netifera

A Distributed Platform

for Network Security Assessment

Who are we?

Philippe Mathieu-Daudé pmd@netifera.com

Claudio Castiglia claudio@netifera.com

http://netifera.com

Agenda

- Network Security Tools
- Some Limitations of Current Tools
- The Netifera Platform
- Netifera based Applications
- Demo
- The Netifera Architecture
- Netifera Peludo
- Questions

Network Security Tools

- What is a network security tool?
  - Network mapping and inventory
  - Port scanning and service discovery
  - Vulnerability scanning
  - Vulnerability exploitation
  - Packet sniffing and traffic monitoring
  - Password recovery
  - Intrusion and malware detection
  - Web application testing

Some Limitations

- Lack of Integration and Interoperability
  - Ad-hoc scripts needed (ex: translate output of a tool to the input format of another)
  - Boring repetitive tasks
  - Difficult to concentrate on the specific problem
- Lack of proper docs or good reference guides
- Sometimes difficult to understand and annoying to use

The Netifera Platform

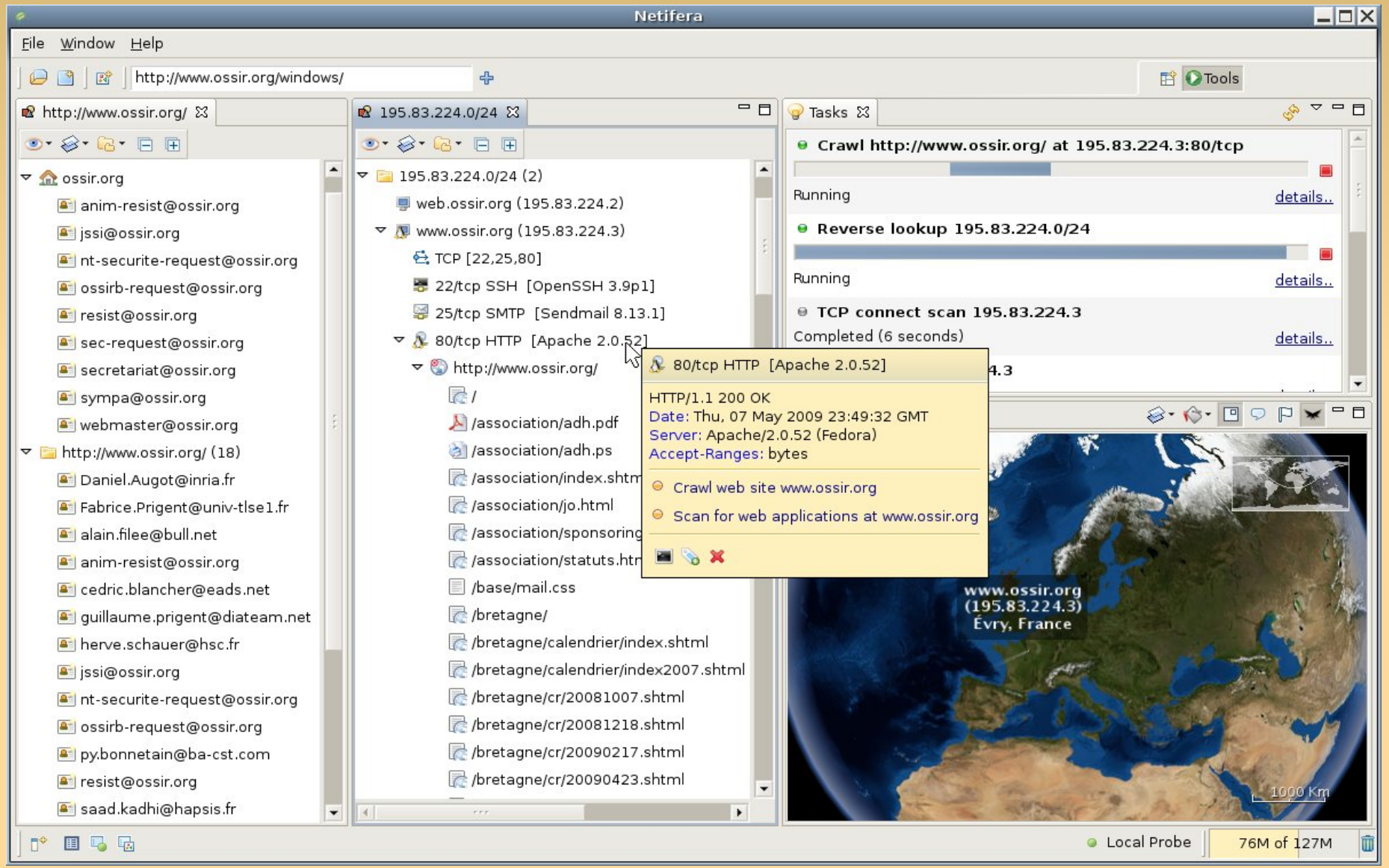
- It is a Distributed Platform
  - Extensible & Scalable
  - Tasks can be distributed and parallelized
- Integrates Information
  - A model of the network is built as information is gathered
- Gathered Data is available to the Tools

