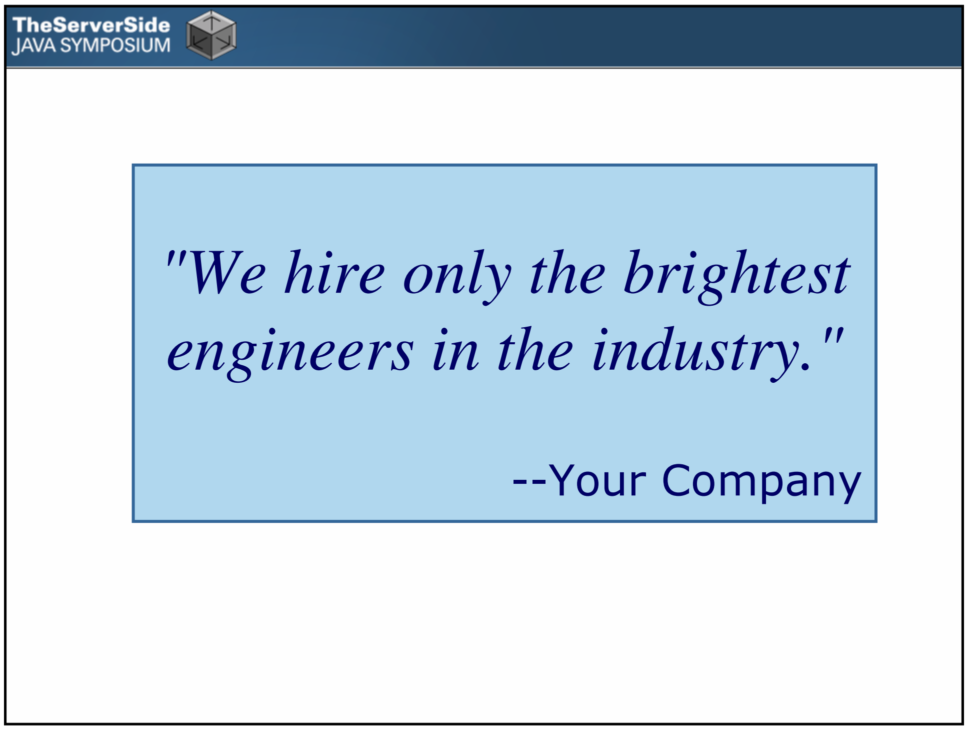
TheServerSide JAVA SYMPOSIUM

Where Did All My Beautiful Code Go?

Gregor Hohpe
Google



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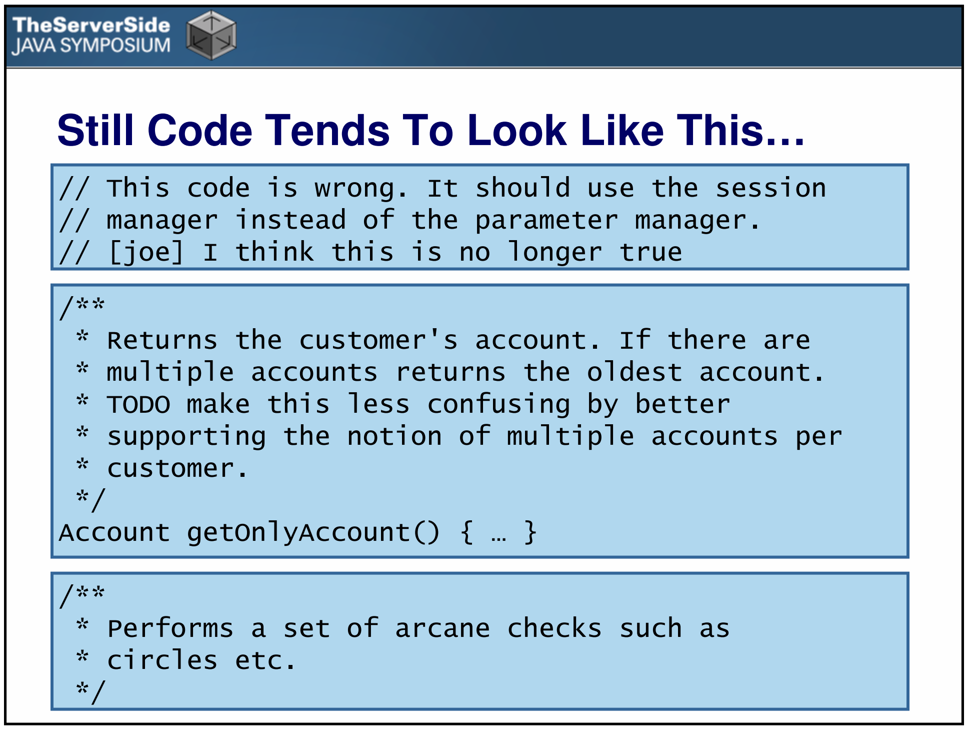
"We hire only the brightest engineers in the industry."

