

Architecting Java solutions for CICS





Architecting Java solutions for CICS

Course introduction

Course introduction

- ▶ Reasons for hosting Java in CICS
- ▶ Requirements:
 - ▷ Knowledge of transaction processing
 - ▷ Experience of Java development

What you'll learn by the end of this course

1. CICS as a mixed language application server
2. Integrating Java applications into a mixed language environment
3. Different ways of developing and deploying Java

Thank you for watching



Overview of Java in CICS

Mixed language applications in CICS

What is CICS?

- ▶ Mixed language application server
- ▶ High volume on-line transaction processing
- ▶ Provides services to host applications
- ▶ Multi-user access to data and messaging

What is CICS?

1. Transactional integrity
2. High security
3. Workload management
4. Wide range of standard connectors

CIICS – A mixed language application server

- ▶ COBOL
- ▶ PL/I
- ▶ Assembler
- ▶ C/C++
- ▶ REXX
- ▶ PHP
- ▶ Java

Mixed language application server

Mixed language applications in CICS

1. Inter-language calling between components
 - ▷ COBOL, Java and other languages
 - ▷ Common interfaces
 - ▷ Independant development

Mixed language applications in CICS

2. Standard APIs

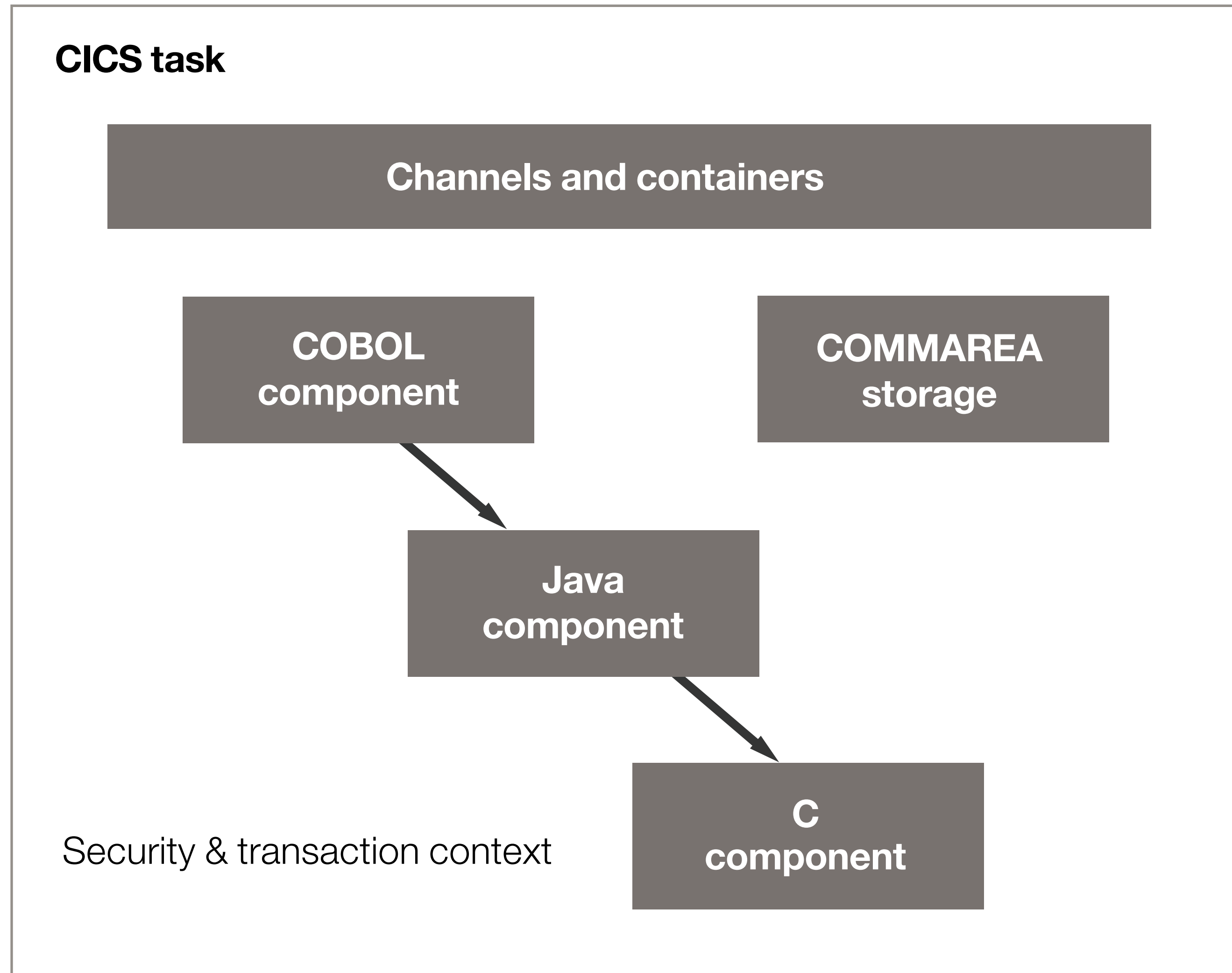
- ▶ EXEC CICS command API
- ▶ Language neutral syntax
- ▶ Translated at compile time
- ▶ Language specific implementation for Java

Mixed language applications in CICS

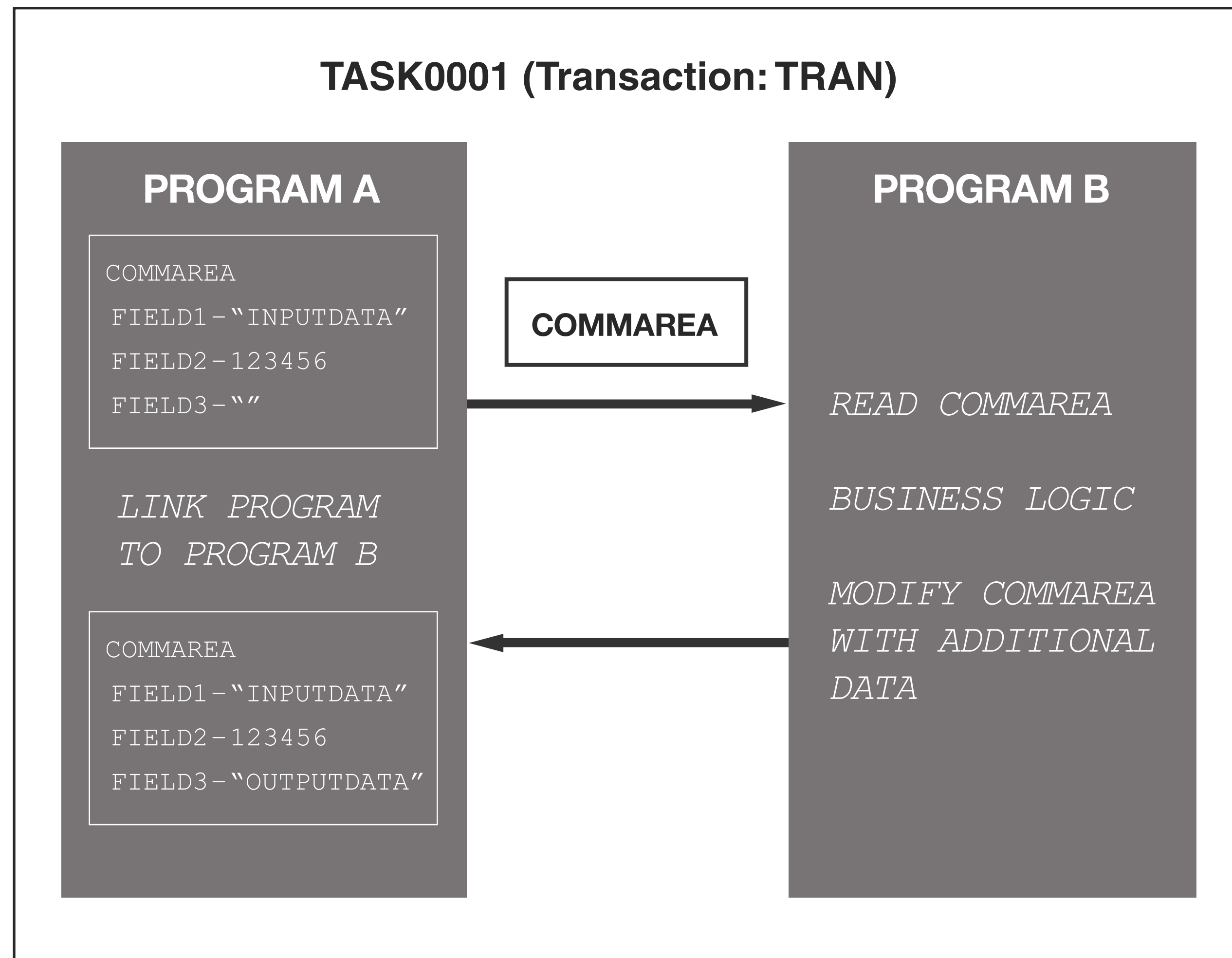
3. Container management

- ▶ Transactions and security
- ▶ CICS task provides UOW and security context
- ▶ Spans across multiple language components

