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Validation
Declare once, validate anywhere. A reality?

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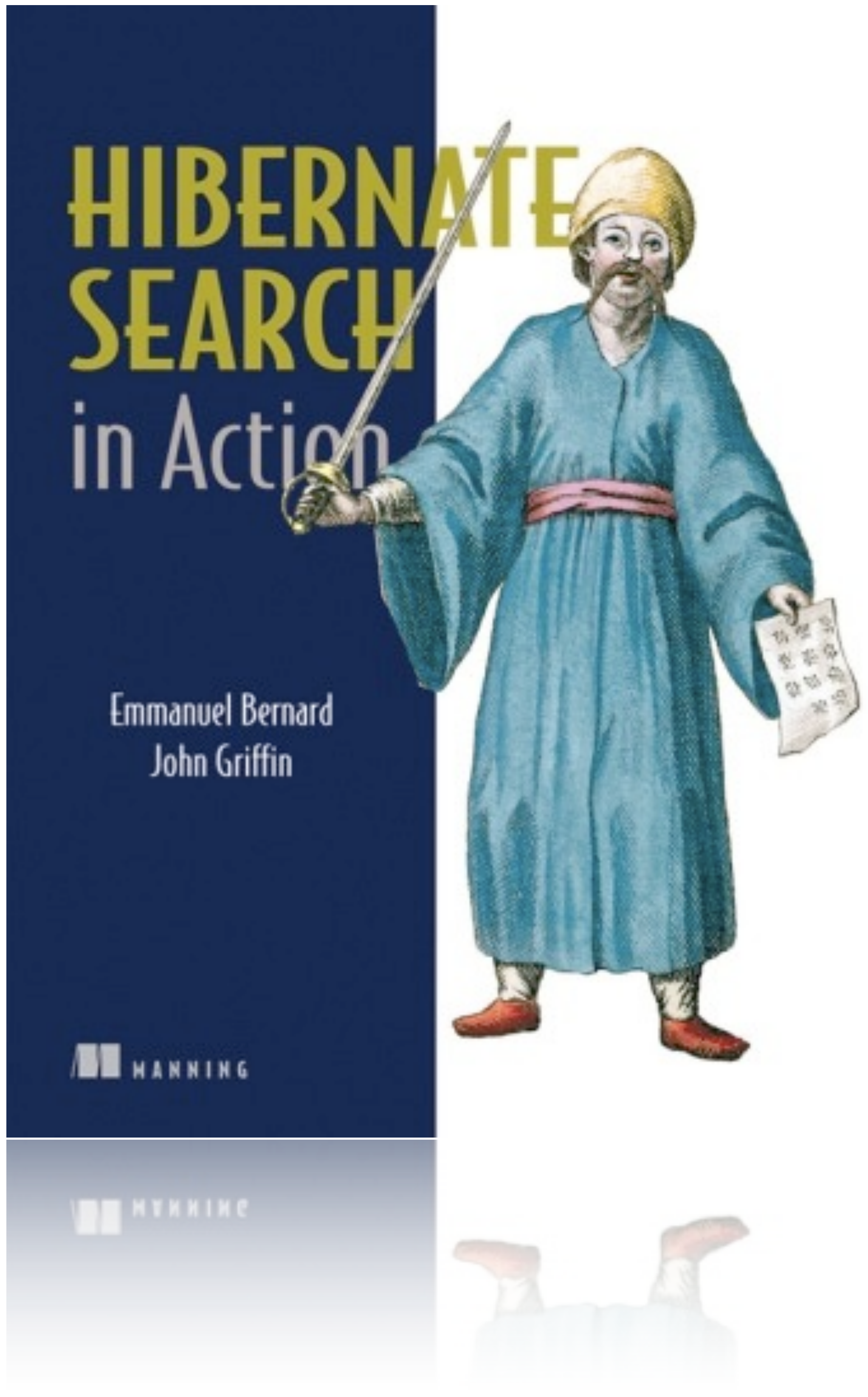
- Enable declarative validation in your applications
- Constrain Once, Validate Anywhere

