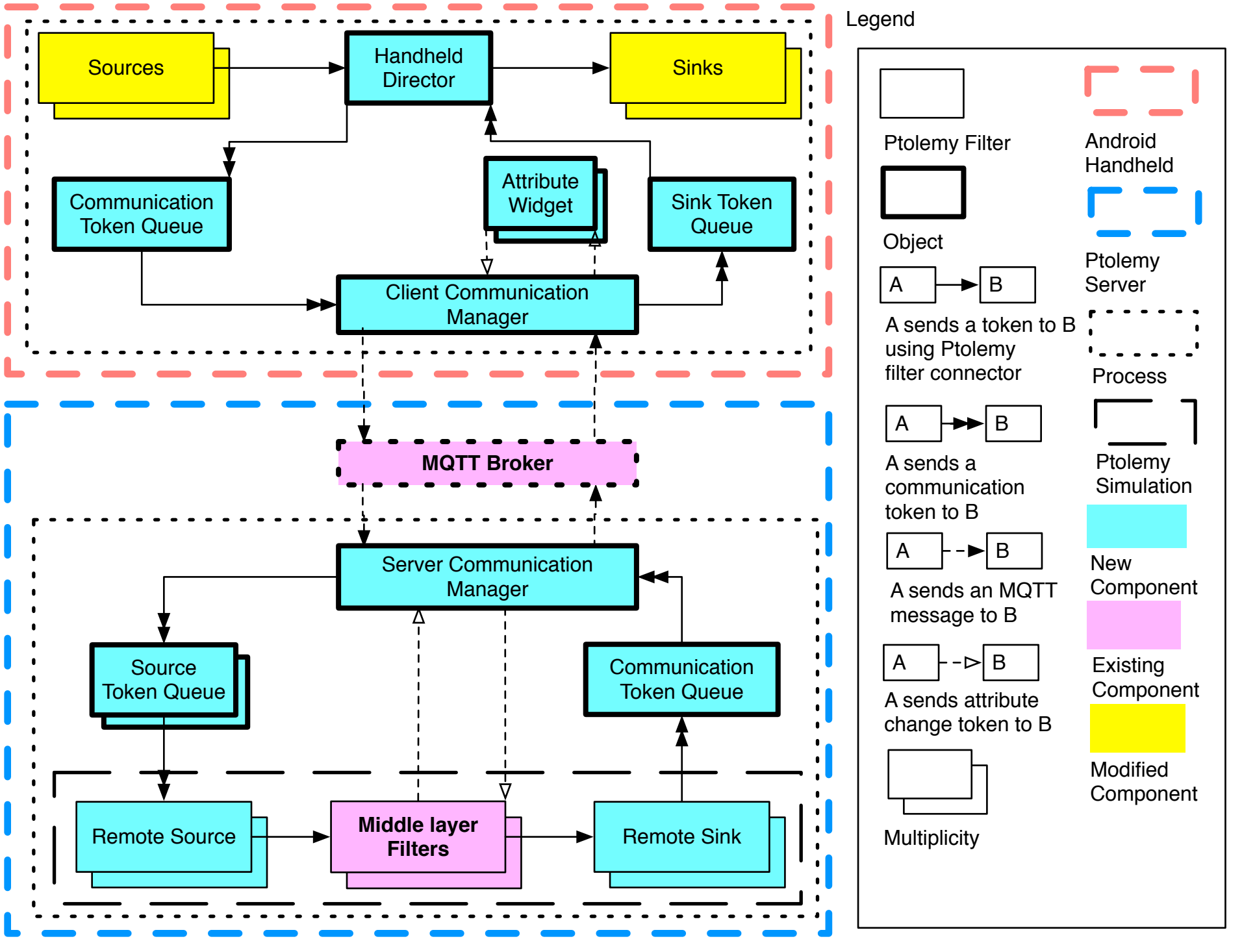
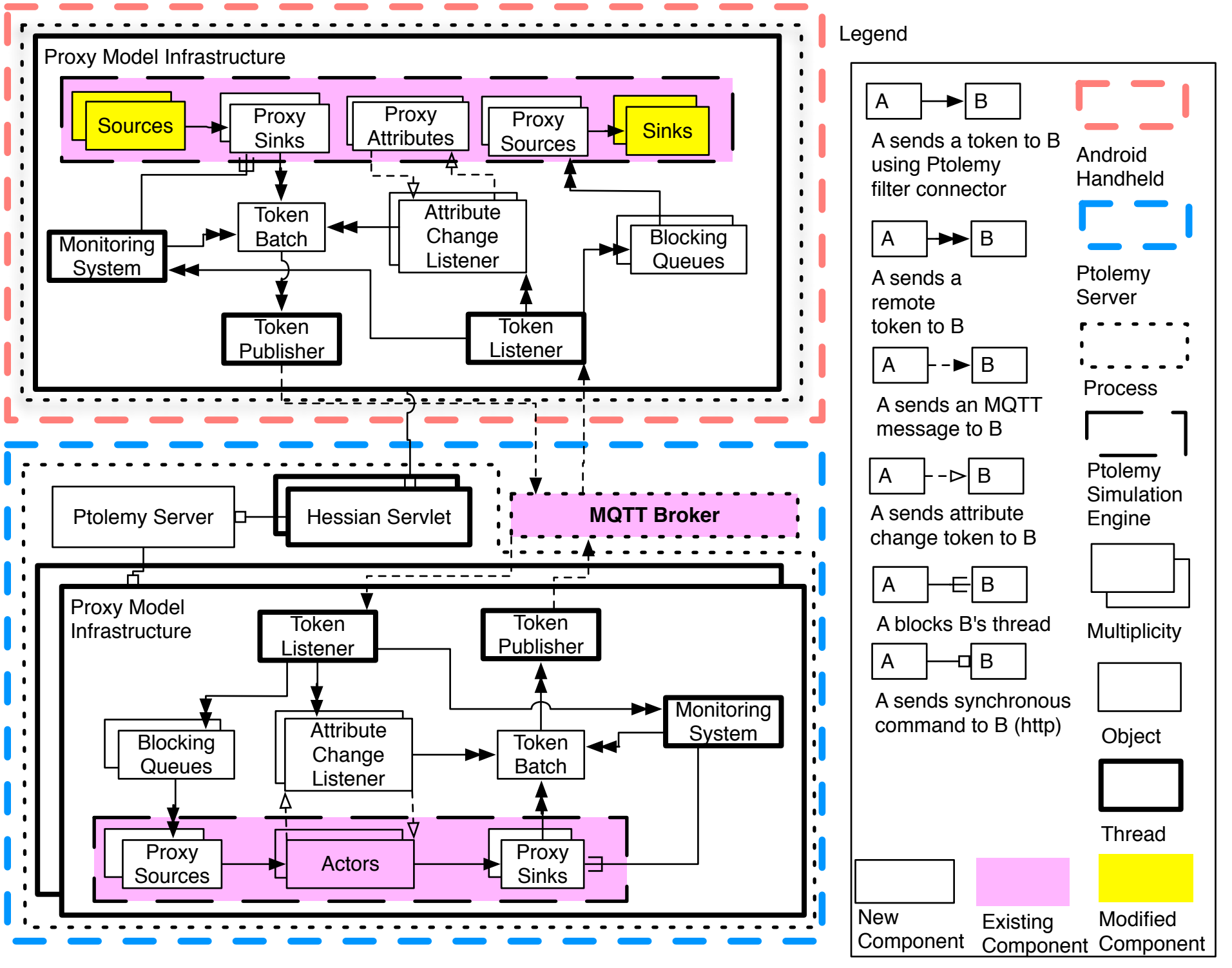
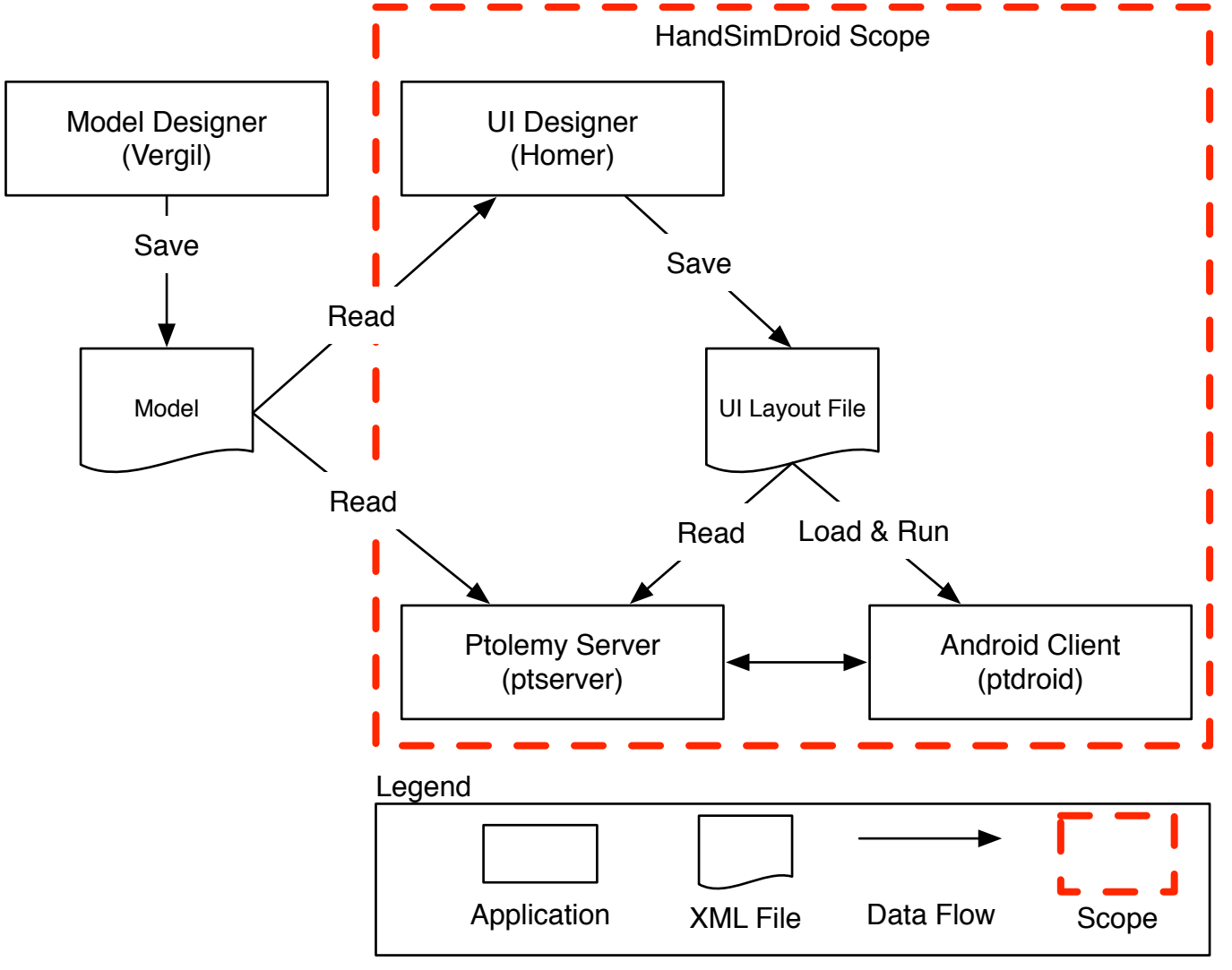
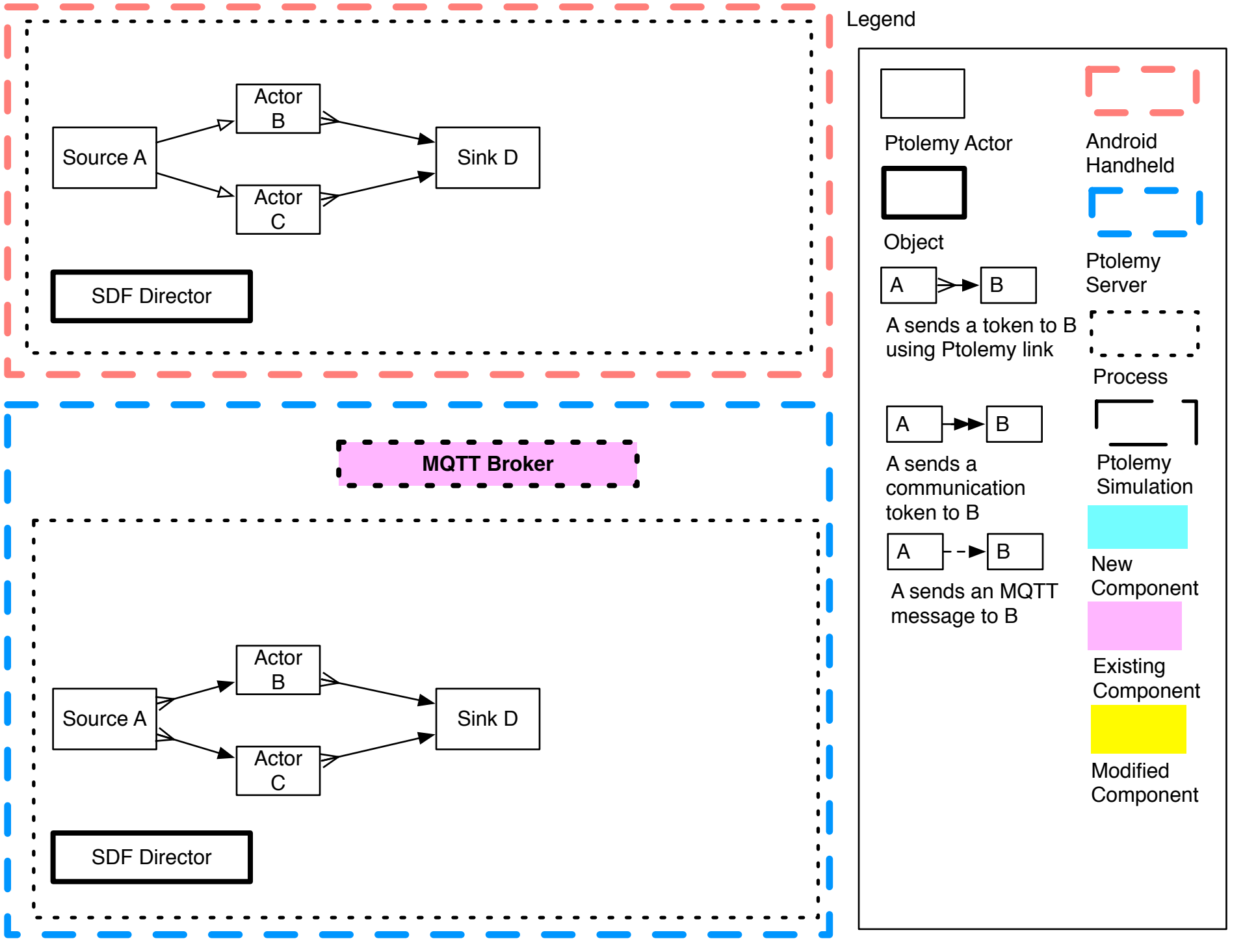
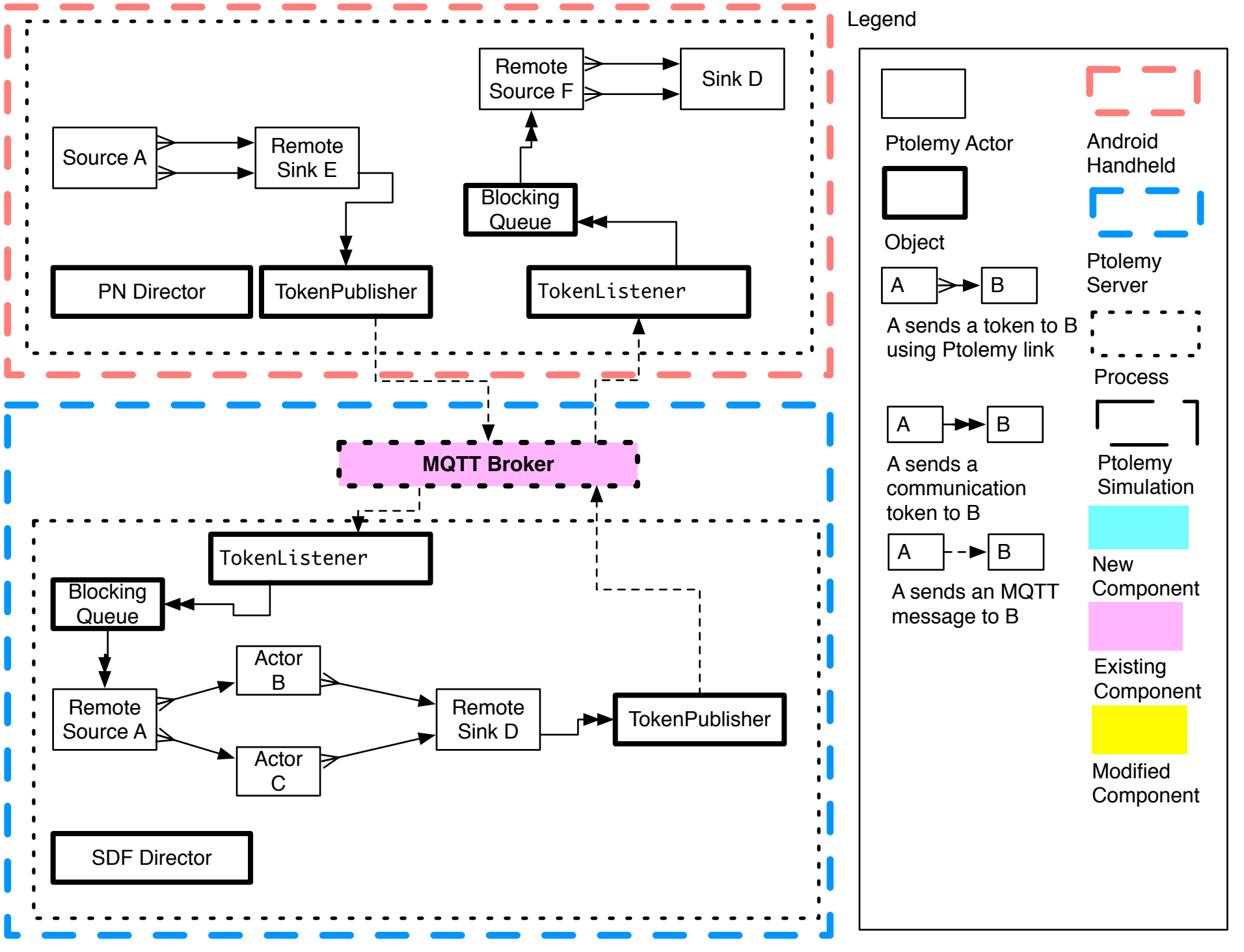
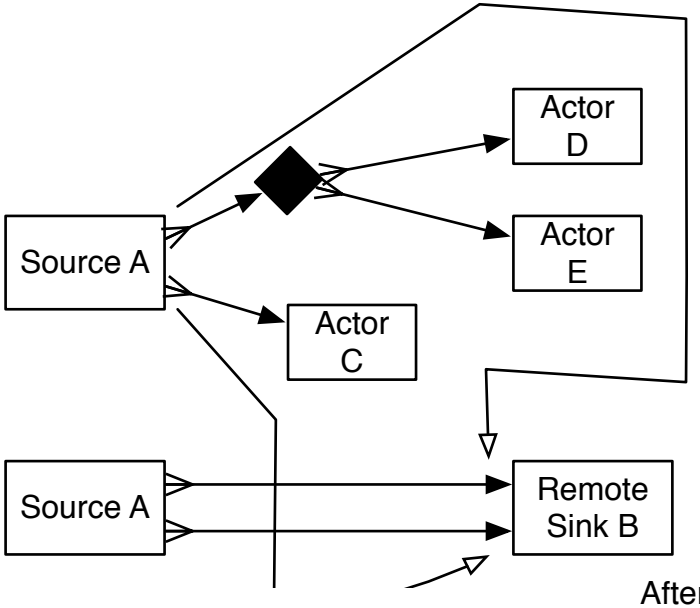

