submain

CodeIt.Right The First Time

Serge Baranovsky, MVP
sergeb@submain.com

Agenda

- Coding Guidelines and Code Correctness
- Code Analysis
- Refactoring
- Tools
- Solution

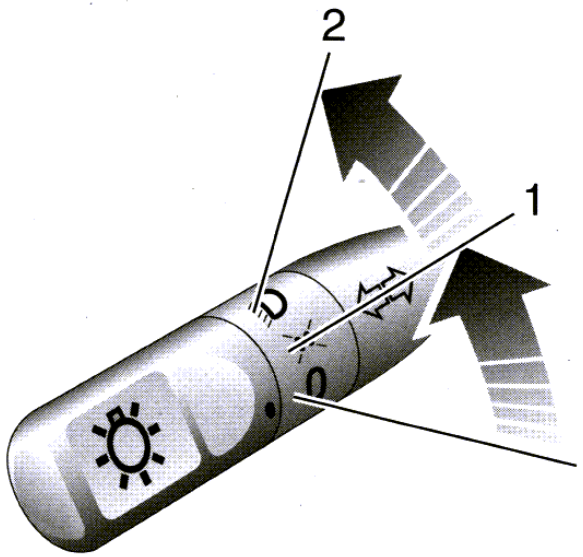
Power of Sameness

When you pickup a rental car:

- Adjust the seat
- Find radio station you like
- Find exit

- Don't' read the manual?

LIGHTS & INDICATORS



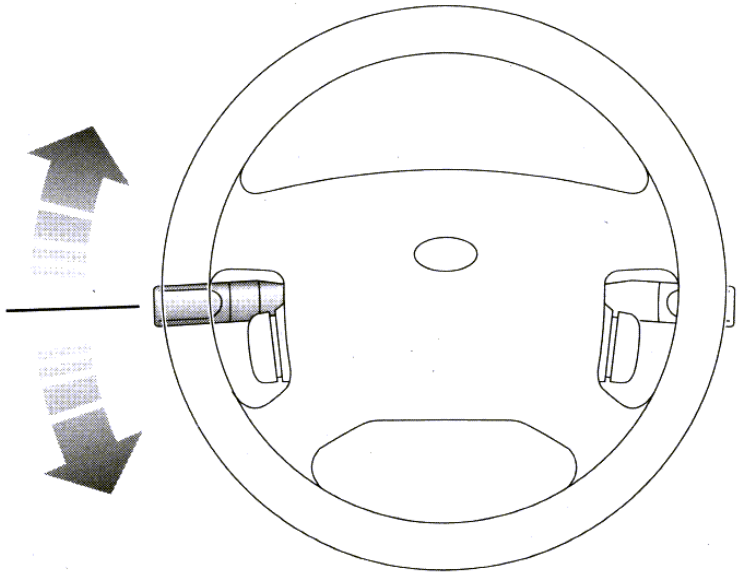
H2448

Side, tail and instrument panel lights
Turn lighting switch to position 1.

Headlights
Turn lighting switch to position 2.

Daylight running lights*
The headlights illuminate automatically, when the starter switch is turned to position 'II'.

Direction indicators



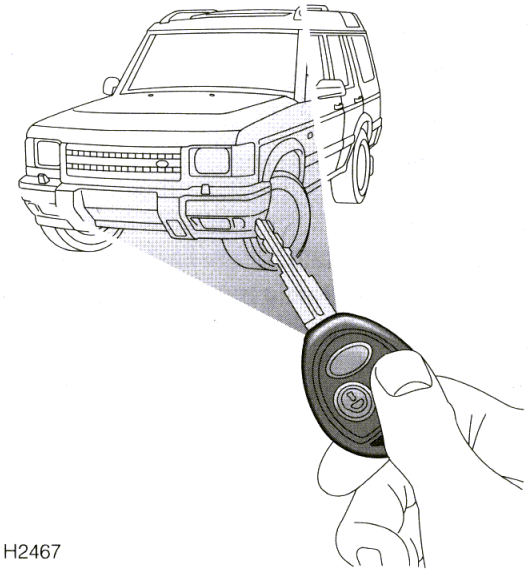
H2582

Move the lever DOWN to indicate a LEFT turn, and UP to indicate a RIGHT turn.

