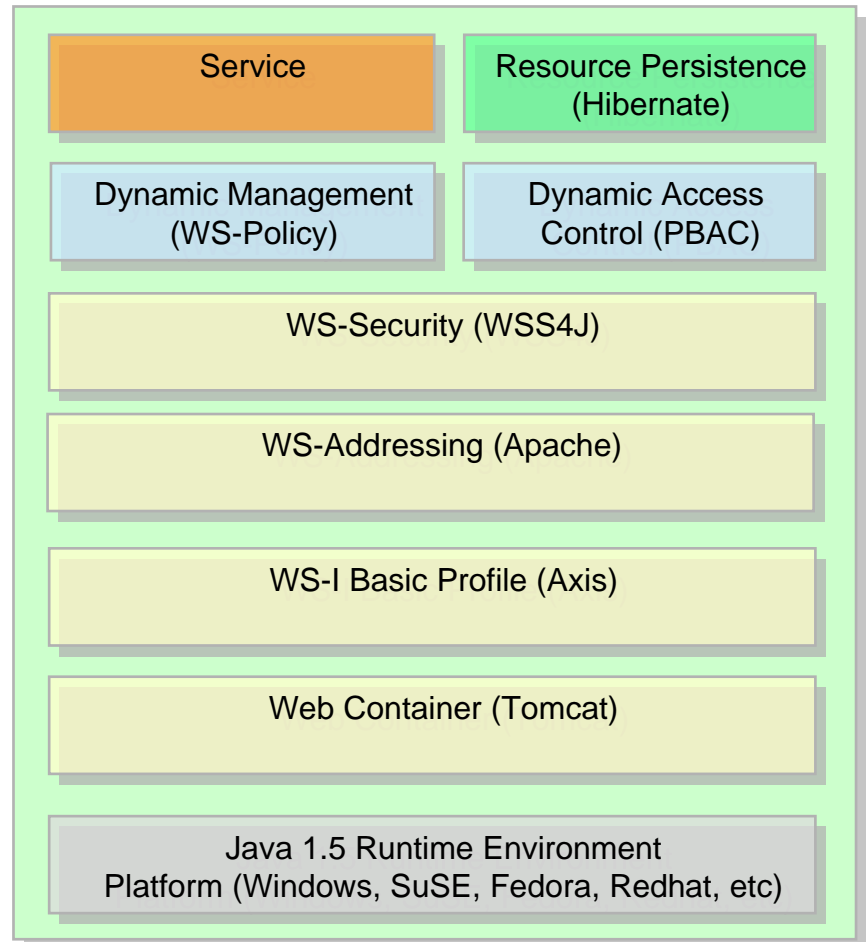


GRIA 5 Architecture



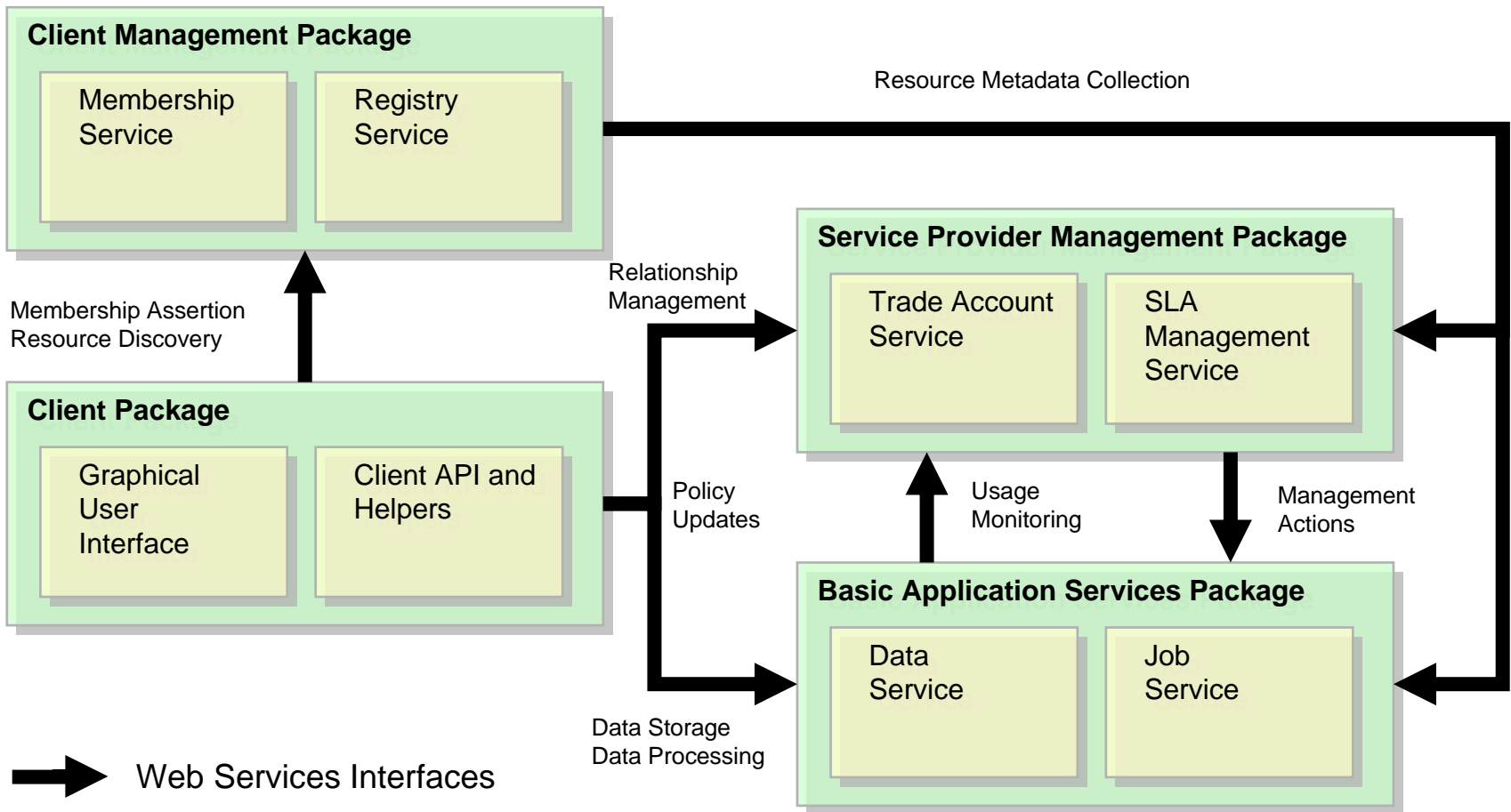
Web Service Infrastructure

- All services build on core infrastructure capabilities
 - contextualised web services
 - resource persistence
 - dynamic access control and roots of trust
 - flexible policy management
- Core technology stack
 - Tomcat 5.5
 - Axis 1.4
 - WS-Addressing
 - WSS4J 1.5
 - Hibernate
- Security
 - transport layer security (https)
 - message layer security (WS-Security)
 - SAML tokens and X.509 certificates
 - resource level dynamic access control policies (PBAC)



