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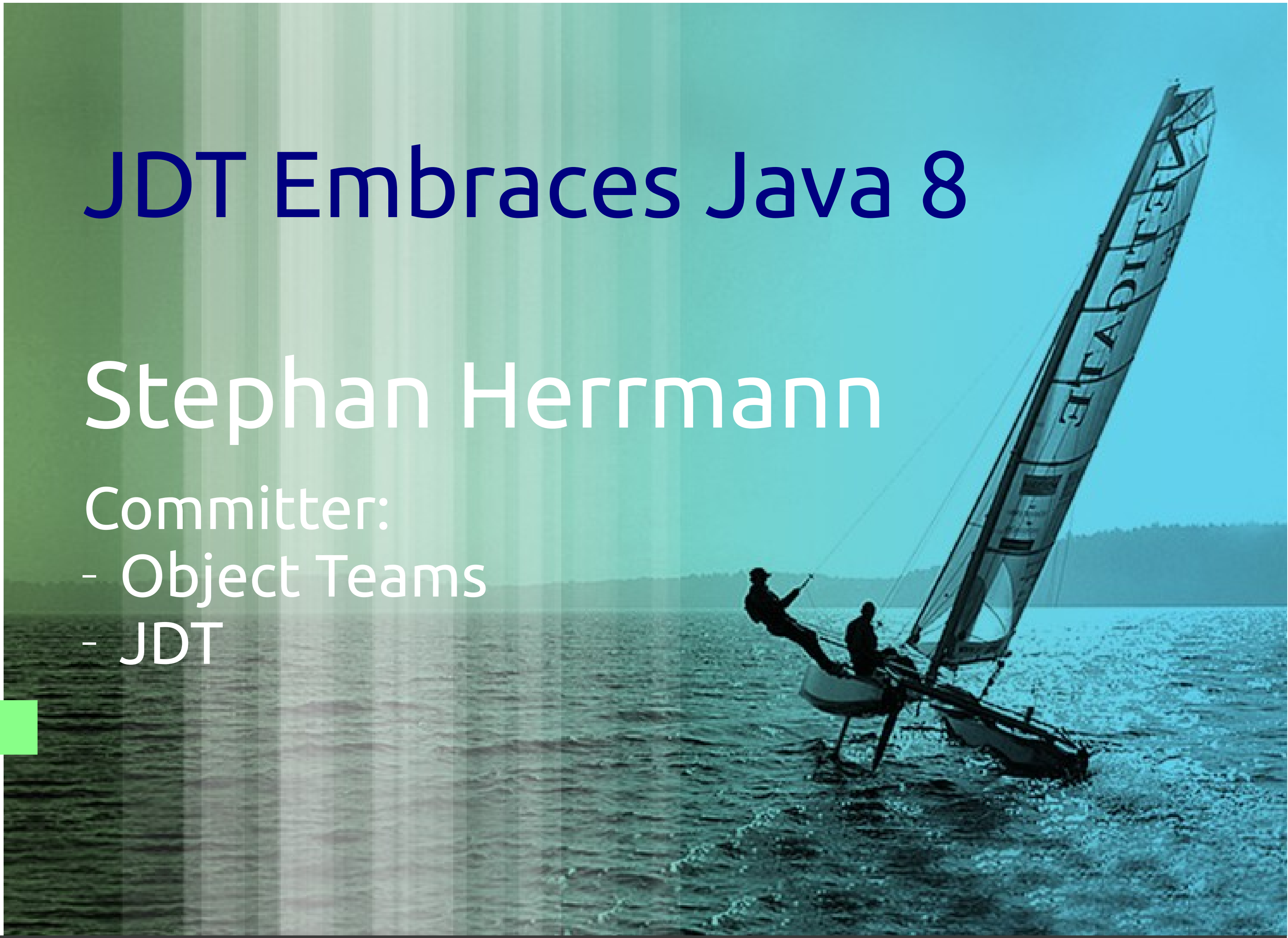