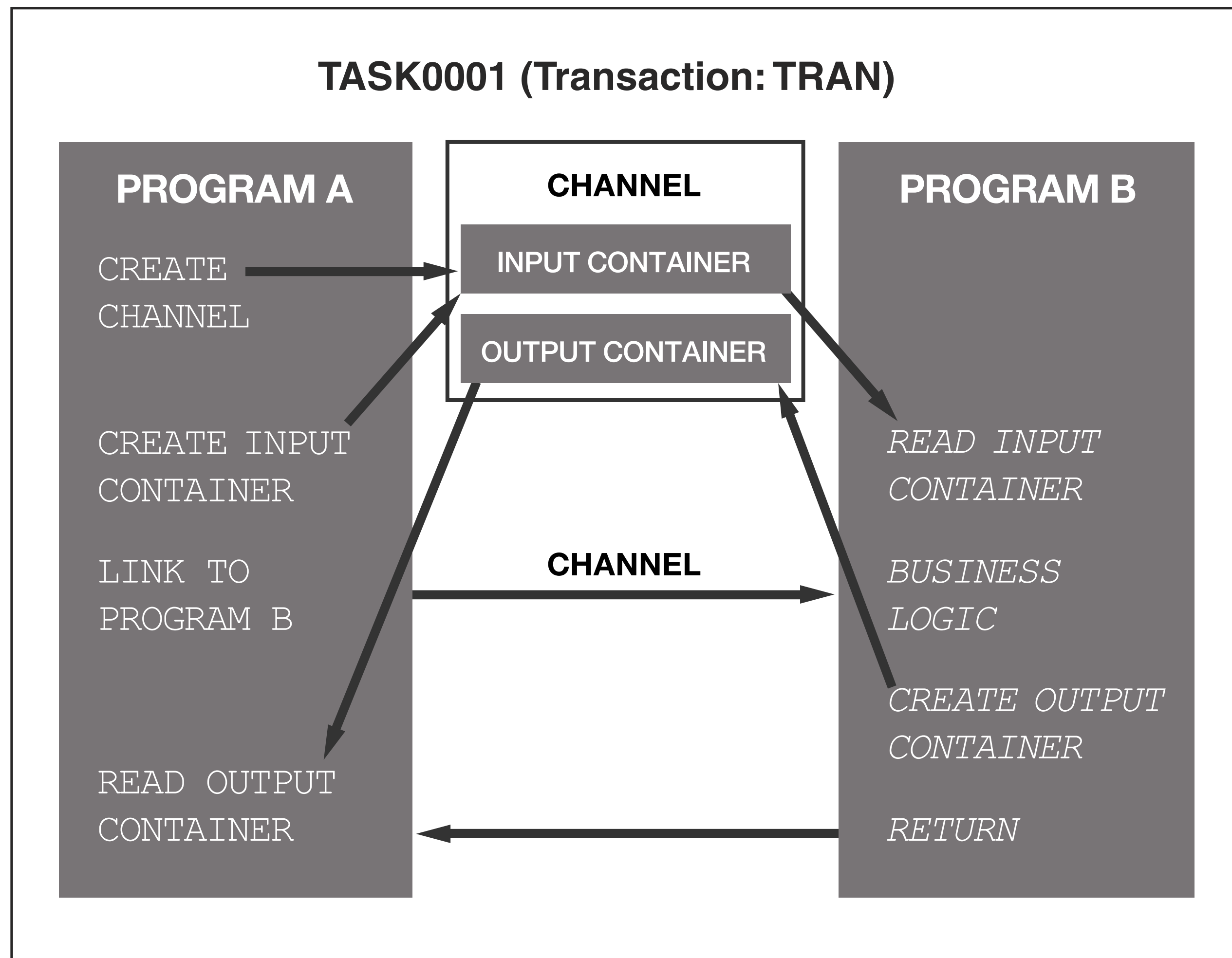
Multiple language components



Calling components with a COMMAREA



Calling components with channel & containers



EXEC CICS API and translator

EXEC CICS LINK PROGRAM ()