Emmanuel Bernard

- Hibernate Search in Action
- blog.emmanuelbernard.com
- twitter.com/emmanuelbernard

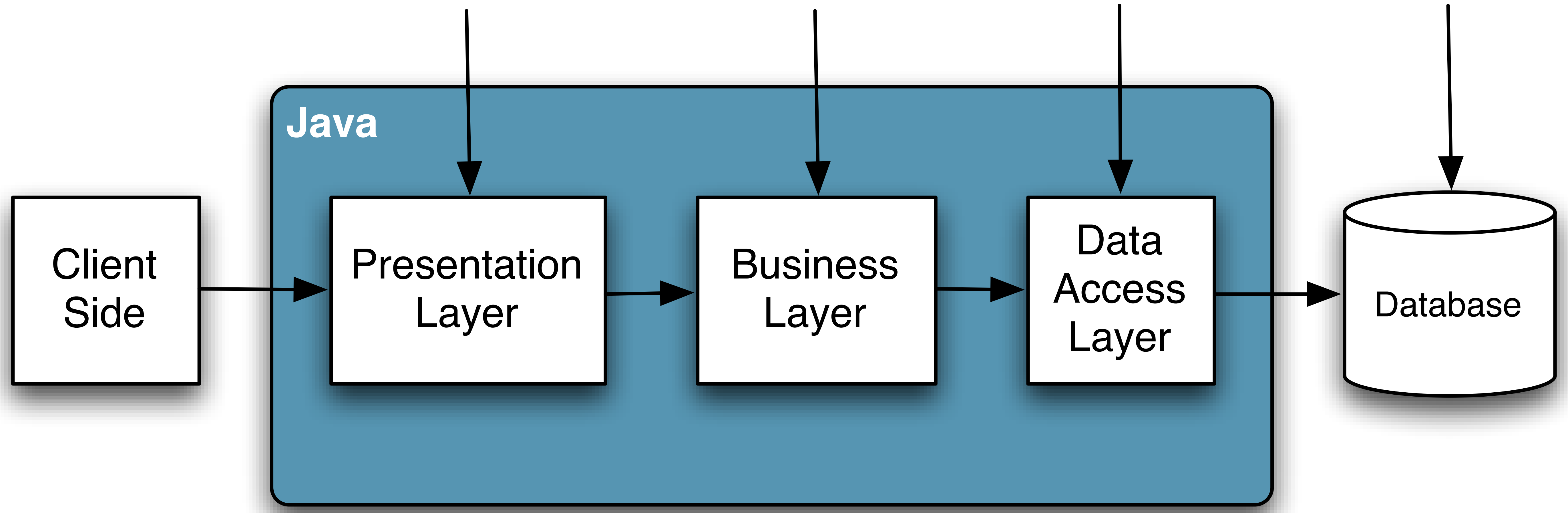


Constraints

- Constraint
  - restriction on a bean, field or property
  - not null, between 10 and 45, valid email...
- How is that useful
  - give feedback to the user
  - ensure that a service will behave correctly
    - define service range of usability
  - avoid adding crap to the database
    - unless you like fixing the data manually

Constraints in the Java Ecosystem

> Where should they be applied



> How many model do I have?

- 1

What is the solution?

> Uniform way to express a constraint
  - everybody speaks the same language
  - based on the domain model (JavaBeans™)

> Standard way to validate constraints
  - one runtime engine
  - same validation implementations shared

> Bridge for constraints out of Java™ land
  - API to access the constraint repository

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Declare a constraint

```
public class Address {
   @NotNull
   @Size(max=30,
         message="longer than {max} characters")
   private String street1;
   ...
   @NotNull @Valid
   private Country country;
}

public class Country {
   @NotNull @Size(max=30)
   private String name;
   ...
}
```

Groups

- Subset of constraints
- Partial validation
  - screen of a wizard UI
- Constraints applied in a given use case
- Order constraint validations
  - which depends on other validations
  - when a constraint is resource/time intensive

```
interface Billable {}

interface BuyInOneClick extends Billable, Default {}

class User {
  @NotNull(groups=BuyInOneClick.class)
  PaymentMethod getDefaultCreditCard() {...}

  @NotNull //Default group
  String getUserName() {...}
}

@GroupSequence(sequence={Default.class, Heavy.class})
interface Complete {}
```

