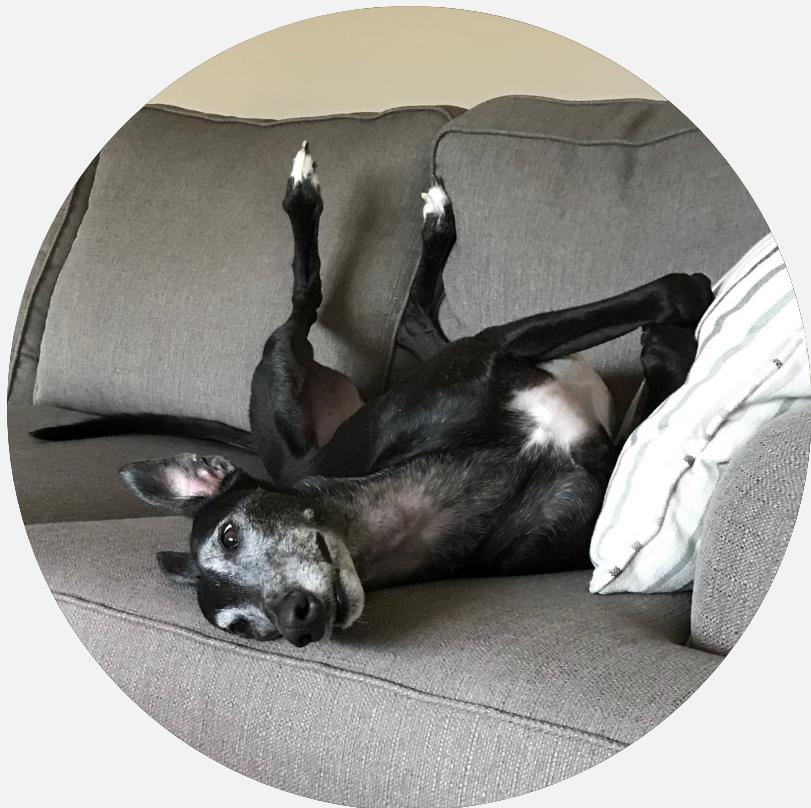


DEVELOPER DRIVEN DESIGN



Steve Crow
Java Developer Advocate

Who am I?



Hi! I'm **Steve Crow!**

The **Java Developer Advocate** at **Nexmo**.

My username is **@cr0wst** on most platforms.

My email is **steve@smcrow.net**.

What is Developer Driven Design?

It's about building software...

...that provides an experience...

...that developers love.

Developer Experience

Like user experience but when your users are developers.

Why?

Reduces cognitive load.

Decrease time to onboard new employees.

Reduce anxiety and stress.

Know Your Target Audience

Is there a specific language?

...or set of languages?

Are there a clear set of community-driven standards?

...or company-driven for internal things?

What about language conventions?

Functional, Procedural, Object-Oriented, Declarative?

Java developers might not like Ruby.

...or Ruby developers might not like Java

True Statement

Ruby

```
person = Person.new("Foo Bar", 25)
puts "#{person.name} is an adult: #{person.adult?}"
```

Java

```
Person person = new Person("Foo Bar", 25);
System.out.println(person.name + " is an adult: " + person.isAdult());
```

Write Good Documentation



I am Devloper
@iamdevloper

Don't waste time writing documentation for your open source library, just wait 3 months, then update the README with a link to a Stack Overflow search results page.

<https://twitter.com/iamdevloper/status/1055436661205729280>

Javadoc

...or your preferred documentation generator.