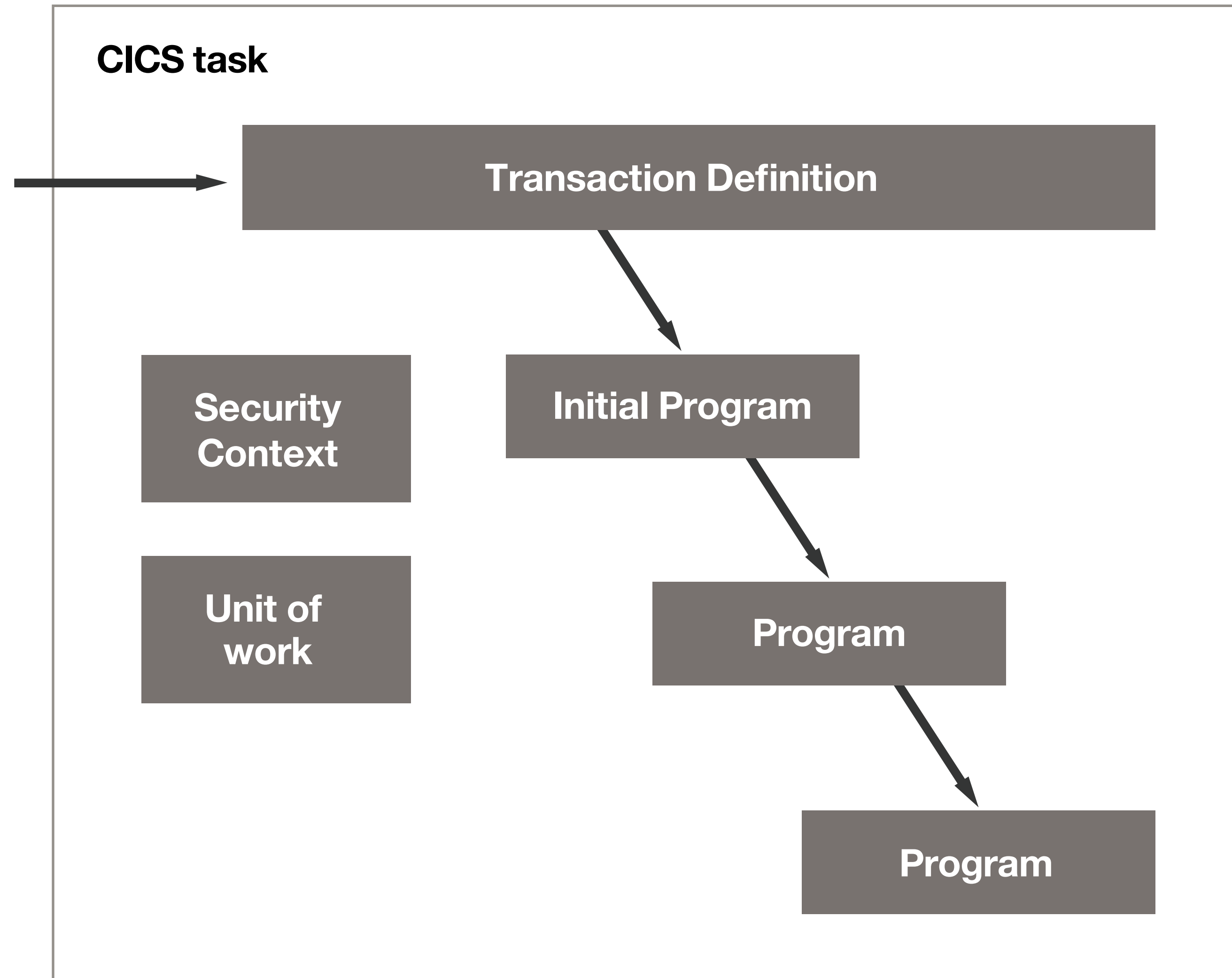
Translator

Language specific statements



Compiler

CICS transactions





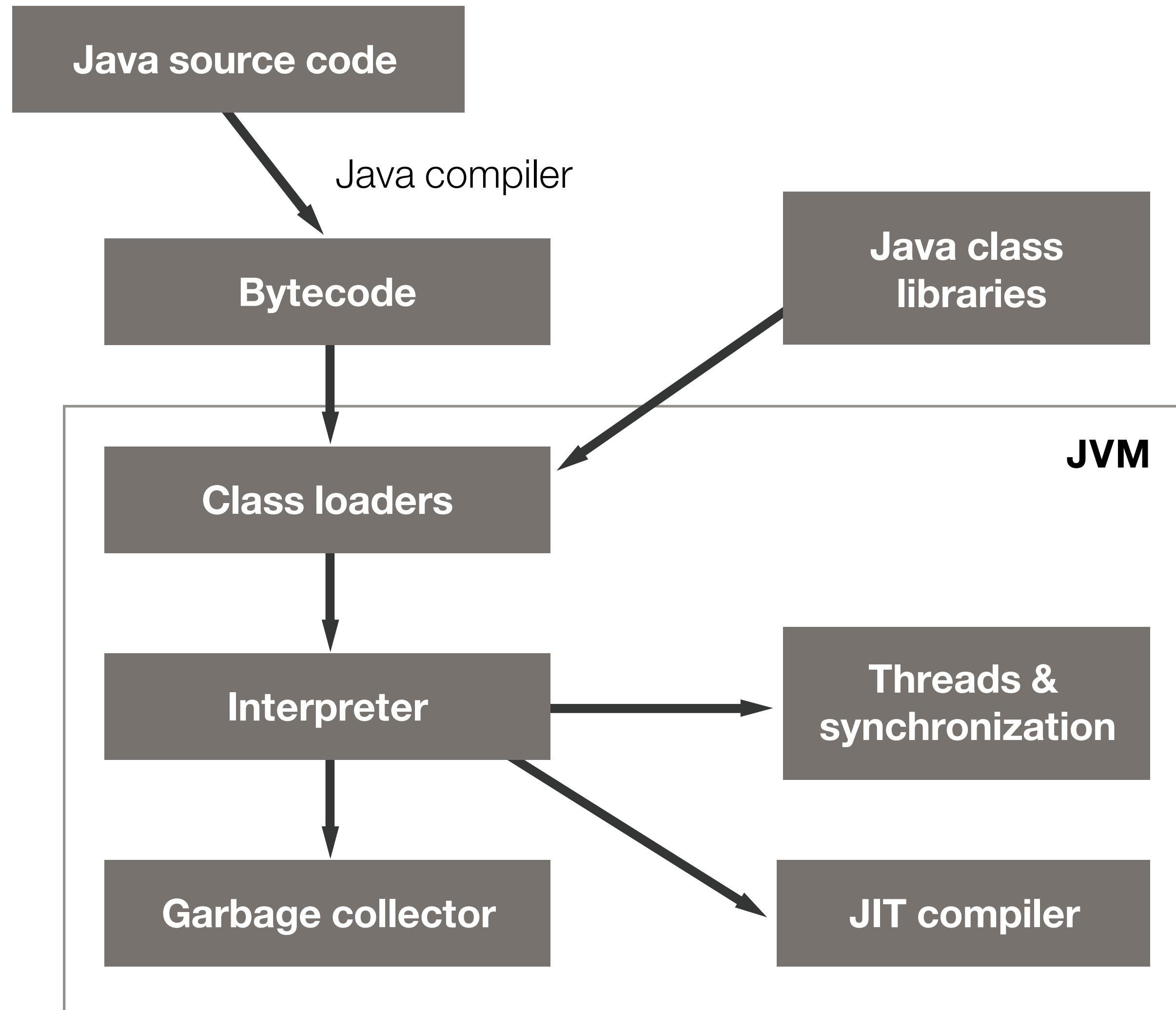
Overview of Java in CICS

Java support in CICS

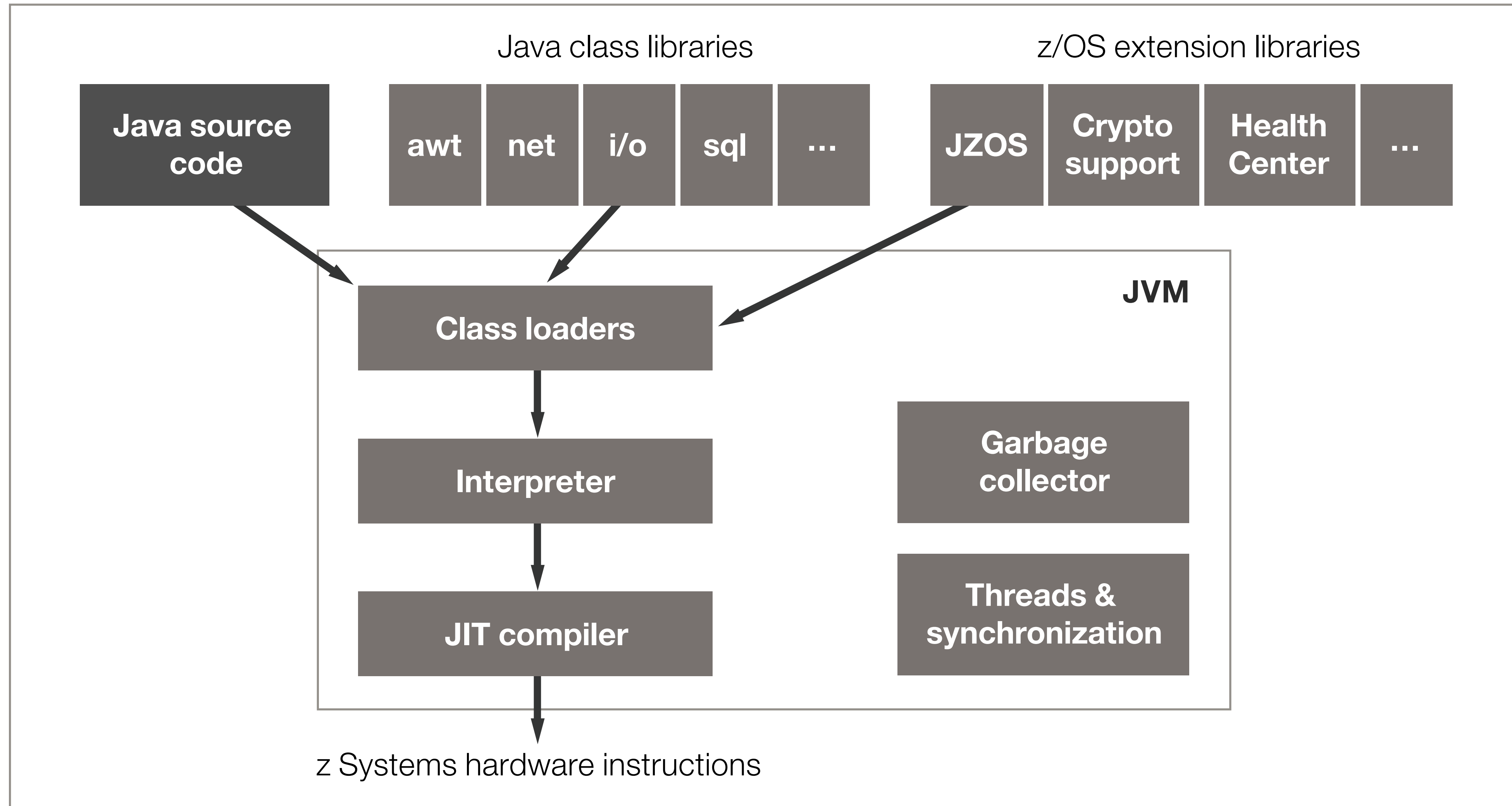
Why use Java?

- ▶ Popular language
- ▶ Readily available skills
- ▶ Rich set of tools
- ▶ Lower operating costs