The Netifera Platform

- Portability
  - Runs on any supported system w/o code changes
  - Independent of the Operating System and Architecture

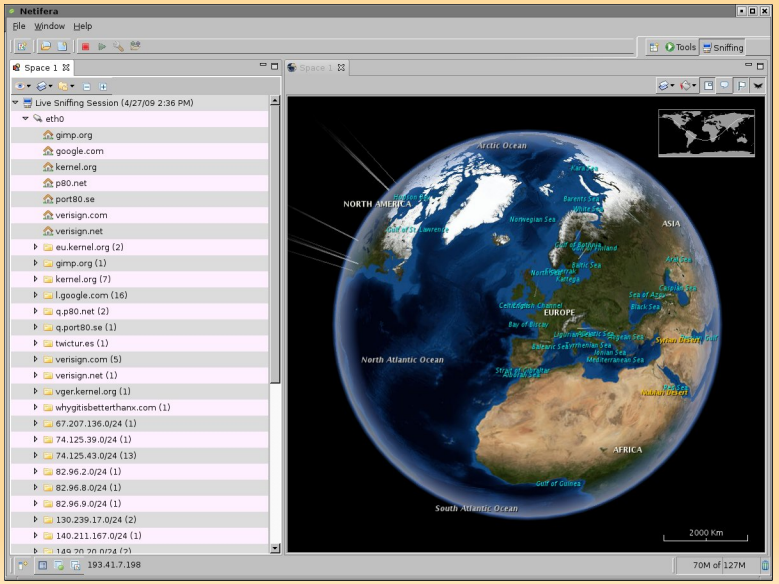
- Provides Common Capabilities needed by Tools
  - File system, sockets, processes, memory, packet sniffing, crafting, injection, protocol analysis, ...

The Netifera Console



The Netifera Console

- Coordination Centre for the Platform Distribution
- Centralized Data Model
- Extensive Analysis, Exploration and Visualization Capabilities
- Solid Graphical User Interface



The Netifera Probe

The Netifera Probe

- Contains the Entire Netifera Platform... without the GUI
- Is a Node in the Distributed Platform
- Local Data Model
- Autonomous (No need to be connected to the Console)

The Netifera Probe

- Gathered information is sent to the Console
  - The Console's model integrates the information coming from the probes
  - The user is able to Analyze and Explore data from all probes
  - Enables the network to be seen from different view points

The Netifera Probe

- Tools and other components can be installed, upgraded and uninstalled while running, over the network, as needed

- Easy Installation
  - Upload a single executable file (admin choice)
  - Injection inside living processes as a shellcode (pentester choice)
  - Self-Contained (no external deps)