NOTE: *For further information concerning operation of the lights, please refer to 'DIRECTION INDICATORS', page 65 and 'LIGHTS', page 65.*

Do you need this?

Using the remote handset



H2467

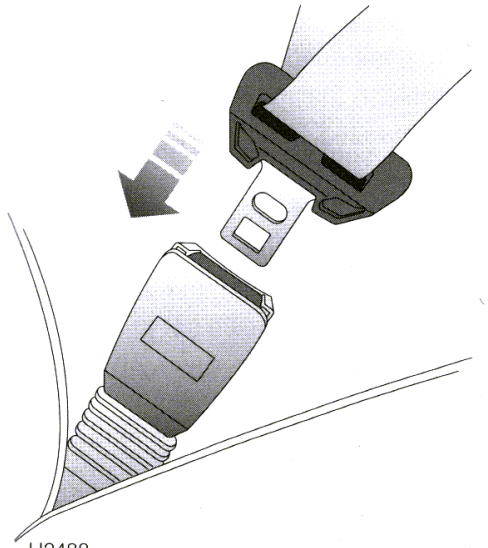
While it is not necessary to point the handset at the vehicle, the handset must be within range of the vehicle when a button is pressed. Note that the operating range may vary depending upon handset battery condition and may sometimes be limited by physical and geographical factors beyond your control. From a security point of view, it may not be wise to unlock unless you are within a few feet of the vehicle.

WEARING SEAT BELTS CORRECTLY

Fastening the seat belts

WARNING

Maladjustment of the seat belt could reduce its effectiveness in a crash, thereby increasing the risk of serious injury or death.



H2488

Power of Sameness!

- You know how to drive your car
- All cars work the same way
- Rental can is a car
- So, you can drive your rental car

VS.

Power of Coding Guidelines

The Power of Sameness!

Quiz

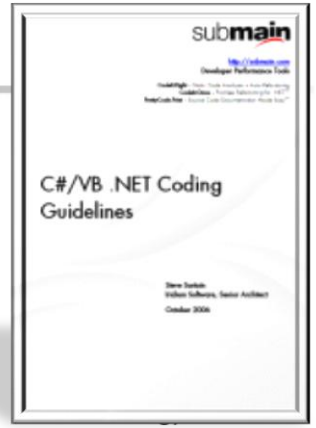
- Does this compile?

```
VB
        Dim foo as IFoo = New IFoo()

C#

        IFoo foo = new IFoo();
```

Identifier	Case	Example	Hungarian	Prefix	Suffix	Notes
Namespace	Pascal	`System.Drawing`				
Class	Pascal	`AppDomain`				Don't - "C" prefix
Attribute Class	Pascal	`ObsoleteAttribute`			Attribute	
Exception class	Pascal	`WebException`			Exception	
Interface	Pascal	`IDisposable`		I		
Enum type	Pascal	`ErrorLevel`			~~Enum~~	singular name, plural for bit fields types + FlagsAttribute
Enum values	Pascal	`FatalError`				
Method	Pascal	`RemoveAll`				Verb or verb phrase
Parameter	Camel	`valueIndex`				Describe meaning, not type - ~~intValue~~ - value
Event	Pascal	`ValueChange`		~~On, Before, After, ...~~		Verb or verb phrase
EventHandler class	Pascal	`MouseEventHandler`			EventHandler	
EventArgs class	Pascal	`MouseEventArgs`			EventArgs	
Property	Pascal	`BackColor`				Noun or noun phrase
Read-only Static field	Pascal	`RedValue`				Use Property
Protected instance field	Camel	`redValue`				Use Property
Public instance field	Pascal	`RedValue`				Use Property



Code Analysis

- Code correctness
- Improve code quality
- Identify potential issues earlier in the dev cycle
- Enforce coding guidelines
- Automatic code reviews
- Educational tool

Code Analysis Tools

(FxCop, VSTS Code Analysis)

Finds –

- Code Compliancy
- Coding Standards
- Naming Conventions
- Violations
- Code patterns
- Best practices
- Performance
- Security

T

D

D

Too

Darn

Difficult !!!