--Your Company



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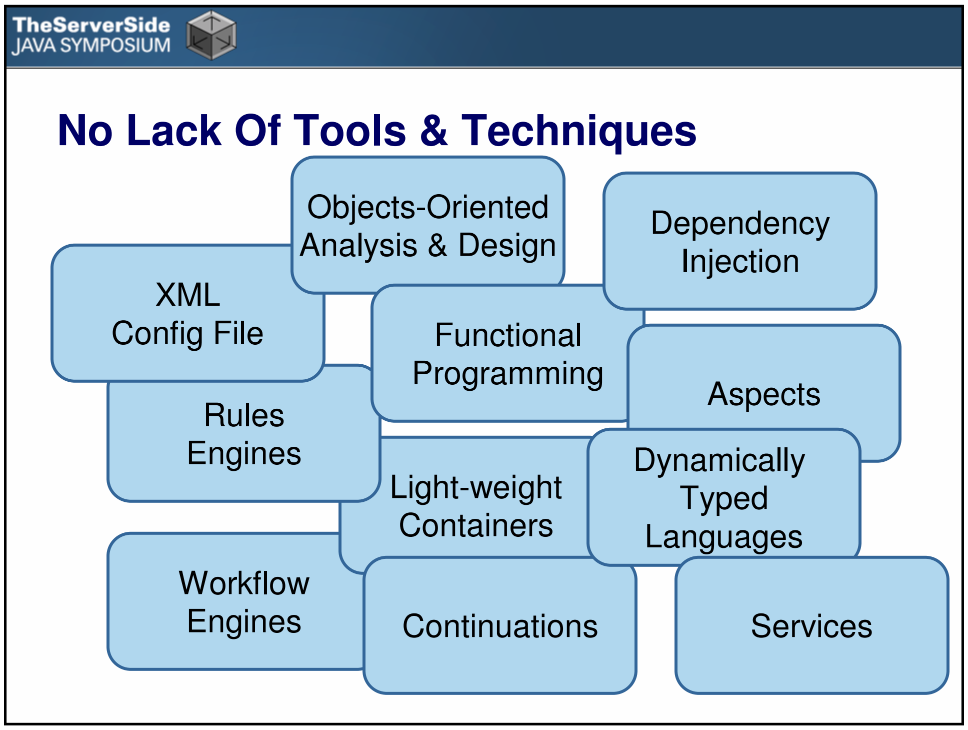
Still Code Tends To Look Like This…

```
// This code is wrong. It should use the session
// manager instead of the parameter manager.
// [joe] I think this is no longer true
```

```
/**
 * Returns the customer's account. If there are
 * multiple accounts returns the oldest account.
 * TODO make this less confusing by better
 * supporting the notion of multiple accounts per
 * customer.
 */
Account getOnlyAccount() { … }
```

```
/**
 * Performs a set of arcane checks such as
 * circles etc.
 */
```



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No Lack Of Tools & Techniques