Javadoc

```
/**  
 * This method level annotation can be used to decorate a Java method  
 * that wishes to be called in order  
 * to handle errors. See {@link Endpoint#onError} for  
 * a description of the different categories of error.  
 *  
 * <p>The method may only take the following parameters:-  
 * <ul>  
 * <li>optional {@link Session} parameter</li>  
 * <li>a {@link java.lang.Throwable} parameter</li>  
 * <li>Zero to n String parameters annotated with {@link javax.websocket.server.PathParam} annotation</li>  
 * </ul>  
 *  
 * <p>The parameters may appear in any order.  
 *  
 * @author danny coward  
 */
```

Javadoc

javax.websocket

Annotation Type OnError

```
@Retention(value=RUNTIME)
  @Target(value=METHOD)
public @interface OnError
```

This method level annotation can be used to decorate a Java method that wishes to be called in order to handle errors. See [Endpoint.onError\(javax.websocket.Session, java.lang.Throwable\)](#) for a description of the different categories of error.

The method may only take the following parameters:-

- optional `Session` parameter
- a `Throwable` parameter
- Zero to n String parameters annotated with the `PathParam` annotation

The parameters may appear in any order.

Author:

dannycoward

Javadoc

The screenshot shows the JavaDoc for the `OnMessage` annotation. The code snippet is:

```
@OnMessage
public S
    javax.websocket
    @Retention(RetentionPolicy.RUNTIME)
    @Target({ElementType.METHOD})
    public interface OnMessage
        extends annotation.Annotation
```

The `OnMessage` annotation is described as follows:

This method level annotation can be used to make a Java method receive incoming web socket messages. Each websocket endpoint may only have one message handling method for each of the native websocket message formats: text, binary and pong. Methods using this annotation are allowed to have parameters of types described below, otherwise the container will generate an error at deployment time.

The allowed parameters are:

1. Exactly one of any of the following choices
 - if the method is handling text messages:
 - `String` to receive the whole message
 - Java primitive or class equivalent to receive the whole message converted to that type
 - String and boolean pair to receive the message in parts
 - `java.io.Reader` to receive the whole message as a blocking stream
 - any object parameter for which the endpoint has a text decoder (`Decoder.Text` or `Decoder.TextStream`).
 - if the method is handling binary messages:
 - `byte[]` or `java.nio.ByteBuffer` to receive the whole message
 - `byte[]` and boolean pair, or `java.nio.ByteBuffer` and boolean pair to receive the message in parts
 - `java.io.InputStream` to receive the whole message as a blocking stream
 - any object parameter for which the endpoint has a binary decoder (`Decoder.Binary` or `Decoder.BinaryStream`).
 - if the method is handling pong messages:

Javadoc

Javadoc

```
/**  
 * @return the name as a String.  
 */  
public String getName() {  
    return this.name;  
}  
  
/**  
 * Set the name.  
 *  
 * @param name the String name to set  
 */  
public void setName(String name) {  
    this.name = name;  
}
```

Code Comments

Code Comments

```
RequestBuilder result = RequestBuilder
    .post(httpWrapper.getHttpConfig().getApiBaseUri() + PATH)
    // Add the number parameter
    .addParameter("number", request.getNumber())
    // Add the brand parameter
    .addParameter("brand", request.getBrand());

    // if the from field is not null
if (request.getFrom() != null) {
    // add the sender id parameter from the from field
    result.addParameter("sender_id", request.getFrom());
}
```

Code Comments

```
// Woof woof! ^_^  
Dog dog = new GoldenRetriever();
```

```
// Sorry I didn't know how to use the Math library!  
return calculateSum(values);
```

Code Comments

```
// If we have a URL Encoded form entity, we may need to regenerate it as UTF-8
// due to a bug (or two!) in RequestBuilder:
//
// This fix can be removed when HttpClient is upgraded to 4.5, although 4.5 also
// has a bug where RequestBuilder.put(uri) and RequestBuilder.post(uri) use the
// wrong encoding, whereas RequestBuilder.put().setUri(uri) uses UTF-8.
// - MS 2017-04-12
if (httpRequest instanceof HttpEntityEnclosingRequest) {
```