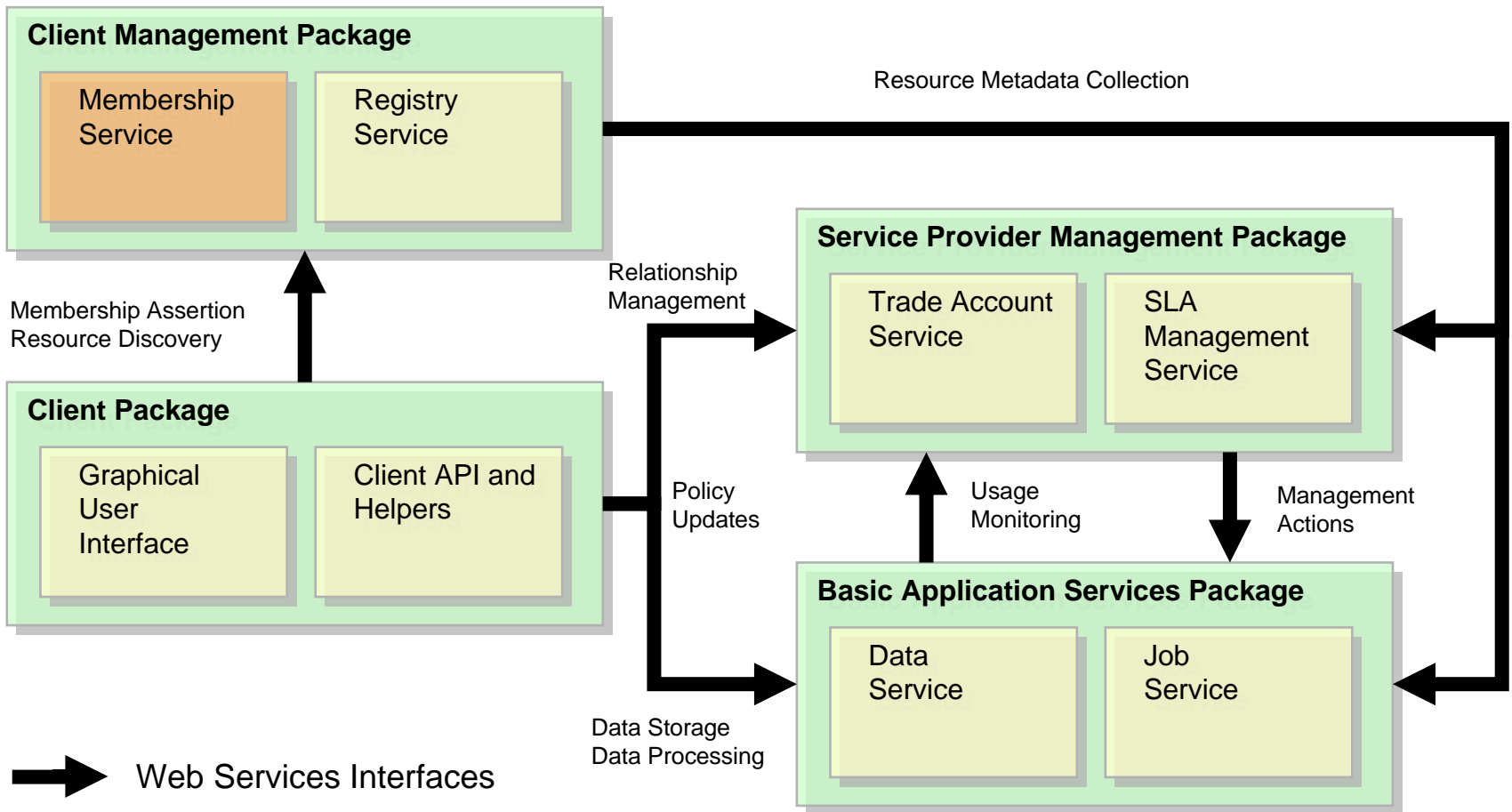


GRIA Services and Interactions





GRIA Services and Interactions



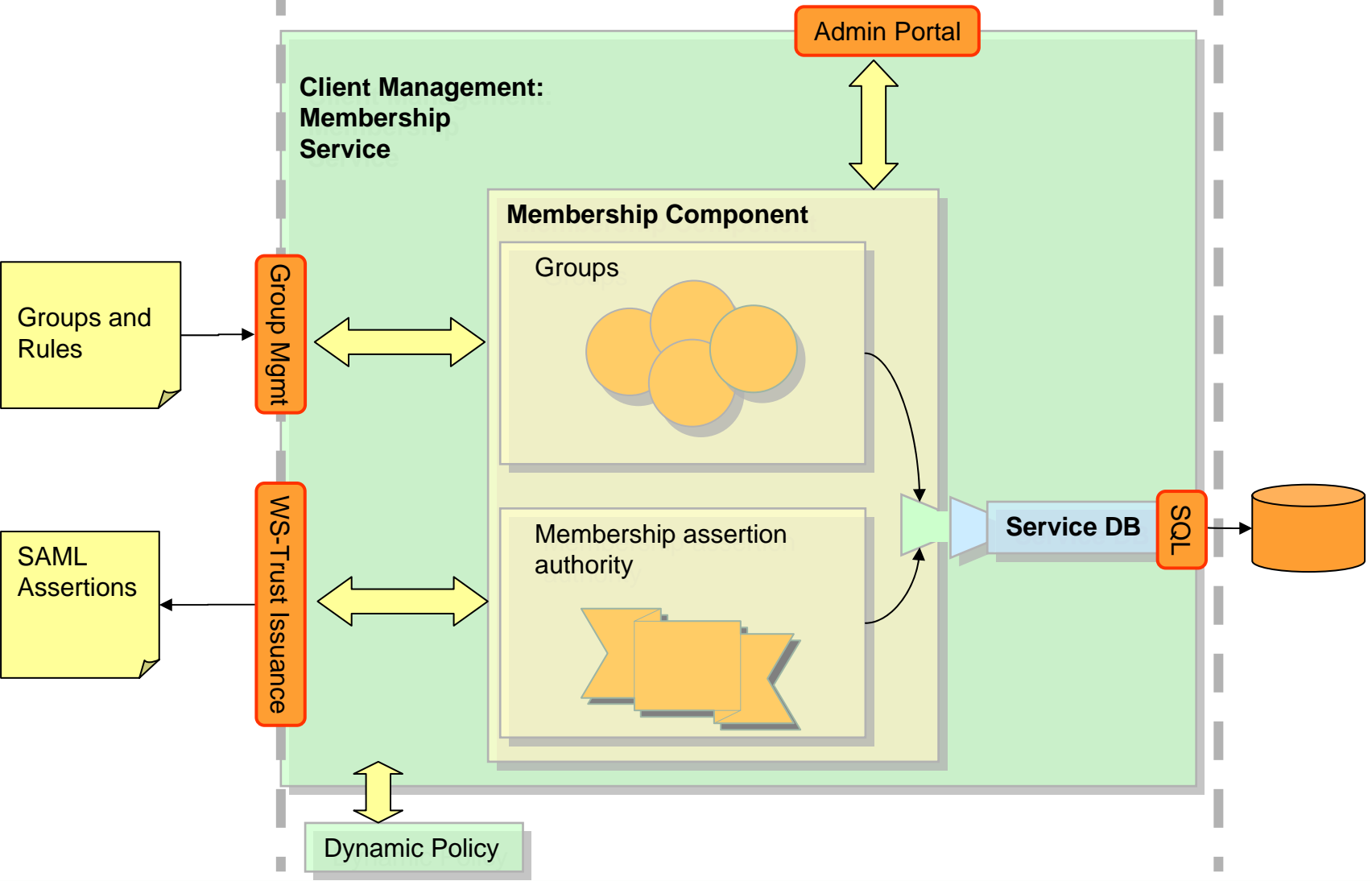
GRIA



Client

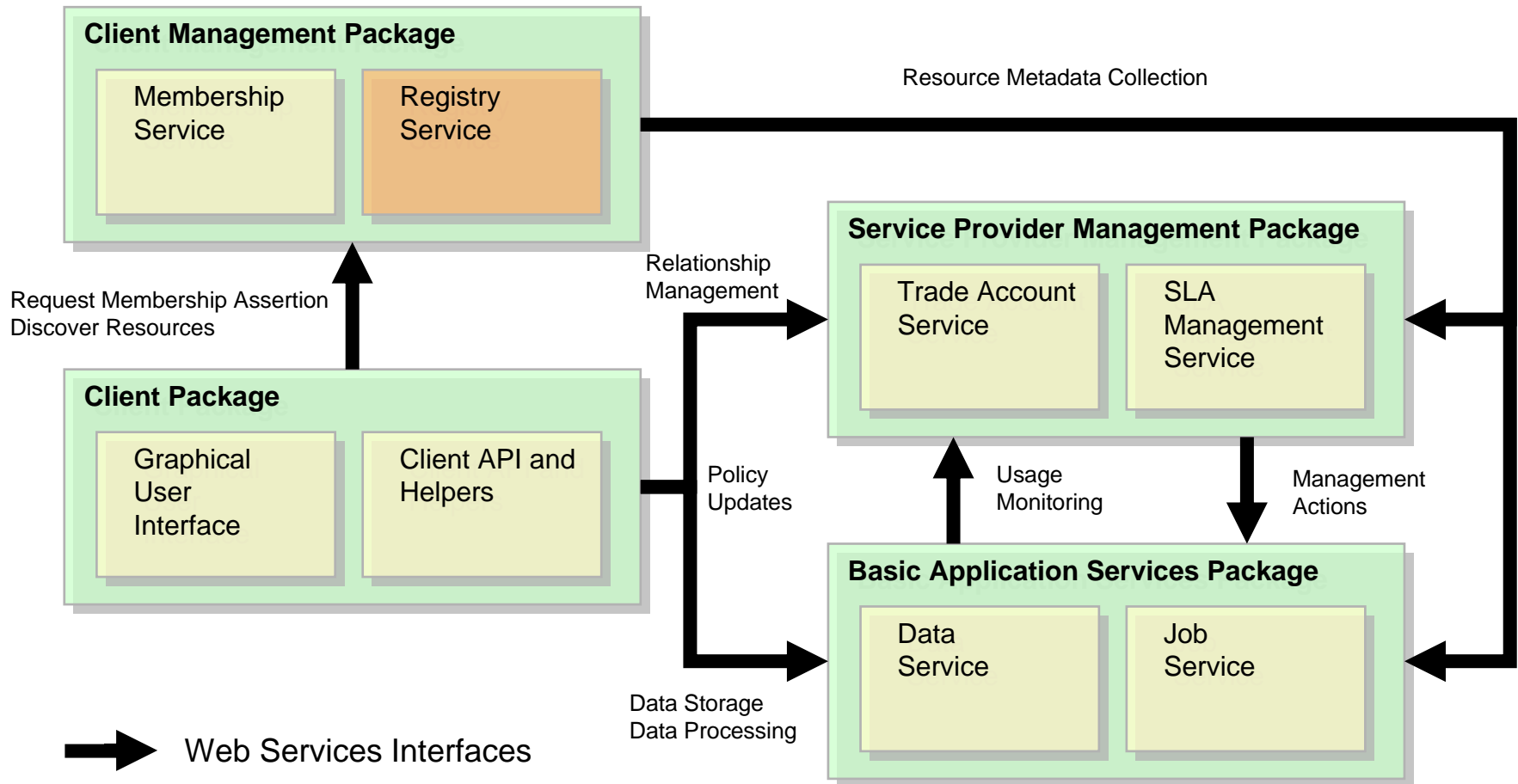
