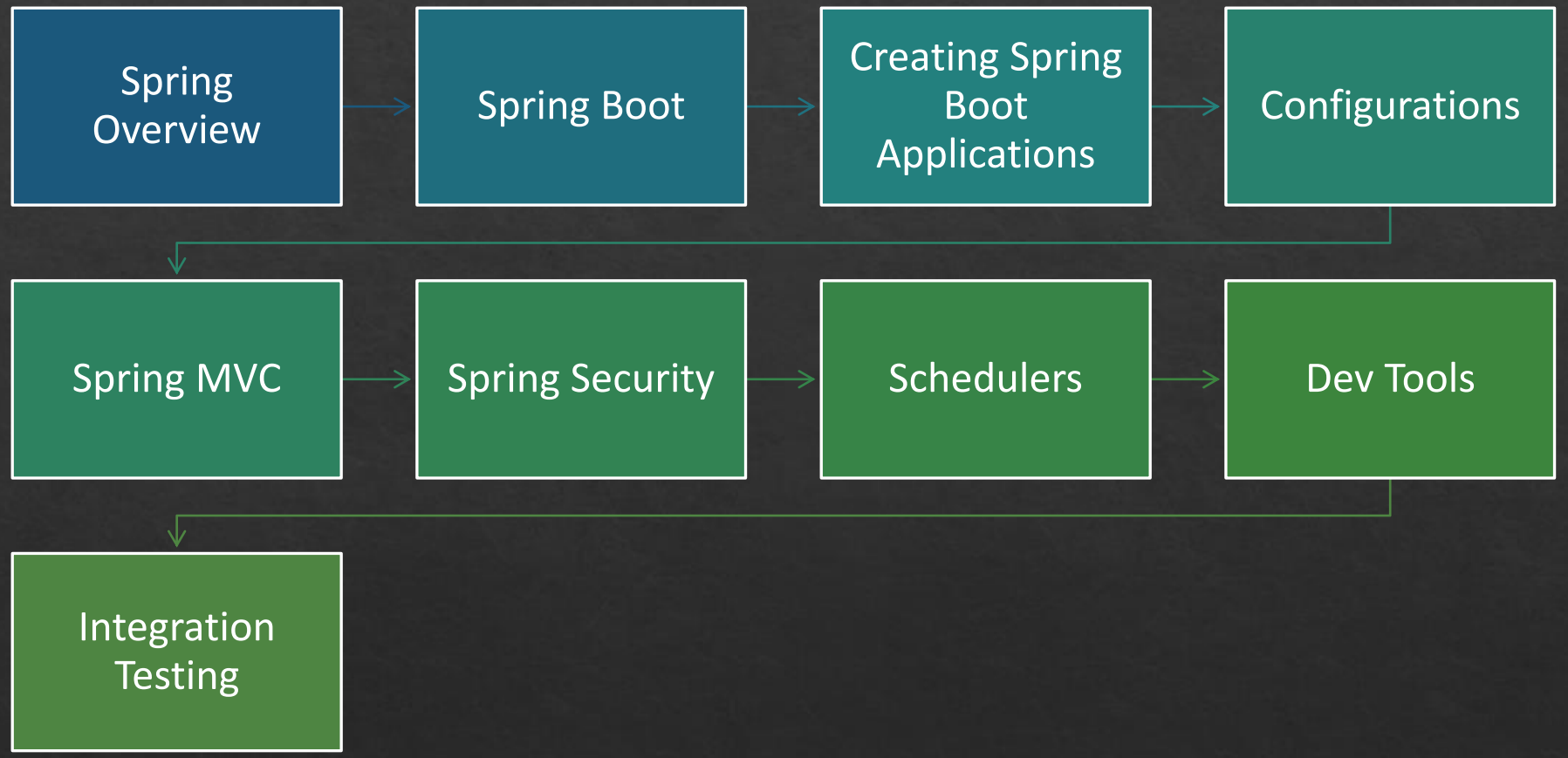
Spring Boot

ANIL JOSEPH

Presentation By Anil Josep(anil.jos@gmail.com)

Agenda



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Software

Java 8 or higher

Eclipse for Web Development (Spring Tools)

IntelliJ

Access to Maven Repository

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Spring

Spring is a Java Framework that makes programming quicker, easier and safer.

Created for enterprise applications

Productive and Fast

Highly Secure

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Spring Applications

- Web Applications
- Microservices
- Cloud-enabled
- Event-Driven
- Batch Processing
- Reactive Applications