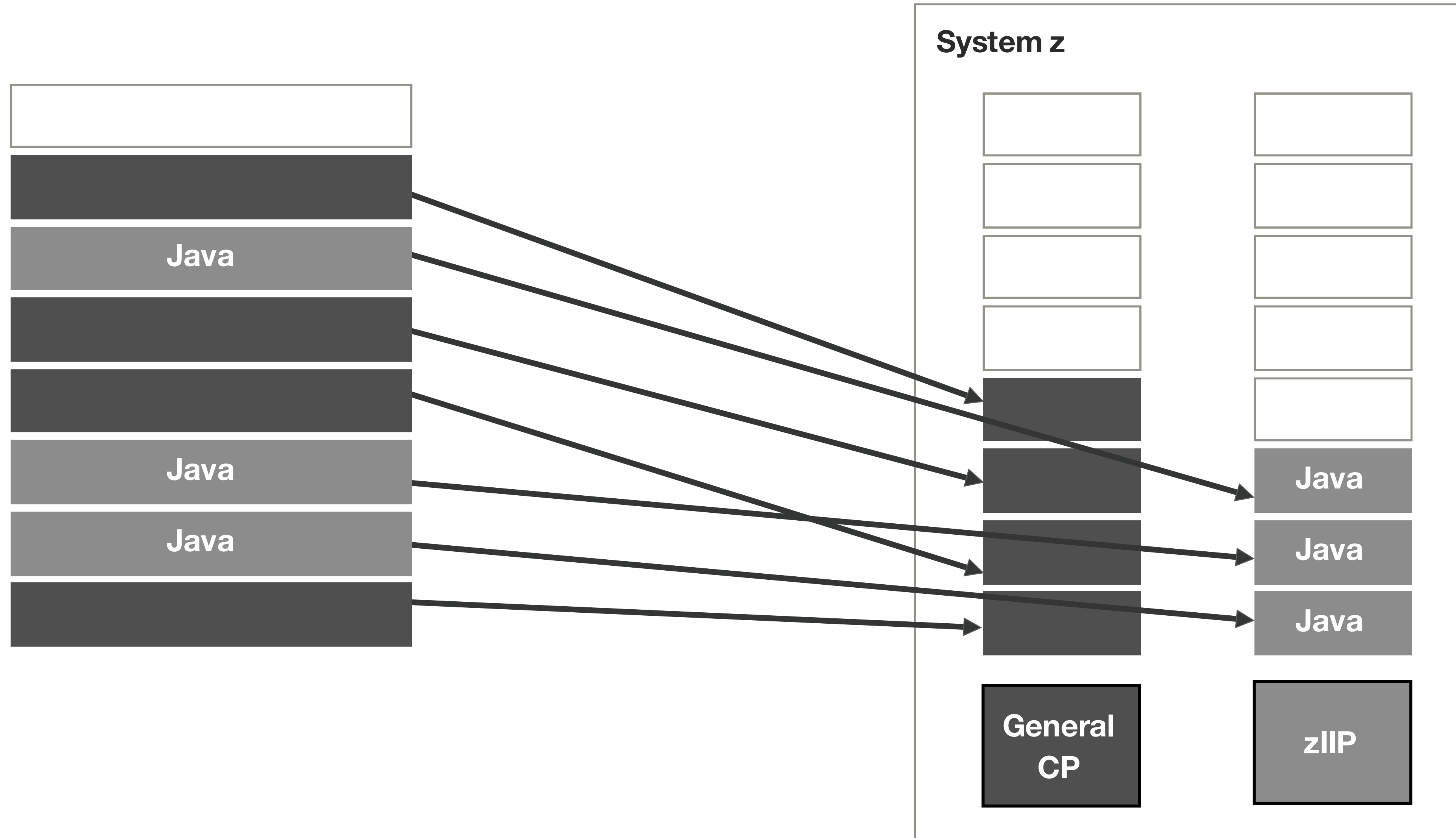
Java components



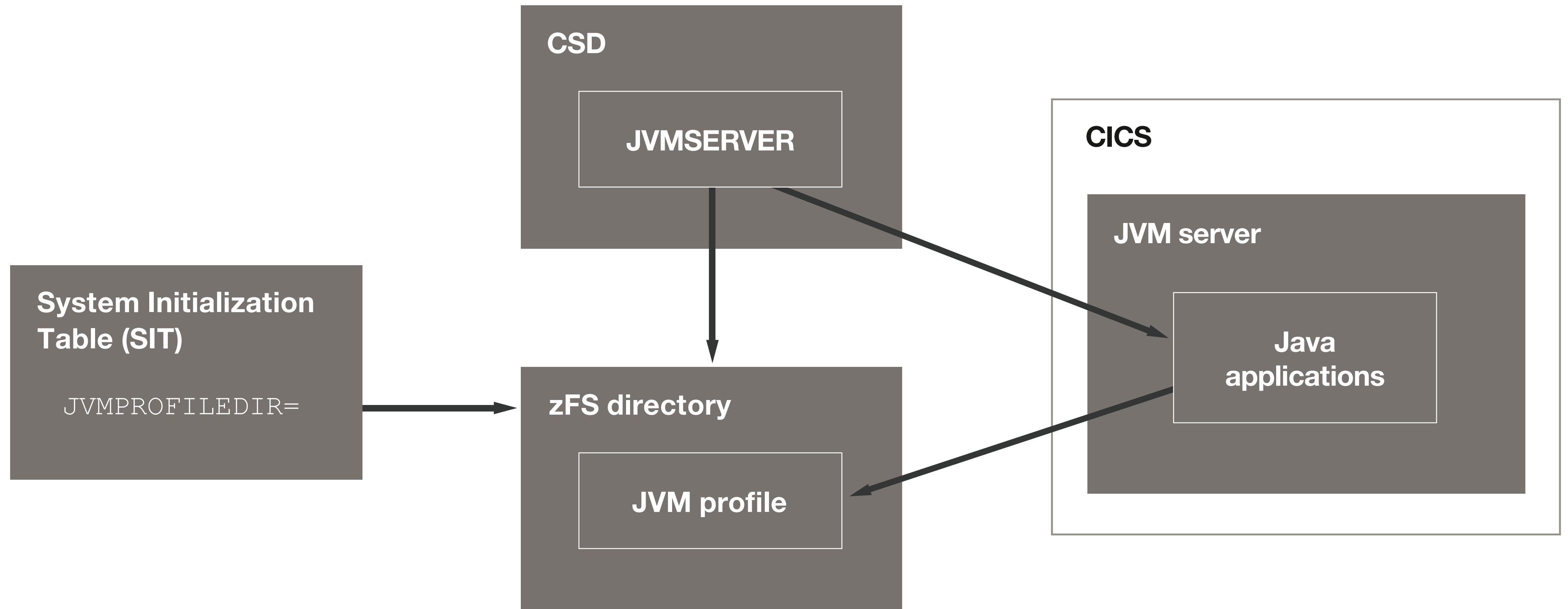
Java support on z/OS



Moving eligible work to zIIP



Java support in CICS



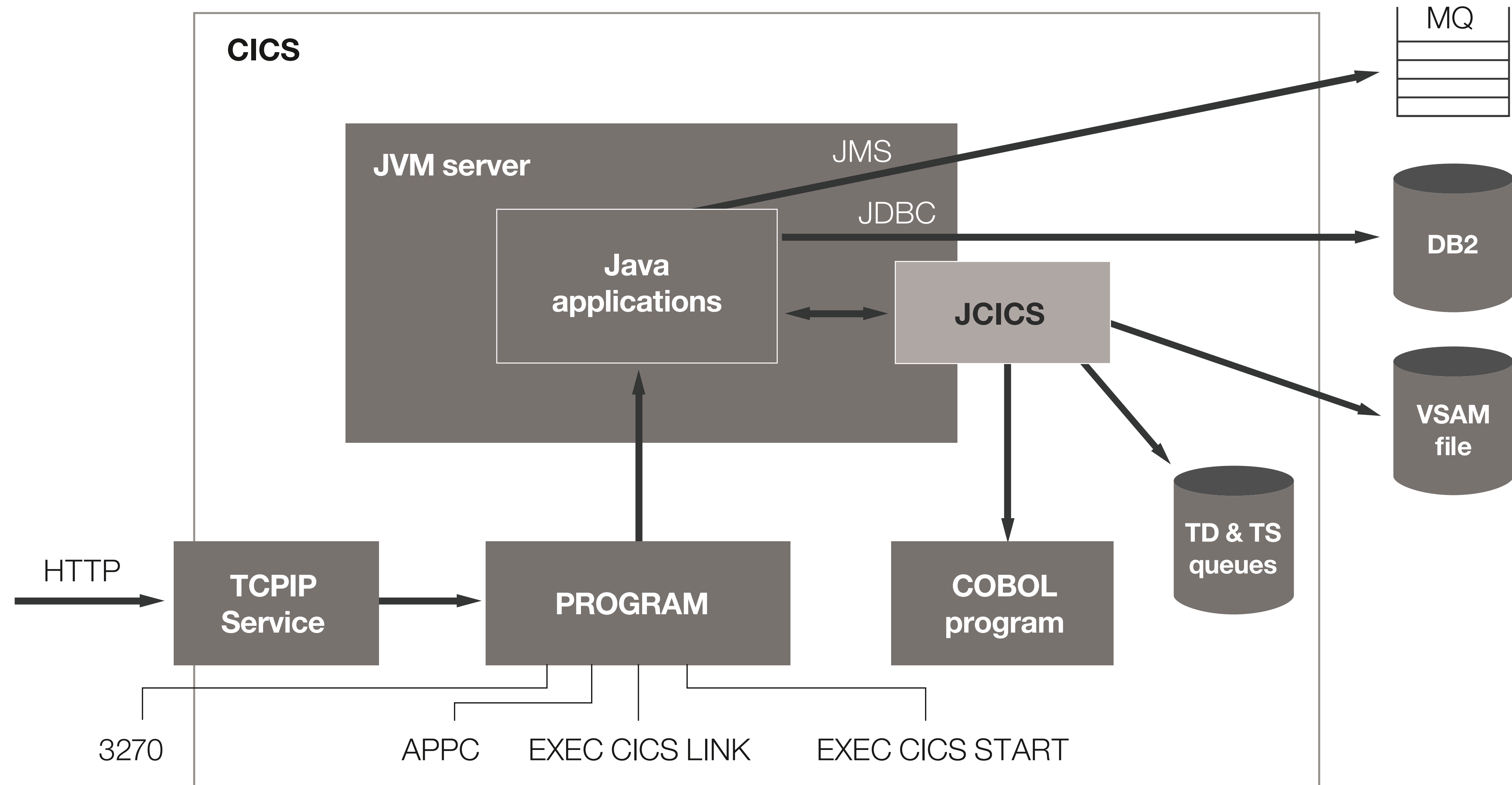
Types of JVM server

- ▶ OSGi JVM server
- ▶ Liberty JVM server
- ▶ Classpath JVM server

Embedded CICS functions

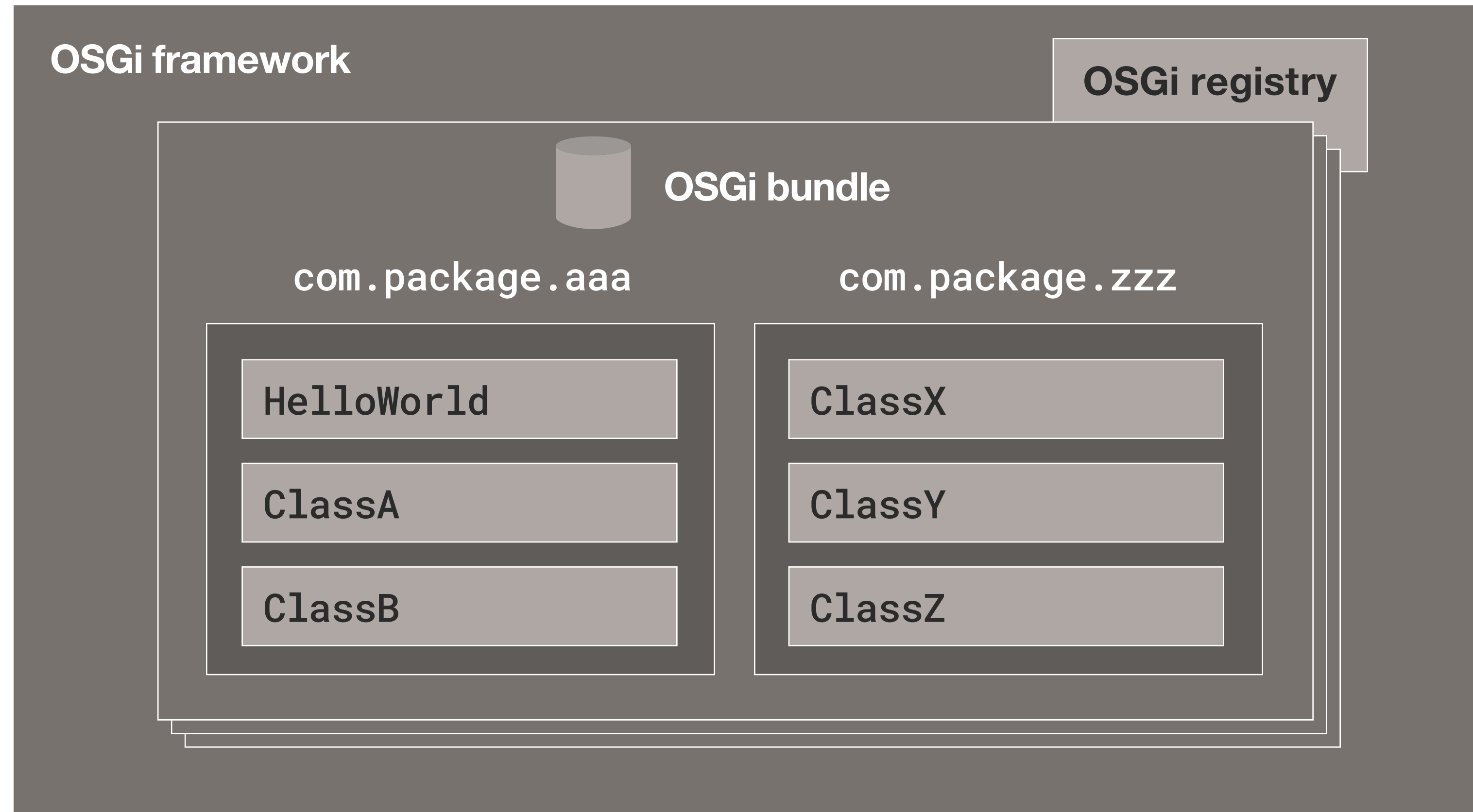
- ▶ Axis2 web services engine
- ▶ JSON web services
- ▶ JSON parsers
- ▶ SAML
- ▶ Dynamic scripting (PHP)