Service

DB Backend

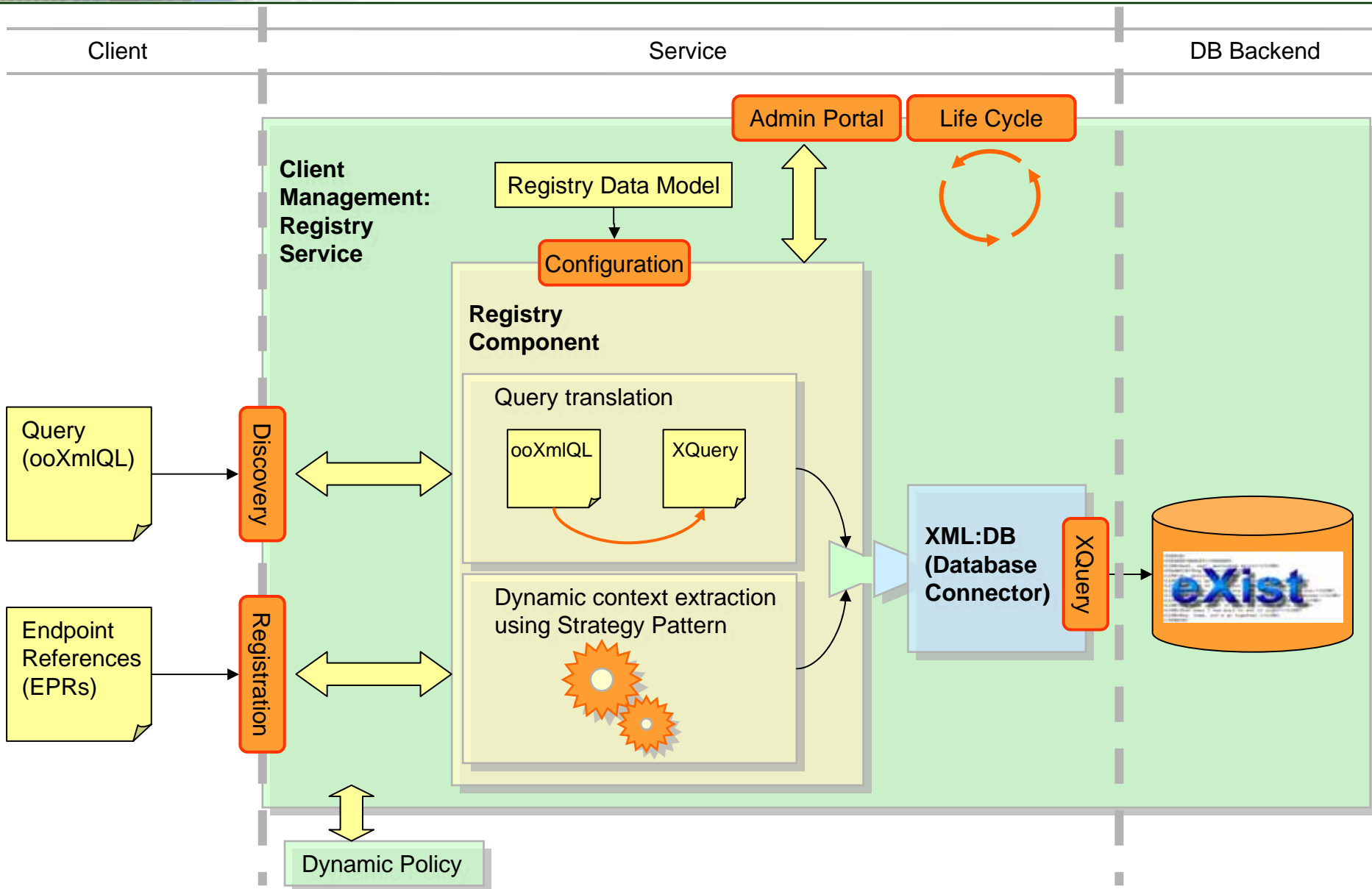




GRIA Services and Interactions

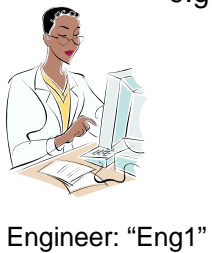
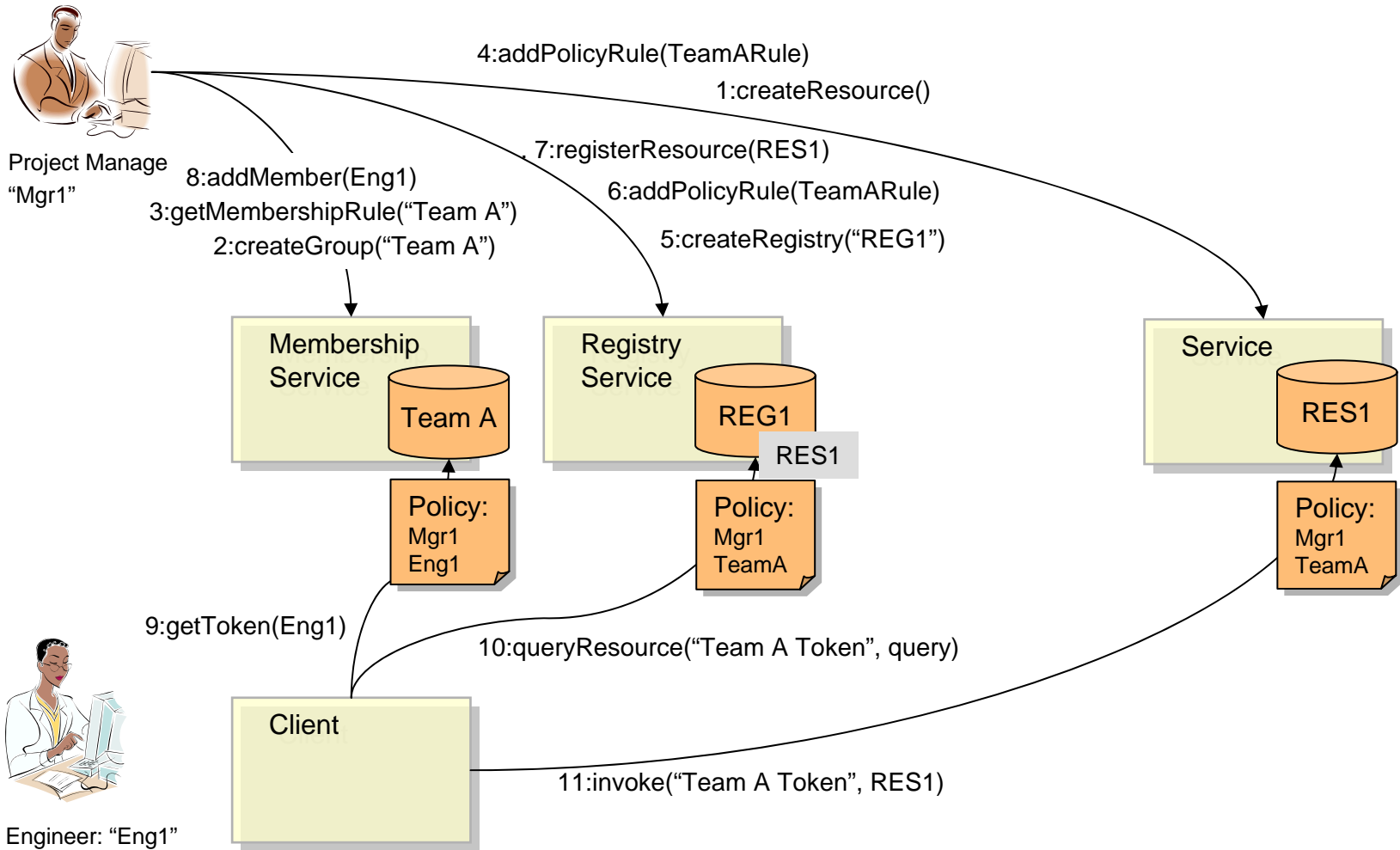