Sources
Handheld Director
Sinks
Communication Token Queue
Attribute Widget
Sink Token Queue
Client Communication Manager
MQTT Broker
Server Communication Manager
Source Token Queue
Communication Token Queue
Remote Source
Middle layer Filters
Remote Sink
Legend
Ptolemy Filter
Object
A
B
A sends a token to B using Ptolemy filter connector
A sends a communication token to B
A sends an MQTT message to B
A sends attribute change token to B
Multiplicity
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation
New Component
Existing Component
Modified Component


Proxy Model Infrastructure
Sources
Proxy Sinks
Proxy Attributes
Proxy Sources
Sinks
Token Batch
Attribute Change Listener
Blocking Queues
Monitoring System
Token Publisher
Token Listener
Ptolemy Server
Hessian Servlet
MQTT Broker
Proxy Model Infrastructure
Token Listener
Token Publisher
Blocking Queues
Attribute Change Listener
Token Batch
Monitoring System
Proxy Sources
Actors
Proxy Sinks
Legend
A
B
A sends a token to B using Ptolemy filter connector
A sends a remote token to B
A sends an MQTT message to B
A sends attribute change token to B
A blocks B's thread
A sends synchronous command to B (http)
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation Engine
Multiplicity
Object
Thread
New Component
Existing Component
Modified Component


HandSimDroid Scope
Model Designer
(Vergil)
UI Designer
(Homer)
Save
Save
Read
Model
UI Layout File
Read
Read
Load & Run
Ptolemy Server
(ptserver)
Android Client
(ptdroid)
Legend
Application
XML File
Data Flow
Scope


Source A
Actor B
Actor C
Sink D
SDF Director
MQTT Broker
Source A
Actor B
Actor C
Sink D
SDF Director
Legend
Ptolemy Actor
Object
A
B
A sends a token to B using Ptolemy link
A
B
A sends a communication token to B
A
B
A sends an MQTT message to B
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation
New Component
Existing Component
Modified Component


Remote Source F
Sink D
Source A
Remote Sink E
Blocking Queue
PN Director
TokenPublisher
TokenListener
MQTT Broker
TokenListener
Blocking Queue
Actor B
Remote Source A
Remote Sink D
TokenPublisher
Actor C
SDF Director
Legend
Ptolemy Actor
Android Handheld
Object
Ptolemy Server
A
B
A sends a token to B using Ptolemy link
Process
A sends a communication token to B
Ptolemy Simulation
A sends an MQTT message to B
New Component
Existing Component
Modified Component