Objects-Oriented Analysis & Design

Dependency Injection

XML Config File

Functional Programming

Aspects

Rules Engines

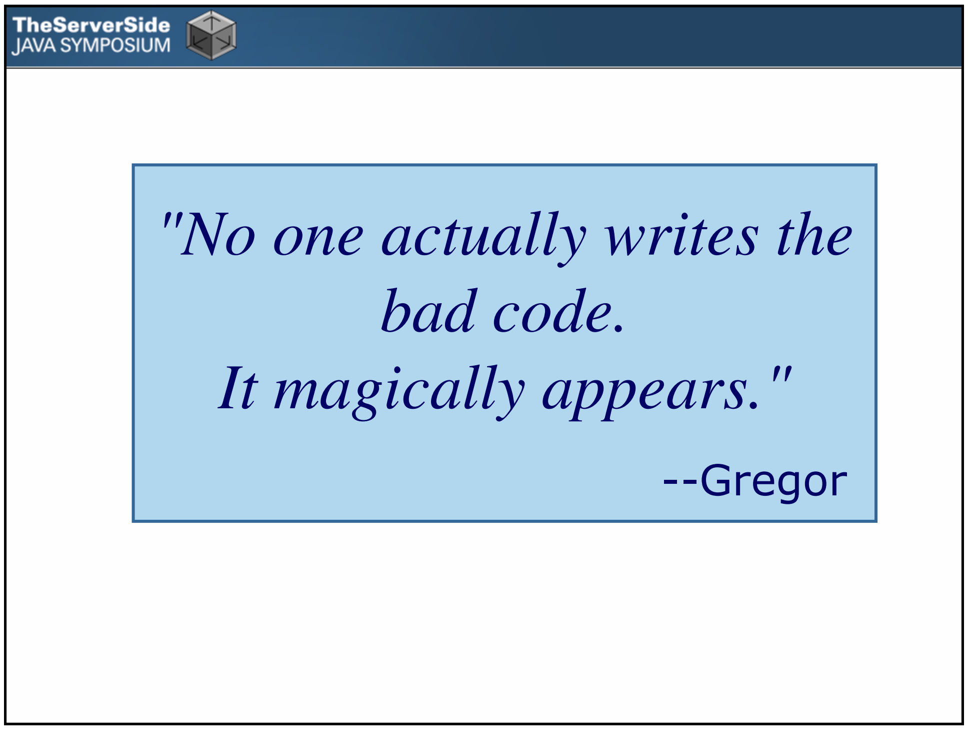
Light-weight Containers

Dynamically Typed Languages

Workflow Engines

Continuations

Services



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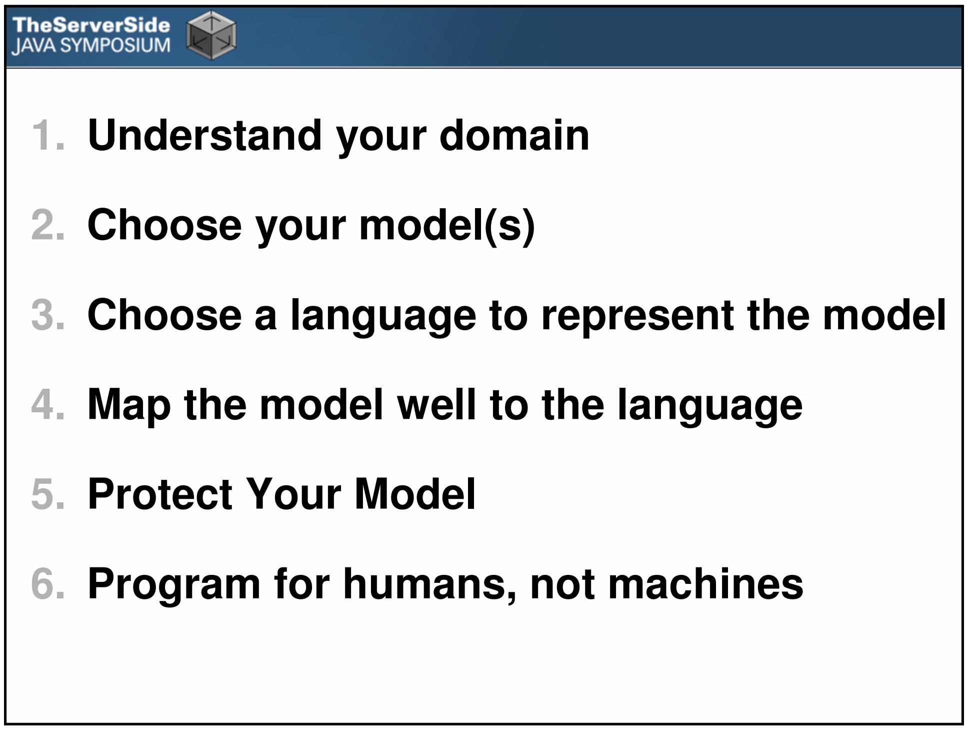
"No one actually writes the bad code.
It magically appears."

--Gregor



TheServerSide JAVA SYMPOSIUM

1. **Understand your domain**
2. **Choose your model(s)**
3. **Choose a language to represent the model**
4. **Map the model well to the language**
5. **Protect Your Model**
6. **Program for humans, not machines**

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A Domain Of Managers And Advertisers…

- A manager can manage one or more advertisers
- A manager has to request access to a advertiser's account first ("invite the advertiser")
- A manager can request full access or partial access
- Subsequently, the advertiser can accept or refuse
- An advertiser can later revoke the manager's access
- An advertiser can have a manager for each access type
- Managers can manage other managers, up to 3 levels deep

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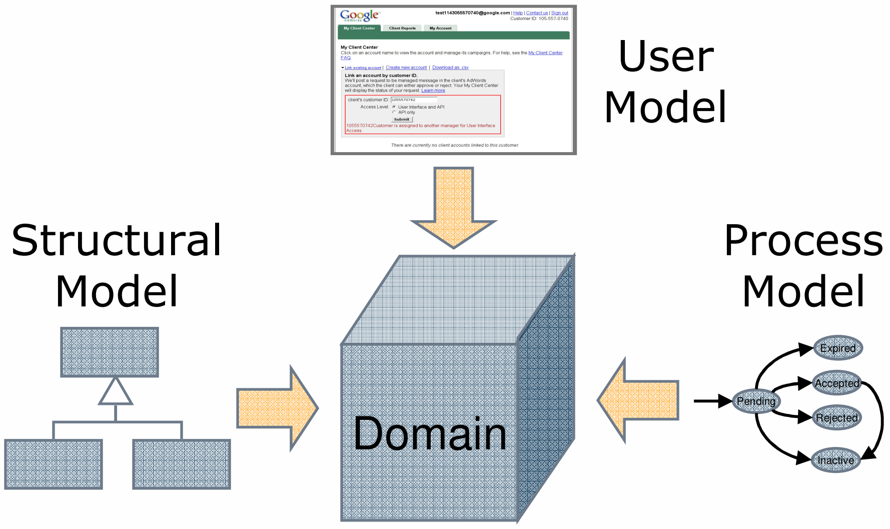
Choose Your Model(s)



test1143055570740@google.com
Customer ID: 105-557-0740

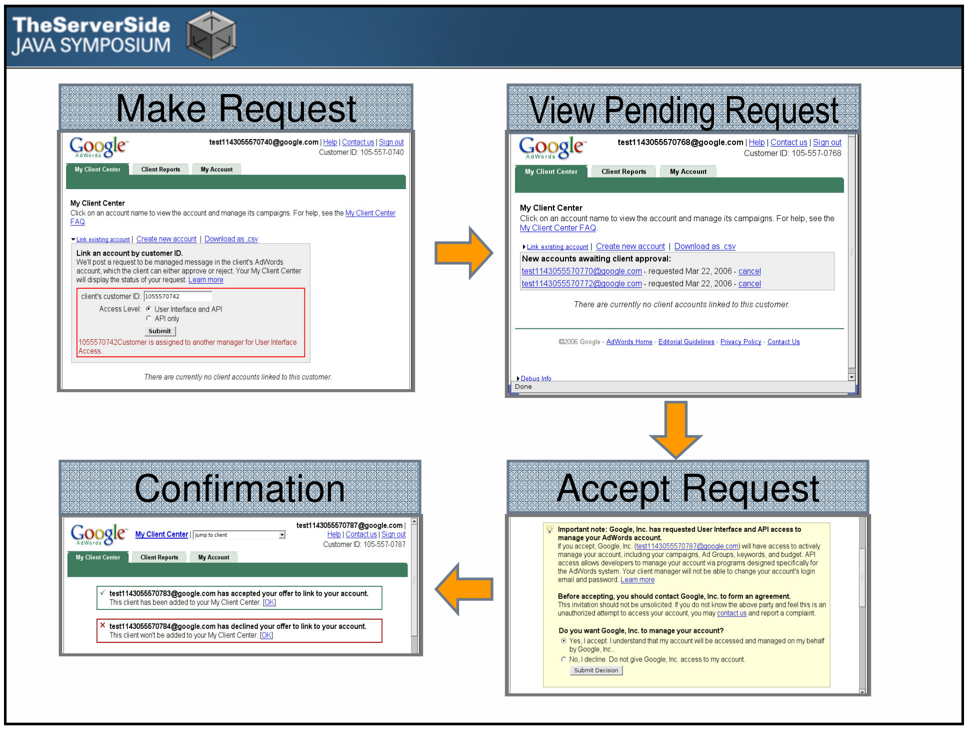
My Client Center
Click on an account name to view the account and manage its campaigns. For help, see the My Client Center FAQ.