GRIA



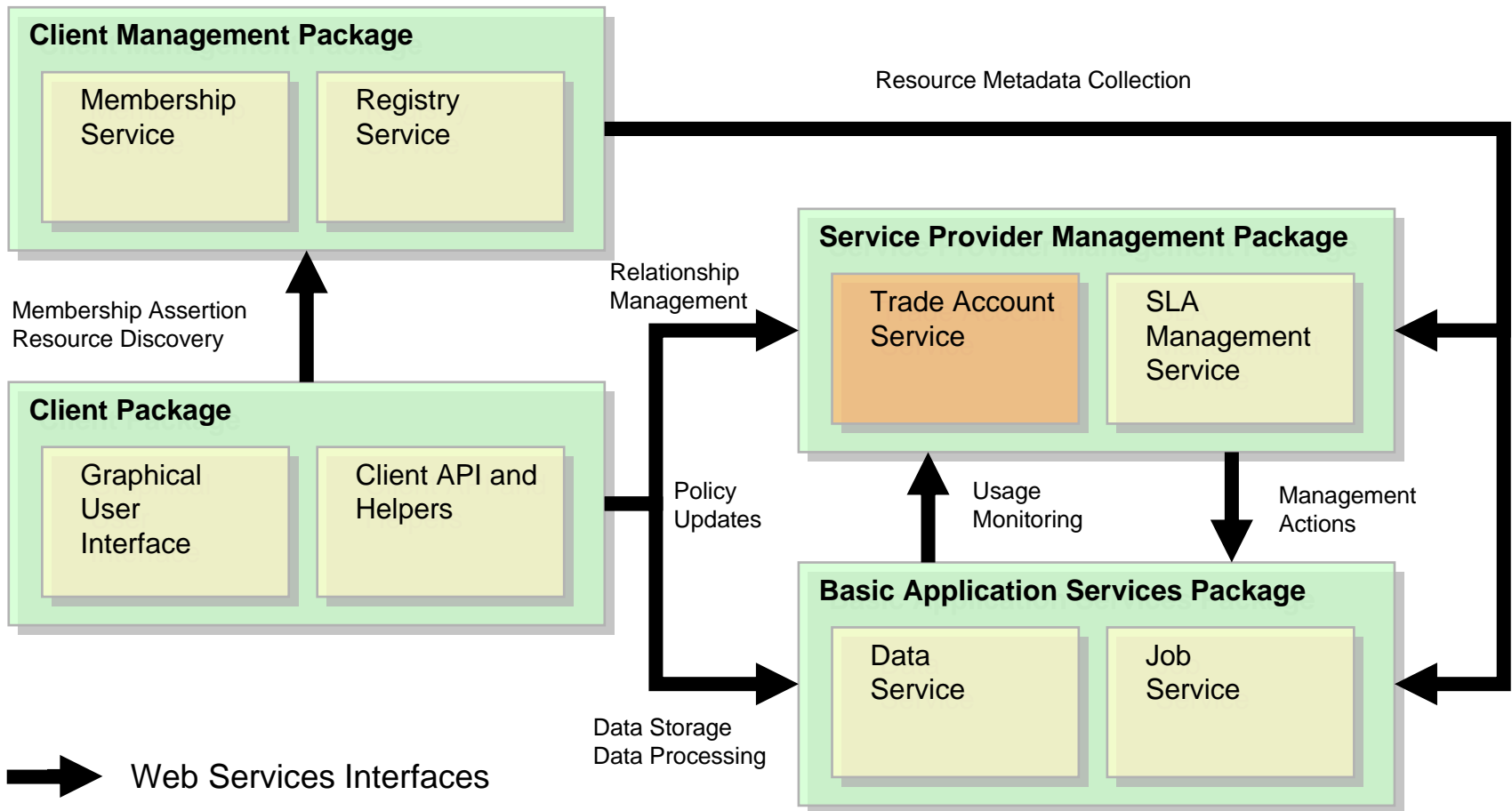


Dynamic Policy Framework





GRIA Services and Interactions





Trade account service

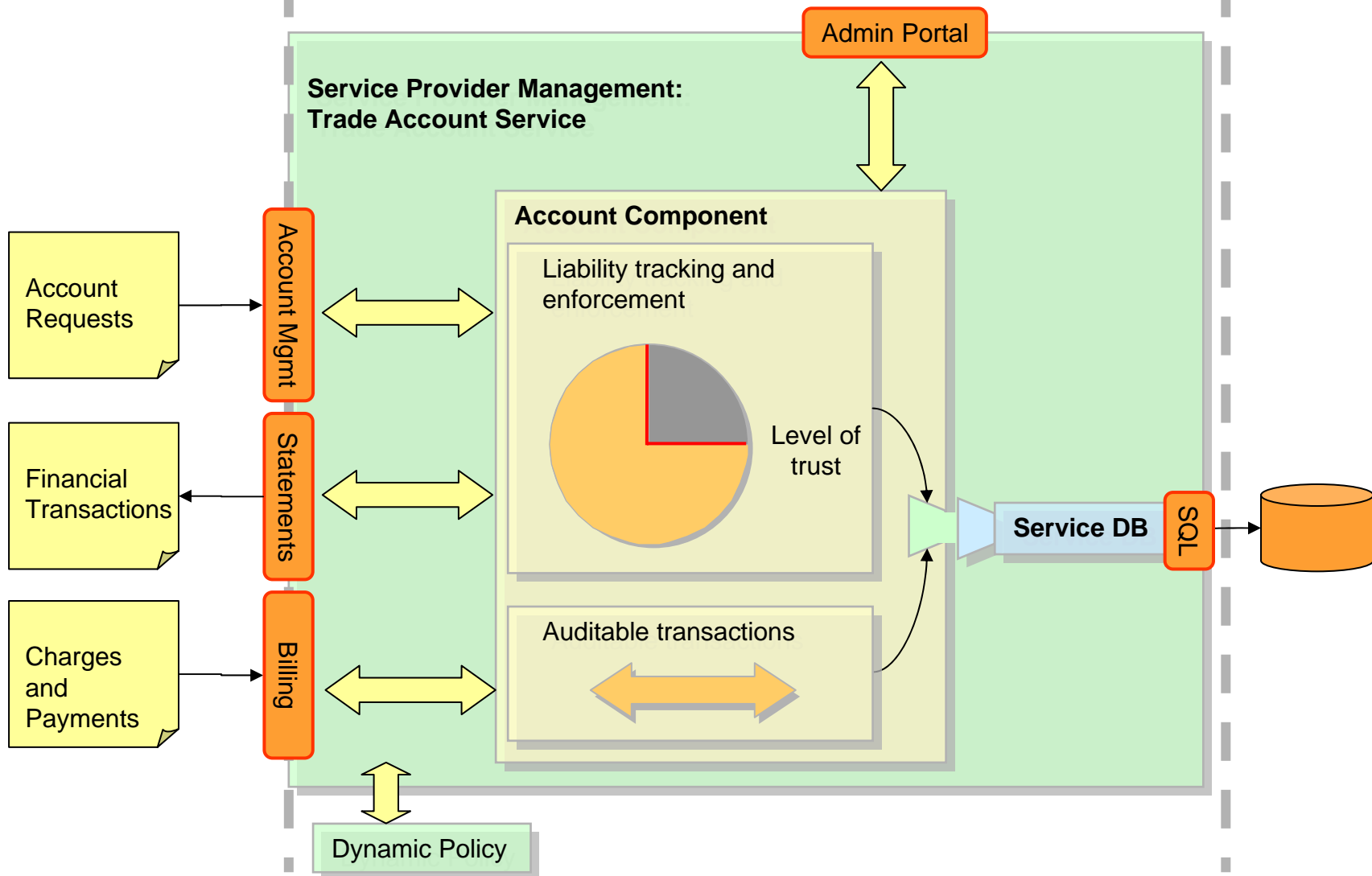
- Allows a service provider to manage relationships with paying customers
 - trade account represents a relationship with a customer and hence a root of trust for service provision
 - service provider sets a limit of liability they are willing to risk against a specific customer (how much they trust the customer)
- Records changes in the liability on accounts
 - service provider can record accrued charges or new payments, for example SLA management service bills to the account service after each billing period
 - all transactions affecting the liability are recorded
- Customers can control and monitor their accounts
 - account statements detailing transactions within a given period can be requested
 - budget holder can control billing permissions on each account
- Trade accounts are not bank accounts
 - used by a service provider to generate invoices for existing financial systems
 - not subject to financial regulations