OSGi JVM server

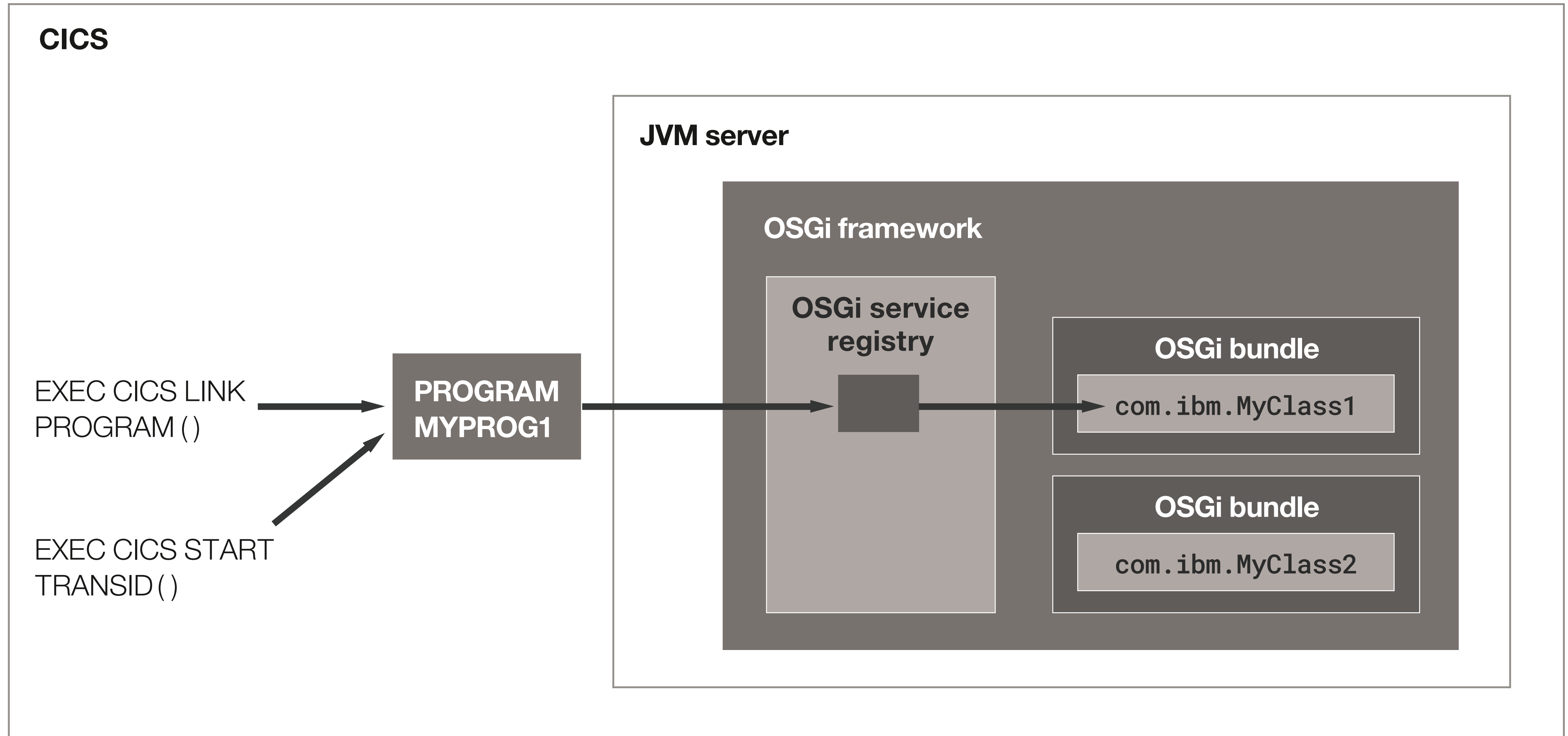


OSGi

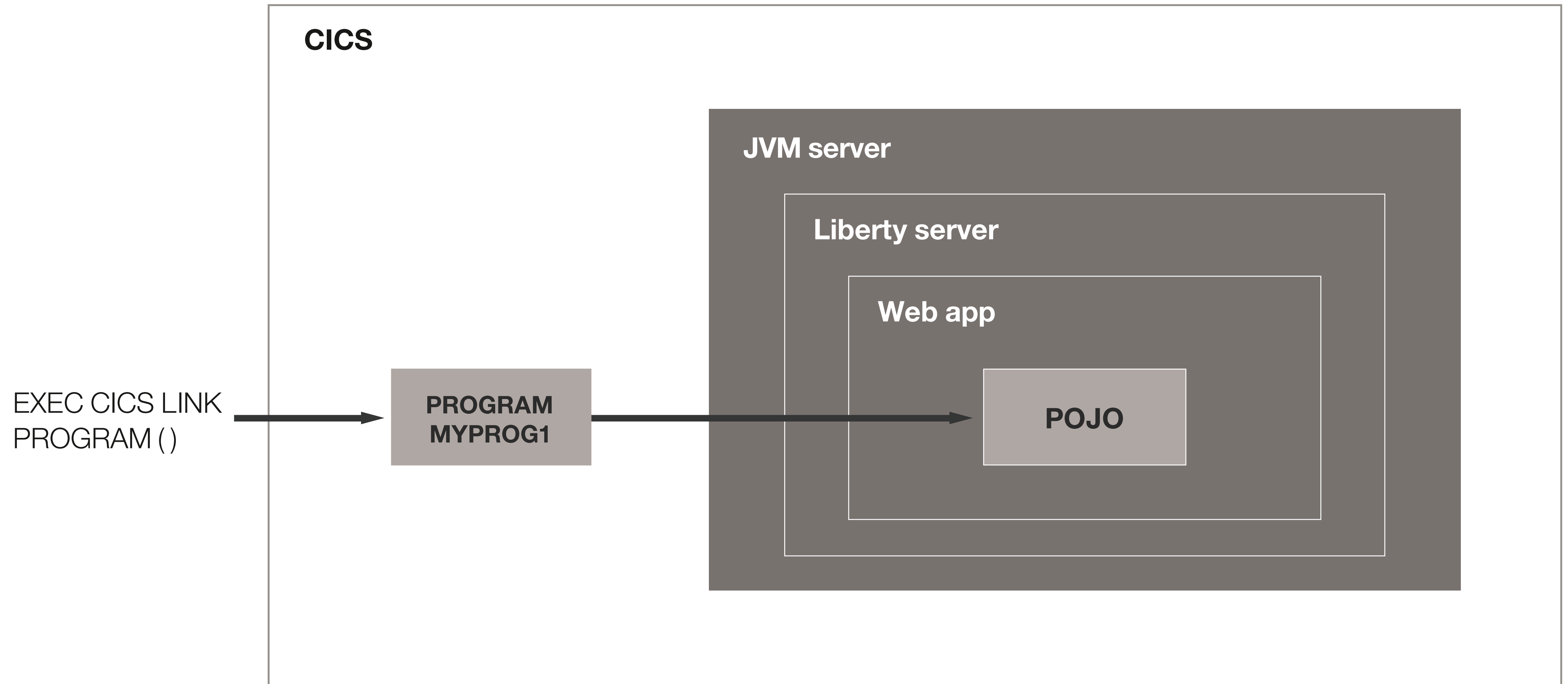
JVM



OSGi JVM server



Link to Liberty



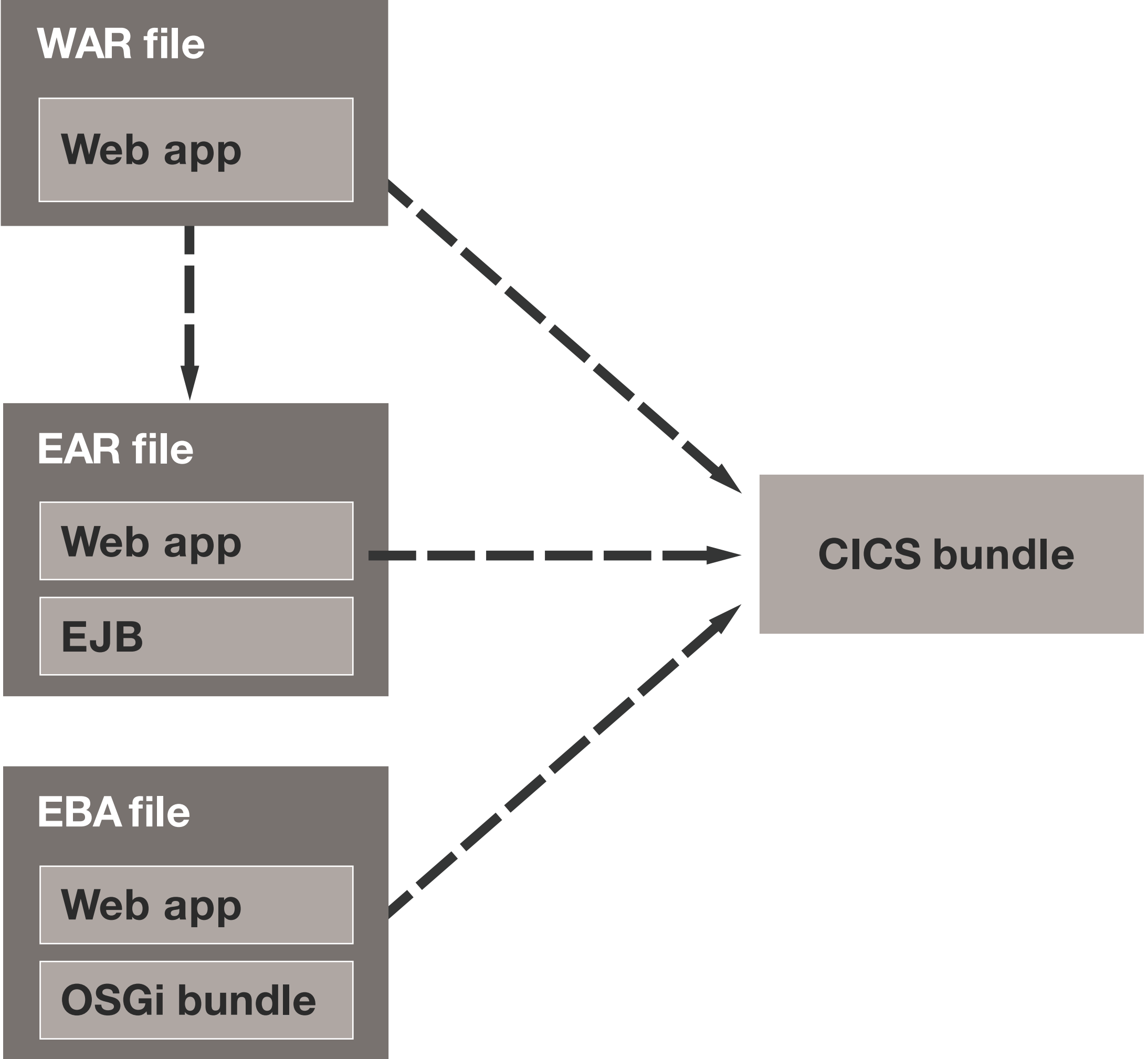
Integrated and standard mode Liberty

- ▶ Standard mode
 - ▶ Requests do not run on CICS enabled threads by default
 - ▶ Provides high zIIP offload

