Dirty Hacks With Java Reflection (includes one or two useful hints)

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javaspecialists.eu
java training

Short Introduction to Heinz

- Created The Java Specialists' Newsletter
  - Advanced newsletter for anyone who is above average in Java
    - No "Hello World" tutorials, except maybe

```
System.out.println("Hello world!");
   -> "Goodbye, cruel world!"
```

- Special offer - sign up tonight and get an invite to join our new JavaSpecialists.slack.com team
  - You can interact with hundreds of Java experts from around the world in real time
  - http://tinyurl.com/gdansk-slack

Reflection is like Opium

- **A bit too strong for every day use**
  - **But can relieve serious pain**
- **Please do not become a reflection addict!**

Modifying/Reading Private/Final Fields

- **We can access private fields by making it accessible**
  - **Requires security manager support**
- **Note: value field is final and private!**

```
import java.lang.reflect.*;

public class PrivateFinalFieldTest {
  public static void main(String... args)
      throws NoSuchFieldException, IllegalAccessException {
    Field value = String.class.getDeclaredField("value");
    value.setAccessible(true);
    value.set("hello!", "cheers".toCharArray());
    System.out.println("hello!");
  }
}
```

```
cheers
```

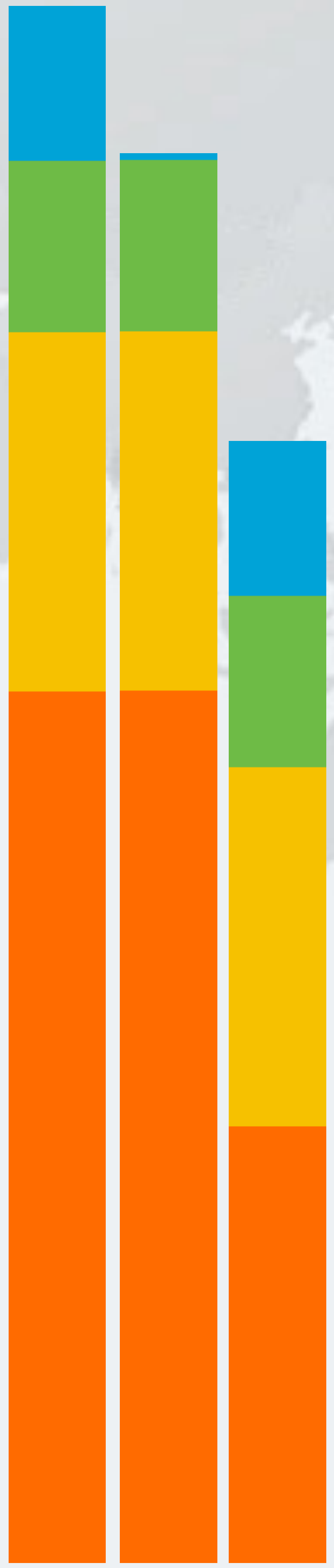
Optimization methodology

1. **Load test to identify bottlenecks**
   - **Identify the easiest to fix**
2. **Derive a hypothesis for the cause of the bottleneck**
   - **Create a test to isolate the factor identified by the hypothesis**
     - **This is important, we have often been fooled by profilers!**
3. **Alter the application or configuration**
4. **Test that the change improves the situation**
   - **Also make sure the system still works correctly**