Client

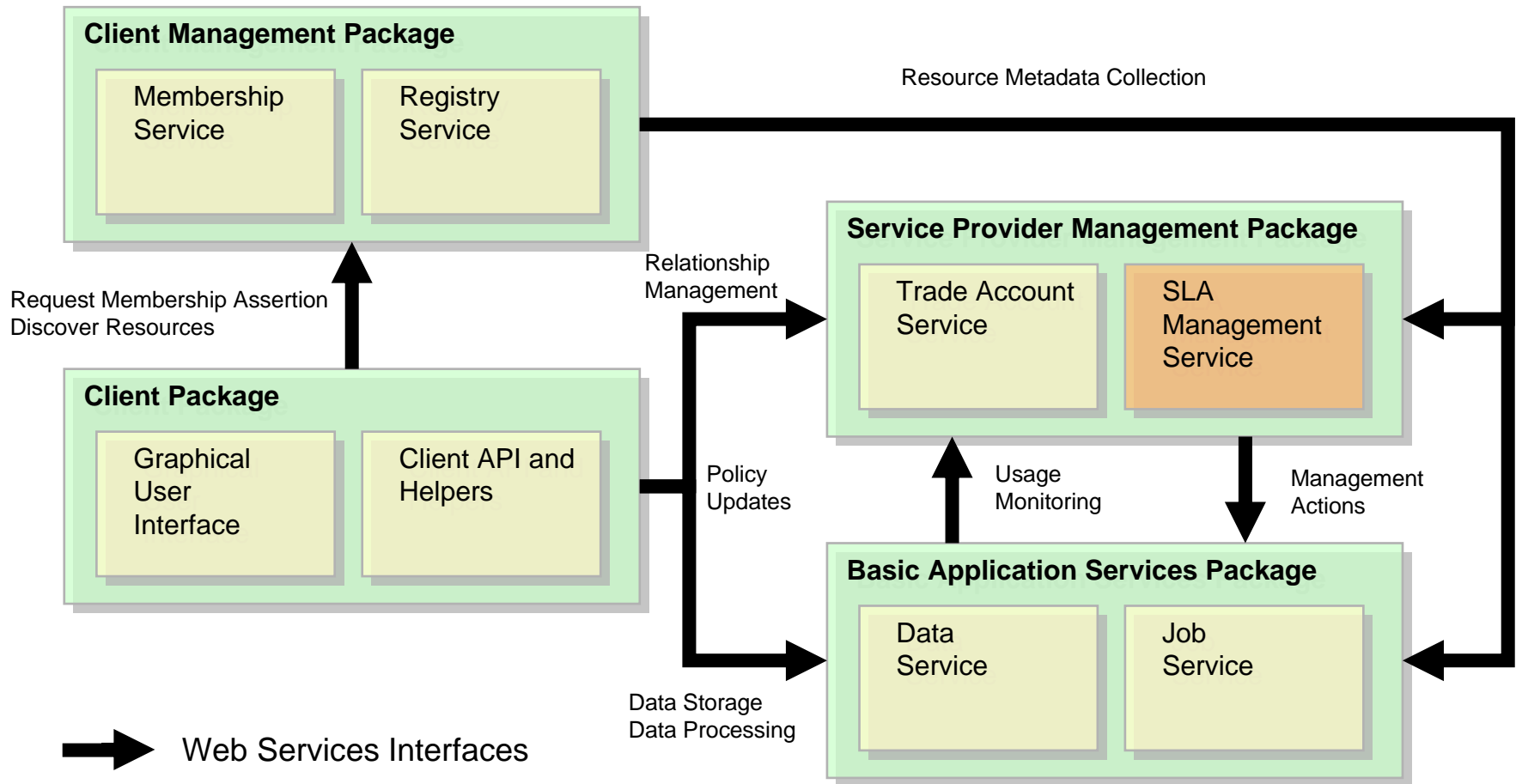
Service

DB Backend





GRIA Services and Interactions





SLA Management Service

- Allows a customer to procure application services from a service provider
 - service providers defines applications and quality of service terms in SLA offerings
 - customers proposes SLAs based these offerings
- Service management works at three levels
 - *Monitoring* of application service usage
 - *Constraining* service usage using SLA QoS terms and available capacity
 - *Billing* for usage based on repeating subscription and pricing terms for resource usage
- Usage reports, constraints and pricing terms are all defined in terms of metrics
 - metrics are generic and defined by the service provider based on the application services deployed
 - metrics can be constrained in terms of cumulative usage or instantaneous rates



Client

Service

DB Backend

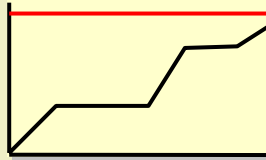
**Service Provider Management:
SLA Management
Service**