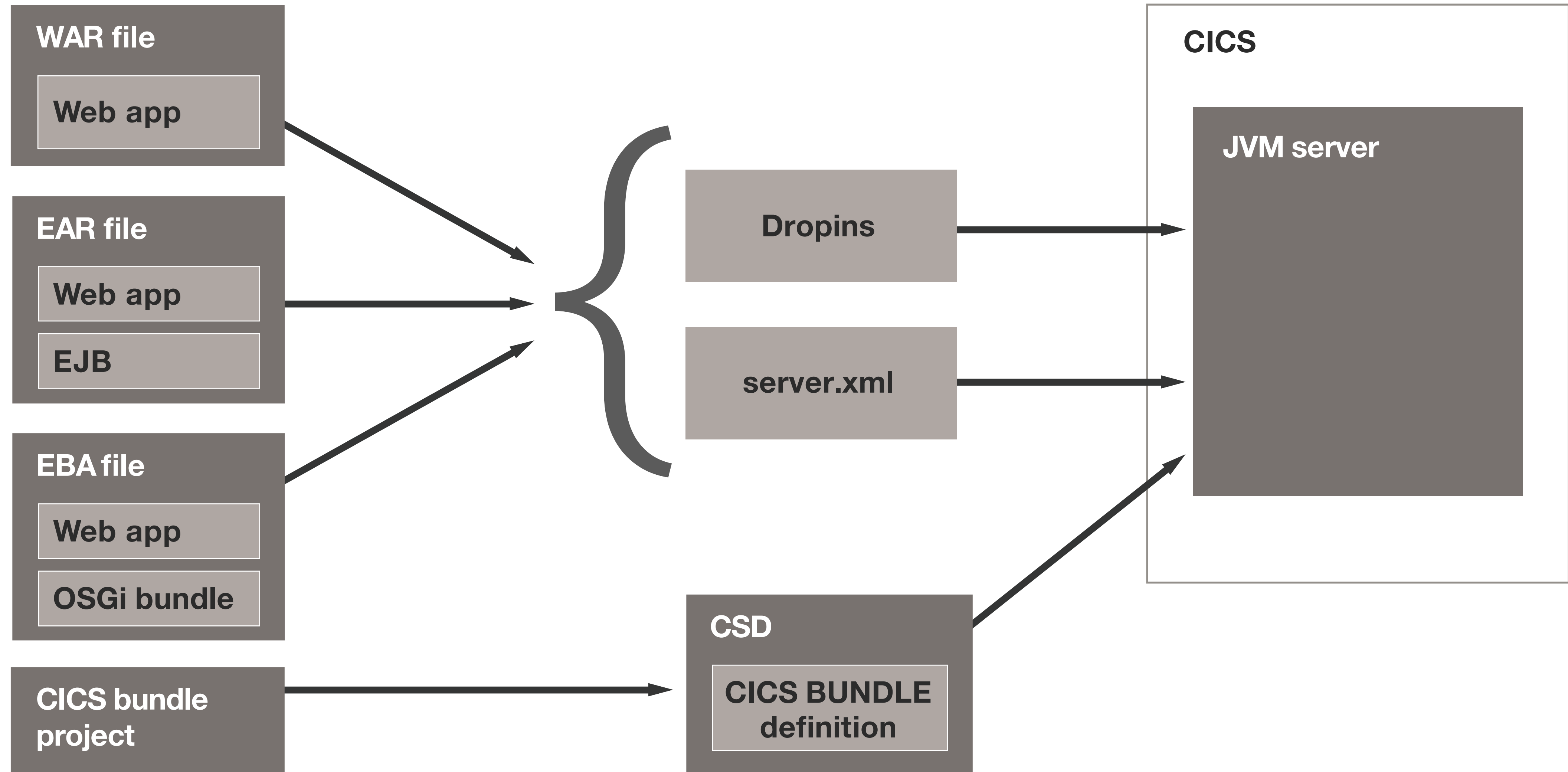
Integrated and standard mode Liberty

- ▶ Integrated mode
 - ▷ Requests run on CICS enabled threads
 - ▷ EXEC CICS LINK command to POJOs
 - ▷ Integrated with CICS transactions and security

Java EE application packaging



Java EE application deployment





Overview of Java in CICS

Java application development for CICS

Java APIs supported in CICS

- ▶ Java Standard Edition
- ▶ Java Enterprise Edition
- ▶ JCICS
- ▶ JDBC & JMS
- ▶ z/OS extension libraries

Java Standard Edition

User Interface Toolkits

AWT

Swing

Print Service

Integration libraries

JDBC

JNDI

RMI

Base libraries

lang and util

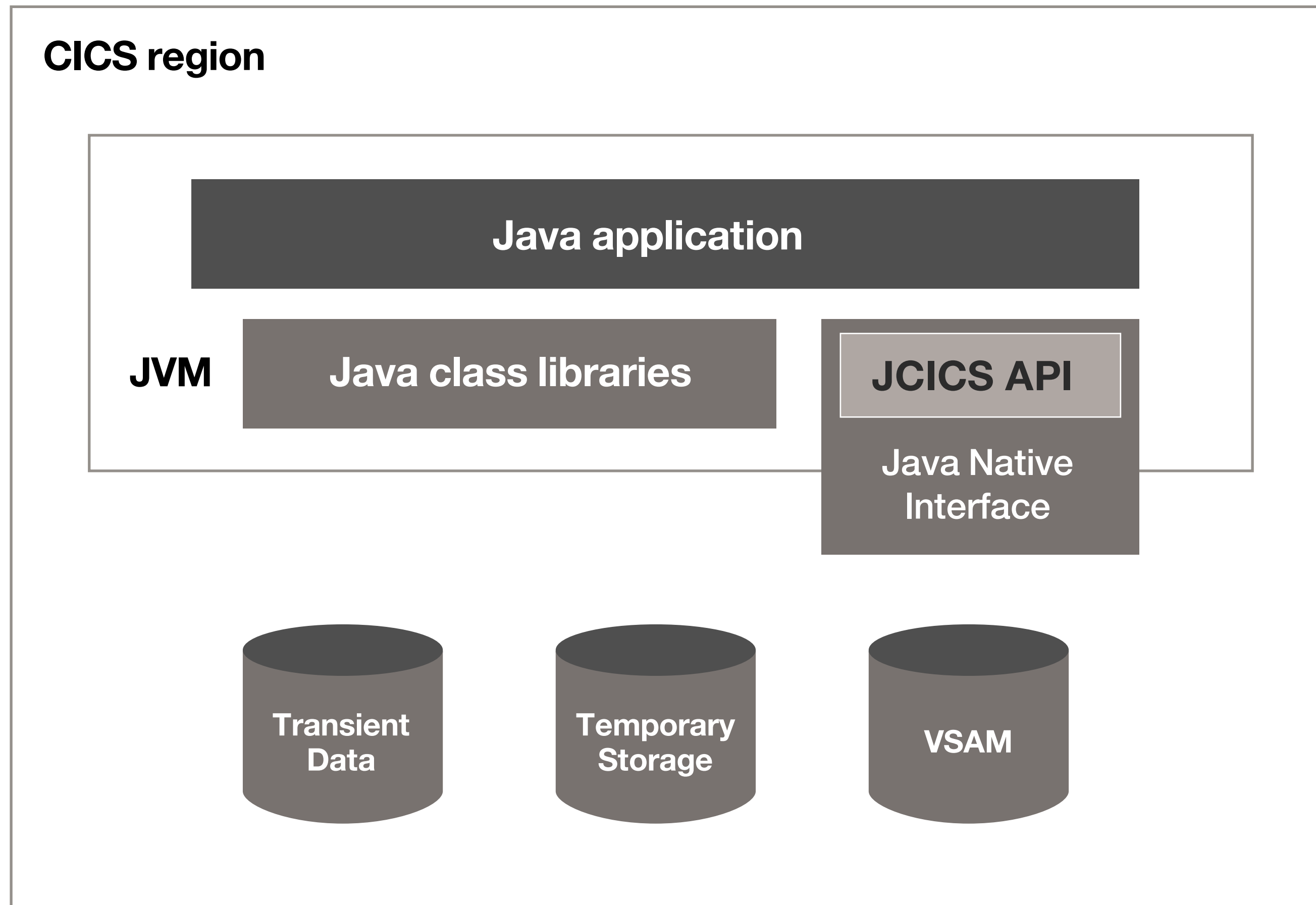
Networking

Security

XML

JNI

JCICS



JCICS

- ▶ Task – Syncpoint control and abends
- ▶ Program – Link command
- ▶ TSQ and TDQ – Accessing queues
- ▶ KSDS, ESDS and RRDS - VSAM files
- ▶ StartResource - Asynchronous processing
- ▶ CICSConditionException - Error response codes

Java Enterprise Edition

- ▶ Java Enterprise Edition – Java EE 7
- ▶ Java EE 6 & Java EE 7
- ▶ JSR specifications
- ▶ Java EE web profile

Java EE – Web profile highlights

- ▶ Subset of full platform
 - ▷ Core web technology – Servlets/JSPs
 - ▷ RESTful JSON web services
 - ▷ Local EJB support
 - ▷ Contexts and Dependency injection
 - ▷ Web sockets