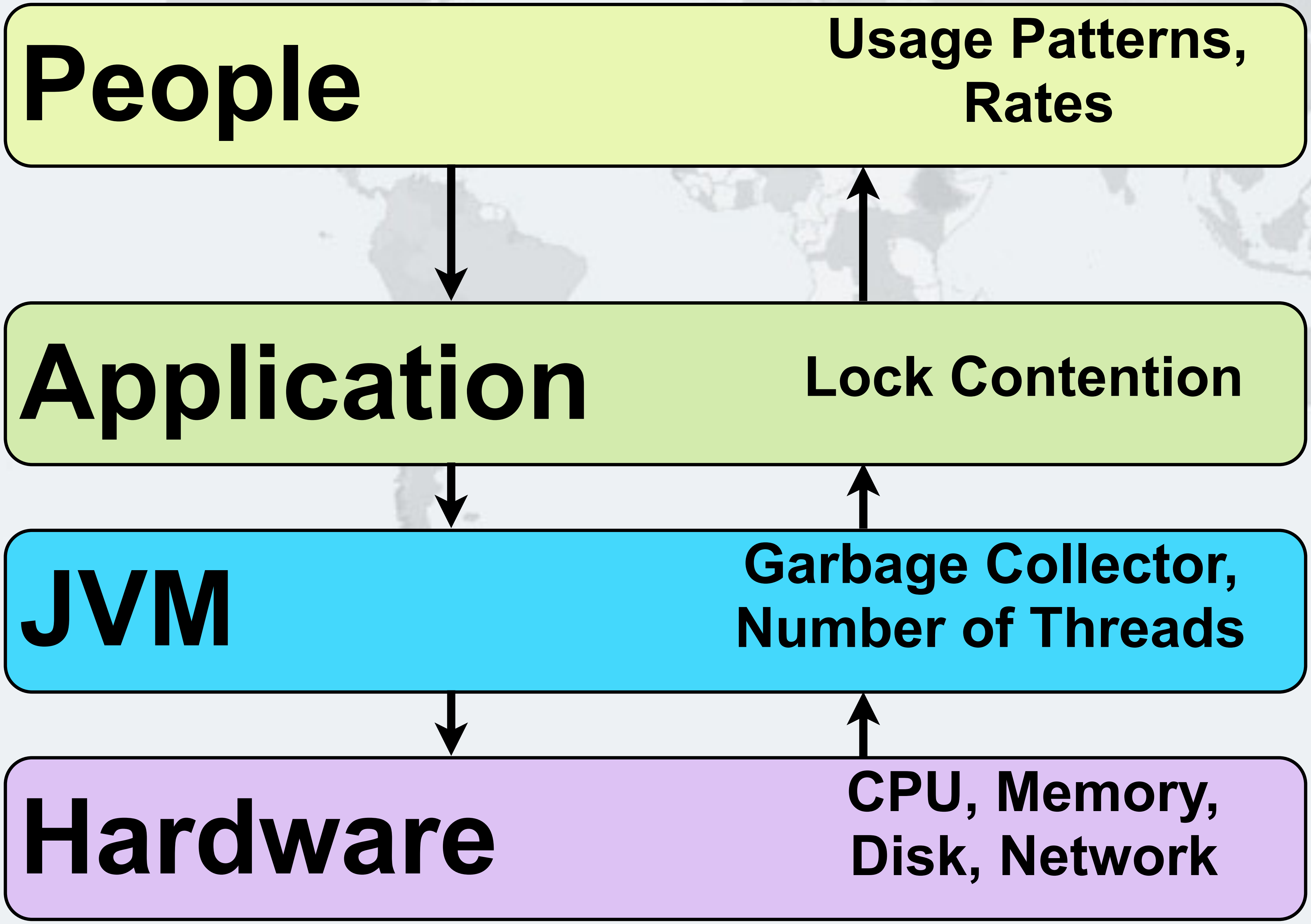
- **Repeat process until targets are met**

Big Gains Quickly

- **Amdahl's law applies**
  - **Consider an 4 layered application**
    - **Servlet takes 10%**
    - **Business component takes 11%**
    - **EJB takes 23%**
    - **SQL takes 56%**
  - **Scenario 1, tuning Servlet gives 20x improvement**
    - **"Google" says that servlets are slow**
    - **0.10/20 + 0.11/1 + 0.23/1 + 0.56 /1 = 0.905**
  - **Scenario 2, tuning SQL give 2x improvement**
    - **We *measure* and discover SQL is the bottleneck**
    - **0.10/1 + 0.11/1 + 0.23/1 + 0.56/2 = 0.72**



System Overview - The Box



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