Link an account by customer ID.
We'll post a request to be managed message in the client's AdWords account, which the client can either approve or reject. Your My Client Center will display the status of your request. Learn more

client's customer ID: 1055570742
Access Level: [✓ User Interface and API] API only

1055570742Customer is assigned to another manager for User Interface Access.

There are currently no client accounts linked to this customer.



Make Request

test1143055570740@google.com | Help | Contact us | Sign out
Customer ID: 105-557-0740

My Client Center
Click on an account name to view the account and manage its campaigns. For help, see the My Client Center FAQ.

Link existing account | Create new account | Download as .csv

Link an account by customer ID.
We'll post a request to be managed message in the client's AdWords account, which the client can either approve or reject. Your My Client Center will display the status of your request. Learn more

client's customer ID: 1055570742
Access Level: [✓ User Interface and API] API only

1055570742Customer is assigned to another manager for User Interface Access.

There are currently no client accounts linked to this customer.

View Pending Request

test1143055570768@google.com | Help | Contact us | Sign out
Customer ID: 105-557-0768

My Client Center
Click on an account name to view the account and manage its campaigns. For help, see the My Client Center FAQ.

Link existing account | Create new account | Download as .csv

New accounts awaiting client approval:
test1143055570770@google.com - requested Mar 22, 2006 - cancel
test1143055570772@google.com - requested Mar 22, 2006 - cancel

There are currently no client accounts linked to this customer.

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Debug Info
Done

Accept Request

Important note: Google, Inc. has requested User Interface and API access to manage your AdWords account.
If you accept, Google, Inc. (test1143055570787@google.com) will have access to actively manage your account, including your campaigns, Ad Groups, keywords, and budget. API access allows developers to manage your account via programs designed specifically for the AdWords system. Your client manager will not be able to change your account's login email and password. Learn more

Before accepting, you should contact Google, Inc. to form an agreement.
This invitation should not be unsolicited. If you do not know the above party and feel this is an unauthorized attempt to access your account, you may contact us and report a complaint.

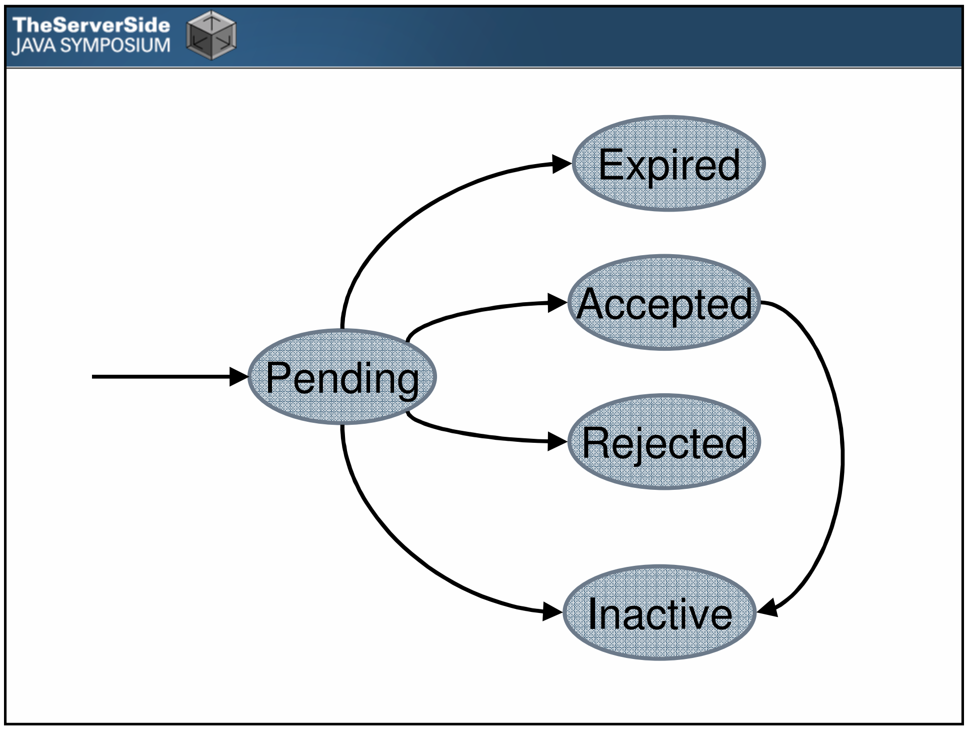
Do you want Google, Inc. to manage your account?
[✓ Yes, I accept. I understand that my account will be accessed and managed on my behalf by Google, Inc..]
No, I decline. Do not give Google, Inc. access to my account.