Examples

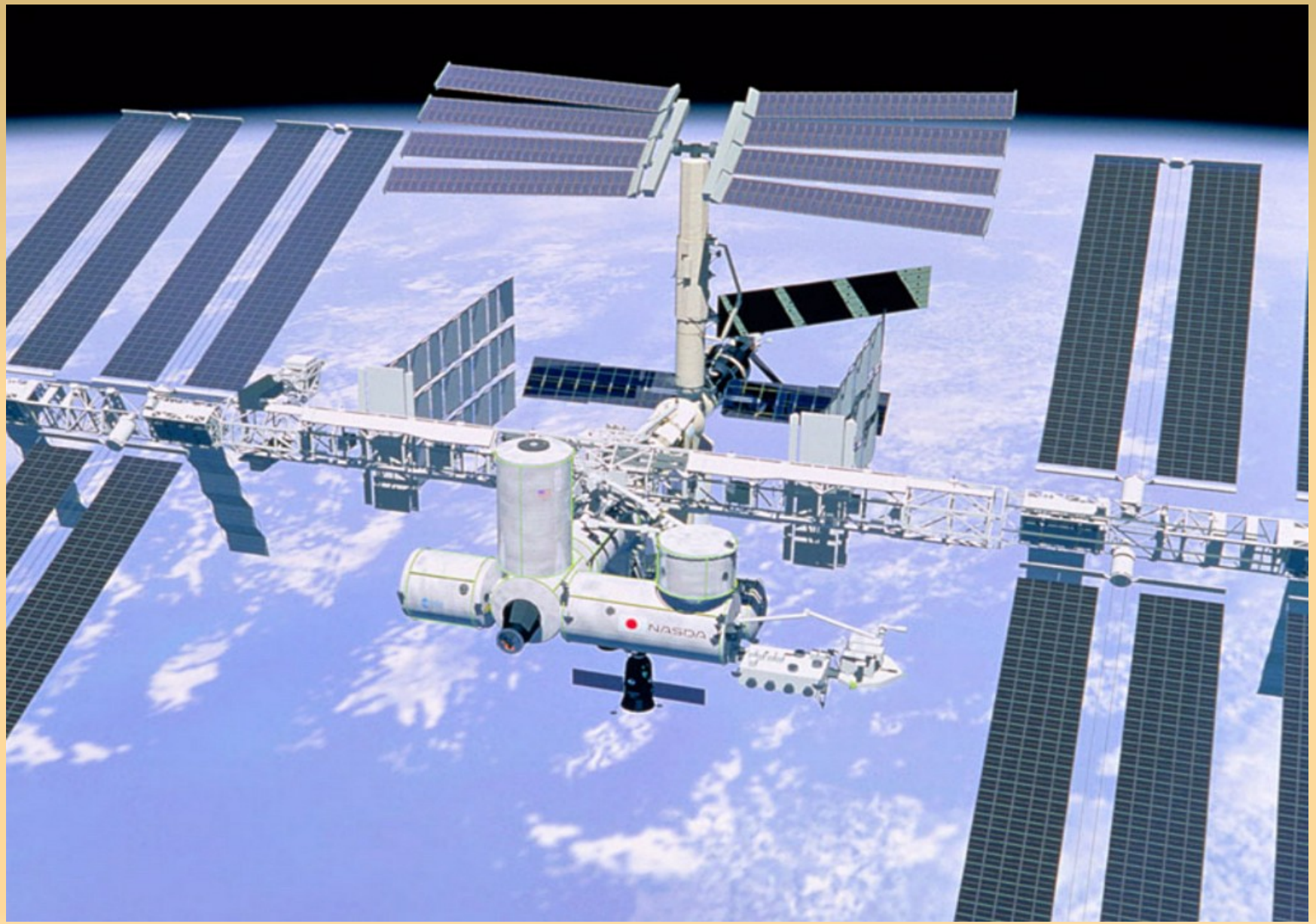
- Security Assessment
- Network Administration
  - Management of large number of systems
  - Orchestration of tasks
- Network Monitoring
  - Monitoring of Servers/Services Healthiness
  - Detection of network based attacks
  - Network Geography
- Network Research