Java EE – Full platform highlights

Web application tier

Servlets

JSPs

JSF

Java Beans

Business application tier

Java web services

EJB

JPA

Managed beans

Enterprise access tier

JDBC

JPA

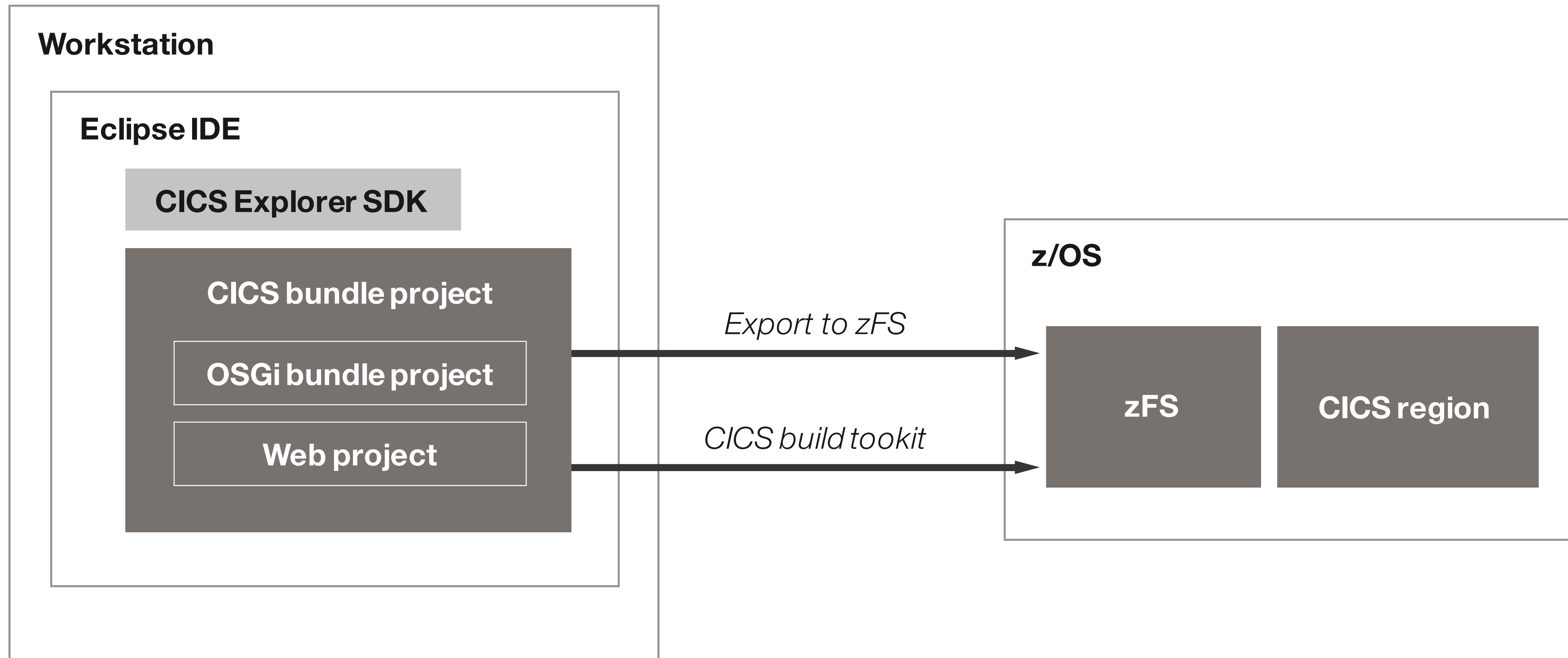
JMS

JCA

JTA

Batch processing

CICS Explorer SDK for Java





Overview of Java in CICS

Use cases for Java applications in CICS

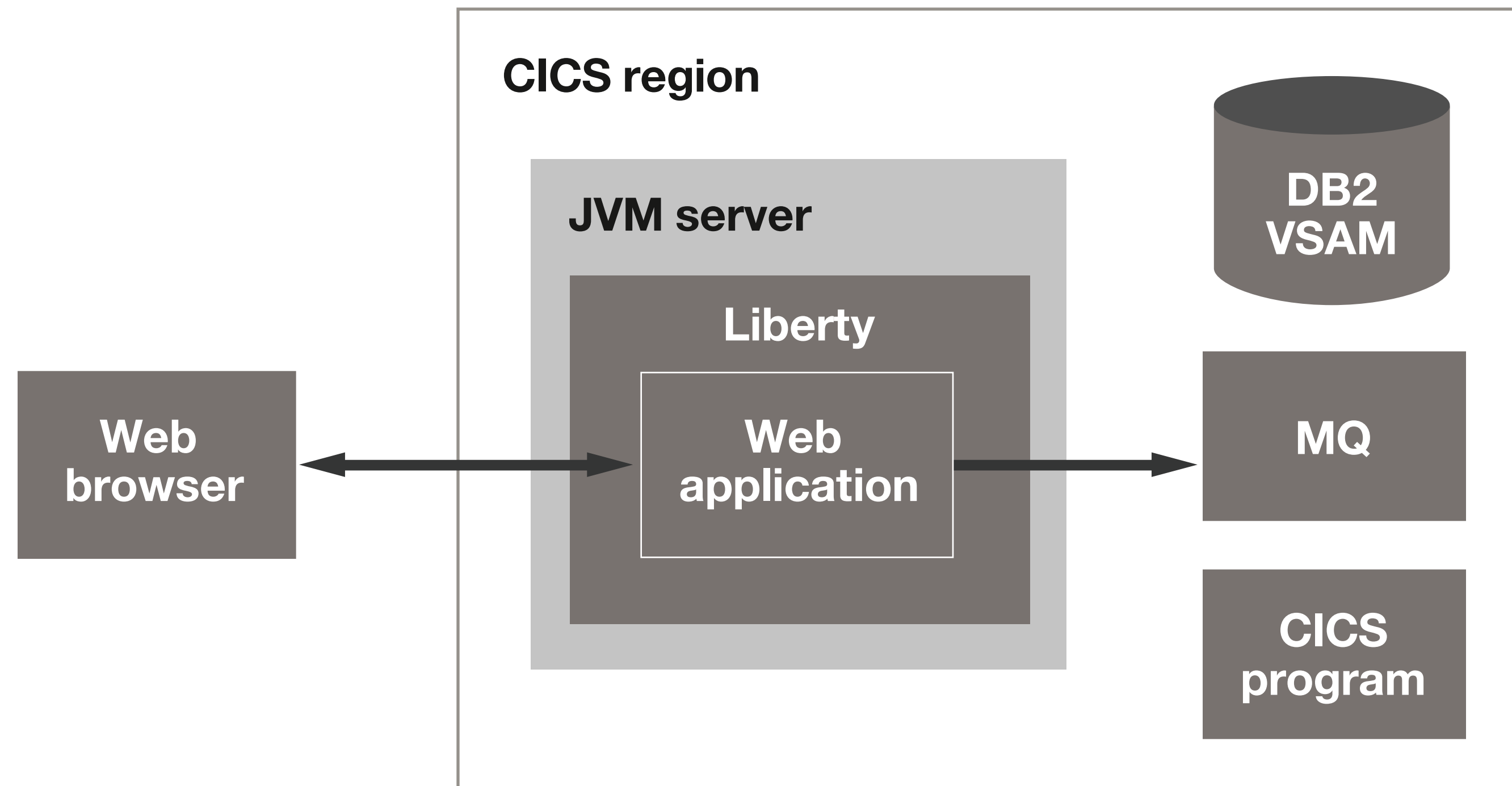
Use cases for Java applications in CICS

1. Java web applications
2. Java web services
3. Java components in CICS applications
4. Java batch

Benefits for all Java applications in CICS

- ▶ Lower costs
- ▶ Fast response times
- ▶ High developer productivity
- ▶ z/OS platform qualities of service