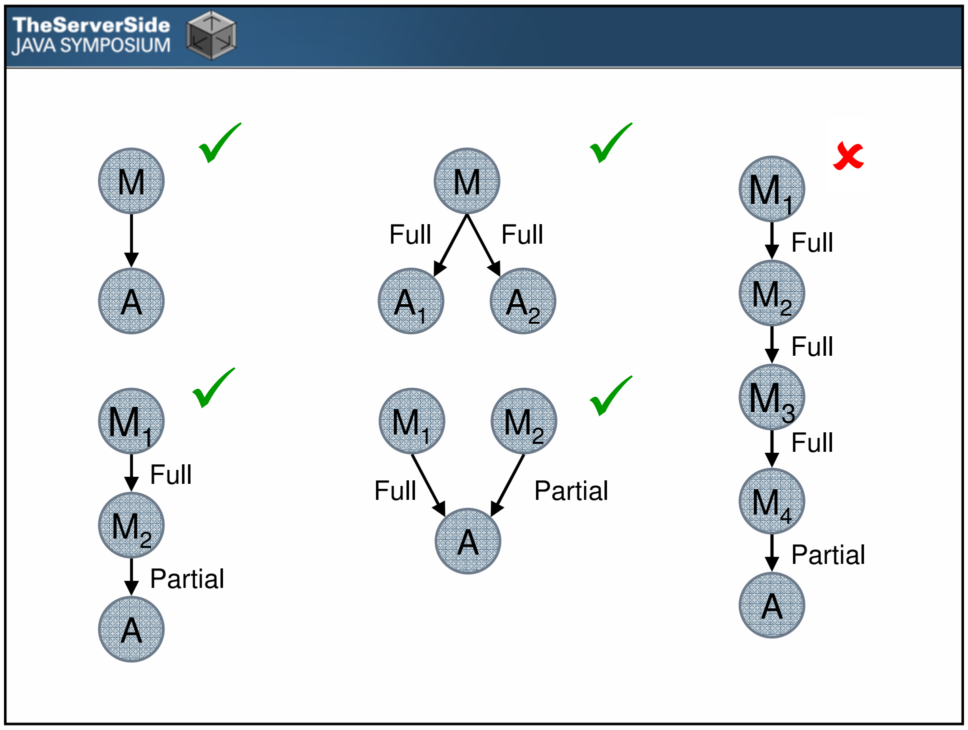
Confirmation

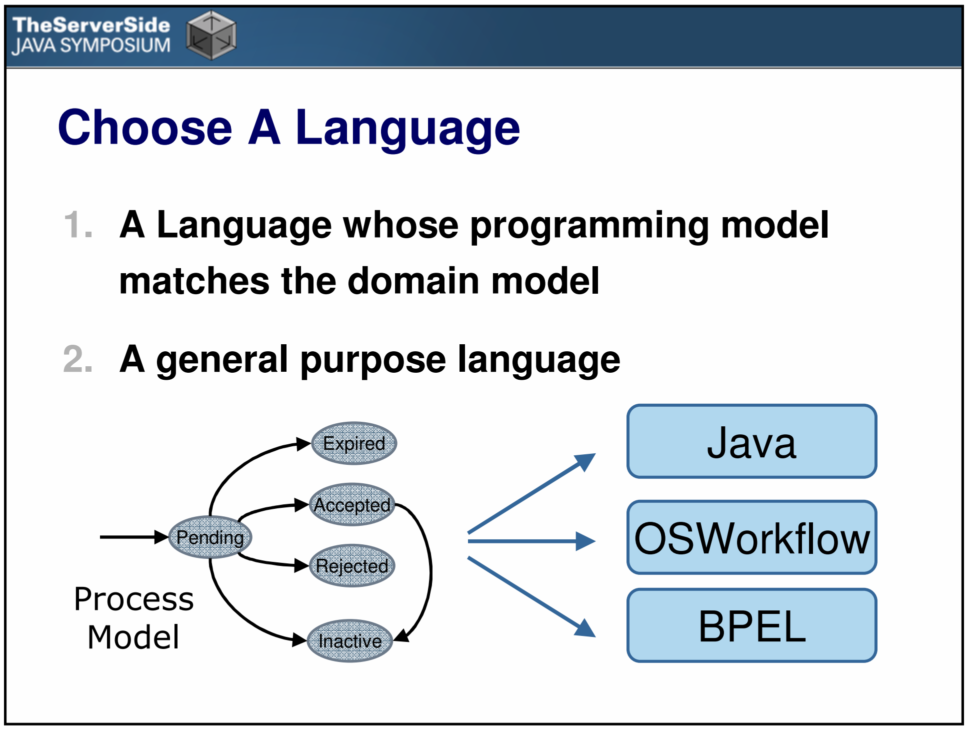
My Client Center | Jump to client
test1143055570787@google.com | Help | Contact us | Sign out
Customer ID: 105-557-0787

✓ test1143055570783@google.com has accepted your offer to link to your account.
This client has been added to your My Client Center. [OK]

✗ test1143055570784@google.com has declined your offer to link to your account.
This client won't be added to your My Client Center. [OK]



