

# The .NET Framework - Technology in Education

# Why .NET?

- **Interoperability between languages and execution environments**
- **Uniformity in schema or formats for Data Exchange using XML, XSL**
- **Extend or use existing code that is valid**
- **Programming complexity of environment is reduced**

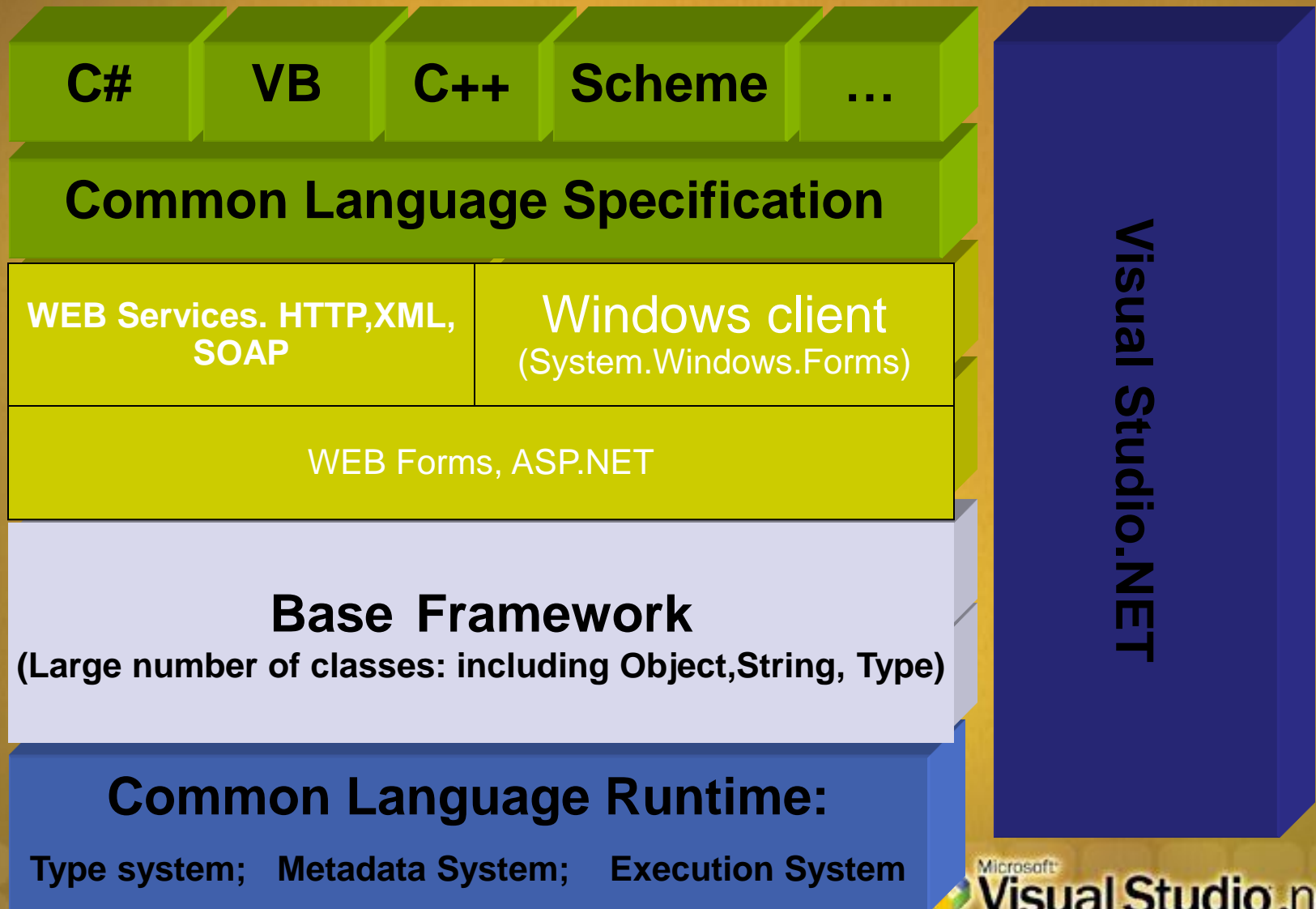
# The .NET Framework is...