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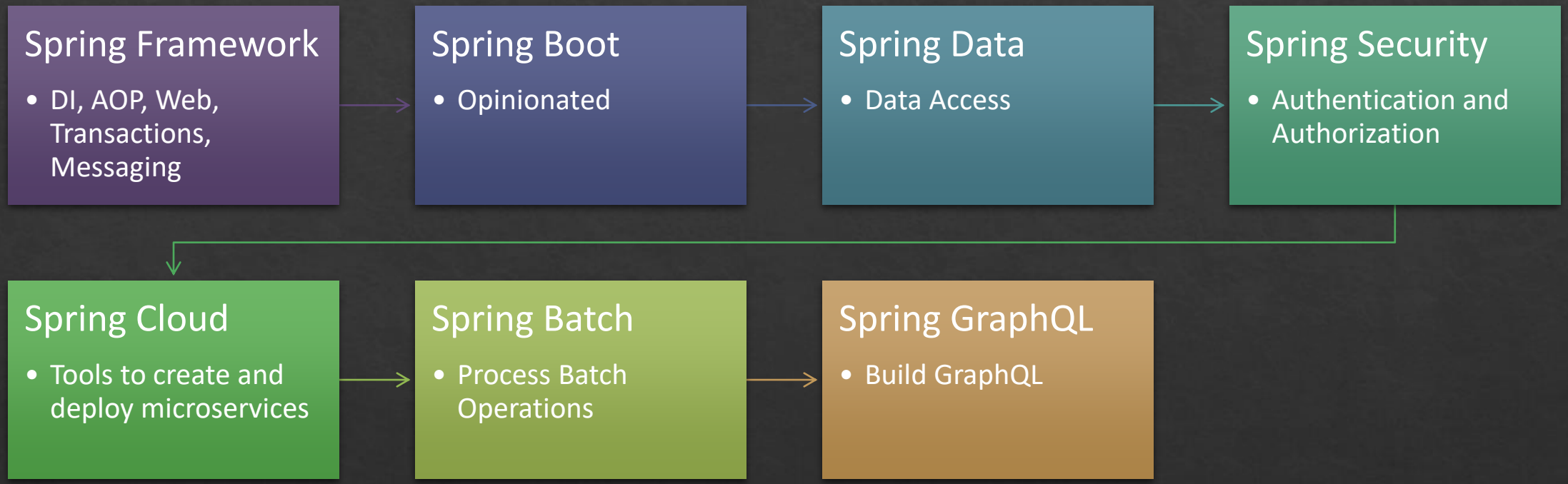
Spring Projects



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Spring Boot

- Provides a radically fast and widely accessible getting started experience for all Spring development.
- Automatically configures Spring whenever necessary
- Opinionated
  - Provides default configuration
- Customization when requirements diverge form the defaults
- Provides a range of non-functional features
  - Security, Metrics, externalized configuration
- Creates a standalone application
- Provides an embedded tomcat, Jetty.
  - Facilities easy deployments on the cloud
- Based on Maven and Gradle

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Getting Started

- Spring CLI
  - A command line tool
  - Allows scripts (Groovy/Java)
  - Very less boiler point code
- Spring Initializer(https://start.spring.io/)
  - A web interface to generate the Maven or Gradle projects
- Eclipse or IntelliJ
  - Provides templates to create spring boot applications

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@SpringBootApplication

- The @SpringBootApplication annotation is equivalent to using @Configuration, @EnableAutoConfiguration, and @ComponentScan with their default attributes.
- @Configuration
  - Indicates that a class declares one or more @Bean methods and may be processed by the Spring container to generate bean definitions and service requests for those beans at runtime
  - Configurations are bootstrapped using the ApplicationContext
- @ComponentScan
  - Spring uses the @ComponentScan annotation to actually gather them all into its ApplicationContext.
- @EnableAutoConfiguration
  - Spring attempts to guess and configure beans that you are likely to need
  - Auto-configuration classes are usually applied based on your classpath and what beans you have defined.

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Annotations

- @Component
  - Marks a class for Spring to automatically detect our custom beans
- Component Stereotypes
  - @Controller, @Service, @Repository
- @Bean
  - Marks a factory method which instantiates a Spring bean

Annotations

- @Conditional
  - Include or exclude the whole configuration or component class
- @Profile
  - Use a @Component class or a @Bean method only when a specific profile is active.
- @PropertySource
  - Define property files for application settings
- @Autowired
  - Mark a dependency which Spring will to resolve and inject