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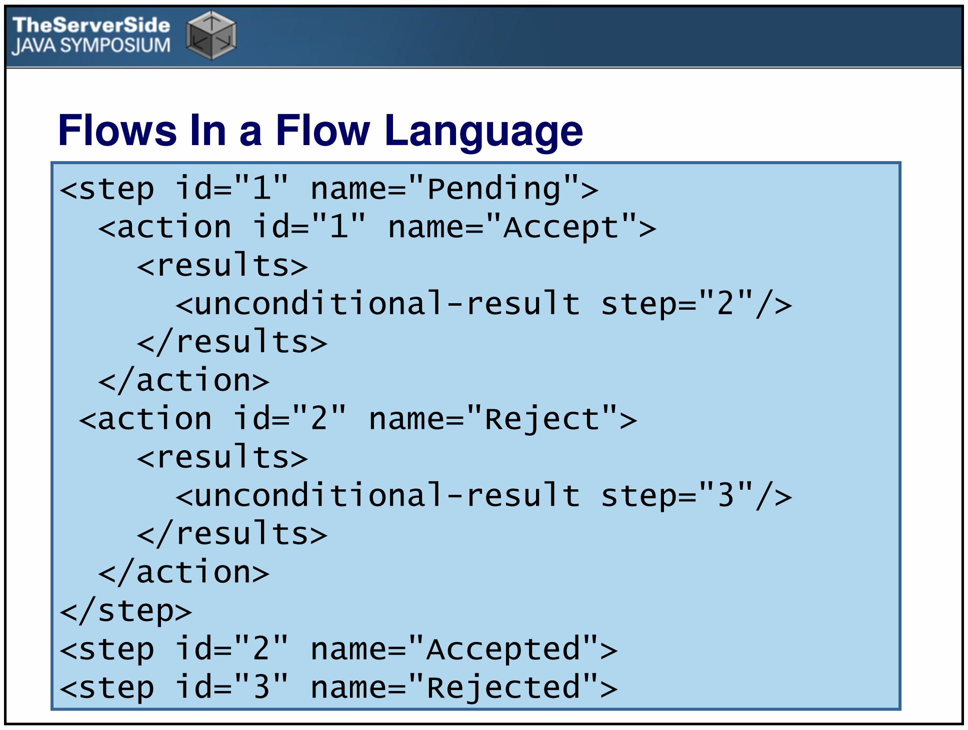
Choose A Language

1. A Language whose programming model matches the domain model
2. A general purpose language

Process Model
Pending
Expired
Accepted
Rejected
Inactive
Java
OSWorkflow
BPEL



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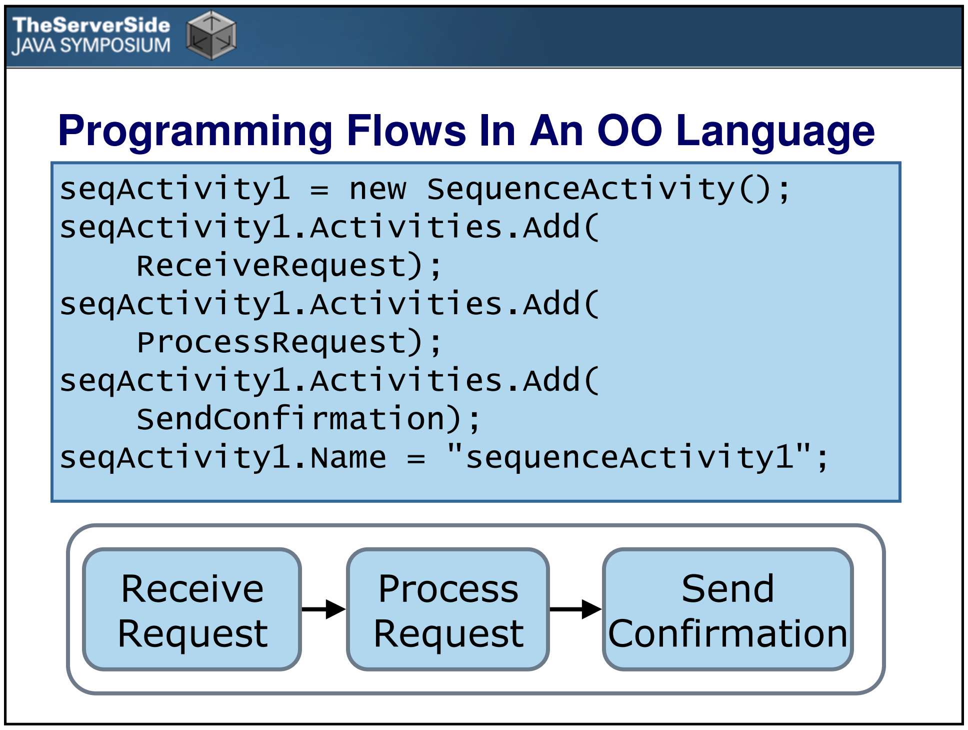
Flows In a Flow Language

```
<step id="1" name="Pending">
  <action id="1" name="Accept">
    <results>
      <unconditional-result step="2"/>
    </results>
  </action>
 <action id="2" name="Reject">
    <results>
      <unconditional-result step="3"/>
    </results>
  </action>
</step>
<step id="2" name="Accepted">
<step id="3" name="Rejected">
```