- A COMPONENT MODEL FOR THE INTERNET
  - The new approach to building large scale distributed systems for the Internet
  - Provides the capability to integrate multiple devices
  - Built around the tools and protocols (XML, WSDL, SOAP, HTTP) that are becoming standard on the Internet

# Understanding the .NET Framework

- **.NET Framework Architecture**
- **.NET Web Services**
- **Key Benefits**

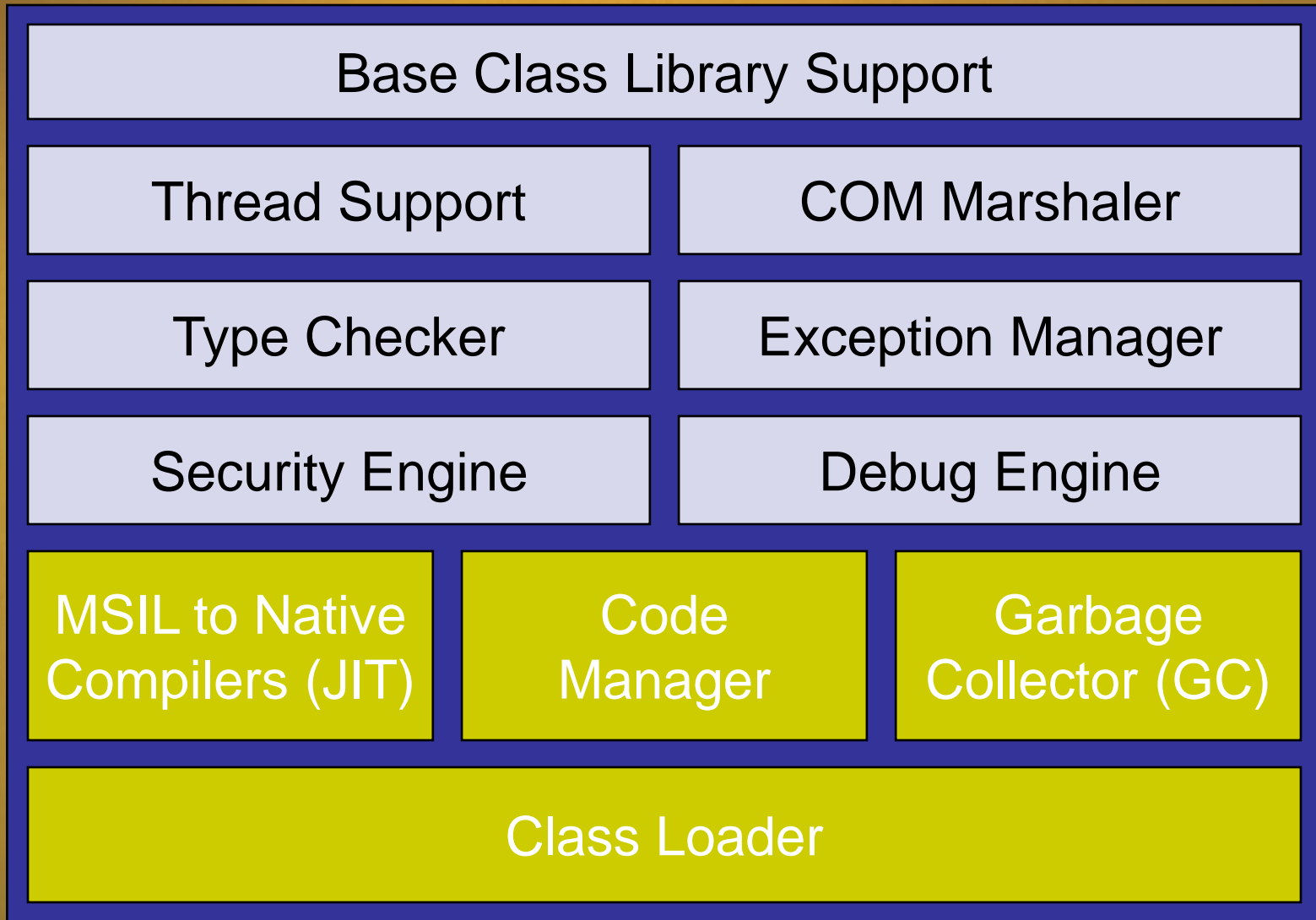
# .NET Framework Architecture



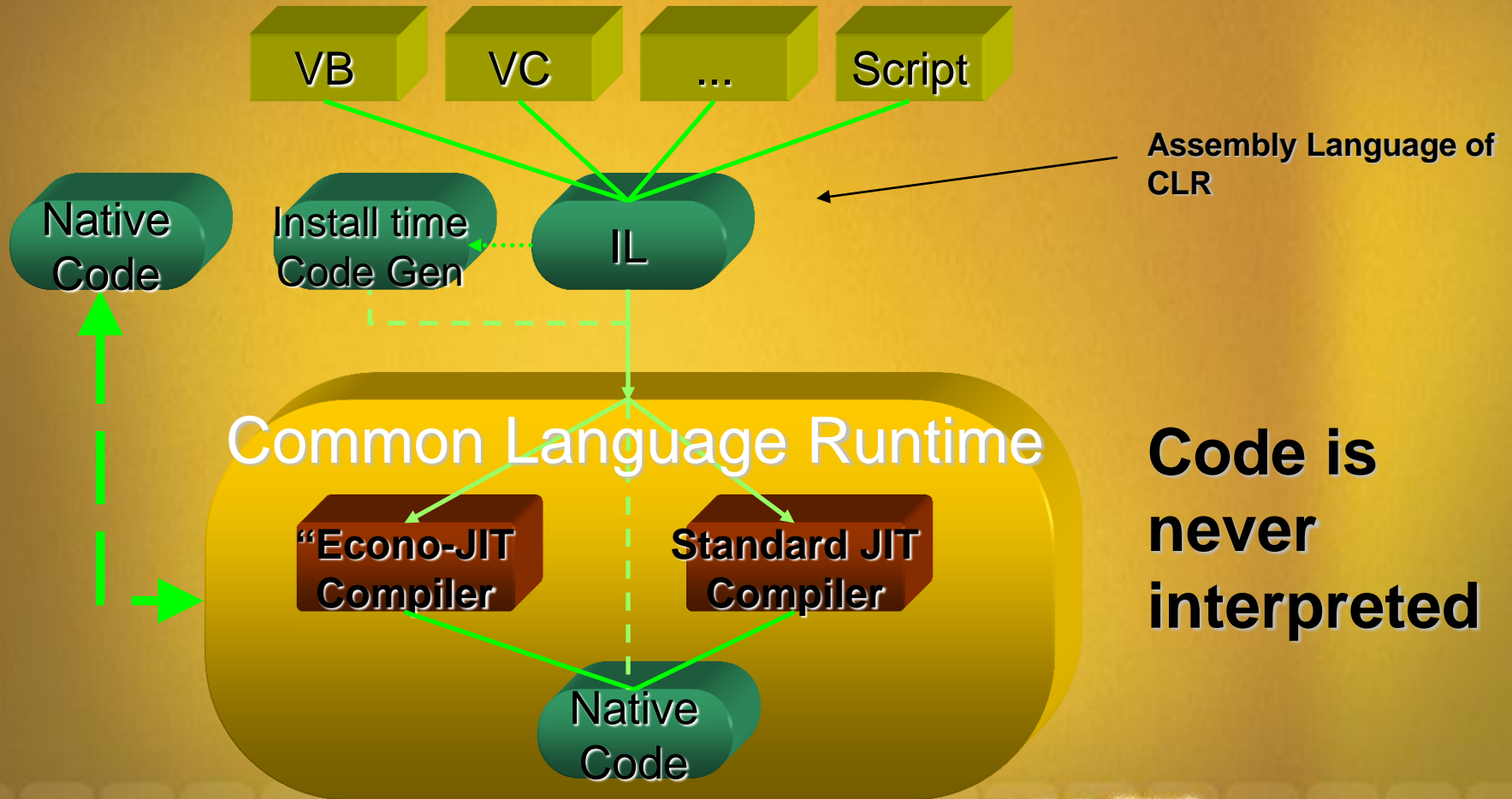
# Common Language Runtime

- **Common Type System:** passing types between dif. prog. languages;
- **Metadata.** Type info must remain in executable. RTTI in C++; type libraries in COM; interface repositories in CORBA
- **Execution Engine:** inheritance of types from dif. languages; IL; memory management: stack walks (IL е стеково базиран, IL инструкциите са безтипови, IL реализира чрез стек абстракция на базовия процесор) & garbage collection, security (error handling, верификация – компилирането на IL инструкция в КОП е съвместно с CLR процес - верификация) ...