FxCop

Pros

- Better than not using any tool
- Free

Cons

- Provides recommendations – you are on your own from there
- Only Microsoft guidelines
- No flexibility
- No link to source code
- Can not do web sites

Refactoring

(Your favorite refactoring tool here)

- Rename
- Encapsulate Field
- Extract Method
- Extract Interface
- …
- …

Refactoring

Refactoring tools do not proactively search for code patterns that require refactoring!

The Challenge

- Code Analysis tools and Refactoring tools don't talk to each other!

The need

- ✓ Find code patterns

  and

- ✓ Provide recommendations

  and

- ✓ Correct issues

CodeIt.Right

Static Code Analysis + Automatic Refactoring

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Painless Coding Guidelines™

Highlights

- Microsoft .NET Guidelines and Best Practices - right out of the box
- Automatic correction options
- “Automagical” Refactoring to Patterns
- Rule Libraries and Profiles
- Custom Rules SDK and API
- Pivot View of the solution health
- Command line version
- …
- Am I running out of time?

Sample Rules

Design

- Abstract types should not have public constructors
- Implement IDisposable Correctly
- Mark assembly with a specified attribute
- Method -> Do not hide base class methods
- Sealed Class -> Do not declare protected members
- Type that contains only static members should be sealed (NotInheritable)
- Do not declare externally visible instance fields
- …

Sample Rules continued…

Error Handling

- Do not re-throw exceptions explicitly
- Do not catch general exception types
- Do not catch the specific exception types
- Do not handle non-CLS-compliant exceptions
- …

General

- VB -> Enforce Option Compare, Explicit, Strict
- Set all Windows Forms Designer settings correctly
- …

Sample Rules continued…

Naming

- … you name it …

Performance

- Dispose methods should call SuppressFinalize
- Remove unused locals, private methods
- …

