

Integral Real-Time Architecture – Whitepaper 201709

Is your team finding it increasingly difficult to stay on top of your evolving enterprise architecture? Are you struggling with managing “implementation skew” as applications drift from their initial design? Does “engineering bureaucracy,” such as being forced to manually update architecture documentation waste time and impede effective communication across groups? Integral from Massiv.io automates the development process by providing an instantaneous, real-time view of your enterprise application architecture. This view is continuously updated directly from source code and supporting IT assets starting before applications are in production. With Integral, you gain always current insights into your enterprise IT and the ability to seamlessly navigate its complexities as it evolves. Whatever the mix of traditional applications and micro-services, internal and cloud services, all stakeholders have common problems, such as:

Architects Needs: efficiently surveying status of applications, from how they fit into the overall enterprise architecture to getting a detailed view of their dependency and component structure. Integral’s documents and requirements search speeds work, and helps catch “implementation skew” and de-risks migrations.

Developers Needs: ability to quickly understand the structure of an application and context for their modifications, updated for each check-in.

Operations Needs: understanding an application, its dependencies and requirements before it is put in production, as well as gaining a real-time view of the app for audit (security, corporate policy) purposes.

Implementations tend to drift from specifications, layers and versions of technologies naturally accumulate, and personnel changes are inevitable. Integral handles these IT realities without introducing its own bureaucracy... no code changes, no run-time agents. Code and other assets stay where they are. All audiences can be more productive on the first day. Integral is designed to run quickly, continuously, and without manual assistance, so that all information is current, as opposed to any static drawing and other documentation the organization has ever made.

From simple service invocations to modules with hundreds of thousands of lines of code, Integral performs in depth analysis quickly and presents results elegantly and at the correct level of detail for the audience at hand. Integral reads directly from code repositories and application configuration artifacts to generate an interactive view of how code is structured, where dependencies are, and how services interact. Frameworks, remote communications, middleware and deployment infrastructure are recognized and accounted. This is a major advance over past approaches such as UML, which often drown users in detail and do not capture this important information. Unlike runtime analysis tools and discovery tools, Integral provides this more accurate insight earlier in the development cycle, before applications hit production and change becomes expensive. Then, in production, Integral will integrate those runtime metrics to highlight performance and other quality hotspots for additional insight.

Investments in graph representations, and language analysis embodied in Integral allow this approach to succeed where past attempts have not. Massiv.io finds that the process it most often supplants is manual white boarding, or large, but static surveys.

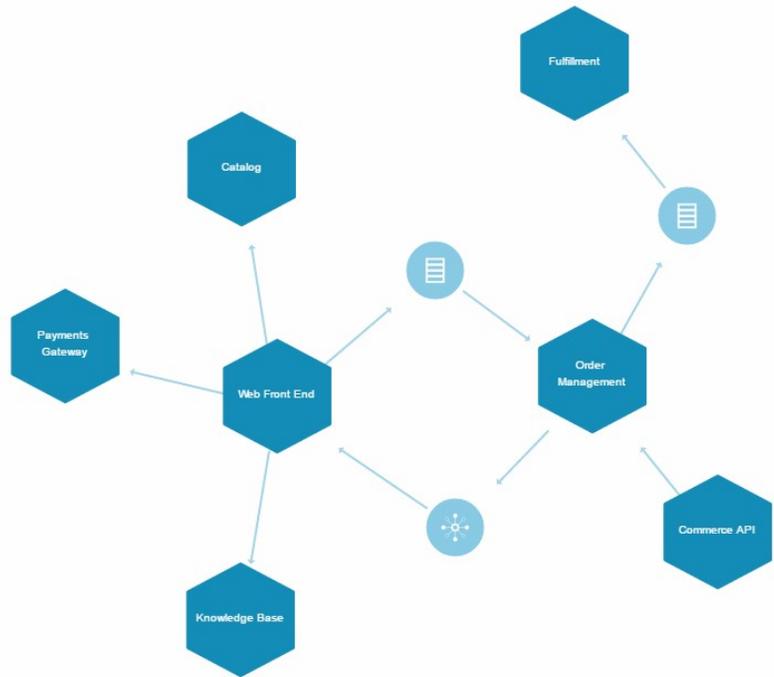
Prime Use Cases

With Integral, a new engineering head can quickly learn of system structure and examine architecture to survey technical debt. An architect can be notified of relevant new systems and consumers, as well as pertinent API or code

level changes. A partner can properly bid on system modifications, and decrease client communication risk by having a continuously updated view of what has been built. A developer can use Code Zoom to view instances of a service use in a relevant language. A member of Ops can determine how many and which versions of technologies and frameworks are in use, and which services are going to have increased load from projects under development. As Integral continuously performs its analyses, changes to technologies, new services, dependency additions, API changes, or other definable events can trigger custom actions for appropriate audiences.

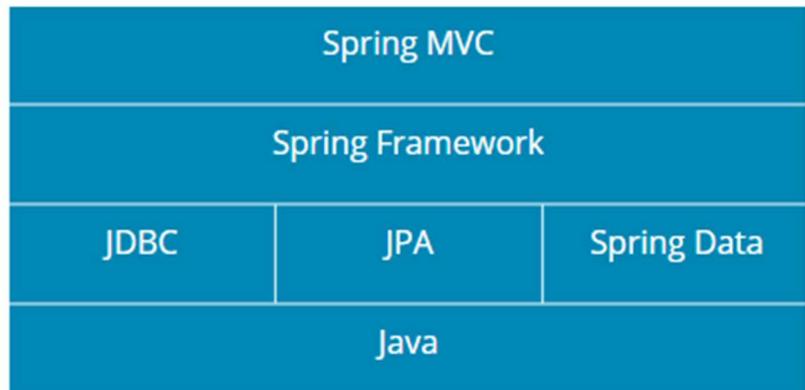
Types of Analyses

Enterprise – How do different applications and services connect? Via what communications and storage modes? The Enterprise view shows how applications communicate to each other and which libraries or protocols they use to communicate. It can be re-sorted in various arrangements.