# Common Language Runtime functions



# Intermediate Language (IL)

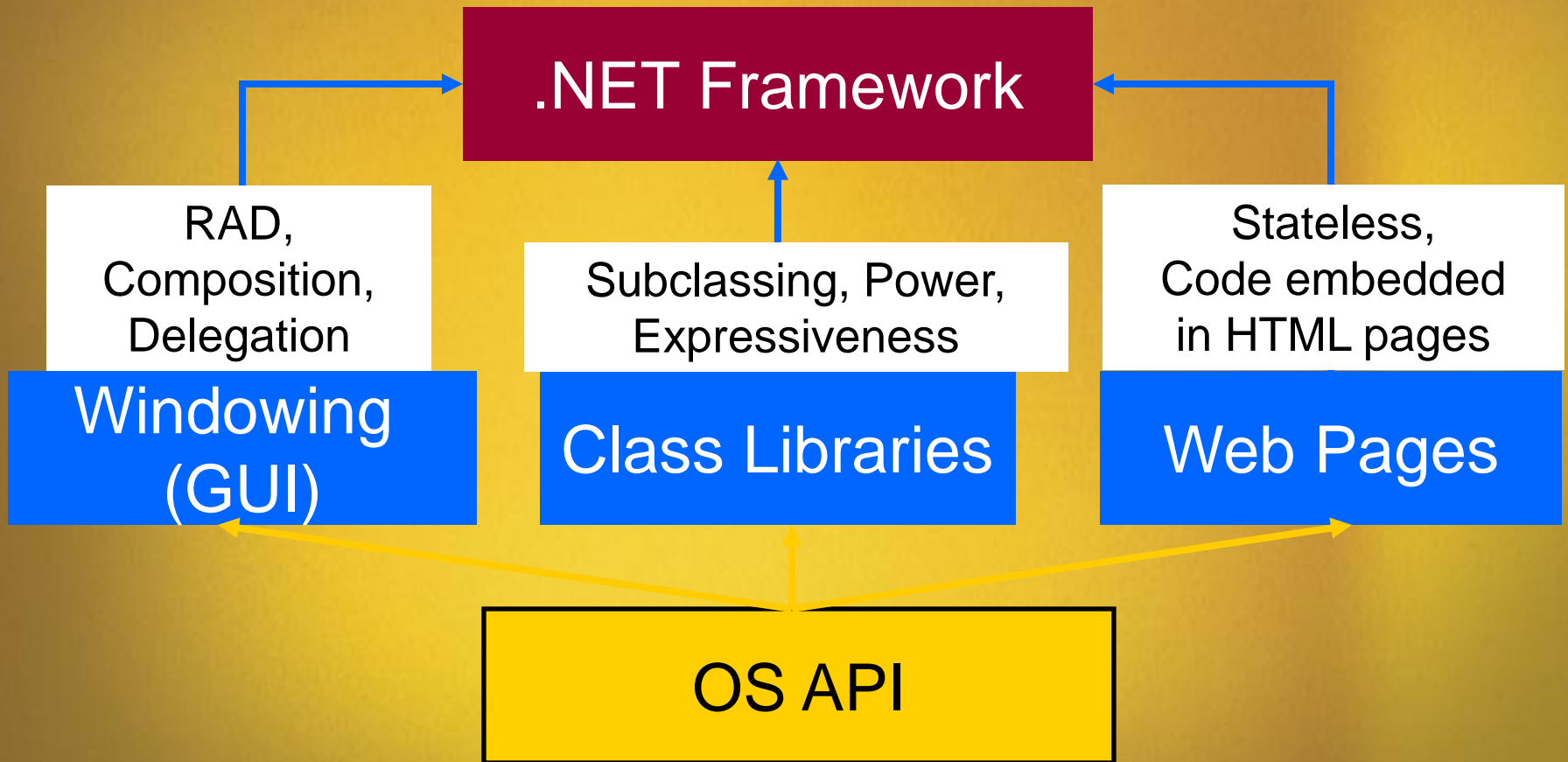


**Code is never interpreted**



# Unified Programming Model

Consistent API availability regardless of language and programming model



# Languages

- Ada
- APL
- Basic (Visual Basic)
- C#
- C
- C++
- J#
- COBOL
- Component Pascal
- ECMAScript (JScript)
- Eiffel (Monash University)
- F# (MS functional lang.)
- IronPython, IronRuby (MS dynamic lang.)
- Visual Basic (XML included)
- Icc (MS Research Redmond)
- Mondrian (Utrecht)
- ML (MS Research Cambridge)
- Mercury (Melbourne U.)
- Oberon (Zurich University)
- Oz (Univ of Saarlandes)
- Perl
- Prolog
- Scheme (Northwestern U.)
- SmallTalk

# .NET Services

- What is a Web Service?
  - Unit of application logic providing data and services over the Web using standard protocols
  - XML Web Services expose additional services needed to build solutions
  - ASP .NET in the .NET Platform
- Building Block Services
  - Basic services used to build applications and Web Service
  - Examples: [www.xmethods.com](http://www.xmethods.com)
  - Access through any Website

# XML Web Services Foundation

Simple, Open, Broad Industry Support

Publish, Find, Use Services: UDDI

Service Interactions: SOAP

Universal Data Format: XML

Ubiquitous Communications: Internet

# .NET Key Benefits

- Ease of Use
  - Object-oriented model
  - Namespace and Framework structure
- Freedom to Choose
  - The language that meets your needs
  - The development tool that will make it easier to learn programming

# .NET Key Benefits

- Stability
  - Garbage collection
  - Assemblies eliminates DLL compatibility issues
- Security
  - Restricting or containing the illegal memory reference

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