JDT Embraces Java 8

Stephan Herrmann

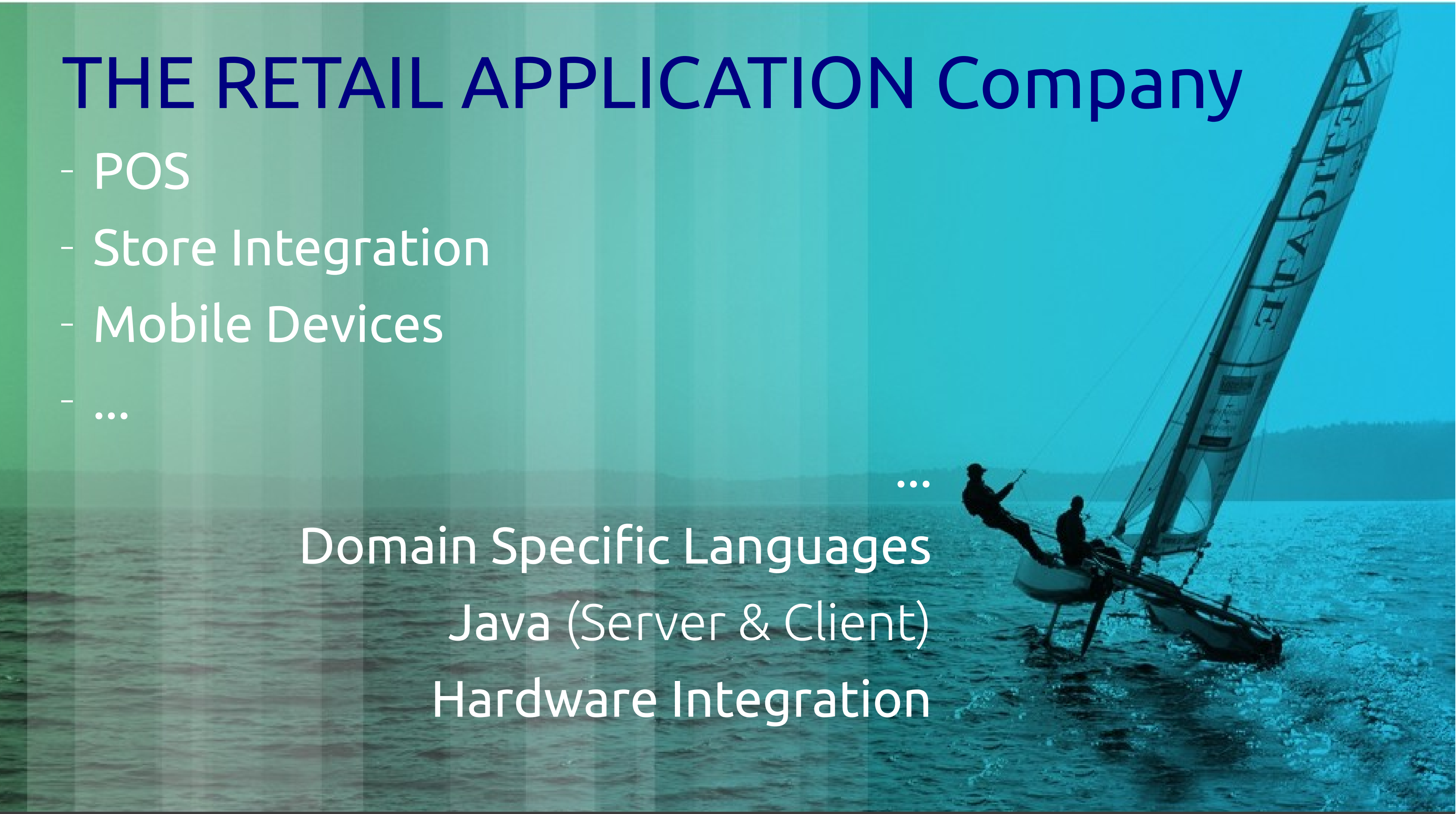
Committer:
- Object Teams
- JDT

Java 8 ready

Eclipse DemoCamp 2014, Munich, Germany

Berlin
Köln

Schöneck, Vogtland
St. Ingbert, Saarland



THE RETAIL APPLICATION Company

- POS
- Store Integration
- Mobile Devices
- ...

...

Domain Specific Languages

Java (Server & Client)

Hardware Integration

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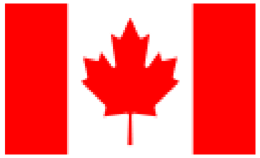
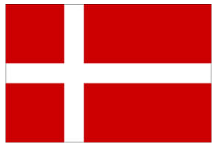
Released March 18th!