Admin Portal

Life Cycle

SLA Management Component

Instantaneous and
cumulative metric constraints



Usage monitoring and
billing



Service DB

SQL

SLA
Proposals

SLA usage
Statements

Application
Service
Usage
Reports

SLA Lifecycle

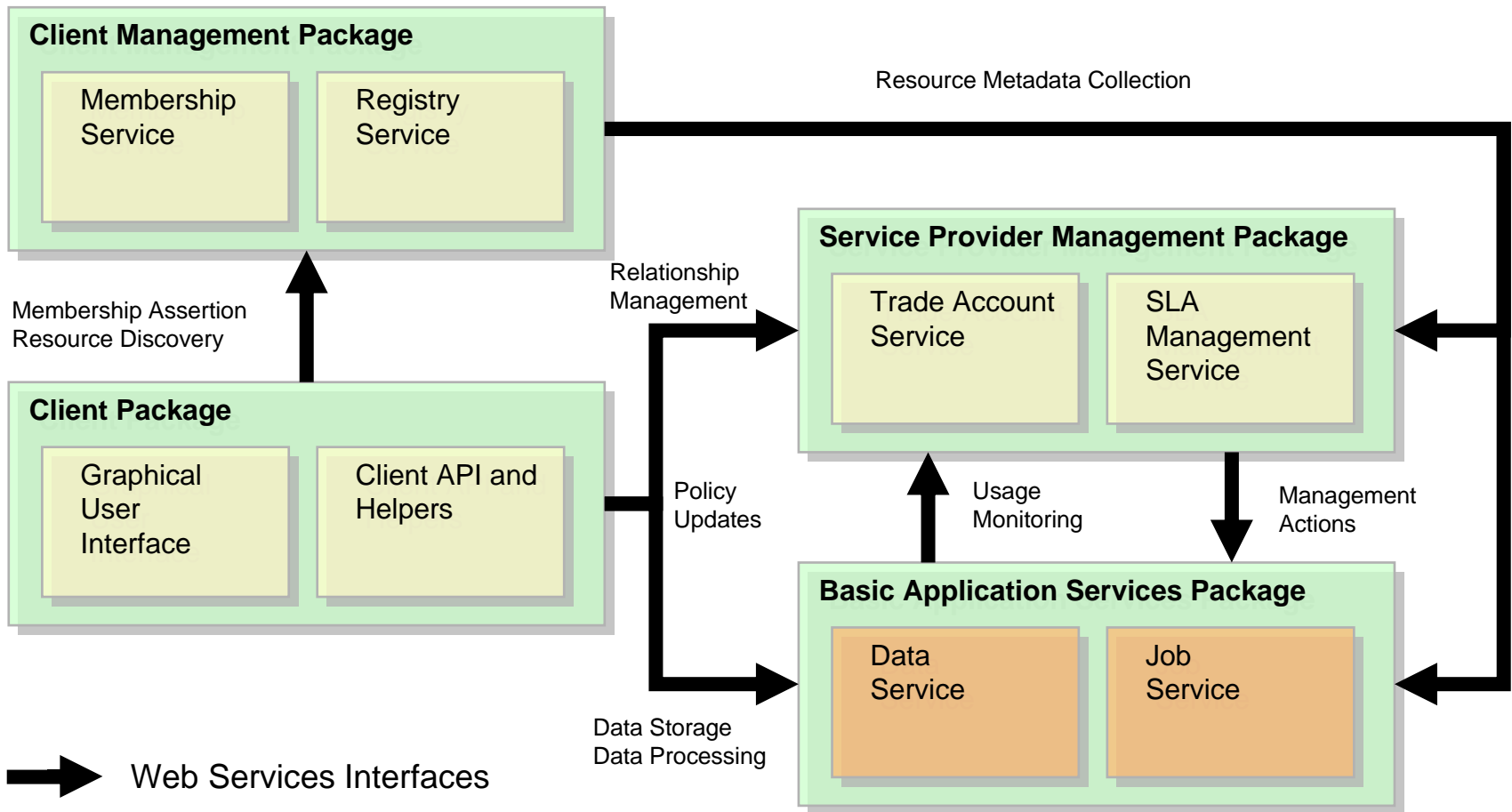
Statement

Monitoring

Dynamic Policy



GRIA Services and Interactions





Basic Application Services

- Allows a service provider with cluster computing facilities to provide data storage and processing to trusted users
 - a job and data service are provided that work together to support batch processing
 - all processing based on applications installed on the cluster by the service provider
- Job service
 - web service interface to heterogeneous execution platforms
 - supports job lifecycle management (discovery, submission, execution, monitoring)
 - flexible integration of different resource managements (e.g. LSF, Condor) based on platform scripts
 - flexible integration of batch applications using simple application wrapper scripts
 - applications installed on the cluster are described using metadata that can be discovered and integrated into workflow tools
- Data service
 - web service interface to file based data stagers
 - supports basic storage and transfer operations using (SOAP, FTP, and HTTP)
 - provides a logical mapping from EPRs to physical names
- Supports SLA based management using application service usage monitoring
 - both services monitor usage metrics and generate reports for the SLA service
 - example metrics include CPU time, disk space, concurrent applications, etc