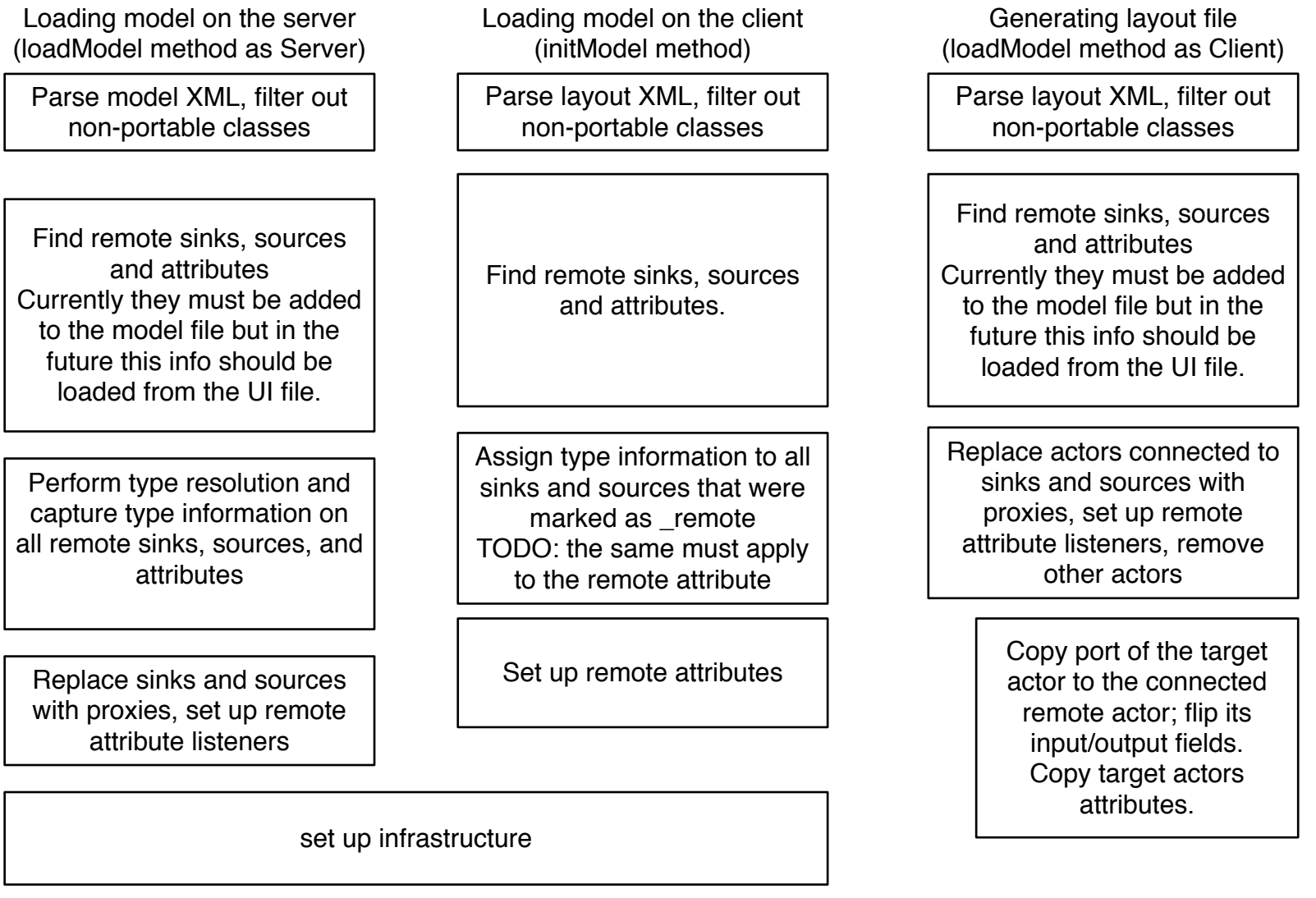


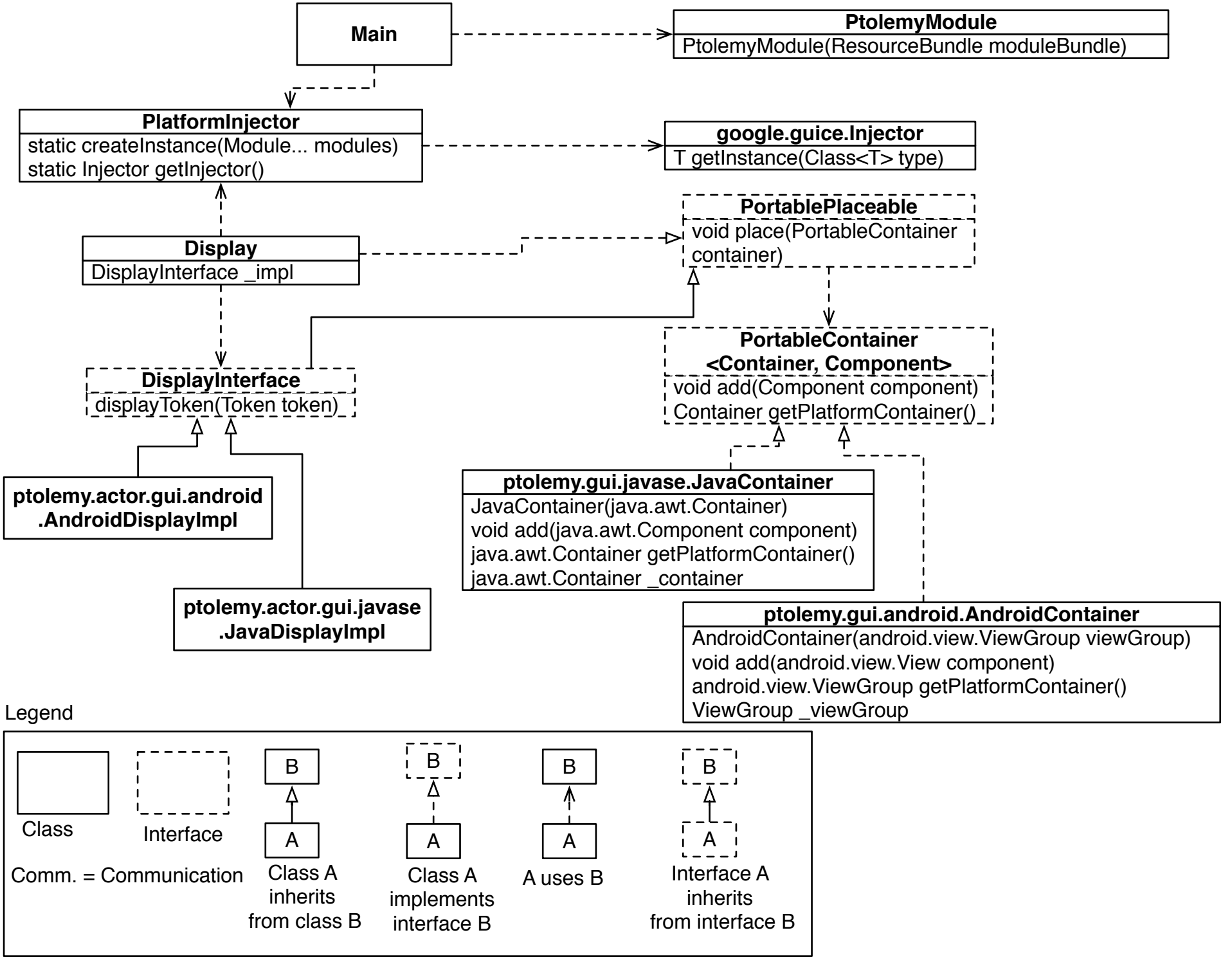
Before actor replacement on client

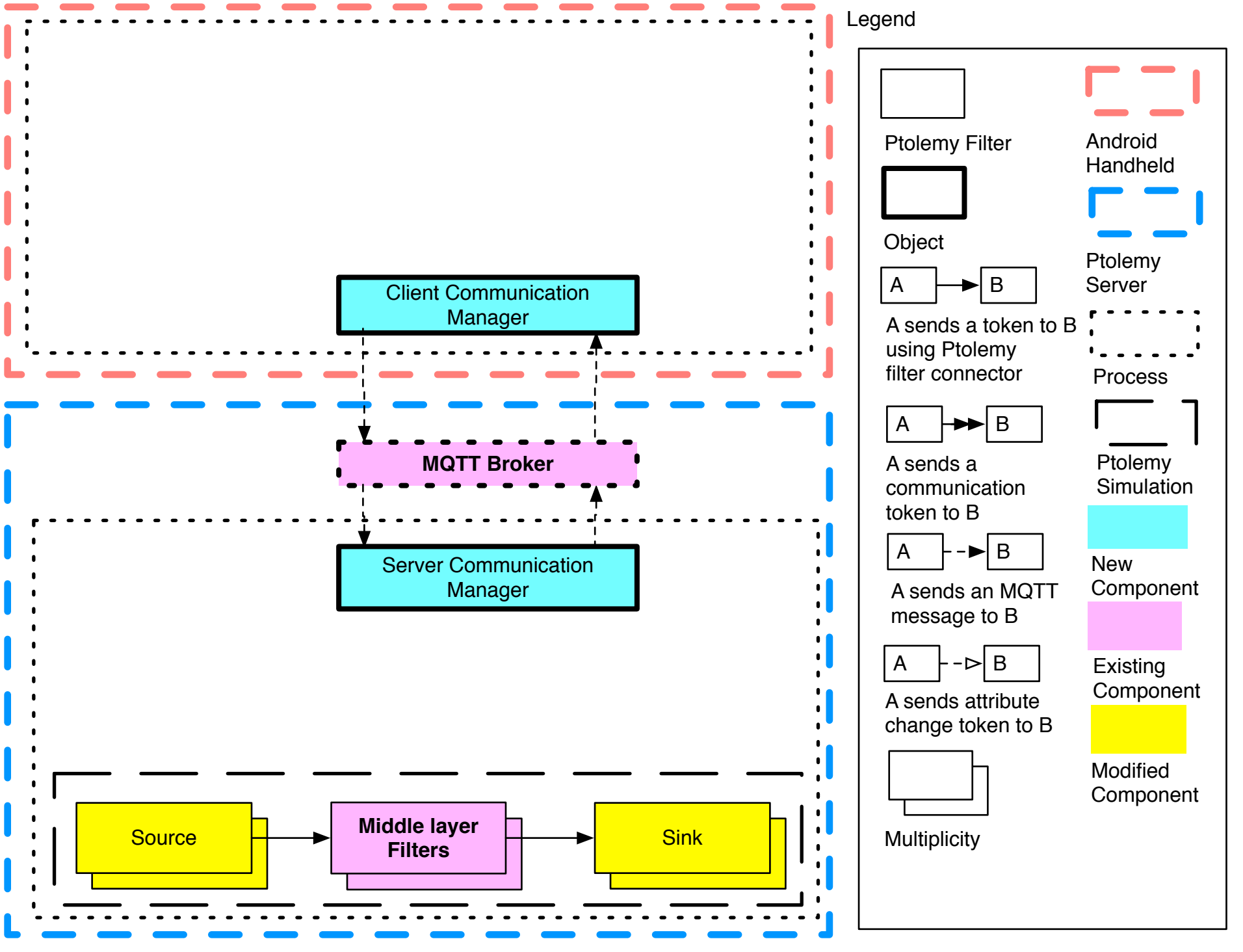
Cloned port,
reverse input/output,
copy and reverse
consumption/
production rate
copy all attributes????