- Andy Clement
- Steve Francisco
- Michael Rennie
- Olivier Thomann
- Curtis Windatt

- Walter Harley
- David Williams



- Jesper S. Møller

- Stephan Herrmann

- Dani Megert
- Markus Keller

- Jay Arthanareeswaran
- Anirban Chakarborty
- Manoj Palat
- Shankha Banerjee
- Manju Mathew
- Noopur Gupta
- Deepak Azad
- **Srikanth Sankaran**

Java 8 Support: Luna ~ “SR1”

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Eclipse and Java™ 8

- Java 8 features supported:
  - JSR 308 - Type Annotations.
  - JEP 120 - Repeating Annotations.
  - JEP 118 - Method Parameter Reflection.
  - JSR 269 - Pluggable Annotation Processor API
    & javax.lang.model API enhancements for Java 8.
  - JSR 335 – Lambda Expressions
    - Lambda expressions & method/constructor references
    - Support for “code carrying” interface methods
    - Enhanced target typing
      new overload resolution & type inference

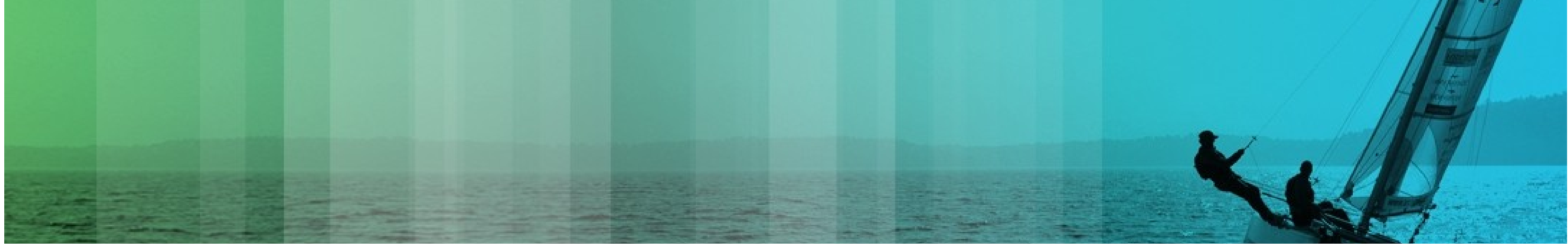
Evolution or Disruption

- Assumptions made in the implementation
  - Grammar can be made to conform to LALR(1)
  - Type bindings can be compared with "==" *(interned)*
  - Compilation happens in sequential phases
    - overload resolution is based on types being resolved
    - flow analysis starts after resolution is completed
  - Indexing is word-based (parsing suffices)
  - Code completion can stop parsing at cursor

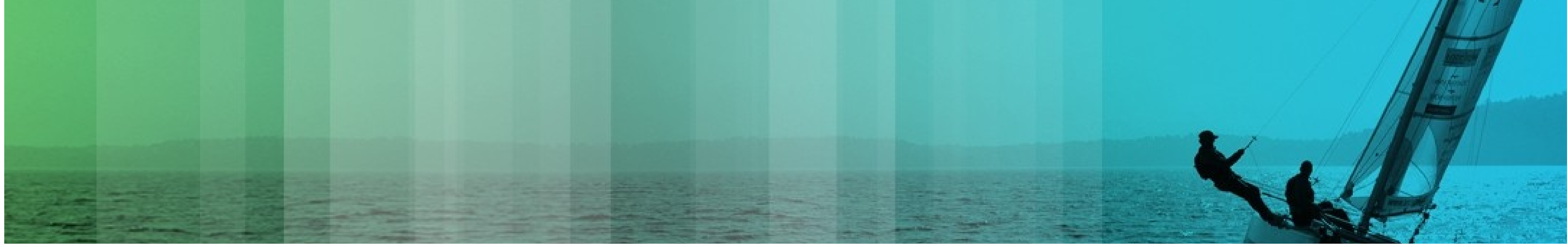
None of these assumptions are valid for Java 8

Revolution

- Fundamental changes in many places
- Full rewrite of
  - Type Inference



Demo: λ



- DEMO JDT Support for Lambda
  - Quick assist
    - to / from lambda
    - expression ↔ block
  - Hover
    - to see the functional type
    - to see inference results
- Not shown
  - Search / Type hierarchy / Refactoring
    - are lambda aware