Code Comments

Developer Portals

Developer Portals

The screenshot shows the Nexmo Developer portal. The top navigation bar includes links for Documentation, Tutorials, API Reference, SDKs & Tools, Community, Extend, and a search bar. A "We're hiring" button is also present. The left sidebar contains a navigation tree with sections like Concepts, Messaging, SMS (Overview, GUIDES: Custom Sender ID, Concatenation and Encoding, SMPP access, Inbound SMS, Country specific features, Delivery receipts), BUILDING BLOCKS (Send an SMS, Send an SMS with Unicode, Receiving an SMS), Tutorials, API Reference, Conversion API, US Short Codes, SNS, and Messages API (Beta). The main content area is titled "Prerequisites" and includes sections for "Install the Nexmo library" and "Initialize the library". The "Initialize the library" section contains the following PHP code:

```
$basic = new \Nexmo\Client\Credentials\Basic(NEXMO_API_KEY, NEXMO_API_SECRET);
$client = new \Nexmo\Client($basic);
```

Below this is a "Code" section containing the following PHP code:

```
$message = $client->message()->send([
    'to' => TO_NUMBER,
    'from' => 'Acme Inc',
    'text' => 'A text message sent using the Nexmo SMS API'
]);
```

These all have a fundamental flaw...

...they can expire.

**When these go out of date it sends
the wrong message.**

**So, make sure you keep them
updated!**

Code with Intent



Adam Wathan
@adamwathan

Redefining "software quality" to mean "checking the boxes next to this list of ideas that are meant to help me write quality software" is a dangerous trap.

Try hard to recognize when you are just trying to satisfy some rule or principal instead of trying to write good code.

<https://twitter.com/adamwathan/status/965613399605354496>

Self-Documenting Code

Turn

```
int[] v = new int[]{1, 2, 3, 4, 5, 6, 7, 8, 9, 10};  
int s = 0;  
for (int i : v) {  
    s += i;  
}  
return s;
```

Info

```
int[] values = new int[]{1, 2, 3, 4, 5, 6, 7, 8, 9, 10};  
return calculateSum(values);
```

Using

```
public int calculateSum(int[] values) {  
    int sum = 0;  
    for (int value : values) {  
        sum += value;  
    }  
    return sum;  
}
```

Self-Documenting Code

Turn

```
if (person.getAge() >= 18
    && "OH".equals(person.getPrimaryAddress().getState())
    && "Columbus".equals(person.getPrimaryAddress().getState())) {
    votingService.processVote(person, votingInformation);
}
```

Info

```
if (isEligibleToVote(person)) {
    votingService.processVote(person, votingInformation);
}
```

Using

```
private boolean isEligibleToVote(Person person) {
    return person.getAge() >= 18
        && "OH".equals(person.getPrimaryAddress().getState())
        && "Columbus".equals(person.getPrimaryAddress().getState());
}
```

Consistent Naming

```
[  
  {  
    "text": "Hello. Please leave a message.",  
    "action": "talk"  
  },  
  {  
    "format": "mp3",  
    "endOnKey": "#",  
    "beepStart": true,  
    "action": "record"  
  },  
  {  
    "text": "Thank you.",  
    "action": "talk"  
  }  
]
```

Consistent Naming

```
TalkNcco intro = new TalkNcco("...");  
  
RecordNcco record = new RecordNcco();  
record.setEndOnKey('#');  
record.setBeepStart(true);  
record.setFormat(RecordingFormat.MP3);  
  
TalkNcco outro = new TalkNcco("Thank you.");  
  
return new Ncco[]{intro, record, outro};
```

Consistent Naming

```
TalkAction intro = new TalkAction.Builder("...").build();

RecordAction record = new RecordAction.Builder()
    .endOnKey('#')
    .beepStart(true)
    .format(RecordingFormat.MP3)
    .build();

TalkAction outro = new TalkAction.Builder("Thank you.").build();

return new Ncco(intro, record, outro);
```

Function Names

Java

```
nexmoVoiceClient.createCall(...);
```

JavaScript

```
nexmo.calls.create({...})
```

Python

```
nexmo.create_call({...})
```

Set Boundaries

Creating a Public API



Chris Ford
@ctford

I get more programming productivity out of reducing the time that I'm stuck than from increasing my speed when I'm not stuck.