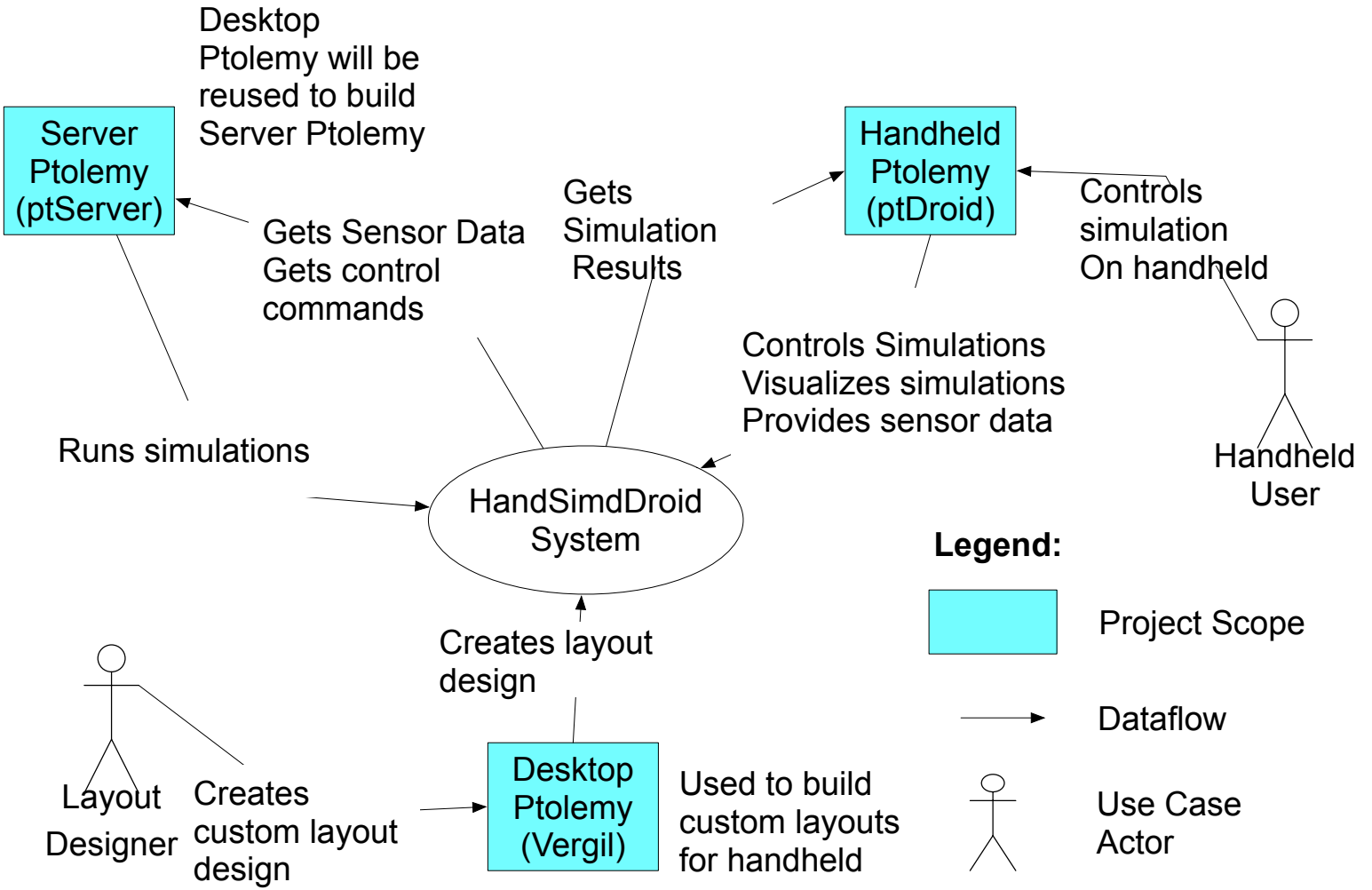
Cloned port, reverse input/output

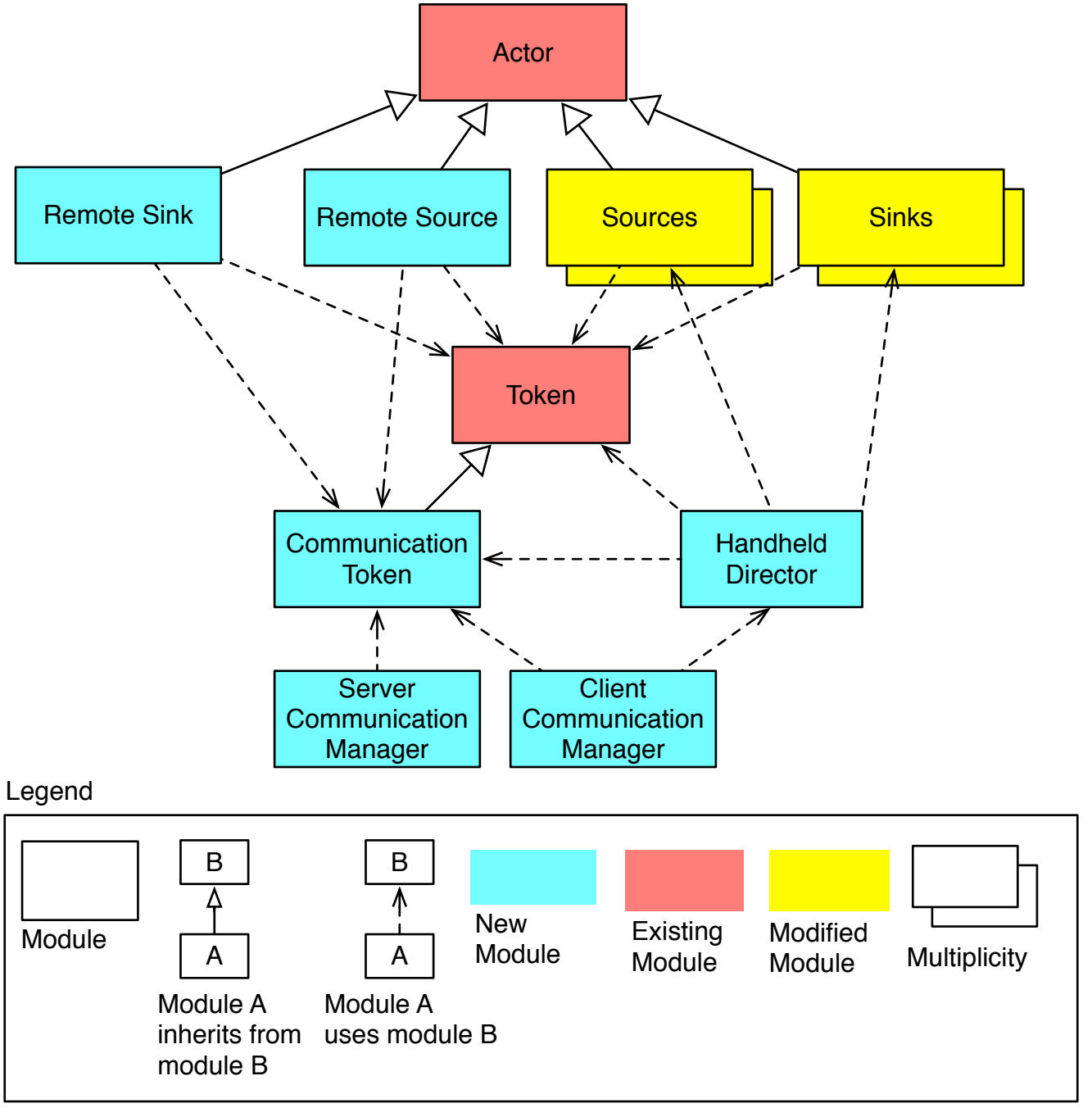
After actor replacement on client

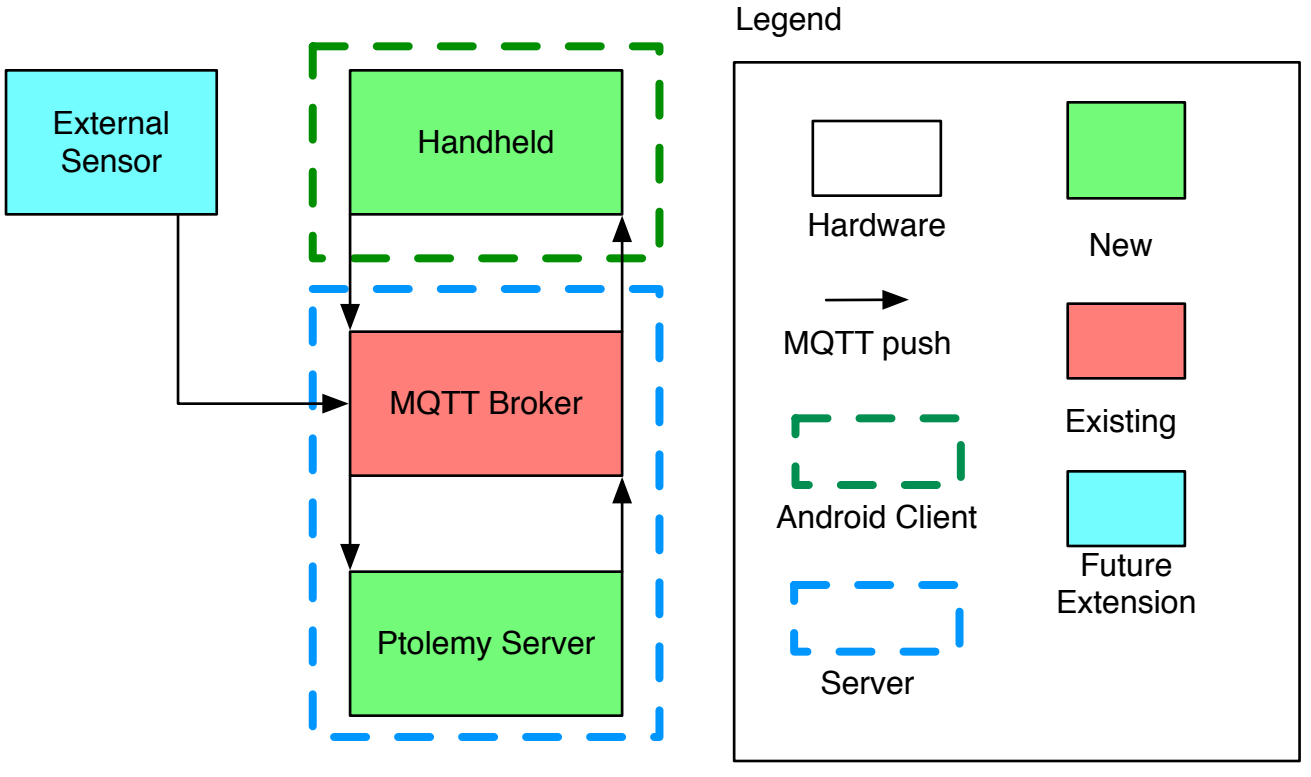

Loading model on the server
(loadModel method as Server)
Parse model XML, filter out non-portable classes
Find remote sinks, sources and attributes
Currently they must be added to the model file but in the future this info should be loaded from the UI file.
Perform type resolution and capture type information on all remote sinks, sources, and attributes
Replace sinks and sources with proxies, set up remote attribute listeners
Loading model on the client
(initModel method)
Parse layout XML, filter out non-portable classes
Find remote sinks, sources and attributes.
Assign type information to all sinks and sources that were marked as _remote
TODO: the same must apply to the remote attribute
Set up remote attributes
Generating layout file
(loadModel method as Client)
Parse layout XML, filter out non-portable classes
Find remote sinks, sources and attributes
Currently they must be added to the model file but in the future this info should be loaded from the UI file.
Replace actors connected to sinks and sources with proxies, set up remote attribute listeners, remove other actors
Copy port of the target actor to the connected remote actor; flip its input/output fields.
Copy target actors attributes.
set up infrastructure