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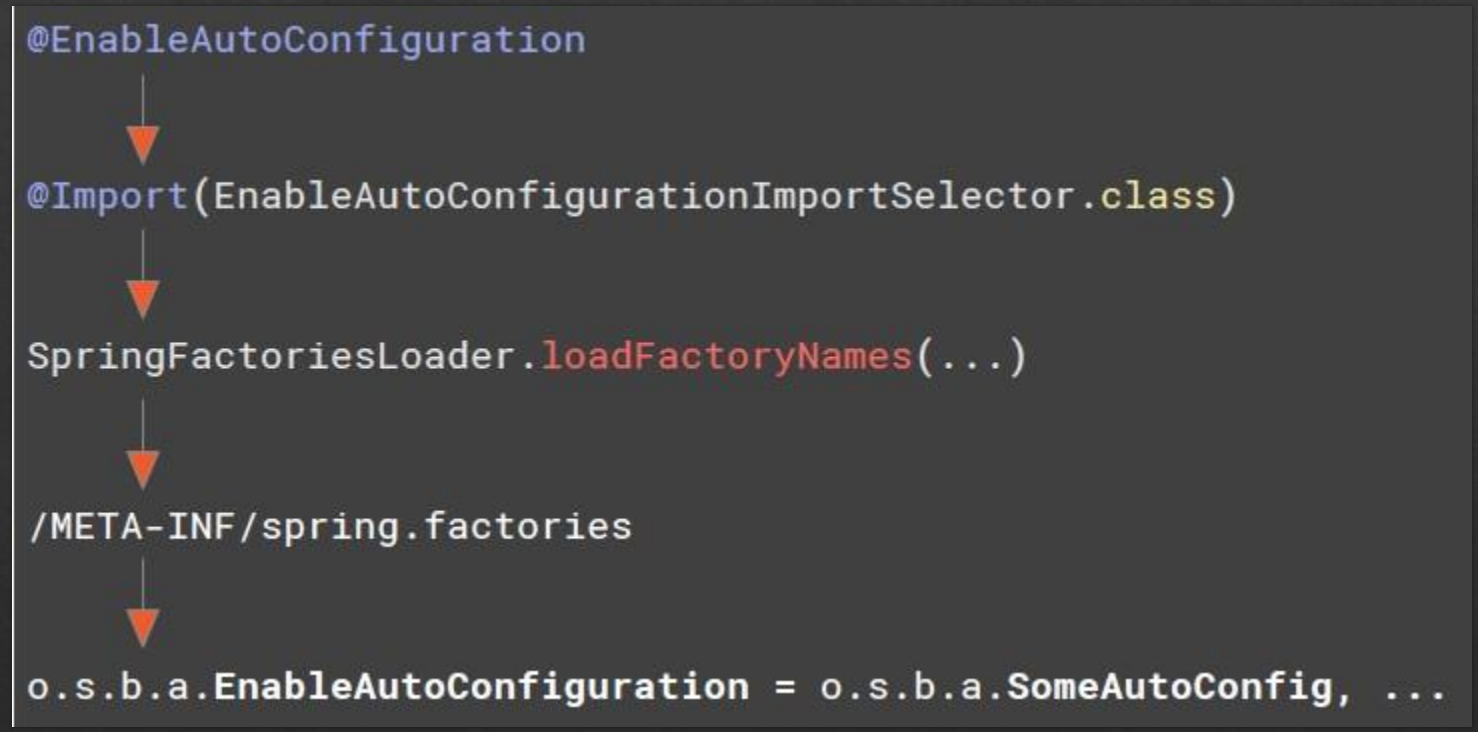
Auto Configuration



Configuration Properties

- Properties can be in .properties files or .yml files
  - properties keys and values are Strings
  - .yml keys are Strings and values with their respective type
- Typesafe Configuration
  - Annotate with @ConfigurationProperties
  - Define getters & setters (JavaBean Spec)
  - Annotate with @Component
  - Can also use @EnableConfigurationProperties
  - Vaidate with JSR 303
- @ConfigurationProperties
  - turns all of your application configuration into typesafe POJOs

Resolving Configuration

- Command Line Arguments
- StandardServletEnvironment
- applicationProperties variants
  - Look for profile-specific configuration 1st
    - application-{profile}.properties
    - application-{profile}.yml
  - Look for generic configuration 2nd
    - application.properties / application.yml
- @PropertySource
  - @PropertySource("/some/path/foo.properties")

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Spring Schedulers

- Schedulers will schedule a task.
- The task id defined in a method annotated as @Scheduled. The methods should follow the rules
  - Should typically have a void return type (if not, the returned value will be ignored)
  - The method should not expect any parameters
- To enable support for scheduling tasks and the @Scheduled annotation, use the @EnableScheduling annotation

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Types of Schedulers

Fixed

- The duration between the end of the last execution and the start of the next execution is fixed.
- The task always waits until the previous one is finished.

Fixed Rate

- The fixedRate property runs the scheduled task at every n millisecond.

Fixed Delay

- The fixedDelay property makes sure that there is a delay of n millisecond between the finish time of an execution of a task and the start time of the next execution of the task.

Cron

- Use cron expressions to control the scheduling of tasks.

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Spring Security

- Spring Security is a powerful, flexible security solution for enterprise software, with a particular emphasis on applications that use Spring
- Provides declarative security for Spring-based applications
- Major Features
  - Authentication
  - Web URL authorization
  - Method invocation authorization

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Authentication & Authorization

- Authentication - process of establishing a principal (usually a user which can perform an action in application)
- Authorization - process of deciding whether a principal is allowed to perform an action
- Authentication process establish identity of the principal, which is used for authorization decision

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Authentication Models

- Spring Security supports various authentication models.
- Spring Security Models
  - HTTP Basic
  - HTTP Digest
  - HTTP X.509 Certificates
  - LDAP
  - JDBC
  - OpenId
  - And many more
- Spring provides implementation of many of these models.

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Resources

- https://spring.io/projects/spring-boot
- https://spring.io/guides/gs/spring-boot/
- https://www.baeldung.com/spring-boot

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Thank You

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