<https://twitter.com/ctford/status/1016425570513678336>

Use scope to guide them.

Java Scopes

	Public	Protected	None	Private
Same Class?	Yes	Yes	Yes	Yes
Same Package?	Yes	Yes	Yes	No
Subclass?	Yes	Yes	No	No
Other Package?	Yes	No	No	No

Scope can be used to send intention.

...even if it's not “real encapsulation”

What about other languages?

Namespaces in PHP

```
<?php  
namespace Foo\Bar\Internal;
```

Internal in Kotlin

```
internal class FooBar {}
```

Underscores in JavaScript

```
class _FooBar {...}
```

Be as restrictive as possible.

Until you no longer have to be.

Use Interfaces to limit access.

Interfaces

```
public static class User {  
    private String email;  
    private String password;  
    private boolean authenticated;  
  
    // Other properties  
  
    // Getters and Setters, other methods, etc..  
}
```

Interfaces

```
public void authenticate(User user) {  
    if (hasValidCredentials(user.getUsername(), user.getPassword())) {  
        user.setAuthenticated(true);  
    }  
    // Other Code  
}
```

Interfaces

```
public interface Authenticatable {  
    String getUsername();  
    String getPassword();  
    String setAuthenticated(boolean authenticated);  
}
```

```
public static class User implements Authenticatable
```

Interfaces

```
public void authenticate(Authenticatable auth) {  
    if (hasValidCredentials(auth.getUsername(), auth.getPassword())) {  
        auth.setAuthenticated(true);  
    }  
}
```

Use design patterns to help guide them.

The Builder Pattern

```
Person person = new Person.Builder()  
    .firstName("Sarah")  
    .lastName("Doe")  
    .favoriteColor(Color.RED)  
    .build();
```

The Builder Pattern

```
public static class Builder {  
    // Properties same as Person  
  
    public Person build() {  
        return new Person(this);  
    }  
  
    public Builder lastName(String lastName) {  
        this.lastName = lastName;  
        return this;  
    }  
}
```

The Builder Pattern

```
private Person(Builder builder) {  
    this.firstName = builder.firstName;  
    this.lastName = builder.lastName;  
    this.age = builder.age;  
    this.favoriteColor = builder.favoriteColor;  
}
```

Static Factory Methods

```
$jeff = Dog::fromName("Jeff");  
  
$lily = Dog::fromArray(['name' => 'Lily', 'breed' => 'Greyhound']);
```

Static Factory Methods

```
class Dog {
    private $name;
    private $breed;
    private $age;

    public function __construct($name, $breed, $age)
    {
        $this->name = $name;
        $this->breed = $breed;
        $this->age = $age;
    }

    // Getters
}
```

Static Factory Methods

```
public static function fromName($name) {  
    $dog = new Dog;  
    $dog->name = $name;  
    return $dog;  
}  
  
public static function fromArray($array) {  
    $dog = new Dog;  
    $dog->name = $array['name'] ?? '';  
    $dog->breed = $array['breed'] ?? '';  
    $dog->age = $array['age'] ?? '';  
    return $dog;  
}
```

Create a Feedback Loop



Tom Morris
@tommorris

Saw code samples today that were:

1. not syntax highlighted
2. not indented
3. not properly structured
(i.e. broken out into methods for control flow)
4. inconsistently formatted
(spaces around operators etc.)

So I clicked "back". Life is too short. #developerexperience

<https://twitter.com/tommorris/status/945684367438991366>

It's ok to ask them to provide feedback.

Just make sure it gets documented somewhere.

Feedback Loop

Was this documentation helpful?