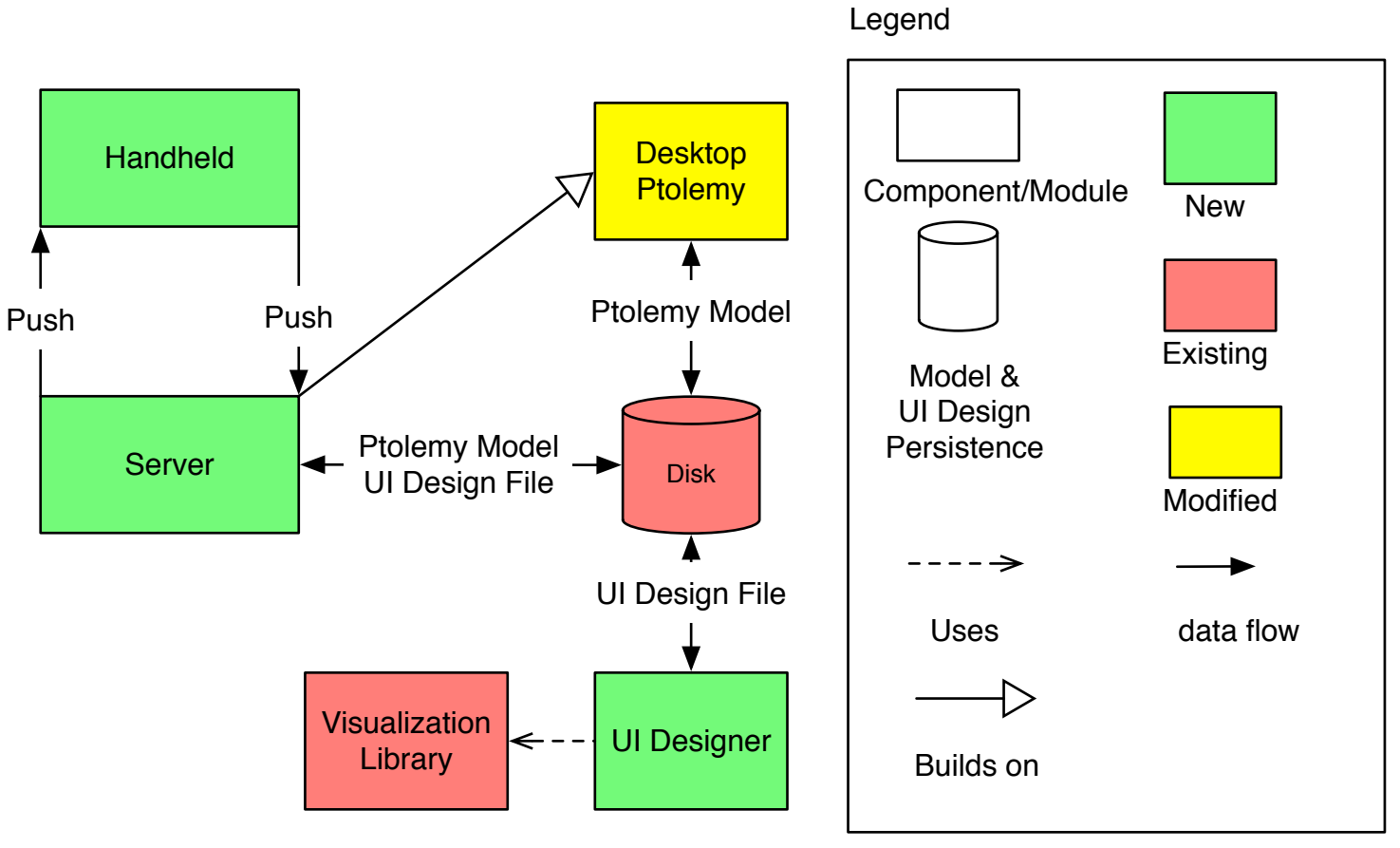

Main
PtolemyModule
PtolemyModule(ResourceBundle moduleBundle)
PlatformInjector
static createInstance(Module... modules)
static Injector getInjector()
google.guice.Injector
T getInstance(Class<T> type)
PortablePlaceable
void place(PortableContainer container)
Display
DisplayInterface _impl
DisplayInterface
displayToken(Token token)
PortableContainer
<Container, Component>
void add(Component component)
Container getPlatformContainer()
ptolemy.actor.gui.android
.AndroidDisplayImpl
ptolemy.gui.javase.JavaContainer
JavaContainer(java.awt.Container)
void add(java.awt.Component component)
java.awt.Container getPlatformContainer()
java.awt.Container _container
ptolemy.actor.gui.javase
.JavaDisplayImpl
ptolemy.gui.android.AndroidContainer
AndroidContainer(android.view.ViewGroup viewGroup)
void add(android.view.View component)
android.view.ViewGroup getPlatformContainer()
ViewGroup _viewGroup
Legend
Class
Interface
Comm. = Communication
B
A
Class A
inherits
from class B
Class A
implements
interface B
A uses B
Interface A
inherits
from interface B

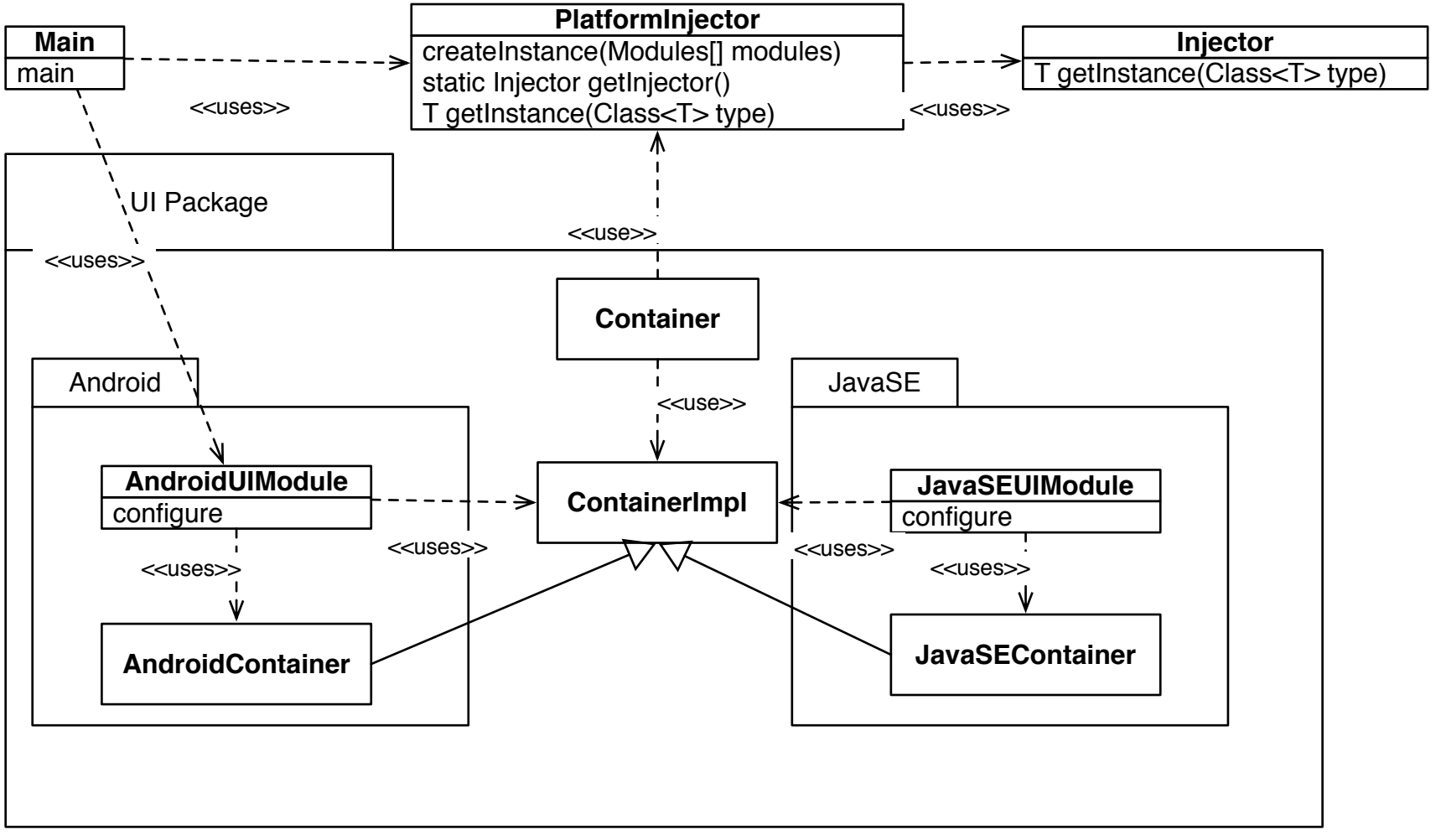

Client Communication Manager
MQTT Broker
Server Communication Manager
Source
Middle layer Filters
Sink
Legend
Ptolemy Filter
Object
A
B
A sends a token to B using Ptolemy filter connector
A sends a communication token to B
A sends an MQTT message to B
A sends attribute change token to B
Multiplicity
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation
New Component
Existing Component
Modified Component

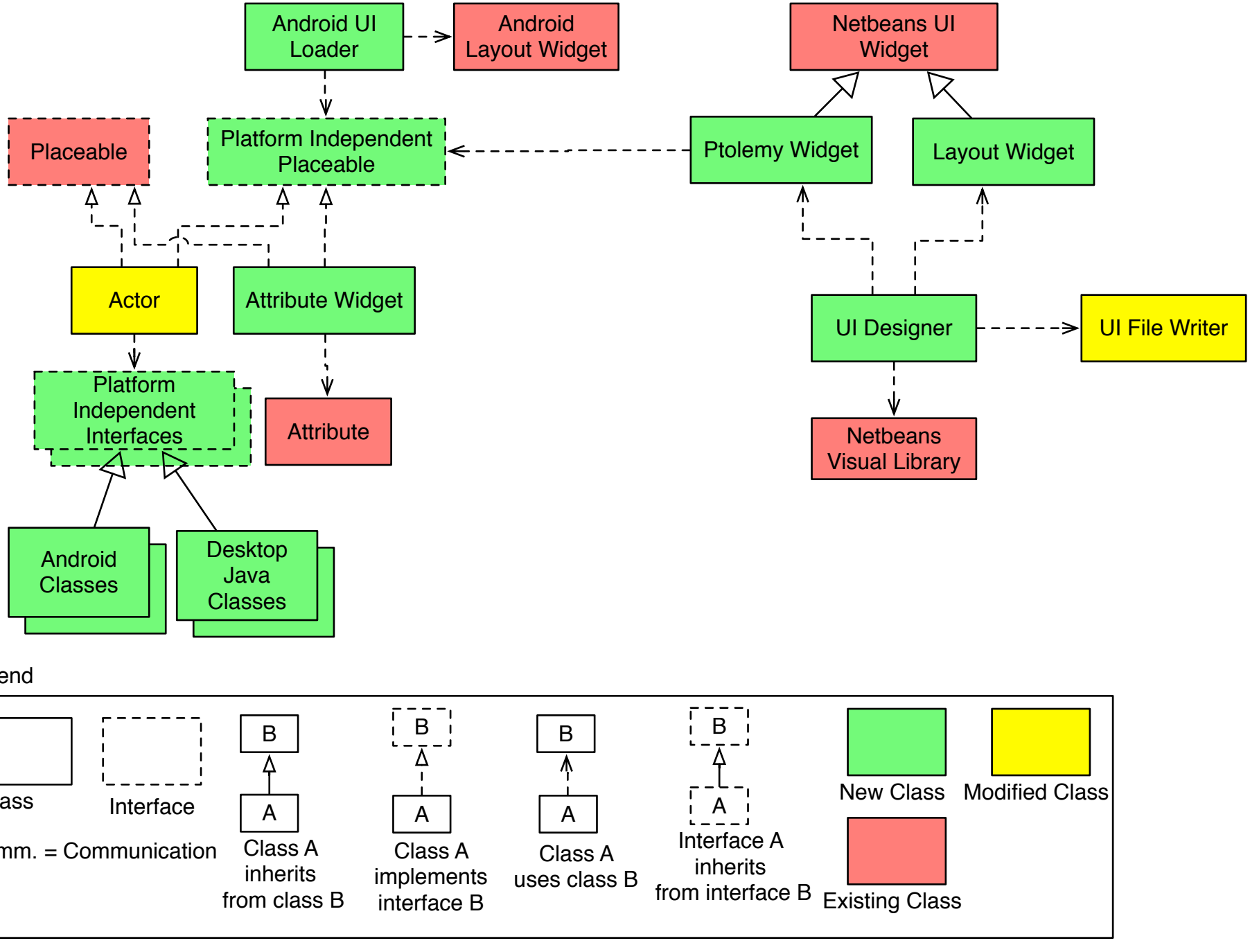

Desktop
Ptolemy will be
reused to build
Server Ptolemy
Server
Ptolemy
(ptServer)
Gets Sensor Data
Gets control
commands
Gets
Simulation
Results
Handheld
Ptolemy
(ptDroid)
Controls
simulation
On handheld
Controls Simulations
Visualizes simulations
Provides sensor data
Handheld
User
Runs simulations
HandSimdDroid
System
Creates layout
design
Legend:
Project Scope
Dataflow
Use Case
Actor
Layout
Designer
Creates
custom layout
design
Desktop
Ptolemy
(Vergil)
Used to build
custom layouts
for handheld