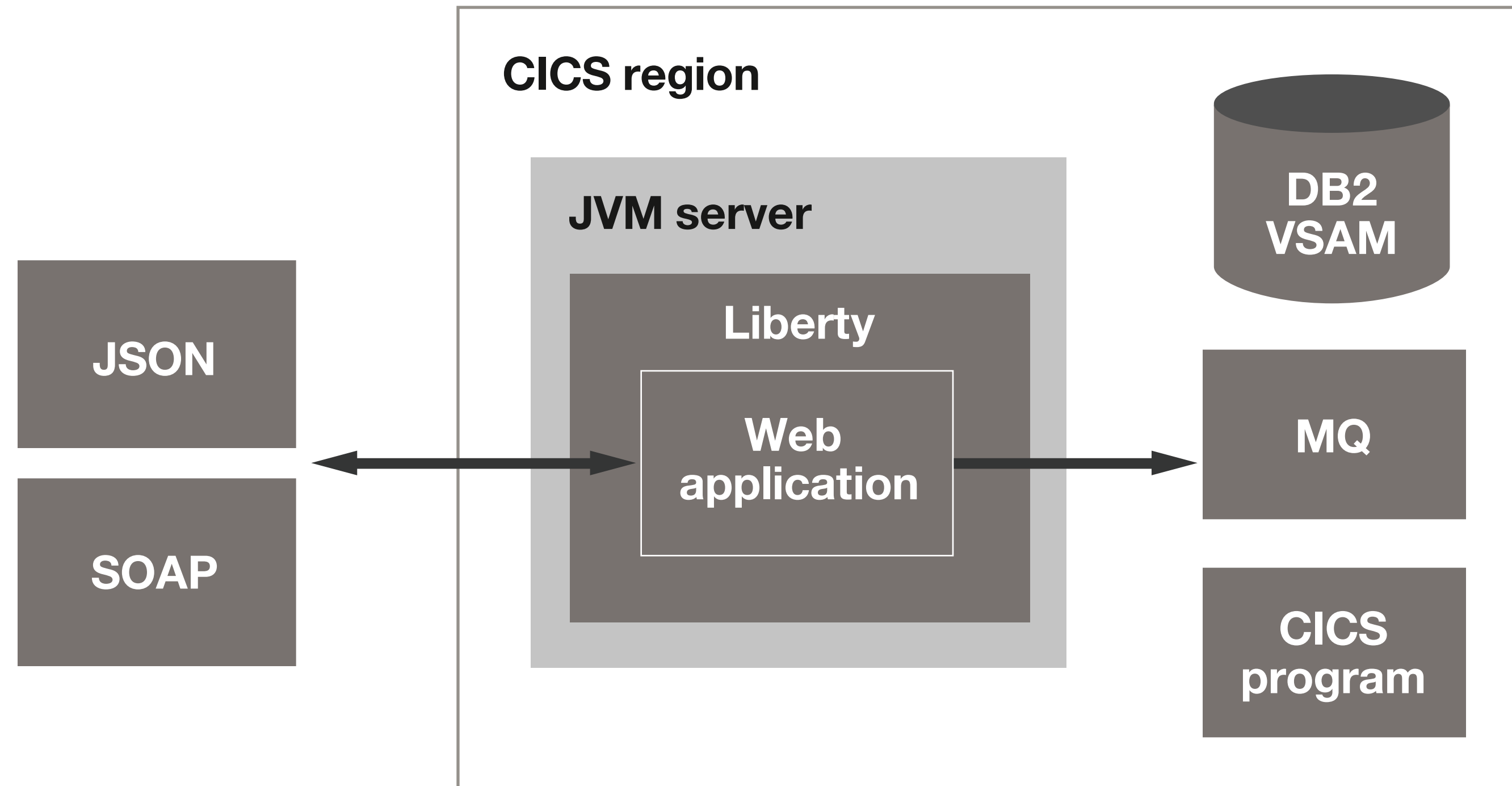
Java web applications



Java web applications

- ▶ Host web applications from other platforms
- ▶ Simplified administration
- ▶ Potential to lower costs
- ▶ Manage together with CICS components
- ▶ Option to tightly integrate with CICS

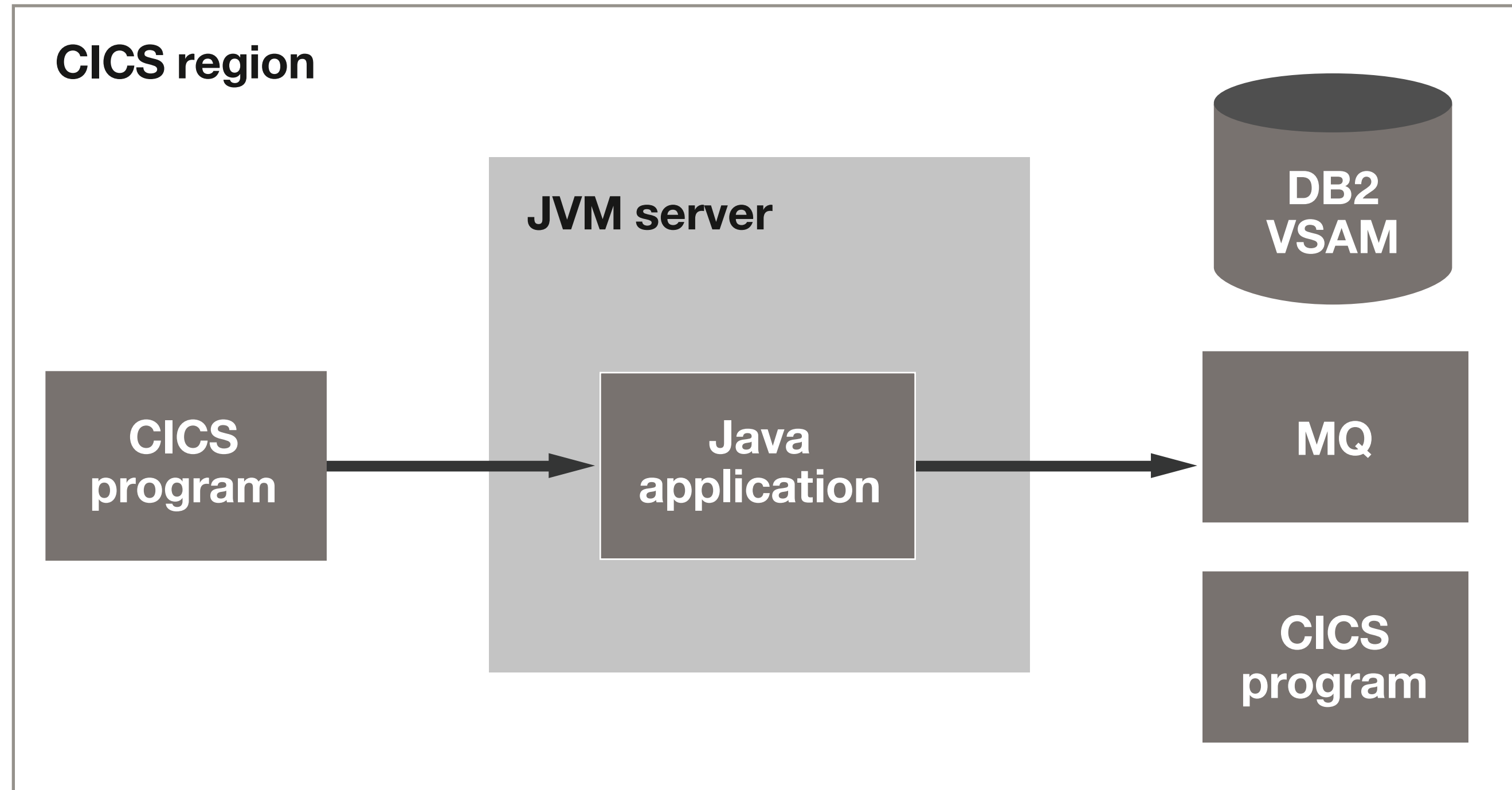
Java web services



Java web services

- ▶ Industry standard formats
- ▶ Customizable processing
- ▶ Data mapping tools

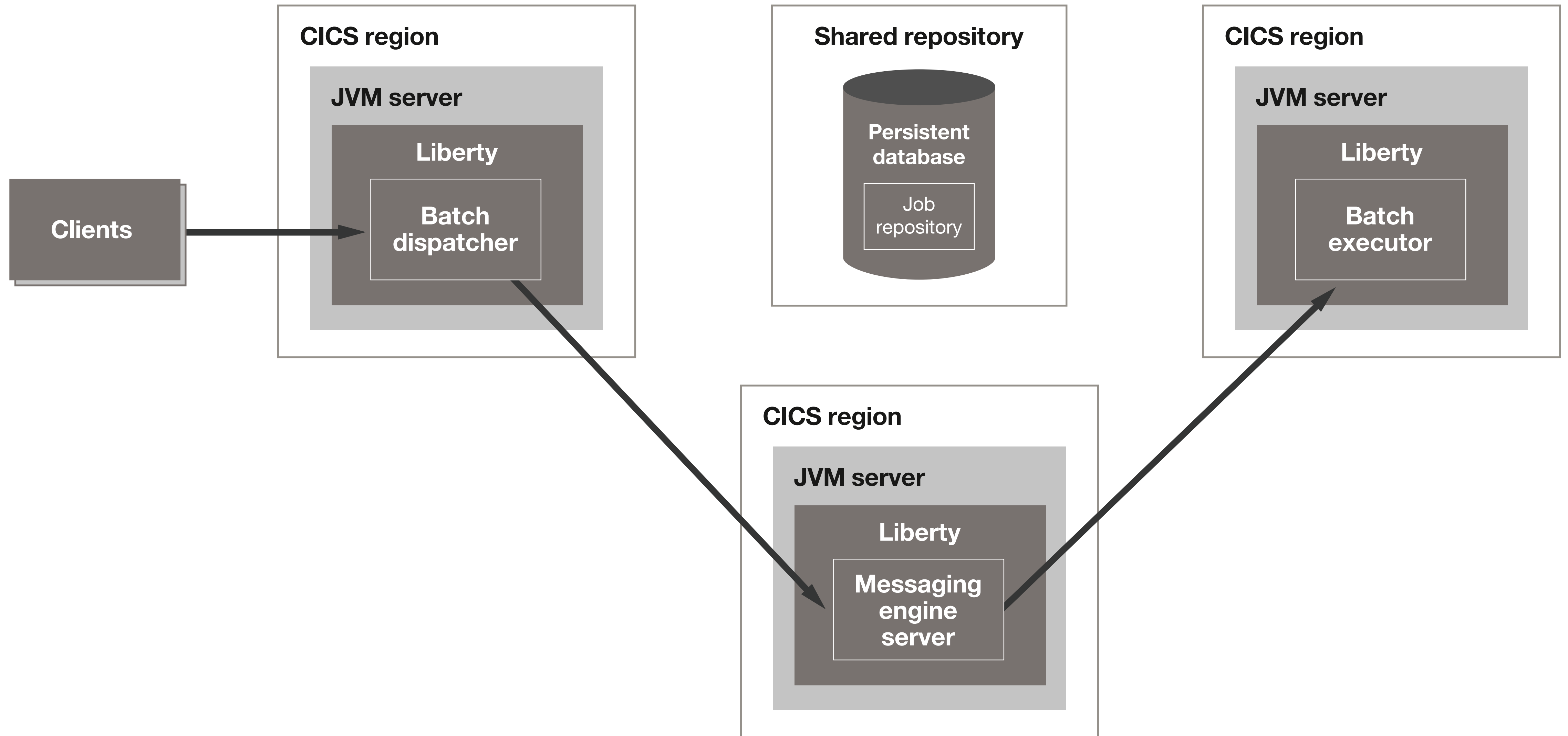
New Java components



Java components

- ▶ Modernize CICS applications
- ▶ Java development
- ▶ Reuse Java components
- ▶ CICS mixed language environment

Java batch



Java batch

- ▶ Can be run with online transactions
- ▶ Flexible scheduling
- ▶ Parallel processing
- ▶ Automatic restart after failures
- ▶ Optimized Java execution



Summary

Course review

Course review

- ▶ Invoke CICS programs from Liberty
- ▶ Used JCICS to access
 - ▷ VSAM files
 - ▷ TSQs
 - ▷ Unit of work support
- ▶ Error handling

