

Simplicity

"Simplicity and clarity are first and most important, since almost everything else follows from them."

- Kernighan & Pike, *The Practice of Programming*'.

Generality

"Generality often goes hand in hand with simplicity, for it may make possible solving a problem once and for all rather than over and over again for individual cases." - Kernighan & Pike, *The Practice of Programming*'.

Inferno

Based on more than 30 years' research at Bell Labs by the group that created UNIX and C, Inferno represents the above ideals taken as far as their vision could see. Every element of the Inferno operating system, from the system call interface to the design of the programming language, has been painstakingly crafted for simplicity, clarity and generality.

For the developer, this means clean and powerful interfaces, easily understood, and free of the frustration that often accompanies software development in today's ultra-complex software environments.

For the user, this means cheaper and more reliable devices: cheaper due to reduced hardware requirements because of the clean design; more reliable because the system's internal structuring makes it easier to write correct applications.

Over today's spiky world of diverse operating systems and hardware, Inferno spreads a soft cushion: its programs see exactly the same interface, regardless of where it is running.

- Inferno provides exactly the same environment for programs, whether it is running natively on bare hardware or as a user application under another OS.
- Devices and many other resources are transparently accessible across any network medium; applications are not aware that they are accessing a remote resource. The simple Styx protocol enables any application to provide such a resource with ease.
- Strong peer-to-peer, public key encryption and authentication is supported underneath Styx; all applications gain these benefits automatically.
- A C-like language, Limbo, combines expressiveness, type-safety, and a simple, understandable thread-communication model to create a pleasurable imperative programming language.
- Library modules provide component level reuse within Limbo programs, allowing run-time replacement of modules, and avoiding the dependency explosion found in many inheritance-based languages.
- All floating point operations are well-defined; string-to-float and float-to-string conversions are guaranteed accurate. This makes it trivial to write distributed scientific/mathematical applications that behave consistently and predictably across heterogeneous architectures and host OSes.
- Application binaries make use of a virtual machine architecture which means that they are entirely platform independent.



Host operating systems:

Windows NT, 2000, 9x, Me
Windows Internet Explorer (as plug-in)
Solaris
Linux
HP/UX
Irix
Plan 9

Native platforms:

Brightstar Engineering ipEngine (PowerPC MPC823)
Compaq iPAQ (SA1110)
Intel x86
Intrinsyc Cerfcube (SA1110)
Javastation 1 (SPARC)
Motorola 8xx FADS development boards (PowerPC)
Various Intel StrongARM development boards

Supported processors:

ARM/StrongARM/Thumb
IBM/Motorola PowerPC
Intel x86
MIPS
Sun SPARC

Encryption algorithms:

40, 128, 256 bit RC4
56 bit DES
IDEA

Secure hash algorithms:

MD4
MD5
SHA

RAM requirements:

small system:	1MB ROM, 1MB RAM
medium-sized system	4MB RAM
with web browser	16MB RAM

Devices:

Audio
Ethernet
Flash
Graphics
Touchscreen
USB
802.11b

Limbo language features:

C-like syntax
Statically typed
Dynamically loaded modules
Garbage collected
Safe pointers
Readable, pascal-like, declaration syntax
Primitive types:
 byte (8-bit unsigned)
 int (32-bit, signed)
 big (64-bit, signed)
 real (64-bit IEEE floating point)
 list
 array (with subarray slices)
 string (first class, by-value)
 tuple (combination of arbitrary types)
 channel (inter-thread communication)
 adt (like C struct)
 pick (discriminated union type)
 module
Unicode/UTF-8 integrated
"Just-in-time" compilation
Concise and efficient

System architecture:

Resources as files
Styx protocol to distribute files
User level file servers
Cheap processes
Highly portable, well-structured kernel

License:

1-year subscription provides:
 complete source code
 unlimited commercial use
 email support
 Free binary download
Applications are open source

Libraries:

Math, linear algebra, FFTS
Limbo/Tk graphics
Profiling

Software:

Small, SSL & Javascript 1.1 capable web browser
Acme IDE
Graphical debugger
Programmable, extensible shell
Comprehensive set of UNIX-like tools
Online Manual
Demos
Games