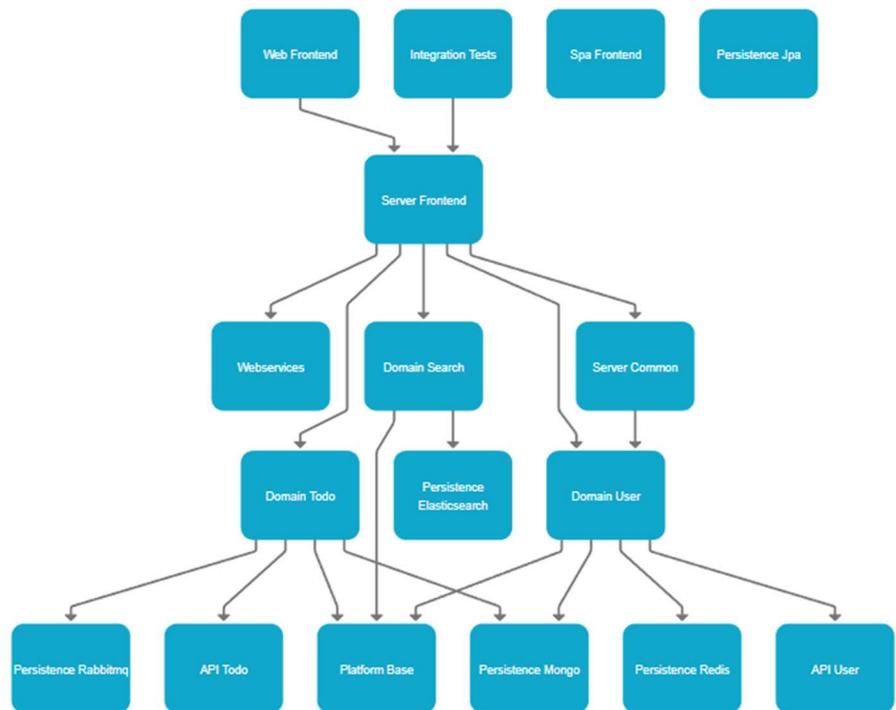
Technology Stack

Stack – Integral automatically provides the commonly used layer diagrams. Just import your repository, and your diagram is ready for use in your presentations.



Tue Jul 04 2017 02:52:46 GMT-0700 (Pacific Daylight Time)

Module – What are the large components that come together to build an application? Receive module flow diagrams instantly.



Design – How do the architecturally relevant structures of a service or application flow together? Does this reveal any anti-patterns or specification drift? Zoom directly to API definitions, documentation, and source code associated with the architecture you’re exploring.

```

    /*
     * Copyright (c) 2015. Traveliko
     */

    package com.bearchoke.platform.domain.user.init;

    import com.bearchoke.platform.base.init.DBInit;
    import com.bearchoke.platform.persistence.mongo.axon.AxonMongoTemplate;
    import com.bearchoke.platform.persistence.mongo.axon.AxonSagaMongoTemplate;
    import lombok.extern.log4j.Log4j2;
    import org.axonframework.eventstore.mongo.MongoEventStore;
    import org.springframework.beans.factory.annotation.Autowired;
    import org.springframework.core.annotation.Order;
    import org.springframework.data.mongodb.core.MongoTemplate;
    import org.springframework.stereotype.Component;

    /**
     *
     */
    @SuppressWarnings("SpringJavaAutowiredInspection")
    @Component
    @Log4j2
    @Order(1)
    public class AxonDBInit implements DBInit {

        private static final String DOMAINEVENTS = "domainevents";
        private static final String SNAPSHOTEVENTS = "snapshotevents";
        private final AxonMongoTemplate axonMongoTemplate;
        private final MongoEventStore eventStore;
        private final MongoTemplate mongoTemplate;
        private final AxonSagaMongoTemplate axonSagaMongoTemplate;

        @Autowired
        public AxonDBInit(AxonMongoTemplate systemMongo,
            MongoEventStore eventStore,
  
```

Explorer – Heat map of API and module complexity lets you drill down into the most pertinent areas for analysis quickly, and immediately view API hierarchies and method lists and parameters. Jump off into code zooms and module wiring, then back again to continue exploring modules in seconds. There is no faster way to learn a new app or service



Technology Support

Java, JEE, Guice, Spring (Boot, Cloud, etc.), JMS, AMQP, Netflix, and many Amazon services supported, with Google and Cloud Foundry on the roadmap. Microsoft .Net, Python, Node.js, and others on the roadmap. Gradle, Maven, and Git handled automatically. Cassandra, MySQL, REDIS, MongoDB, and other data stores recognized. Link your documentation stores, including Dropbox, Slack, and Sharepoint into the relevant sections of code. Spring and other code generators interpreted.

With all this support, you can filter and inspect your technology uses, both by type and by version to know your organization’s required support matrix or deviations from standards. Or, you can elect to be notified for additions or changes thereof, use of blacklists dependencies, and more.

Create Trigger ✕

⚡
Select a Trigger Type

>

⚙️
Define a Filter

>

🎯
Select a Target

Select a trigger type from the list below

Blacklisted Dependency	Detects when an application relies on a blacklisted dependency
New Application	Fires when a new application is added
REST API Change	Fires when an incompatible API change is detected

CANCEL
CREATE

Deployment

Software as a Service or simple internal deployment with a single JAR for your Java 8 VM. Visit www.massiv.io