DEMO

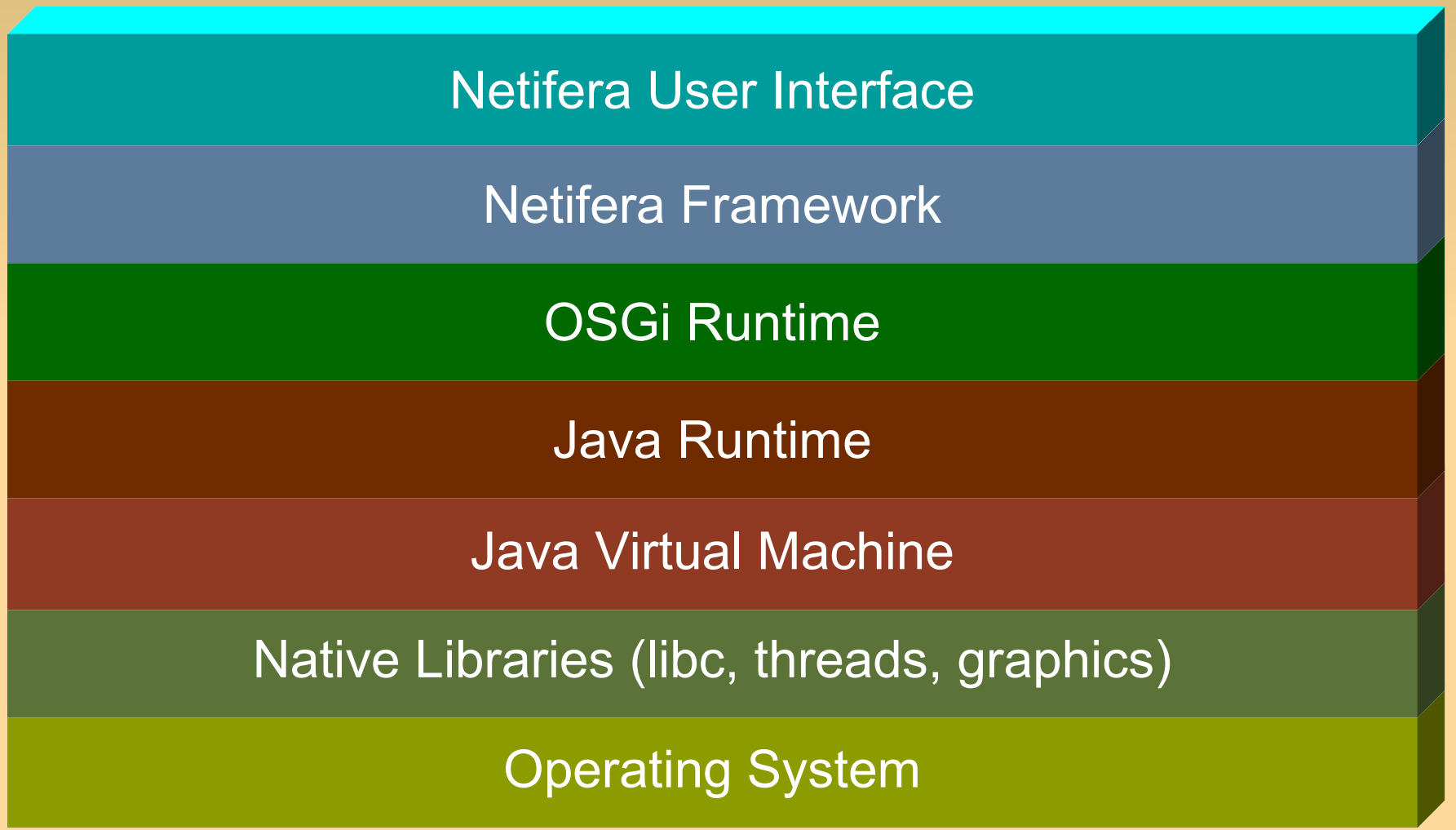
Video

The Java Virtual Machine As Shellcode

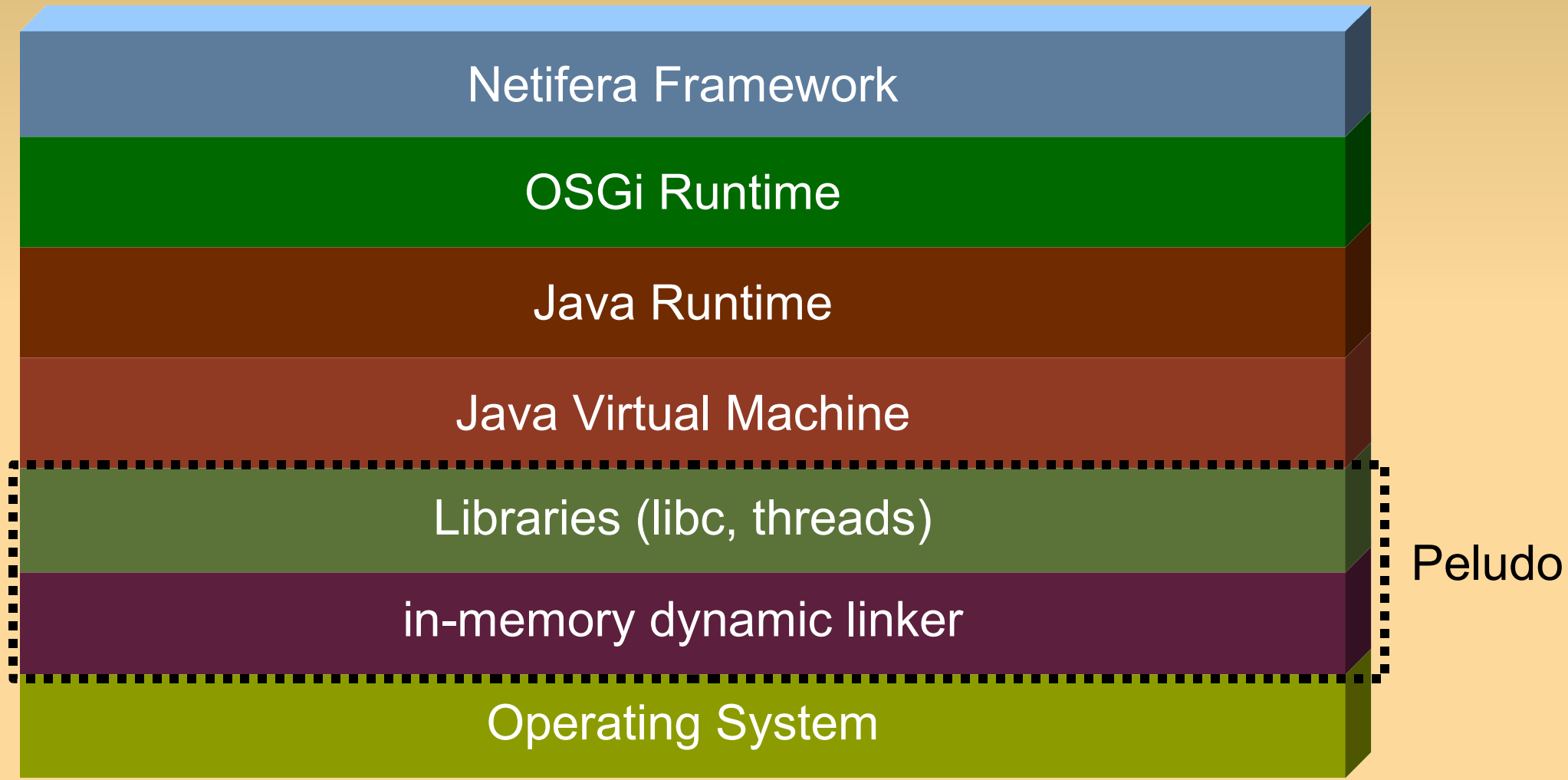
Inside The Netifera Platform



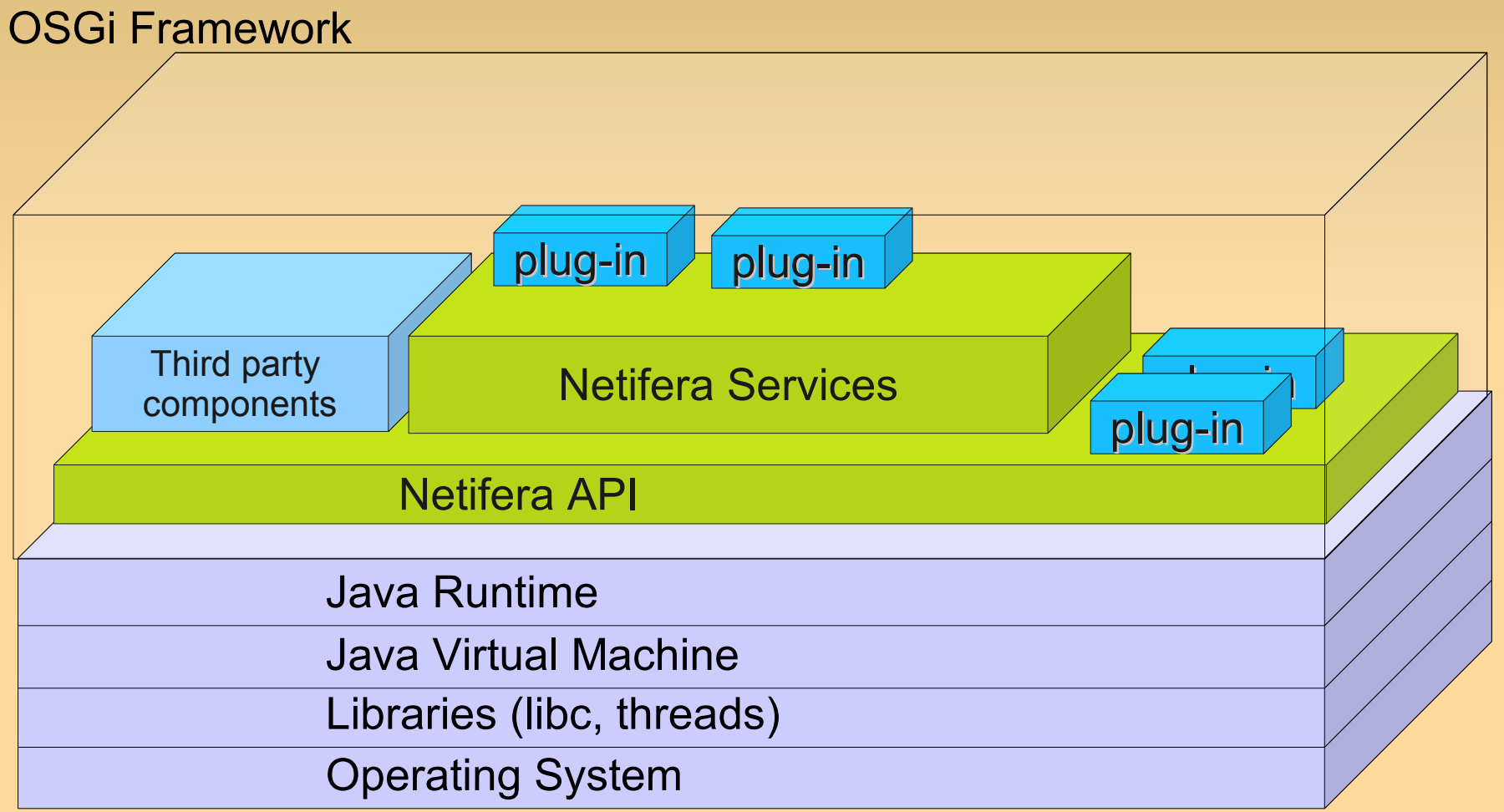
Console Architecture



Probe Architecture



Netifera Architecture: Closer View



Netifera Peludo

Purpose

- Toolchain to generate C based Applications
  - Portable
  - Self-Contained (No external dependencies)
  - Injectable
  - Small