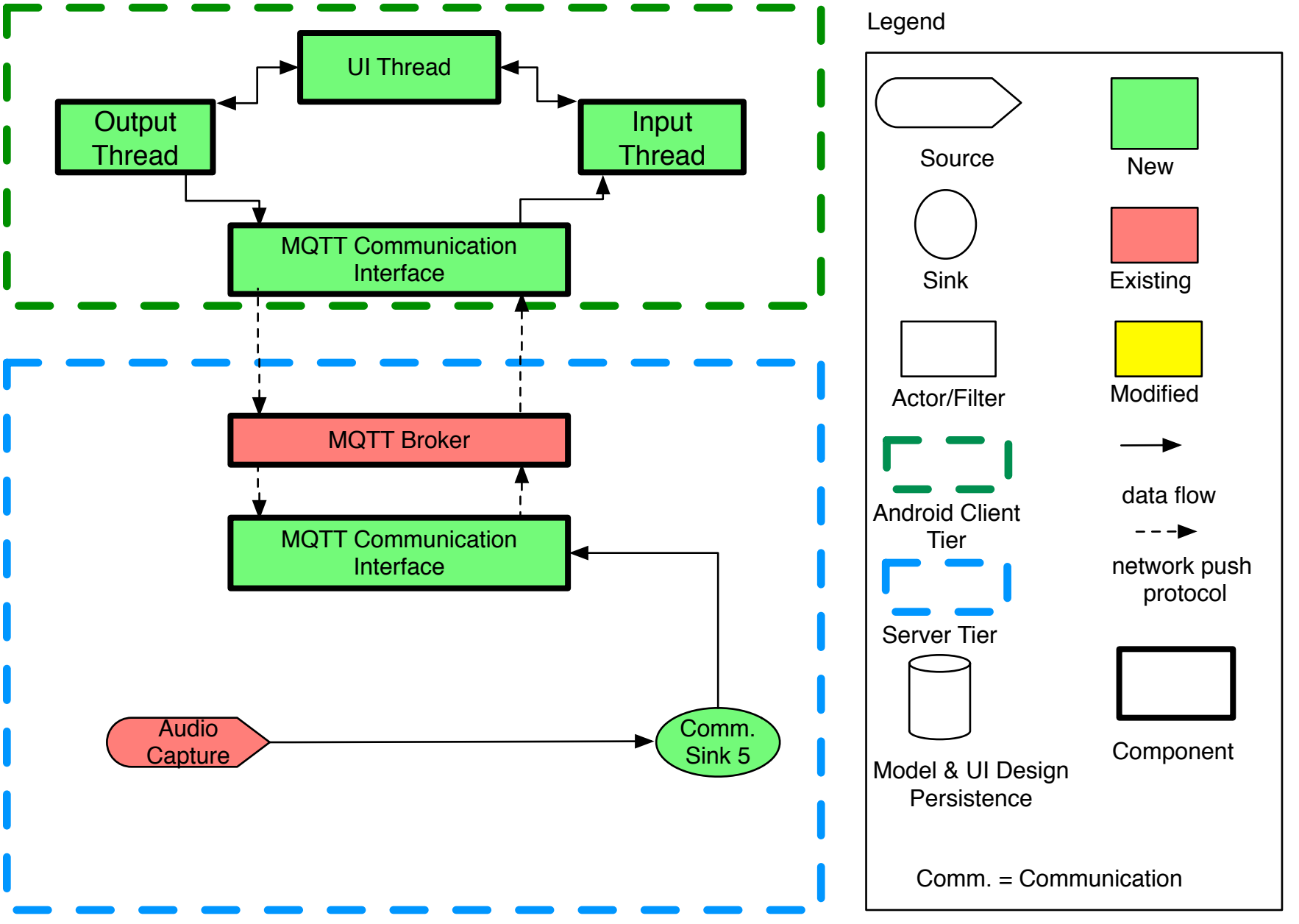

Actor
Remote Sink
Remote Source
Sources
Sinks
Token
Communication Token
Handheld Director
Server Communication Manager
Client Communication Manager
Legend
Module
B
A
Module A inherits from module B
B
A
Module A uses module B
New Module
Existing Module
Modified Module
Multiplicity

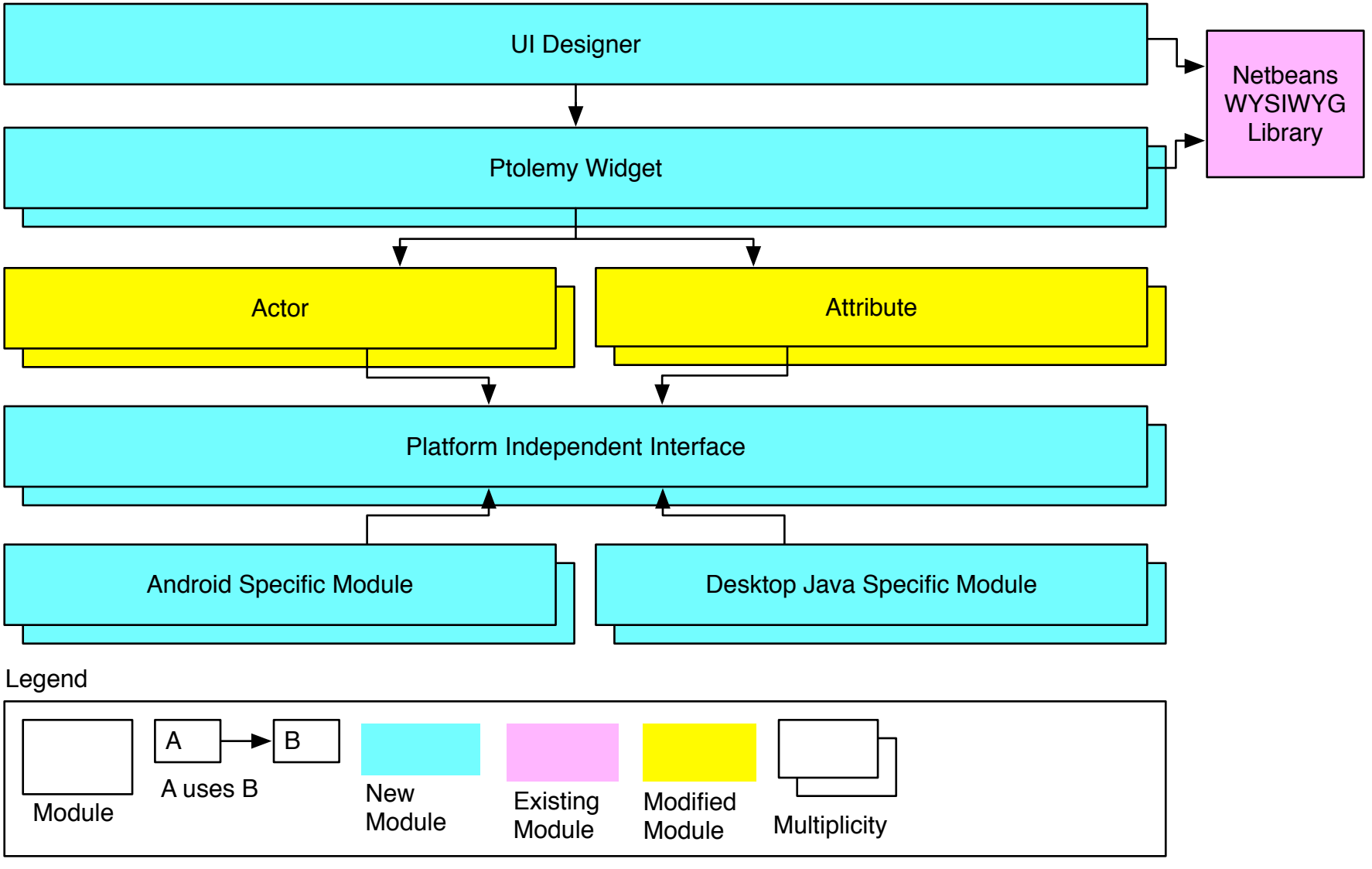

External Sensor
Handheld
MQTT Broker
Ptolemy Server
Legend
Hardware
New
MQTT push
Existing
Android Client
Future Extension
Server

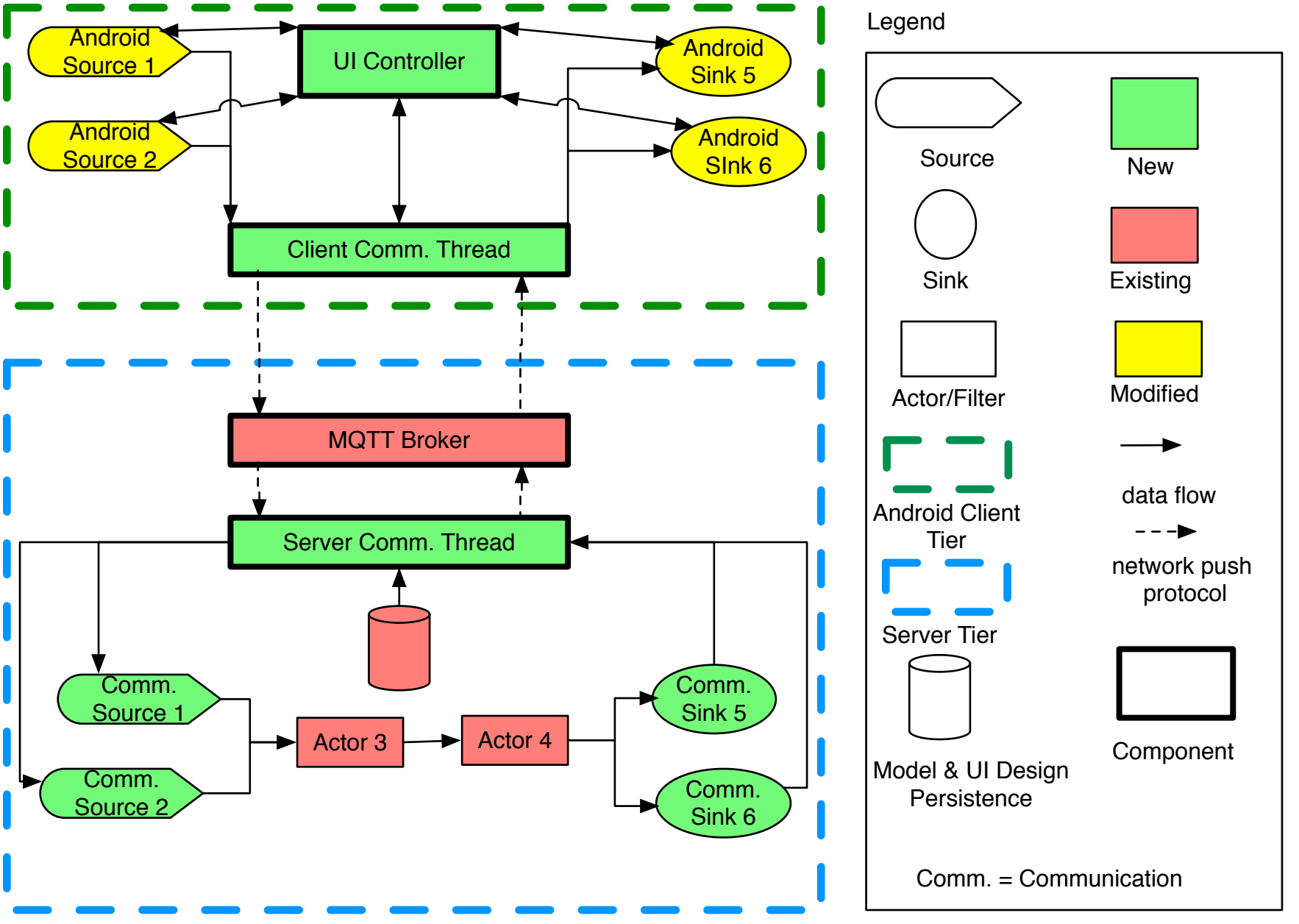

Handheld
Desktop
Ptolemy
Push
Push
Ptolemy Model
Server
Ptolemy Model
UI Design File
Disk
UI Design File
Visualization
Library
UI Designer
Legend
Component/Module
New
Existing
Model &
UI Design
Persistence
Modified
Uses
data flow
Builds on