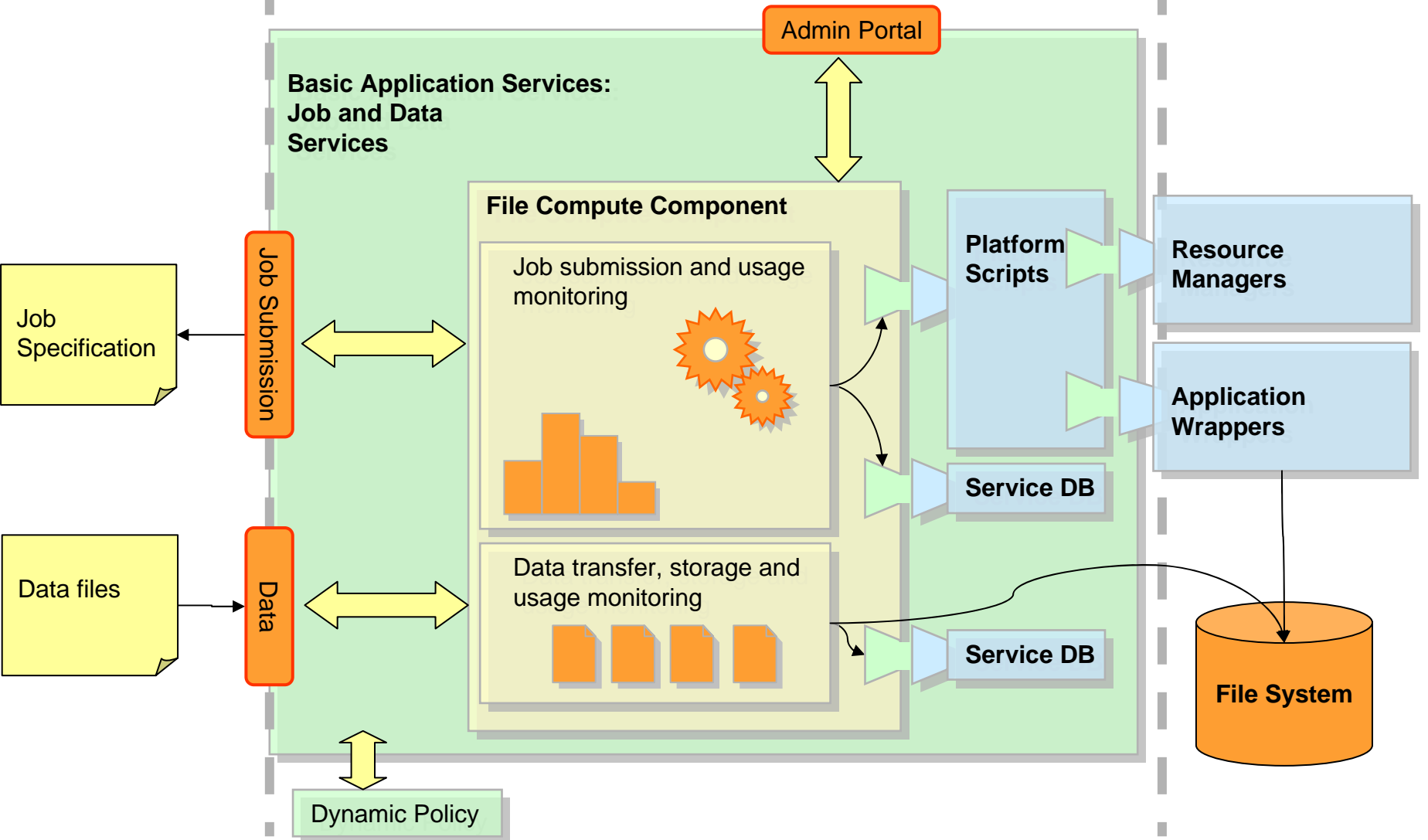
GRIA



Client

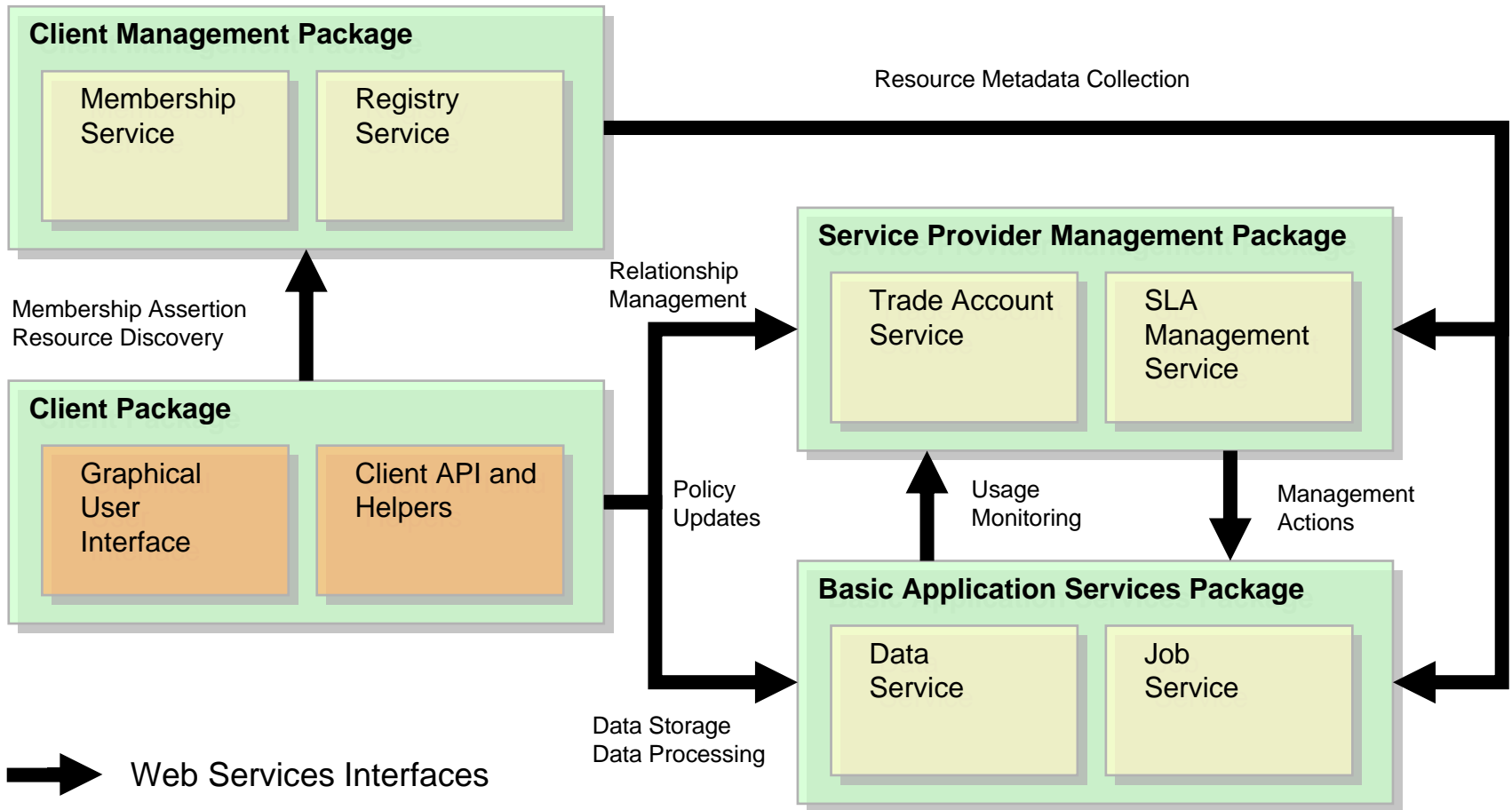
Service

Execution Platform





GRIA Services and Interactions





Client

- Allows user access to GRIA management and application services via desktop applications
- Basic extensible graphical user interface for GRIA and other 3rd party services
 - provides client access to GRIA management capabilities
 - provides example client for job, data and OGSA-DAI application services for demonstrating capabilities
 - expectation is that user will access application services using existing client software rather than the GRIA GUI (e.g. workflow tools)
- Client API toolkit for integration with client applications
 - Java API based on the web service interface using dynamic proxies
 - best practice approaches for integration with other infrastructures such as .NET



GRIA OGSA-DAI Application Service

- Allows service providers to provision complex data services
 - used to provision new or existing data resources
 - supports relational, XML and bespoke data resources
 - flexible architecture for integration of new data resource types using the Data Resource Management and OGSA-DAI Activities
 - based on OGSA-DAI service from the University Of Edinburgh
- Access to data resources based on role subscriptions
 - service providers define roles in existing data management systems
 - customers subscribe to roles allowing them to access a view on the data resources
 - mapping between customer and roles is dynamic
- Supports SLA based management using application service usage monitoring
 - monitors usage metrics and generates reports for the SLA service
 - basic metrics include number of subscriptions to a role, number of subscribers
 - can be extended to include further application metrics such as transaction time if required
- Simple deployment and configuration using GRIA's web management portal