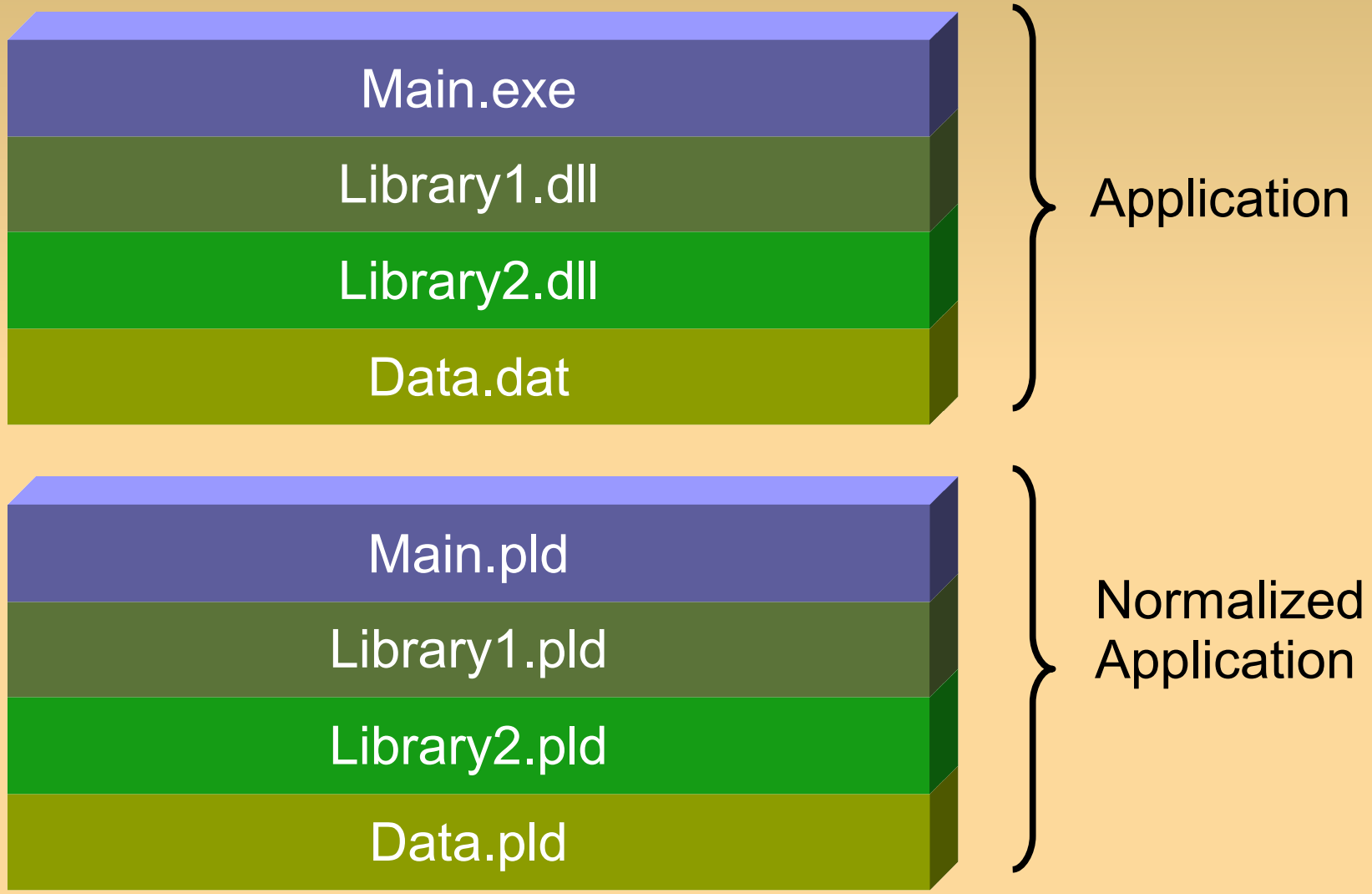
PLD File Format

- It is a simple TLV based binary format
- Composed by Sections
  - Standard .code, .data, .export, .import, .reloc
  - .nimport (Native Imports)
  - Supports compression

What is an Application?