Usage

- Serialization Pattern, Custom Serialization
- Dispose/Finalize Pattern
- …

Demo #1

Naming Rules

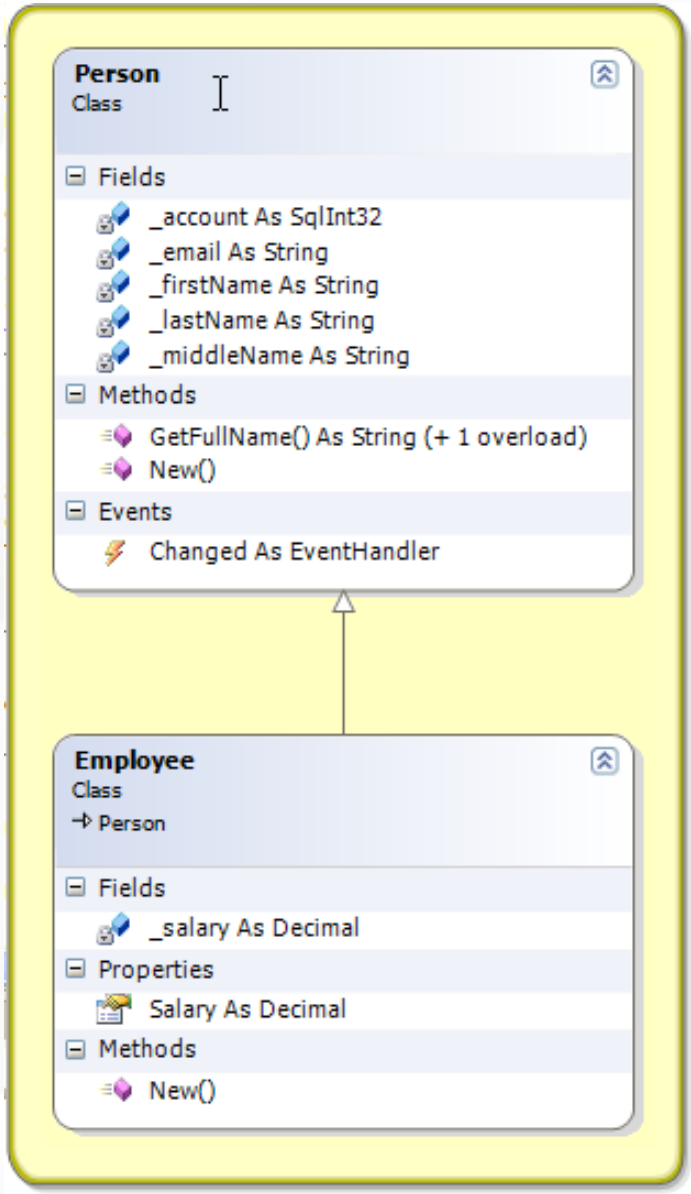
Demo #2

Custom Serialization

Project implements simple

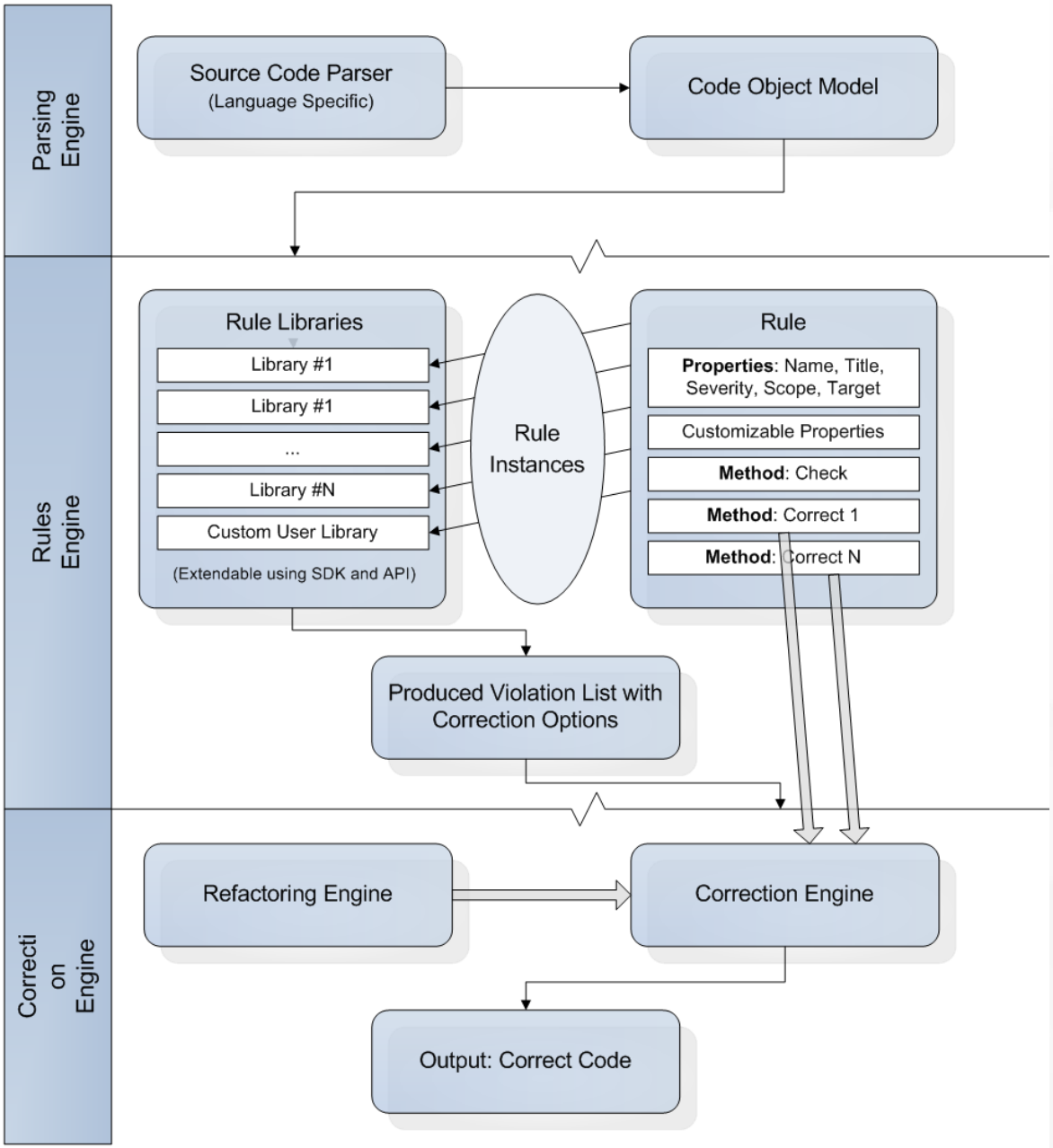
Person <- Employee

class hierarchy



Demo #3

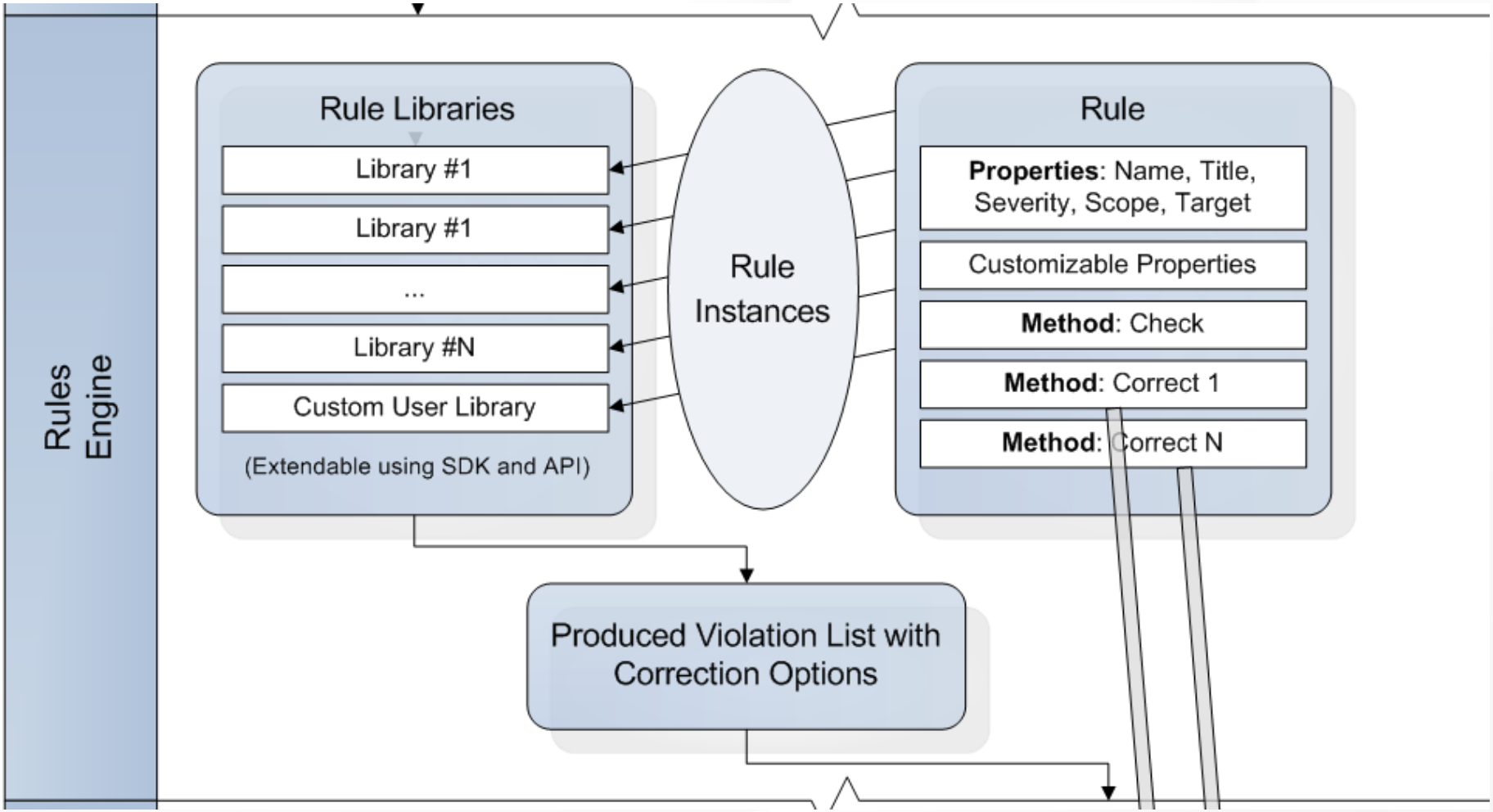
DasBlog


Parsing Engine
Source Code Parser
(Language Specific)
Code Object Model
Rules Engine
Rule Libraries
Library #1
Library #1
...
Library #N
Custom User Library
(Extendable using SDK and API)
Rule Instances
Rule
Properties: Name, Title, Severity, Scope, Target
Customizable Properties