Create your own constraint

- Annotations with expressive names
- List of ConstraintValidators
- Constraint composition

```java
@Constraint(validatedBy={
  SizeValidatorForCollections.class),
  SizeValidatorForString.class } )
public @interface Size {
    String message() default "{constraint.size}";
    Class<?>[] groups() default {};
    int min() default 0;
    int max() default Integer.MAX_VALUE;
}
```

```java
public class SizeValidatorForString
  implements ConstraintValidator<Size, String> {

   public void initialize(Size annotation) {}

   public boolean isValid(String value,
                     ConstraintValidatorContext context) {}
}
```

Composition

- Reuse constraints
- Expose meta-informations

```
@NotNull @Size(min=5, max=5)
@Constraint(validatedBy=FrenchZipCodeValidator.class)
public @interface FrenchZipCode {
  String message() default "{constraint.frenchzipcode}";
  Class<?>[] groups() default {};
}
```

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Integration
- tools
- plain SE
- EE 6

Bootstrap API

> extensible
> support multiple implementations
> type-safe
> can override some attributes contextually

> XML configuration optional
  - META-INF/validation.xml

```
ValidatorFactory vf =
  Validation.buildDefaultValidatorFactory();

ValidatorFactory vf = Validation.byDefaultProvider()
    .configure()
      .messageInterpolator( containerMI )
      .traversableResolver( jpaTR )
      .constraintValidatorFactory( webBeansDI )
      .buildValidatorFactory();

ValidatorFactory vf = Validation
    .byProvider(ACMEConfiguration.class).configure()
      .messageInterpolator( containerMI )
      .failFast()
      .enableLegacyAcme("2.0")
      .buildValidatorFactory();
```

Change configuration for a Validator

```
Validator v = vf.getValidator();

Validator v = vf.usingContext()
                    .messageInterpolator( jsfMi )
                .getValidator();
```

Message

- Can be externalized
- Internationalization
- Interpolate constraint parameters
  - must be shorter than {min}
- Custom MessageInterpolator strategy
  - Useful for application frameworks
  - Contextual data
  - Locale

TraversableResolver

> Should a property or association be validated

> Lazy properties or associations are ignored
>
> - Java Persistence

Manual validation

> Get a Validator from a ValidatorFactory

```
Set<ConstraintViolation<User>> errors =
  validator.validate(user);

Set<ConstraintViolation<User>> errors =
  validator.validate(user, BuyInOneClick.class);
```

> ConstraintViolation

- error message / message template
- invalid value
- context

Accessing the metadata

> DDL generation, tools, JavaScript generators

> Metadata API

```
BeanDescriptor - validator.getConstraintsForClass(User.class)
PropertyDescriptor - beanDescr.getConstrainedProperties()
ConstraintDescriptor - descr.getConstraintDescriptors()
                     - constrDescr.getComposingConstraints()
```

> Shines with:
- composition
- built-in annotations

JSF 2 integration

> Zero conf
> Validate input components

- find property via Expression Language
- call Bean Validation on input value
- return localized error messages
- use JSF user Locale
  - custom MessageInterpolator

Java Persistence 2

- On entity change
  - validation
  - can select the groups validated

- Make use of a custom TraversableResolver
  - do not traverse associations

Java EE 6

> Validator as an injectable resource

```
@Resource Validator validator;
//or
@Resource ValidatorFactory vf;
```

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Demo
Validating a Java EE 6 application

