

2.2.2.2.2 Operating Environment

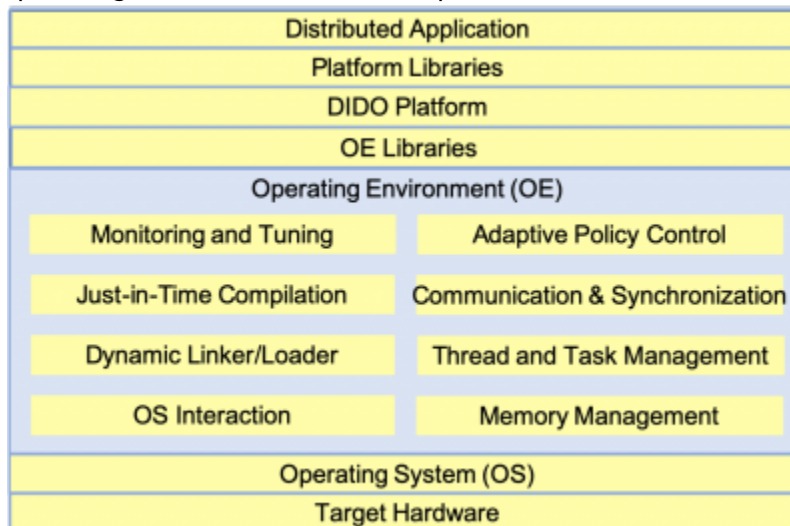
[return to Node View](#)

The concept of an Operating Environment (Run Time System) is generally traced back to *Ada*, which defined: an abstract [interface](#) to the underlying [operating system](#), thread and task management, as well as mechanisms for monitoring, tuning, and performing dynamic memory management (all to protect against access to unallocated memory, buffer overflow errors, range violations, off-by-one errors, array access errors, and other detectable poor coding practices)¹.

Another major advancement came with Java and the Java [Virtual Machine](#) (JVM), which added a [Just-In-Time \(JIT\) compiler](#), virtual [processor](#), and an interpreter².

Microsoft later introduced the .NET framework, which runs on the Windows operating system. .Net includes Web Services, Web Forms, and Windows Forms in the Operating Environment³. Subsequently, Mono was introduced and is now sponsored by Microsoft in order to allow cross-operating system development and deployment of .Net applications. The Mono Framework is based on [ECMA Standards](#) for C# and the [Common Language Runtime \(CLR\)](#)⁴;

Figure 1: Generalized Operating Environment (OE) components⁵



Standards

Technical Standards

- [ISO/IEC 9899:2018 Programming languages -- C](#)
- [ISO/IEC 14882:2017 Programming languages -- C++](#)
- [ECMA: Standard ECMA-262 - ECMAScript® 2018 Language Specification \(Javascript\)](#)
- [ECMA: Standard ECMA-334 - C# Language Specification](#)
- [ECMA: Standard ECMA-335 - Common Language Infrastructure \(CLI\)](#)