Method: Check
Method: Correct 1
Method: Correct N
Produced Violation List with Correction Options
Correction Engine
Refactoring Engine
Correction Engine
Output: Correct Code

Rule libraries

- Extensible
- CodeIt.Right SDK
- New Rule Wizard
- FxCop mapping
- SuppressMessage attribute

- Community to share custom rules


Rules Engine
Rule Libraries
Library #1
Library #1
...
Library #N
Custom User Library
(Extendable using SDK and API)
Rule Instances
Rule
Properties: Name, Title, Severity, Scope, Target
Customizable Properties
Method: Check
Method: Correct 1
Method: Correct N
Produced Violation List with Correction Options

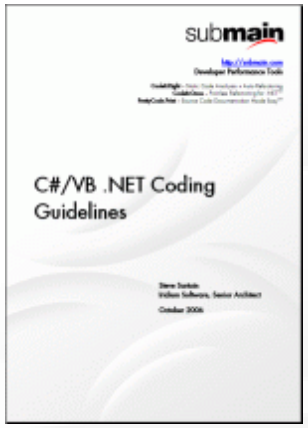
Tips for existing projects

- Filter the noise
- Naming rules may not be important for existing product
- Drill down
  - Critical Errors
  - Errors
  - Warnings
- Use multiple profiles
- Use excludes
- Use SuppressMessage

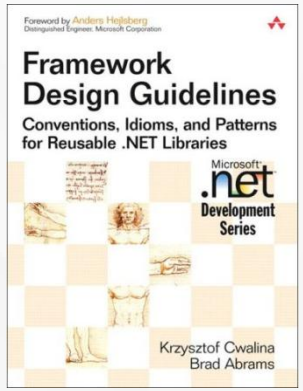
Questions? Comments?

Resources

CodeIt.Right
http://submain.com/codeit.right



.NET Coding Guidelines 100+ pg eBook (PDF)
http://submain.com/guidelines



Book: Framework Design Guidelines
by Brad Abrams and Krzysztof Cwalina
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Serge Baranovsky - sergeb@submain.com