Bean Validation

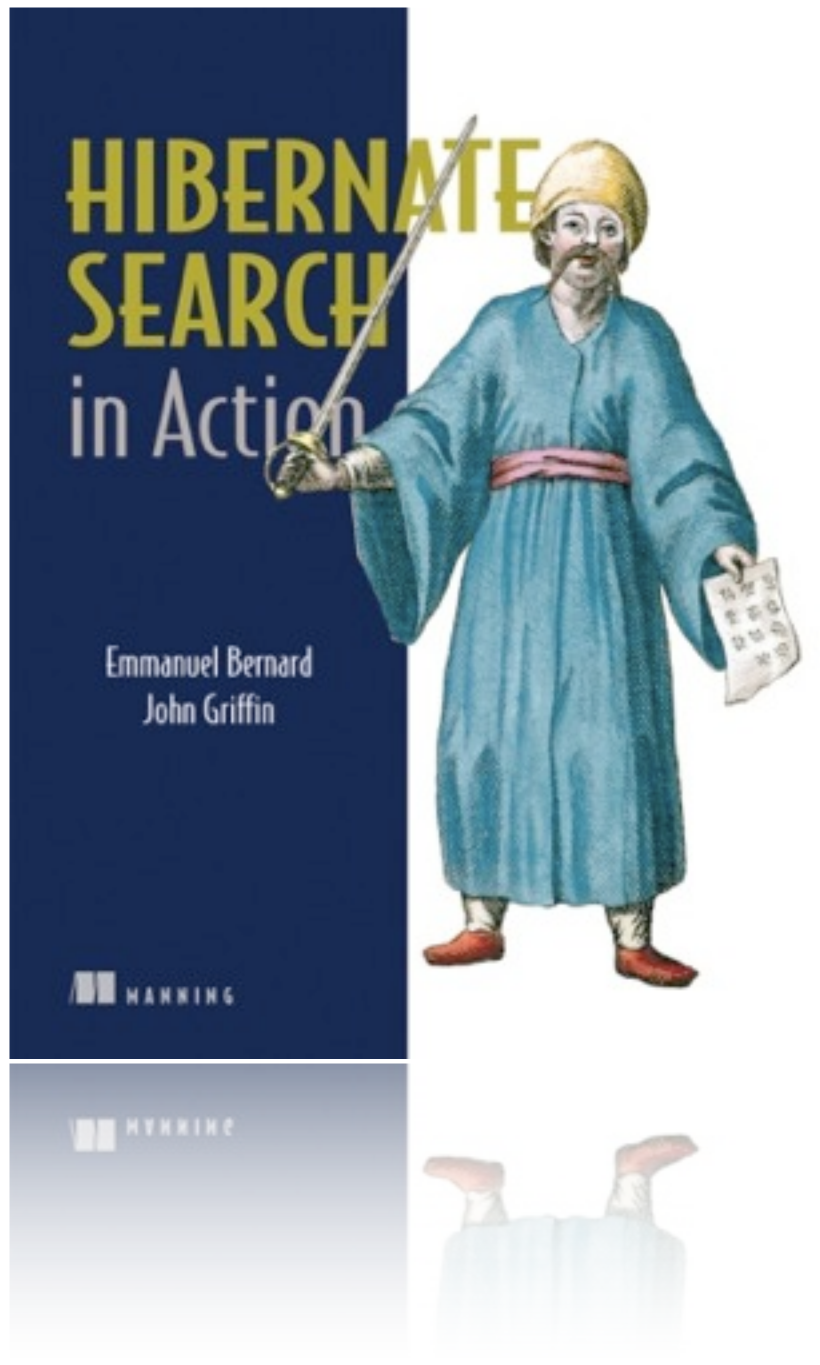
- Status
- Todo
  - Better interpolation
  - Better support for typed ConstraintValidator
  - Get constraints matching groups in metadata API
  - Enhance property path
  - More type-safe extension for bootstrap
  - Review XML support
  - Bug sweeping
- Give us feedback!

Hibernate Validator 4

- Bean Validation is in proposed final draft
  - RI available
- Road Map
  - working on the TCK
  - backward compatible with legacy Hibernate Validator usage
  - some cool ideas out of the spec scope
- License
  - ASL 2.0

Questions?

- JCP.org
  - http://jcp.org/en/jsr/detail?id=303
  - http://people.redhat.com/~ebernard/validation
- http://in.relation.to
  - Search for ‘Bean Validation’
- Hibernate Validator
  - http://validator.hibernate.org
- http://forum.hibernate.org/viewforum.php?f=26



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Hibernate Search in Action - Manning
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