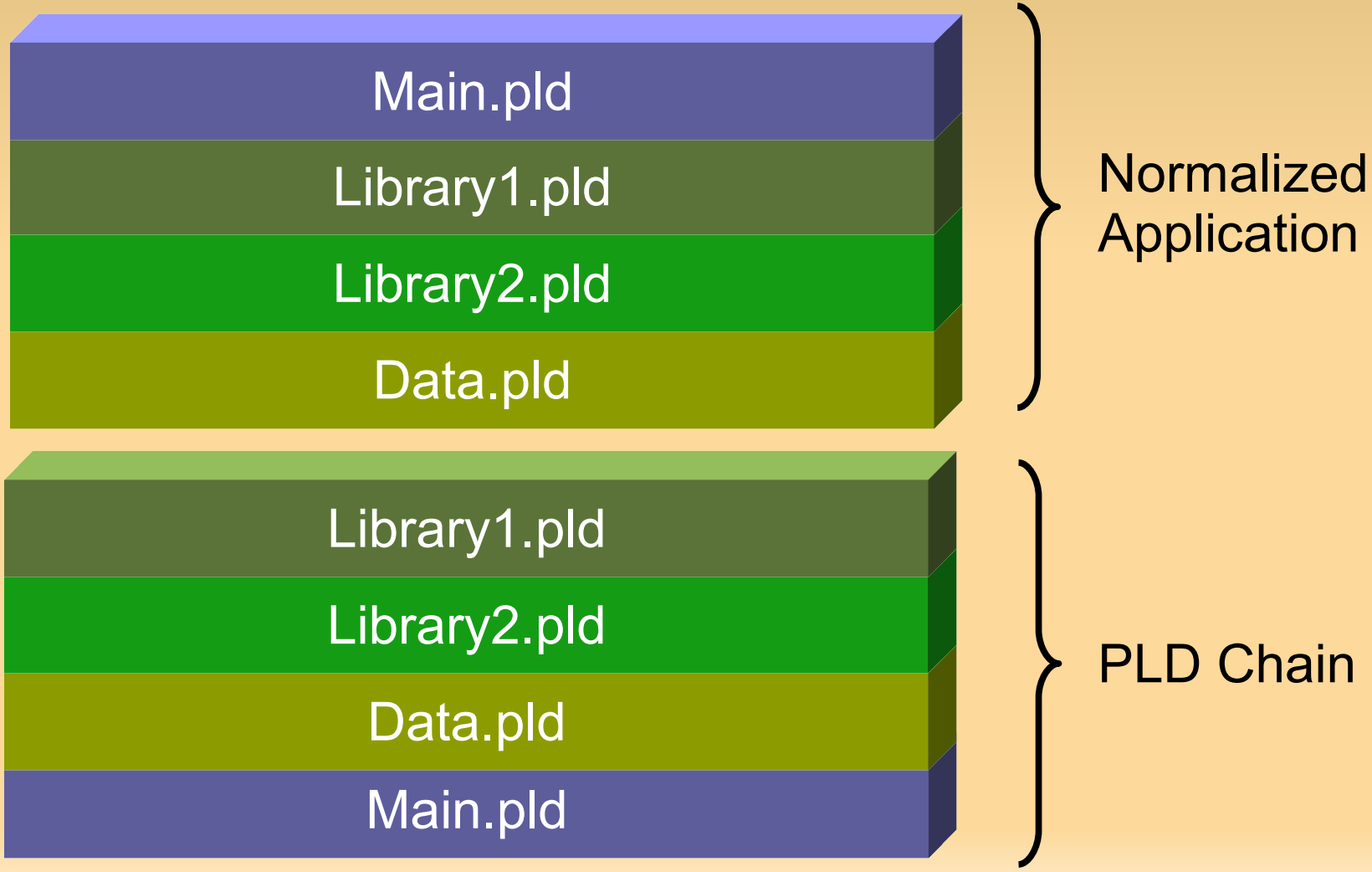
- Applications are composed by
  - Main executable
  - Dependencies (libraries)
  - Optional data files
- Under Peludo, Applications are normalized to the PLD format
  - Entirely composed of PLD files
  - Data files are embedded inside pure .data PLDs

PLD Normalization



PLD Chain

- A PLD Chain is a concatenation of PLD files in dependency order



PLB Files

- Peludo provides two components:
  - Bootstrap code
  - Peludo kernel (mainly composed by the PLD loader)
    - The PLD loader is an in-memory linker that never touches the filesystem
- A PLB File is created when a PLD Chain is concatenated to these two components