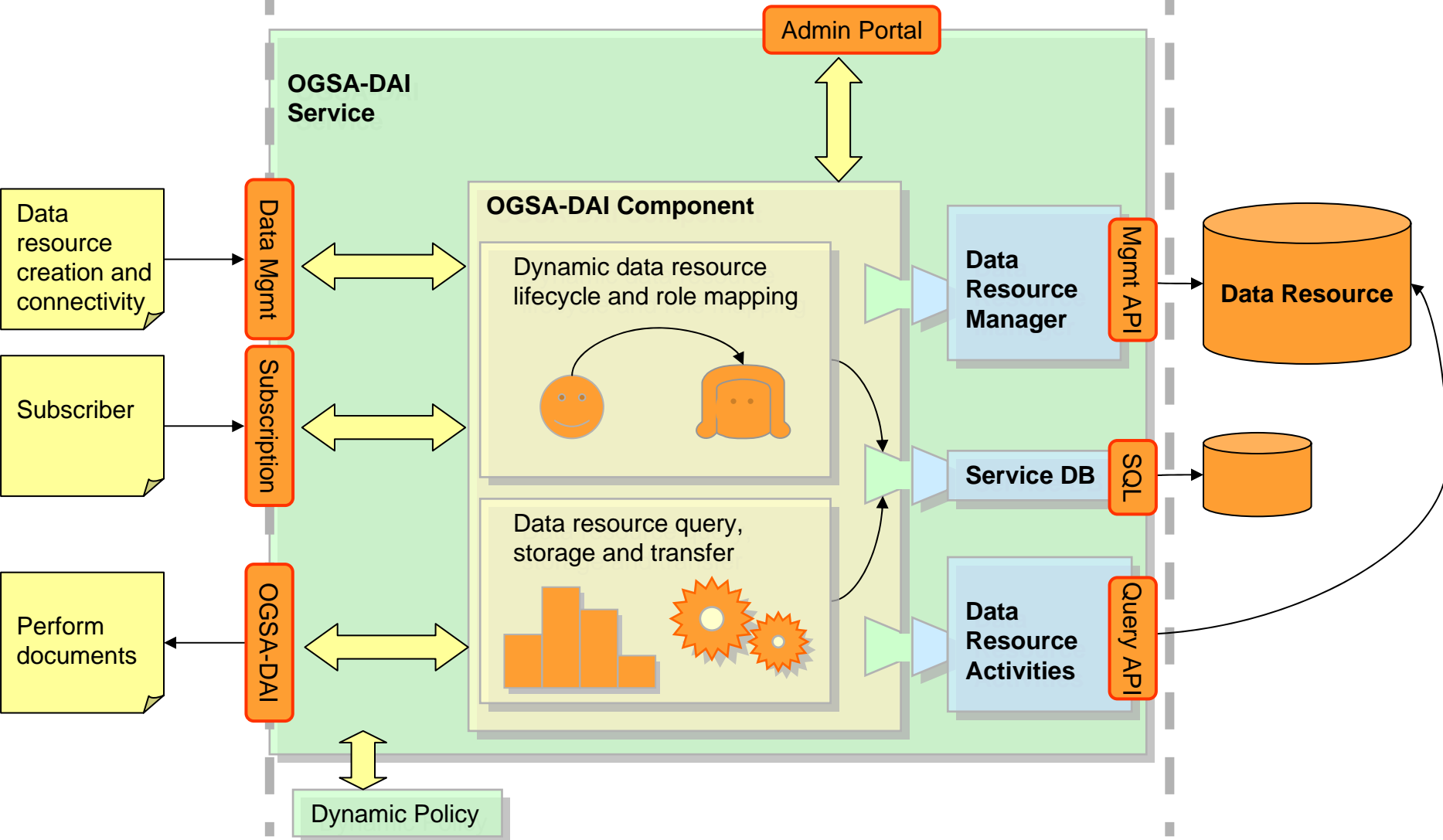
GRIA



Client

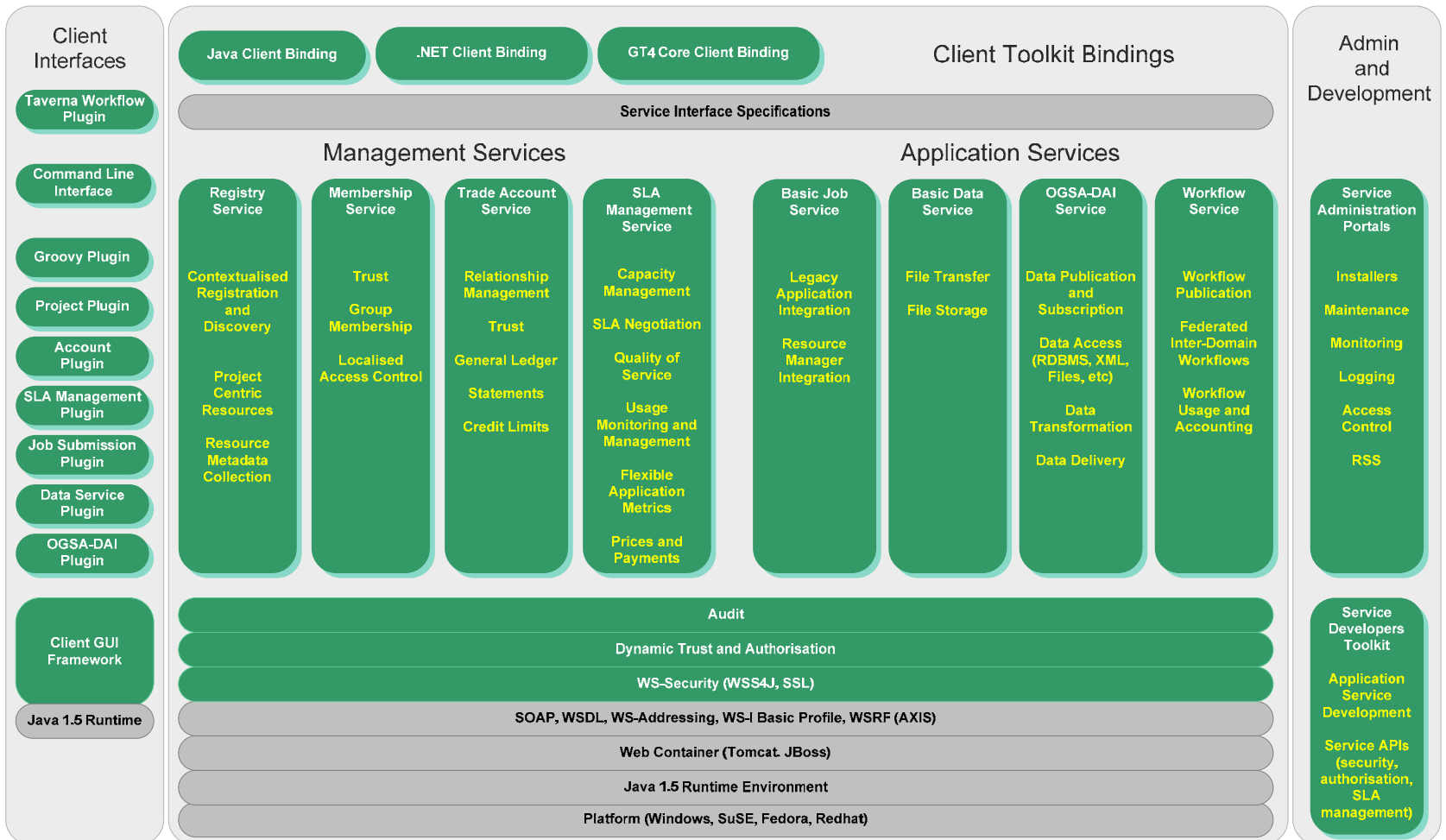
Service

DB Backend



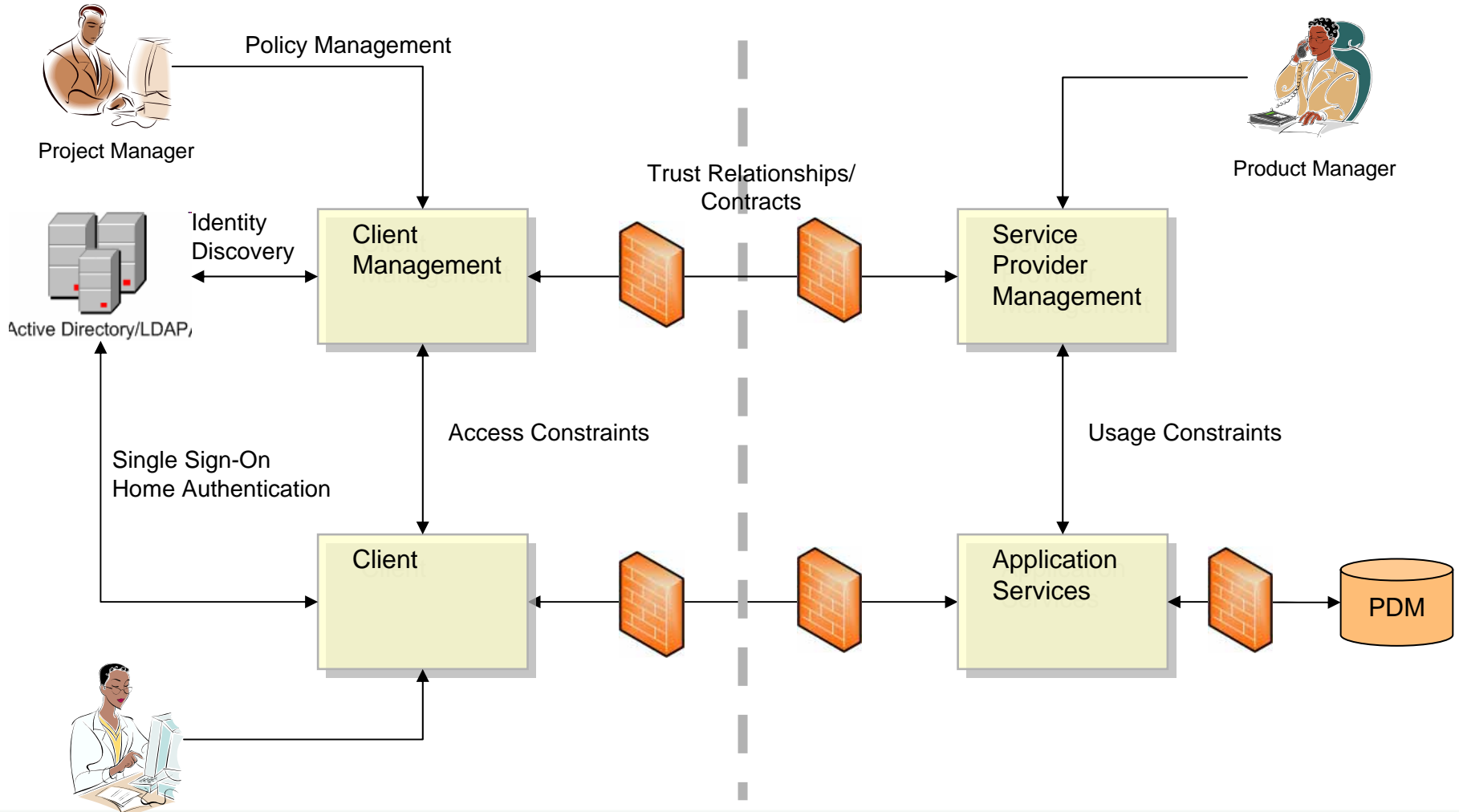


GRIA 5.1 Architecture

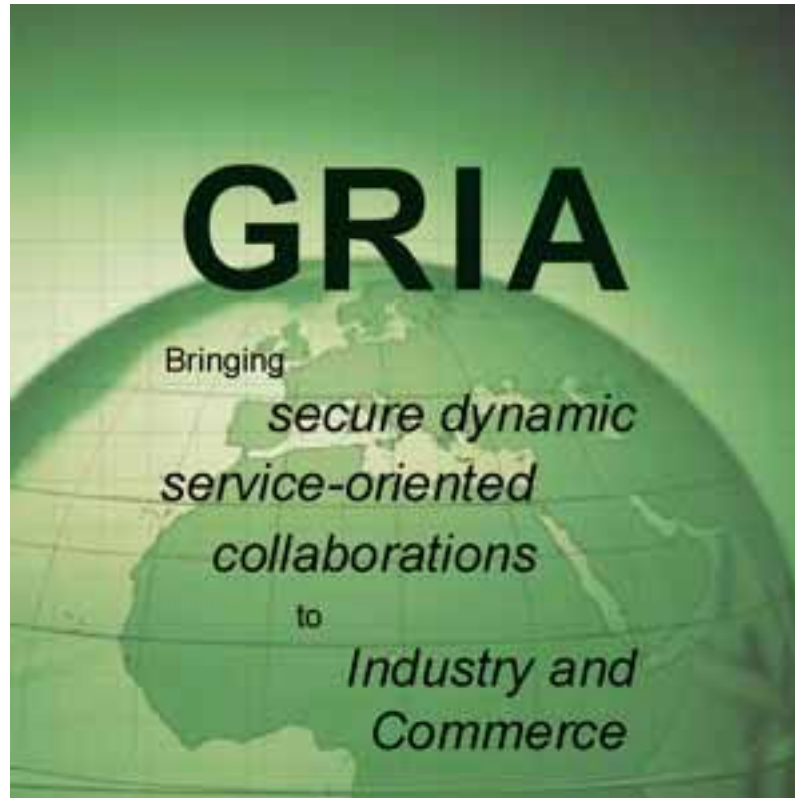




Enterprise Security Integration



GRIA



<http://www.gria.org/>