- [ECMA: Technical Report TR/84 - Common Language Infrastructure \(CLI\) - Information Derived from Partition IV XML File](#)
- [ECMA: Technical Report TR/89 - Common Language Infrastructure \(CLI\) - Common Generics](#)
- [RFC5424 - The Syslog Protocol \(SYSLOG\)](#)
- [W3C: RDF 1.1 Terse RDF Triple Language \(Turtle\)](#)
- [W3C: OWL 2 Web Ontology Language - Structural Specification and Functional-Style Syntax \(second Edition\)](#)
- [W3C: RDF 1.1 Concepts and Abstract Syntax \(RDF\)](#)
- [W3C: SPARQL 1.1 Overview \(SPARQL\)](#)
- [W3C: Cascading Style Sheets Level 2 Revision 2 \(CSS 2.2\) Specification](#)
- [W3C: HTML5 \(HTML5\)](#)
- [W3C: Extensible Markup Language \(XML\) 1.0 \(Fifth Edition\)](#)
- [W3C: XML Schema Definition Language \(XSD\) 1.1 Part 1: Structures](#)
- [W3C: XML Schema Definition Language \(XSD\) 1.1 Part 2: Datatypes](#)
- [W3C: XSL Transformations \(XSLT\) Version 3.0](#)
- [W3C: Document Object Model \(DOM\) Level 3 Core Specification](#)
- [W3C: XML Path Language \(XPath\) 3.1](#)
- [OMG: Data Distribution Service \(DDS\)](#)
- [OMG: DDS Interoperability Wire Protocol \(DDSI-RTPS\)](#)
- [OMG: ISO/IEC C++ 2003 Language DDS PSM \(DDS-PSM-Cxx\)](#)
- [OMG: Java 5 Language PSM for DDS \(DDS-Java\)](#)
- [OMG: OPC-UA/DDS Gateway \(DDS-OPCUA\)](#)
- [OMG: RPC Over DDS \(DDS-RPC\)](#)
- [OMG: DDS Security \(DDS-SECURITY\)](#)
- [OMG: Web-Enabled DDS \(DDS-WEB\)](#)
- [OMG: DDS Consolidated XML Syntax \(DDS-XML\)](#)
- [OMG: DDS For Extremely Resource Constrained Environments \(DDS-XRCE\)](#)
- [OMG: Extensible and Dynamic Topic Types for DDS \(DDS-XTypes\)](#)

de facto Standards

- [Apache: Log4j](#)
- [Apache: Log4cxx](#)
- [Apache: log4php](#)
- [Apache: log4net](#)
- [Apache: log4jscala](#)
- [Bitcoin: Developer's Guidance](#)
- [Ethereum: cpp Project](#)
- [Ethereum: Ethereumh Project](#)
- [Ethereum: Ethereumjs-lib Project](#)
- [Ethereum: Ethereum_j Project](#)
- [Ethereum: Go-ethereum Project](#)
- [Ethereum: Parity Project](#)
- [Ethereum: Pyethapp Project](#)
- [Ethereum: Ruby-ethereum Project](#)

- EIP 20: ERC-20 Token Standard
- Ethereum: Ethereum Virtual Machine (EVM)
- Ethereum: Solidity Language Specification
- Linux Foundation: Hyperledger
- Oracle: The Java® Language Specification SE 8 Edition
- Oracle: The Java® Virtual Machine Specification JVM
- Oracle: Java logger API
- Google: Go (software language)
- InterPlanetary File System (IPFS)

Tools

- None at this time

1)

[https://en.wikipedia.org/wiki/Ada_\(programming_language\)](https://en.wikipedia.org/wiki/Ada_(programming_language))

2)

“Understanding the JVM Architecture”, Joydip Kanjilal, Developer.com, 16 February 2015,

<https://www.developer.com/java/data/understanding-the-jvm-architecture.html>

3)

“Components of .Net Framework”, DeveloperIn.Net, Jayanthan JVP,

<http://www.developerin.net/a/39-Intro-to-.Net-FrameWork/23-Components-of-.Net-Framework>

4)

“Cross platform, open source .Net Framework”, The Mono Project, <https://www.mono-project.com/>

5)

“Language Run-Time Systems: An Overview”, Evgenij Belikov, Heriot-Watt University, School of Mathematical and Computer Sciences Riccarton, EH14 4AS, Edinburgh, Scotland, UK

<https://pdfs.semanticscholar.org/b20c/0295a0661a4c175fcd5acc0ea49e9caf3ca1.pdf>

From:

<https://www.omgwiki.org/dido/> - **DIDO Wiki**

Permanent link:

https://www.omgwiki.org/dido/doku.php?id=dido:public:ra:1.2_views:2_tech_views:2-nodenet:2_node:2_oenv

Last update: **2022/02/05 21:20**