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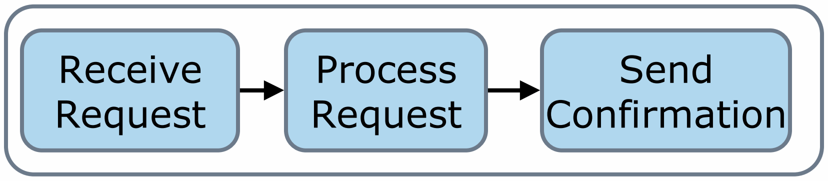
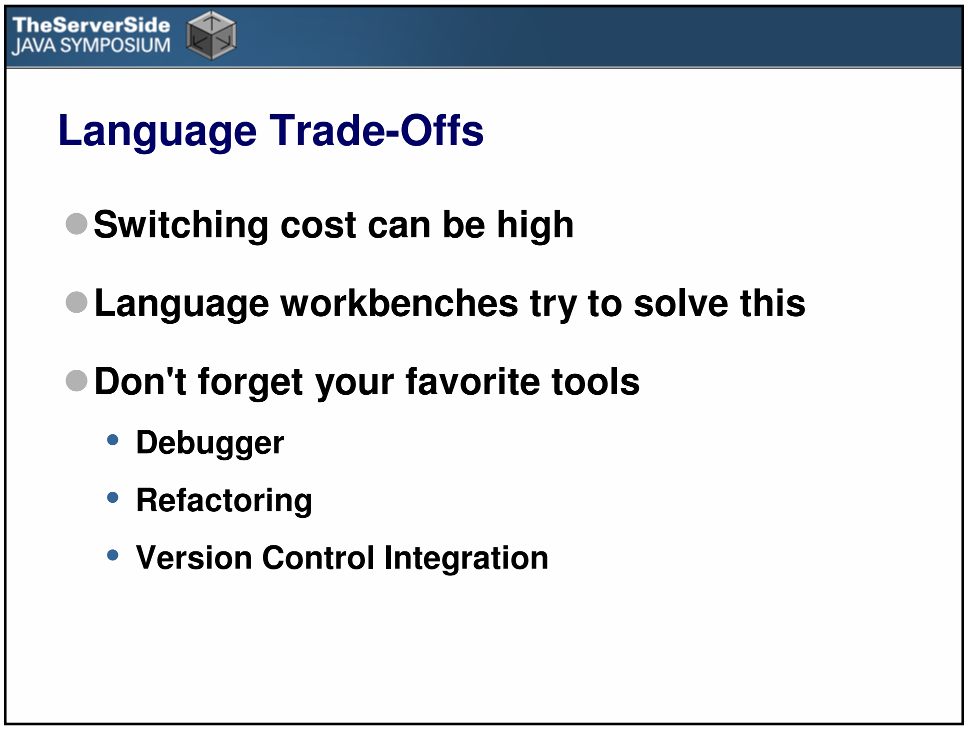
Programming Flows In An OO Language

```
seqActivity1 = new SequenceActivity();
seqActivity1.Activities.Add(
    ReceiveRequest);
seqActivity1.Activities.Add(
    ProcessRequest);
seqActivity1.Activities.Add(
    SendConfirmation);
seqActivity1.Name = "sequenceActivity1";
```





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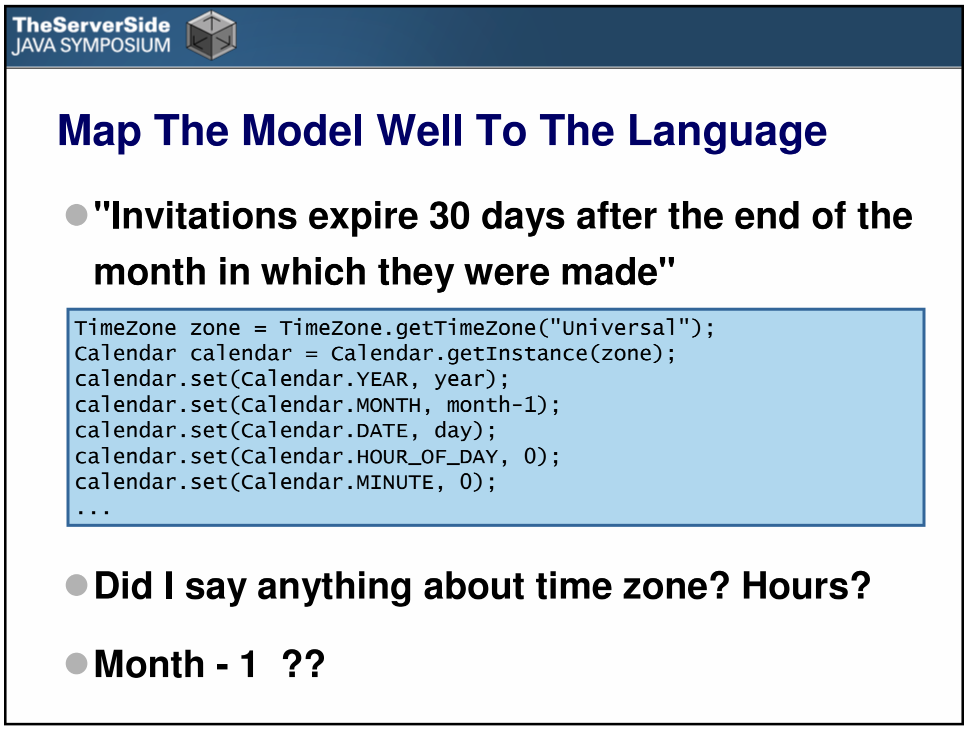
Language Trade-Offs

- Switching cost can be high
- Language workbenches try to solve this
- Don't forget your favorite tools
  - Debugger
  - Refactoring
  - Version Control Integration



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Map The Model Well To The Language

- "Invitations expire 30 days after the end of the month in which they were made"

```
TimeZone zone = TimeZone.getTimeZone("Universal");
Calendar calendar = Calendar.getInstance(zone);
calendar.set(Calendar.YEAR, year);
calendar.set(Calendar.MONTH, month-1);
calendar.set(Calendar.DATE, day);
calendar.set(Calendar.HOUR_OF_DAY, 0);
calendar.set(Calendar.MINUTE, 0);
...
```

- Did I say anything about time zone? Hours?
- Month - 1 ??

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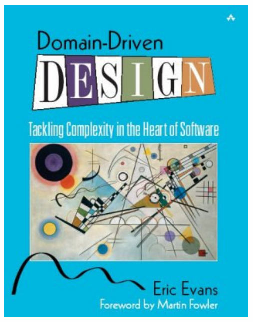
March Is Not A Number

```
CalendarDate invited = CalendarDate.from(2006, 3, 23);
int allowedDays = 30;
CalendarDate expiryDate =
  completion.month().end().plusDays(allowedDays);
```

- `month()` is a `CalendarInterval` (a range of days, not a number)
- `end()` is a `CalendarDate` (a specific day, not a point in time)


Domain-Driven
DESIGN
Tackling Complexity in the Heart of Software
Eric Evans
Foreword by Martin Fowler