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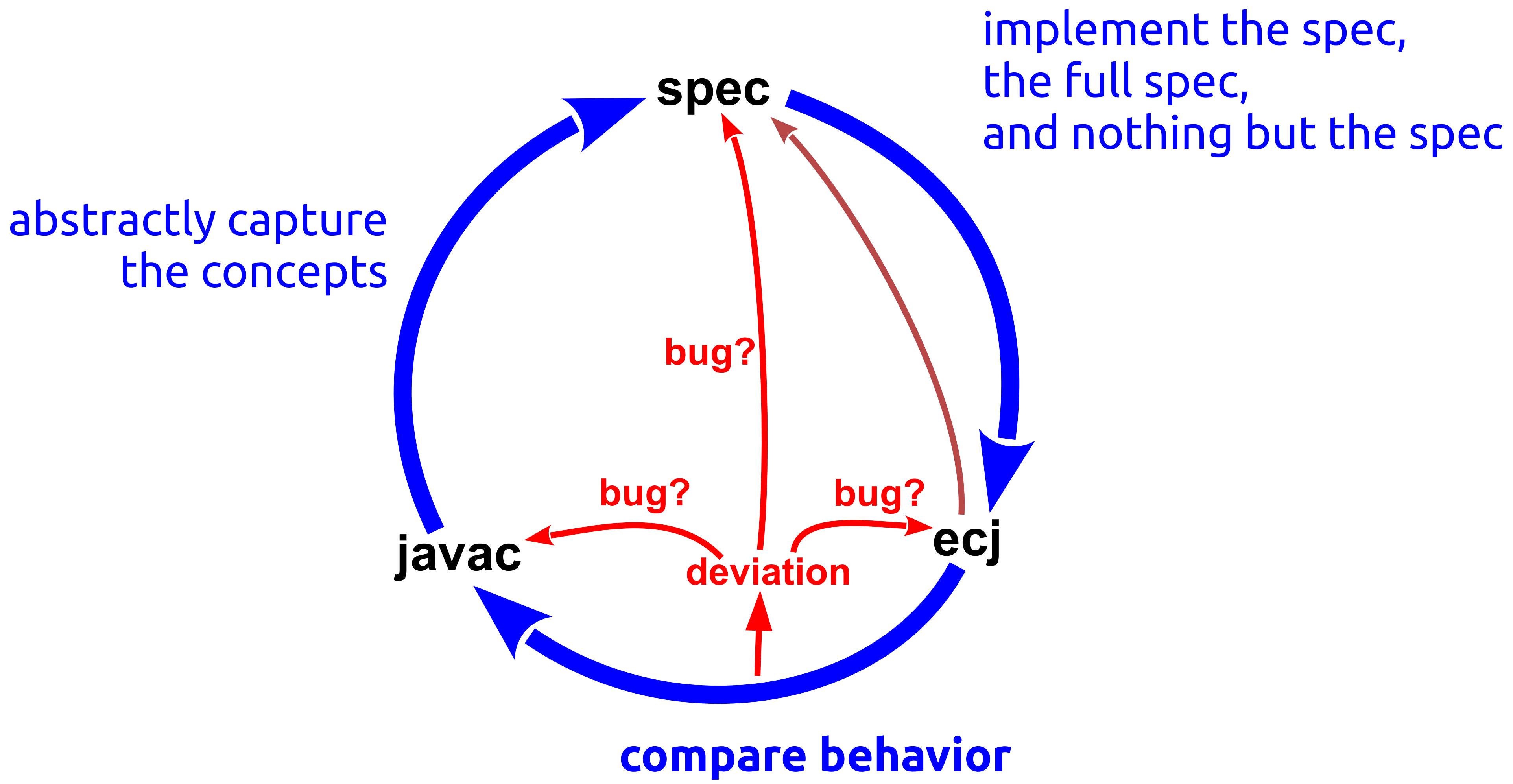
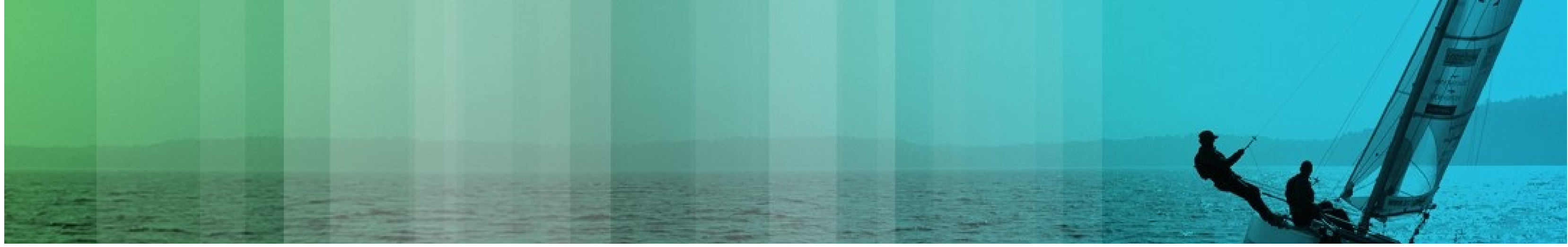
The Compiler

- Reasons for having our own compiler
  - incremental compilation (as you type)
    - good error recovery
  - run even code with errors
  - use compiler information in the UI
    - visualization
    - navigation
    - quick assist & refactoring
  - **QUALITY ASSURANCE**