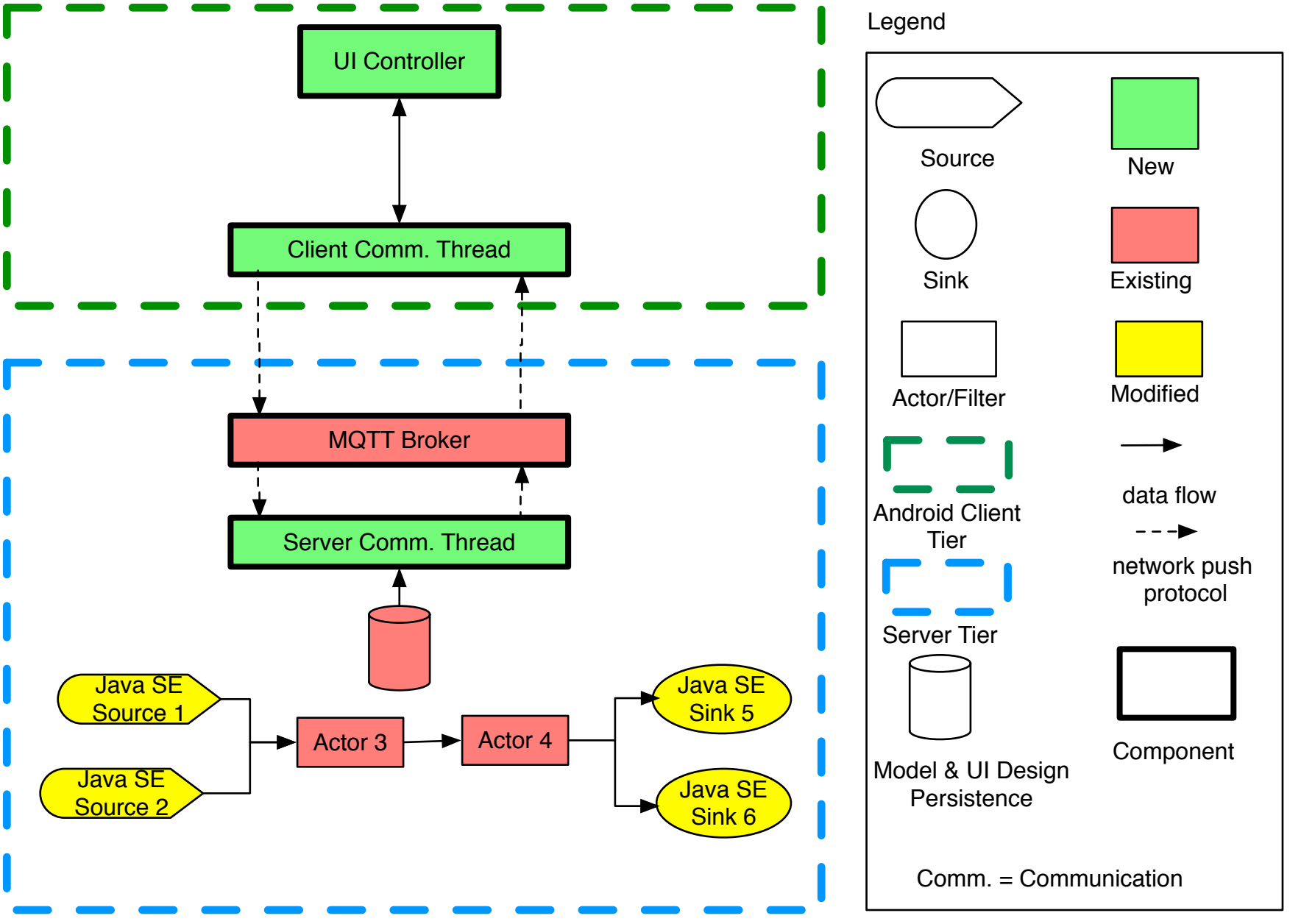

Main
main
PlatformInjector
createInstance(Modules[] modules)
static Injector getInjector()
T getInstance(Class<T> type)
Injector
T getInstance(Class<T> type)
<<uses>>
<<uses>>
UI Package
<<use>>
<<uses>>
Container
Android
JavaSE
<<use>>
AndroidUIModule
configure
ContainerImpl
JavaSEUIModule
configure
<<uses>>
<<uses>>
<<uses>>
<<uses>>
AndroidContainer
JavaSEContainer

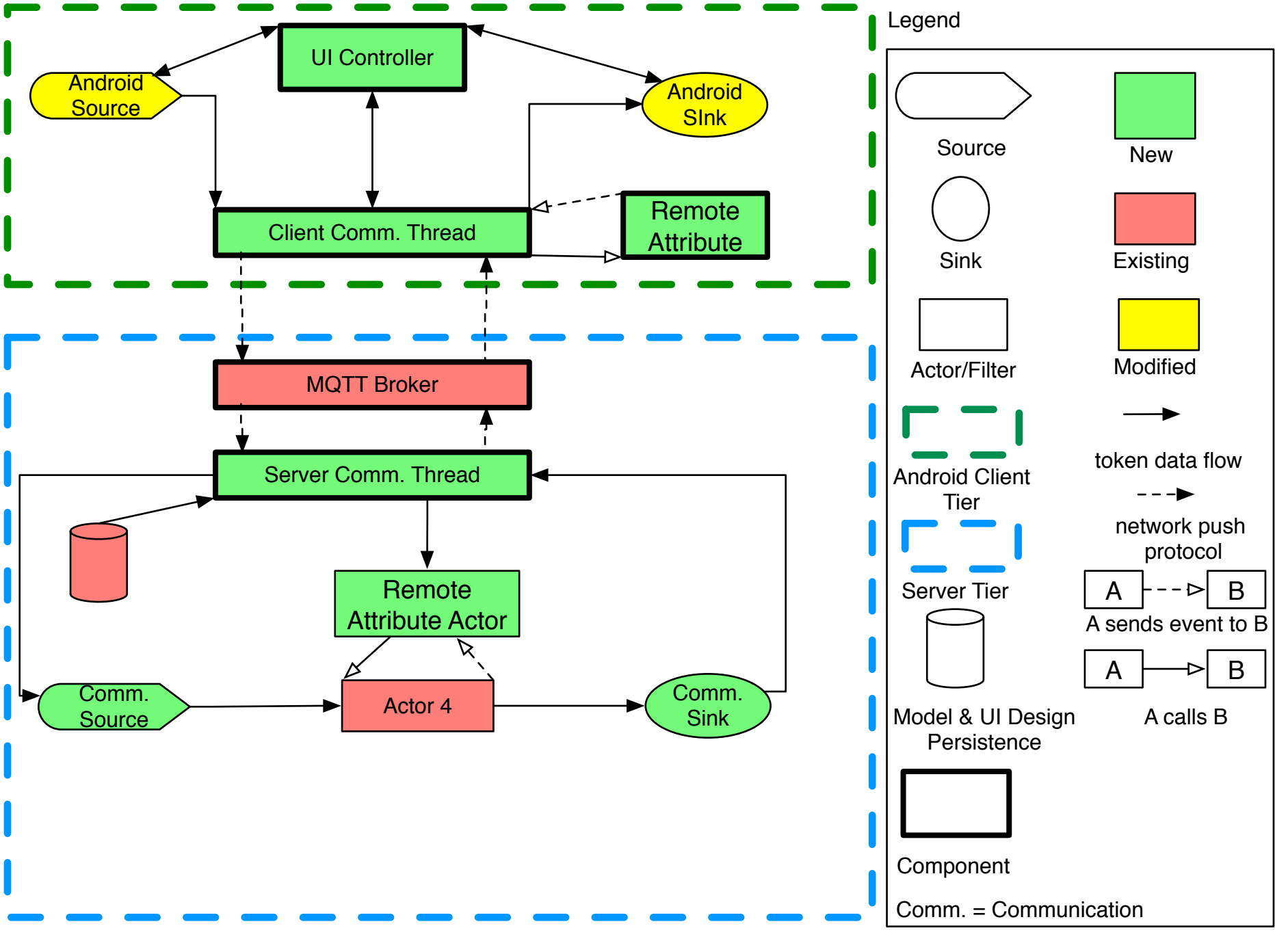

Android UI Loader
Android Layout Widget
Netbeans UI Widget
Placeable
Platform Independent Placeable
Ptolemy Widget
Layout Widget
Actor
Attribute Widget
UI Designer
UI File Writer
Platform Independent Interfaces
Attribute
Netbeans Visual Library
Android Classes
Desktop Java Classes
Legend
Class
Interface
B
A
Comm. = Communication
Class A inherits from class B
Class A implements interface B
Class A uses class B
Interface A inherits from interface B
New Class
Modified Class
Existing Class

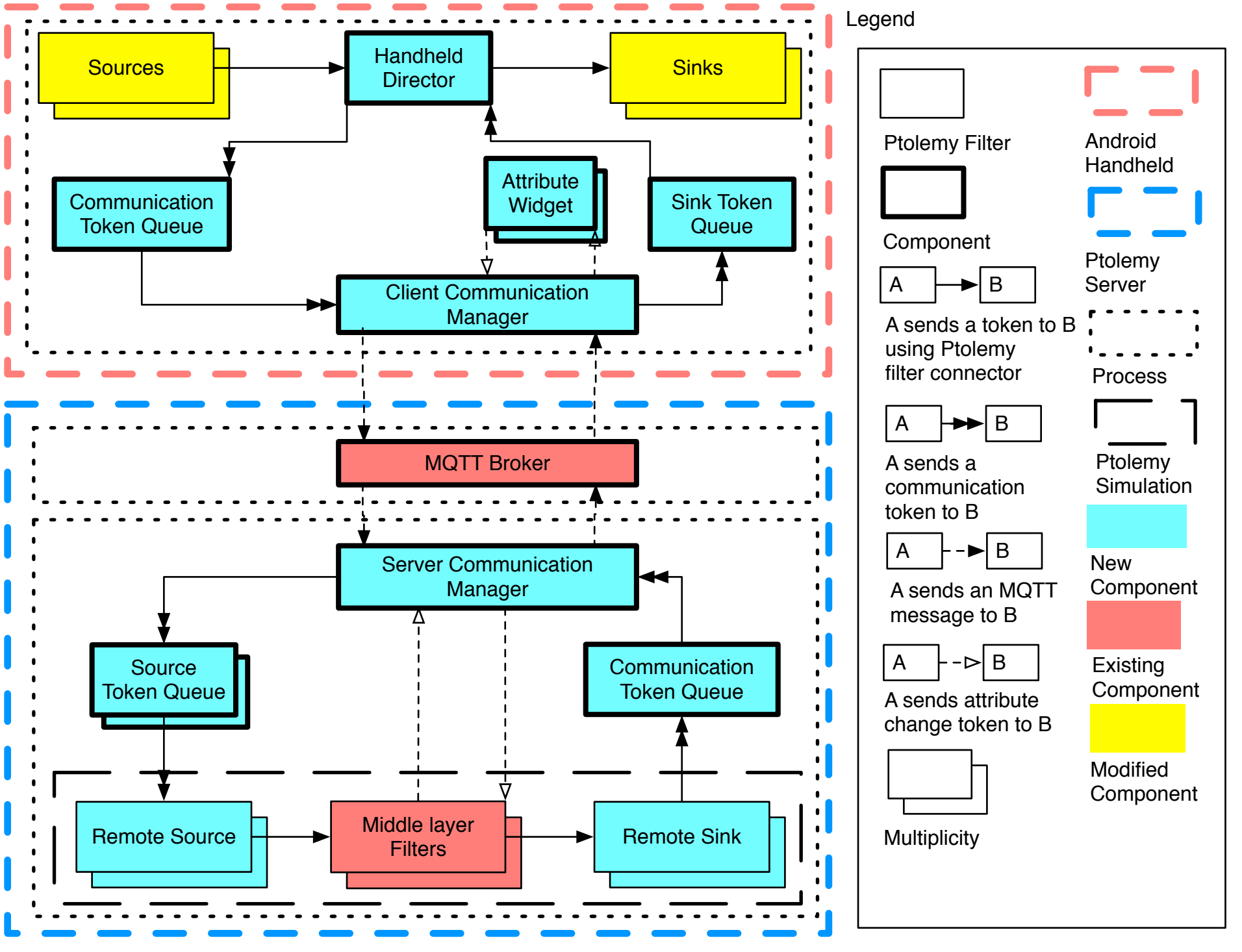

UI Thread
Output Thread
Input Thread
MQTT Communication Interface
MQTT Broker
MQTT Communication Interface
Audio Capture
Comm. Sink 5
Legend
Source
New
Sink
Existing
Actor/Filter
Modified
Android Client Tier
data flow
network push protocol
Server Tier
Model & UI Design Persistence
Component
Comm. = Communication