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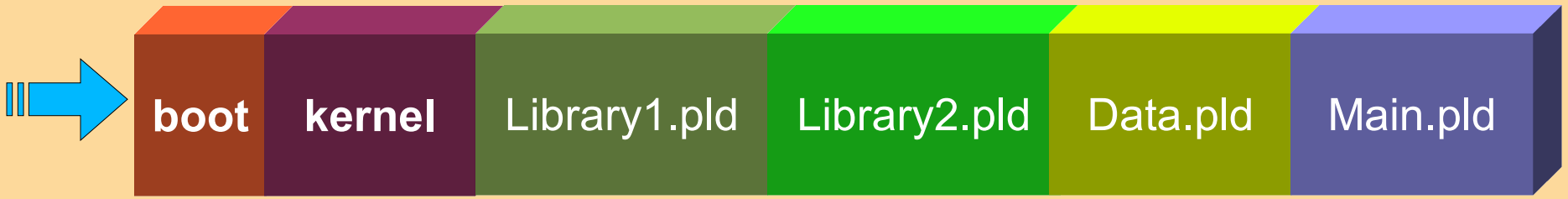
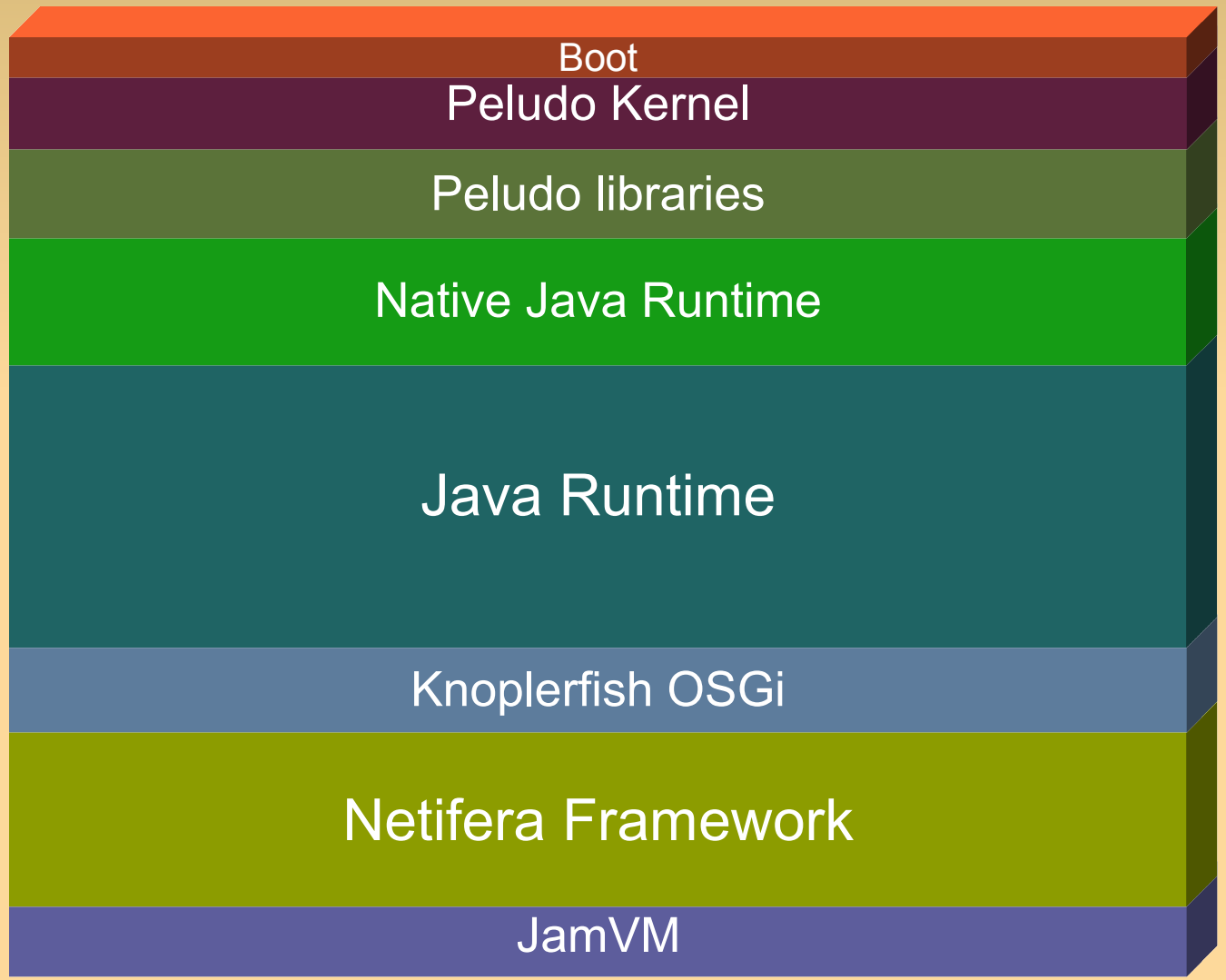


- To launch the Application you just jump to the PLB's first byte

Injection

- In order to inject inside a living process
  - The process should be exploited (or specially created) to receive a PLB File as shellcode
  - The PLB is received and loaded into memory
  - Executed jumping to its first byte

Netifera's PLB Probe



Thank you!

Questions?

Contact Us

http://netifera.com

info@netifera.com