Java Quality Assurance





Demo: @

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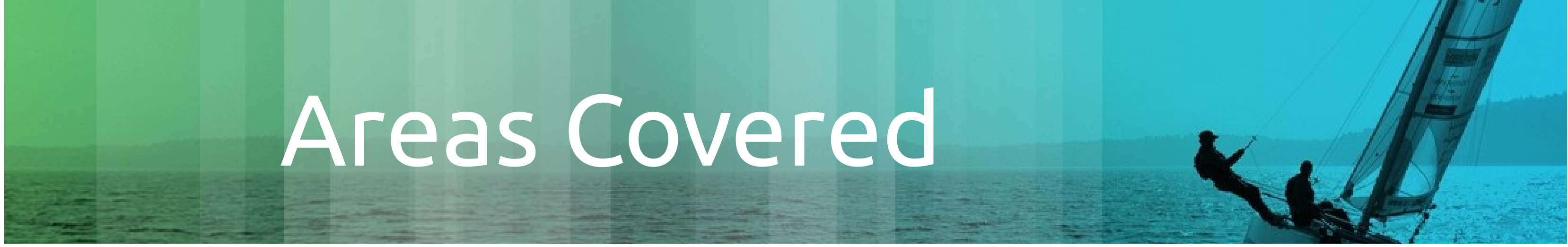


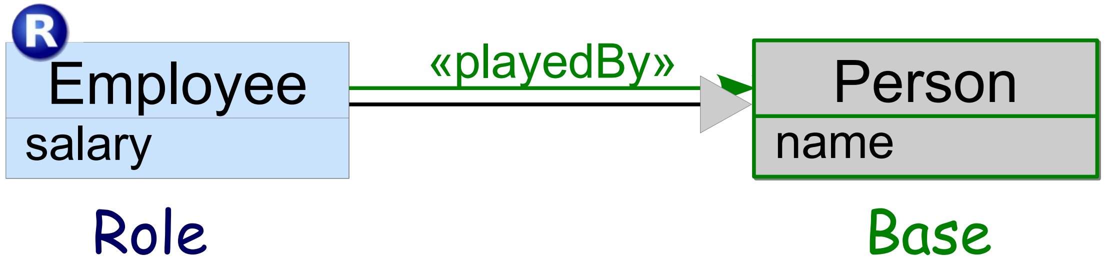
Areas Covered

- Connecting objects to a system
  - nothing new
  -
- Algorithms
  - lambda expressions
  - library updates for lambdas
- Types
  - type annotations
  - type inference

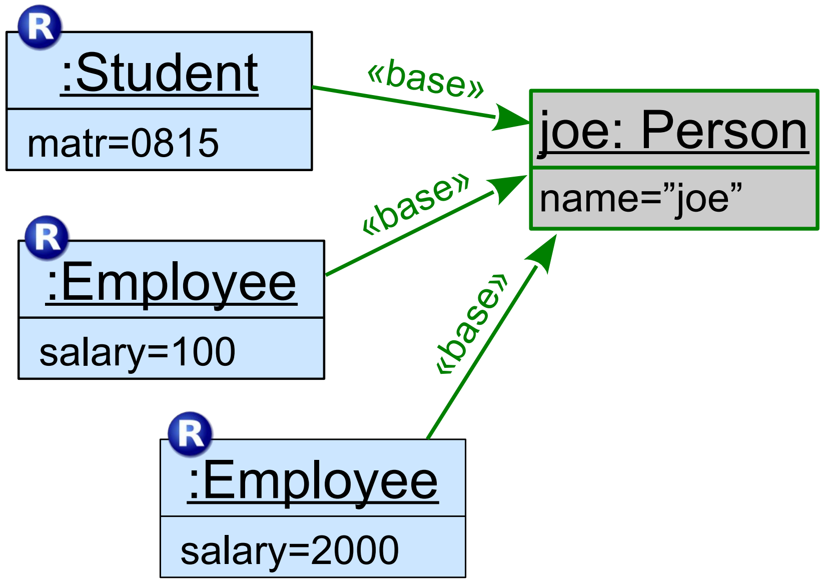
λ

Object Composition

playedBy Relationship



- Properties
  - **Dynamism**:
    roles can come and go
    (same base object)
  - **Multiplicities:**
    one base can play several roles
    (different/same role types)



Areas Covered

- Connecting objects to a system
  - **Object Teams**
  -
- Algorithms
  - lambda expressions
  - library updates for lambdas
- Types
  - type annotations
  - type inference

λ