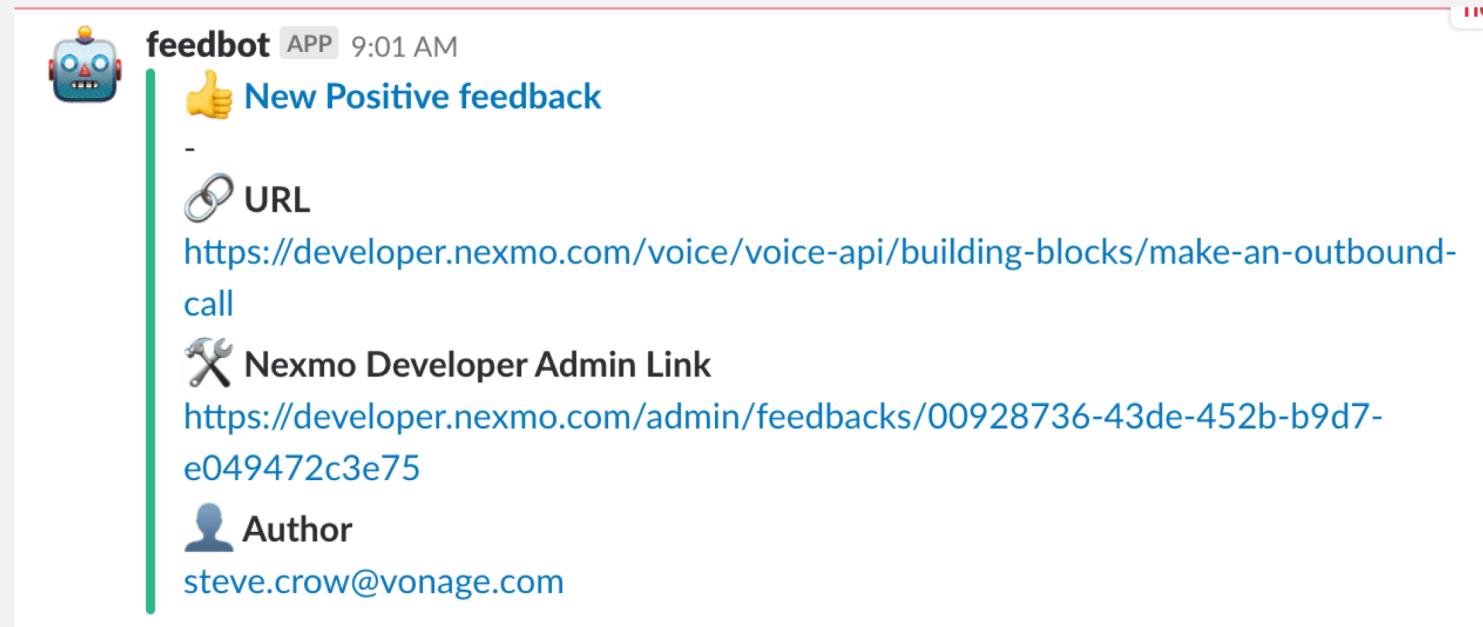
Email (optional)

How could we improve it? (optional)

Send Feedback

Your data will be treated in accordance with our [Privacy Policy](#), which sets out the rights you have in respect of your data.

Feedback Loop



Feedback Loop

SENTIMENT	positive
RESOURCE	https://developer.nexmo.com/voice/voice-api/building-blocks/make-an-outbound-call
OWNER	steve.crow@vonage.com
OWNER TYPE	User
IP	107.77.194.20
COMMENT	EMPTY
CREATED AT	October 27, 2018 13:01
UPDATED AT	October 27, 2018 13:02
CODE LANGUAGE	java
CODE LANGUAGE SELECTED WHILST ON PAGE	YES
CODE LANGUAGE SET BY URL	NO

You should provide them with feedback too.

Major? Minor? Patch?

3.14.15

Now Relax

Things will change.



Tracy Lee | ladyleet
@ladyleet

If you focus on fixing small things 1 by 1 that help contribute to the larger goal, things tend to work out. Don't stress on things you can't control.

Also: Don't focus on things that aren't working (where we spend most of our time). Double down on what's working.

<https://twitter.com/ladyleet/status/1050799316611133440>

Stay Consistent

Thank you!

More resources at <https://github.com/crOwst/dx>