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Protect Your Model

- No longer a code issue
- Make it beautiful but accessible
- Anticorruption layer
- Validation tools, e.g. imports etc.
- Good test coverage can actually hurt

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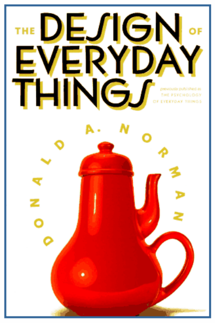
Program For Humans Not Machines

- People will read your code
- Make it easy for them
- Misunderstandings are not the user's but the designer's fault
- Usability test your interfaces
- Learn from usability design: affordances,…



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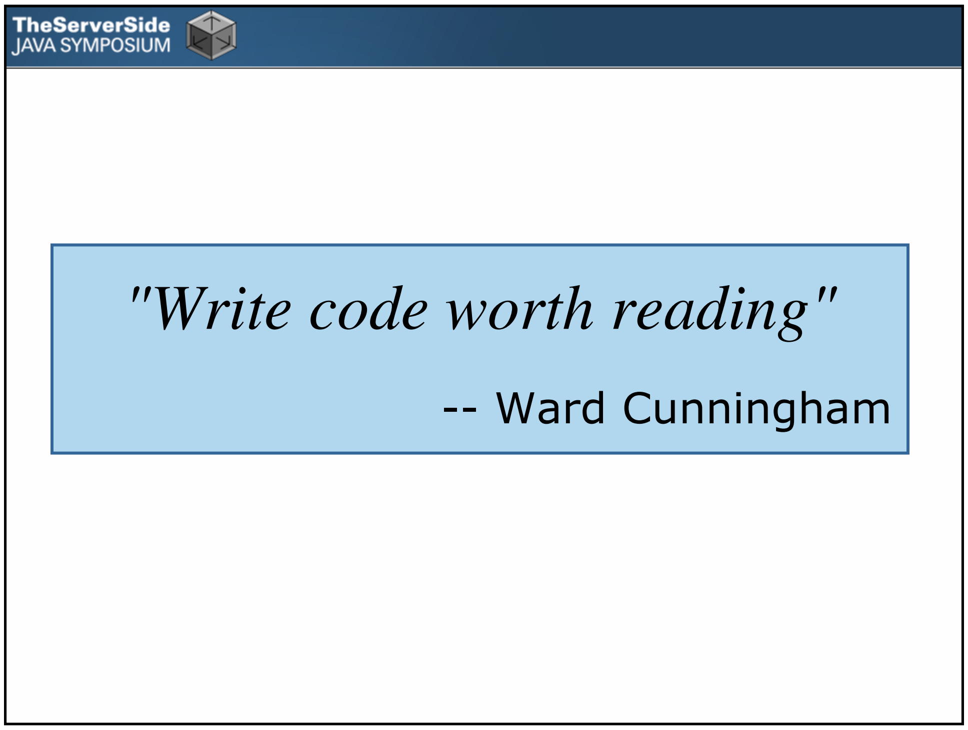
"Programmers Are People, Too"

- Kevlin Henney
  - "Effective Interface Design"
  - Affordances (Don Norman's Design of Everyday Things)
- Josh Block
  - "How to Design a Good API and Why it Matters"
  - "Conceptual Weight" of an API
- Ken Arnold
  - "Programmers are people, Too"



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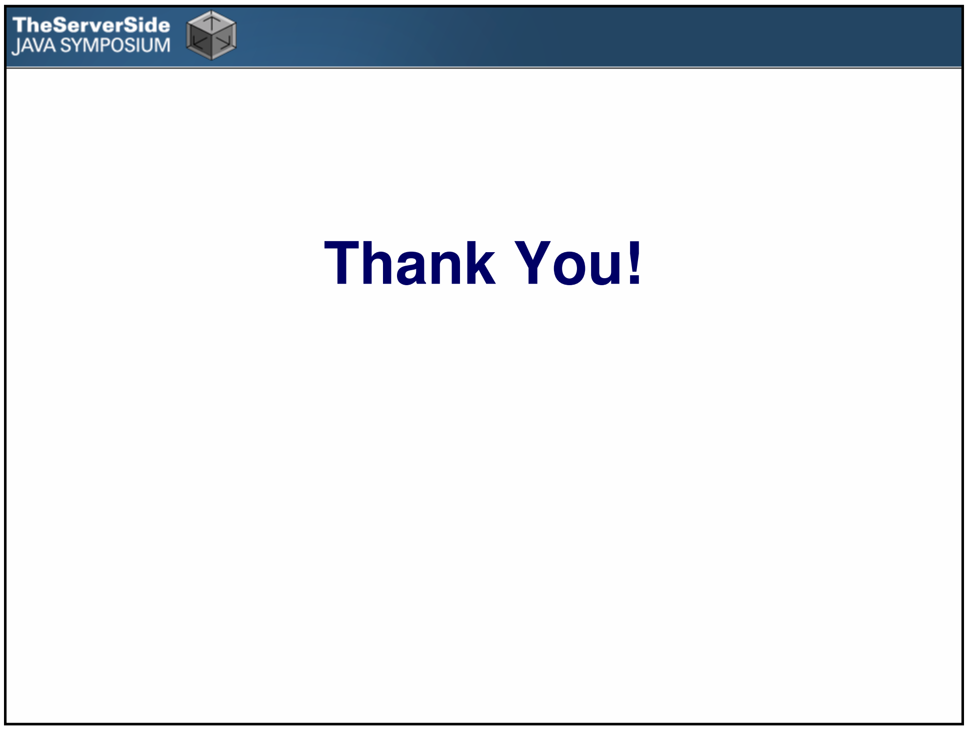
"Write code worth reading"

-- Ward Cunningham



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Thank You!