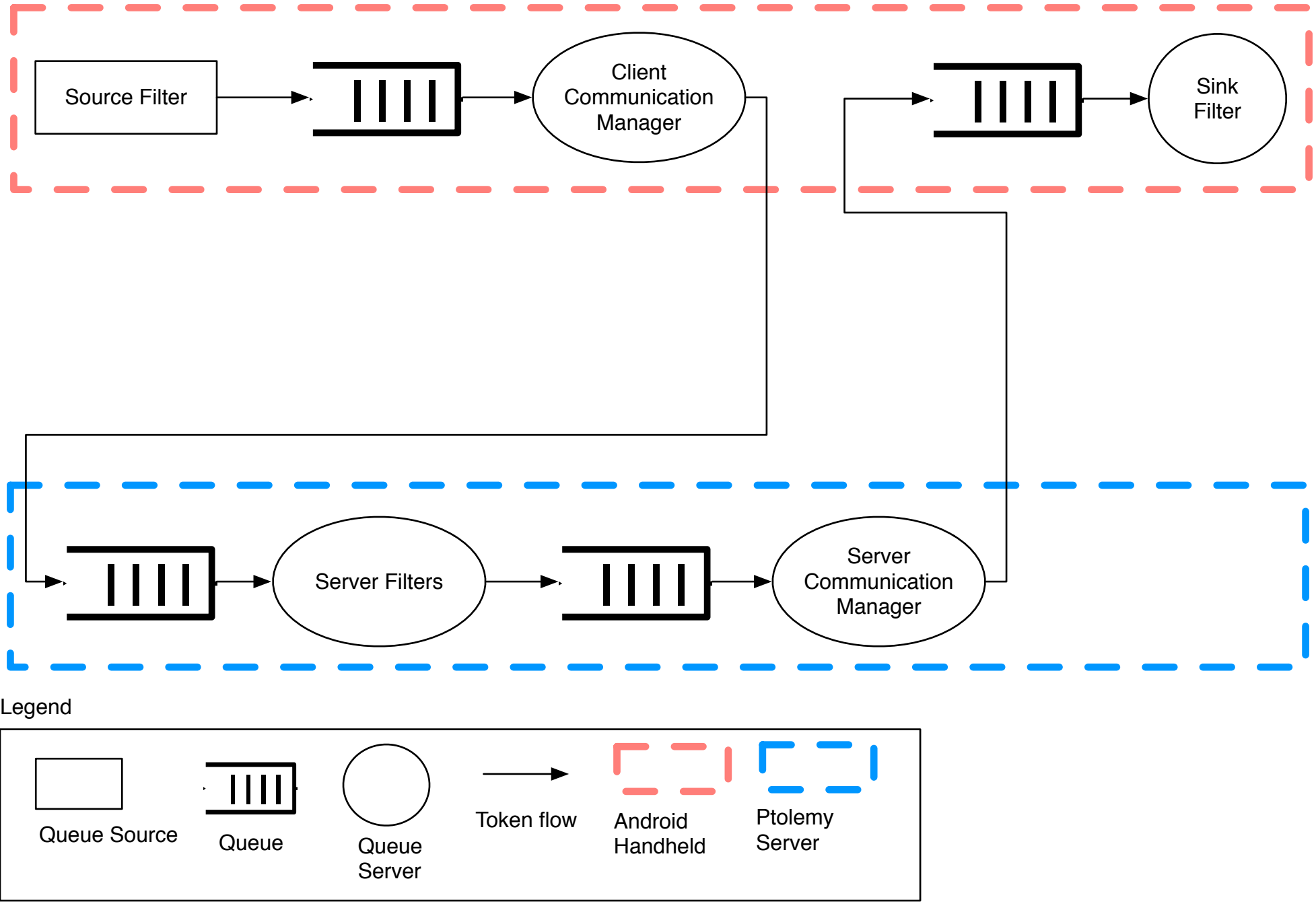

UI Designer
Netbeans WYSIWYG Library
Ptolemy Widget
Actor
Attribute
Platform Independent Interface
Android Specific Module
Desktop Java Specific Module
Legend
Module
A
B
A uses B
New Module
Existing Module
Modified Module
Multiplicity

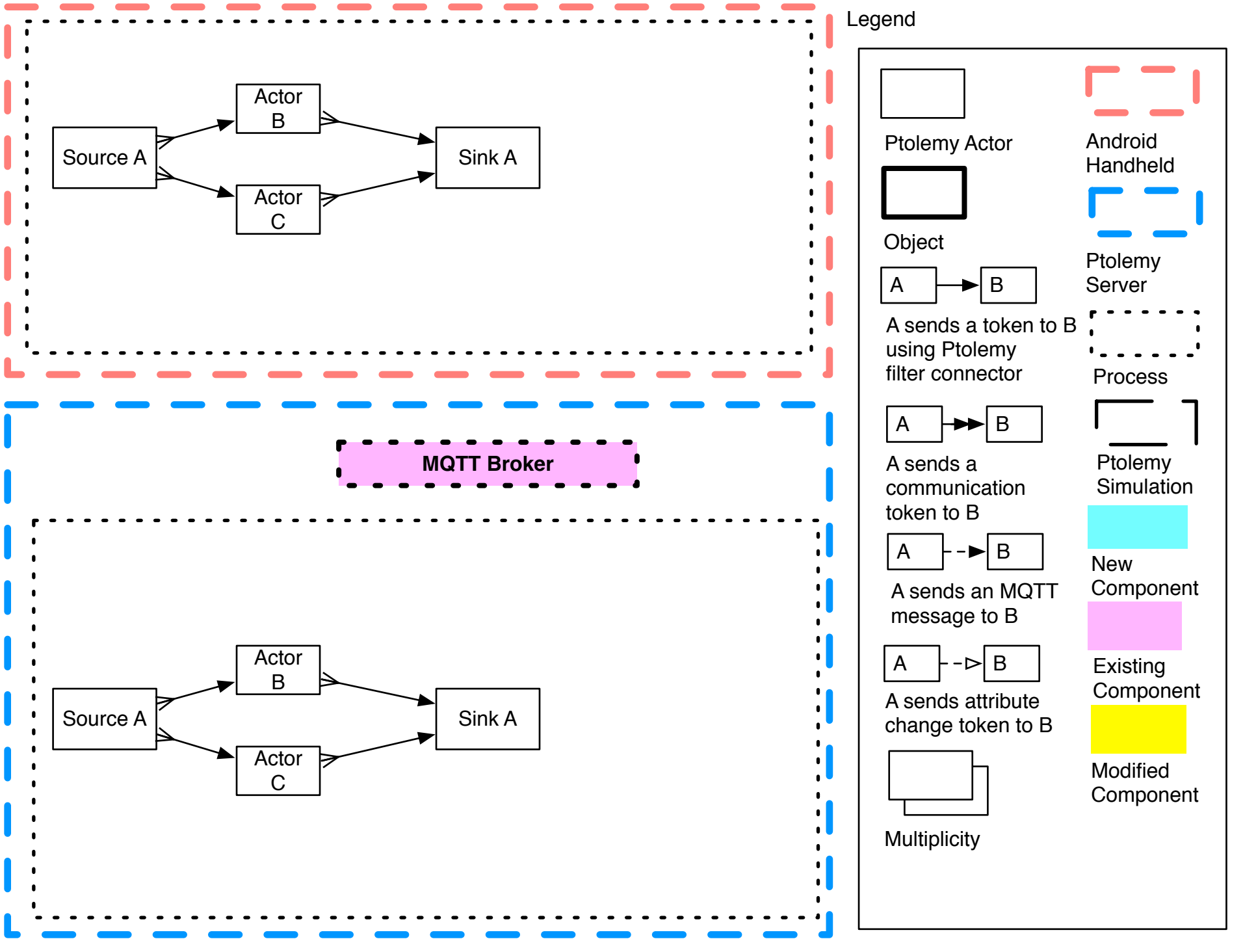

Android Source 1
Android Source 2
UI Controller
Android Sink 5
Android SInk 6
Client Comm. Thread
MQTT Broker
Server Comm. Thread
Comm. Source 1
Comm. Source 2
Actor 3
Actor 4
Comm. Sink 5
Comm. Sink 6
Legend
Source
New
Sink
Existing
Actor/Filter
Modified
Android Client Tier
data flow
network push protocol
Server Tier
Model & UI Design Persistence
Component
Comm. = Communication


UI Controller
Client Comm. Thread
MQTT Broker
Server Comm. Thread
Java SE Source 1
Java SE Source 2
Actor 3
Actor 4
Java SE Sink 5
Java SE Sink 6
Legend
Source
New
Sink
Existing
Actor/Filter
Modified
Android Client Tier
data flow
network push protocol
Server Tier
Model & UI Design Persistence
Component
Comm. = Communication


UI Controller
Android Source
Android Slnk
Client Comm. Thread
Remote Attribute
MQTT Broker
Server Comm. Thread
Remote Attribute Actor
Comm. Source
Actor 4
Comm. Sink
Legend
Source
New
Sink
Existing
Actor/Filter
Modified
token data flow
Android Client Tier
network push protocol
Server Tier
A
B
A sends event to B
A
B
A calls B
Model & UI Design Persistence
Component
Comm. = Communication


Sources
Handheld Director
Sinks
Communication Token Queue
Attribute Widget
Sink Token Queue
Client Communication Manager
MQTT Broker
Server Communication Manager
Source Token Queue
Communication Token Queue
Remote Source
Middle layer Filters
Remote Sink
Legend
Ptolemy Filter
Component
A
B
A sends a token to B using Ptolemy filter connector
A sends a communication token to B
A sends an MQTT message to B
A sends attribute change token to B
Multiplicity
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation
New Component
Existing Component
Modified Component


Source Filter
Client Communication Manager
Sink Filter
Server Filters
Server Communication Manager
Legend
Queue Source
Queue
Queue Server
Token flow
Android Handheld
Ptolemy Server


Source A
Actor B
Actor C
Sink A
MQTT Broker
Source A
Actor B
Actor C
Sink A
Legend
Ptolemy Actor
Object
A
B
A sends a token to B using Ptolemy filter connector
A
B
A sends a communication token to B
A
B
A sends an MQTT message to B
A
B
A sends attribute change token to B
Multiplicity
Android Handheld
Ptolemy Server
Process
Ptolemy Simulation
New Component
Existing Component
Modified Component