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Part II

Federation
Components

Federates
Components

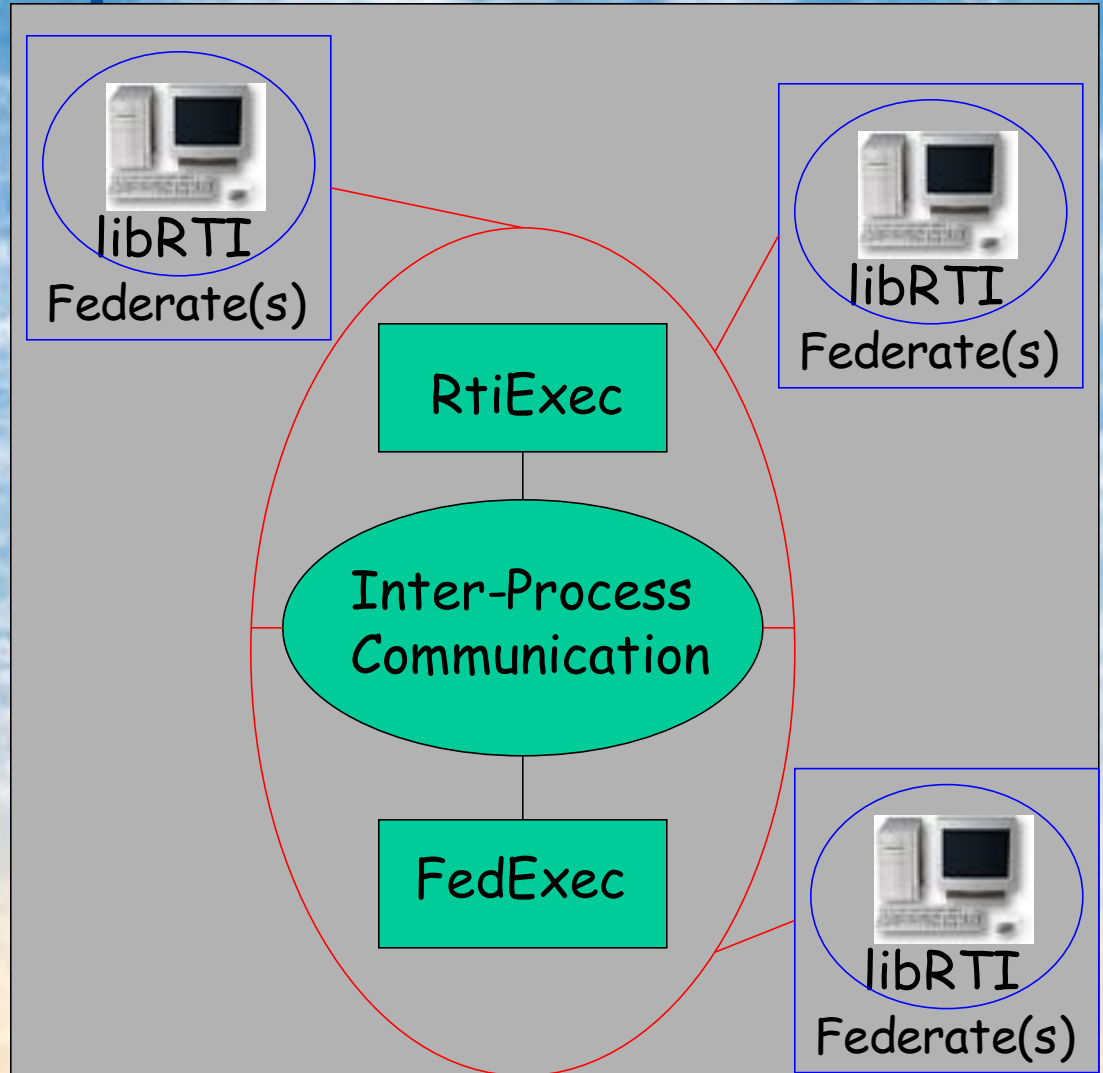
Federation
Execution
Analysis

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Part II

Federation Components

Logic
View



Federation
Components

Federates
Components

Federation
Execution
Analysis

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Federation Components

Logic
View

Federation executive

- ◆ A process for each federation.

FedExec

Created by first federate

- ◆ Able to administrate incoming and retiring federates from federation execution with continuity. Assign unique handles for each federate
- ◆ Facilitates exchanges among federates
- ◆ Console interface for manual operations

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Federation Components

RtiExec

Logic
View

FedExec

RtiExec

- ◆ Manage multiple federations execution creation and destruction (with different names)
- ◆ Global process run on unique platform
- ◆ Socket listening Port good defined
- ◆ Console interface for manual operations

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Federation Components

Logic
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R.T.I. library

FedExec

- ◆ Keep HLA services available for each federate

RtiExec

- ◆ Written in C++ with C++/Java interface and others languages

libRTI

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Federation
Components

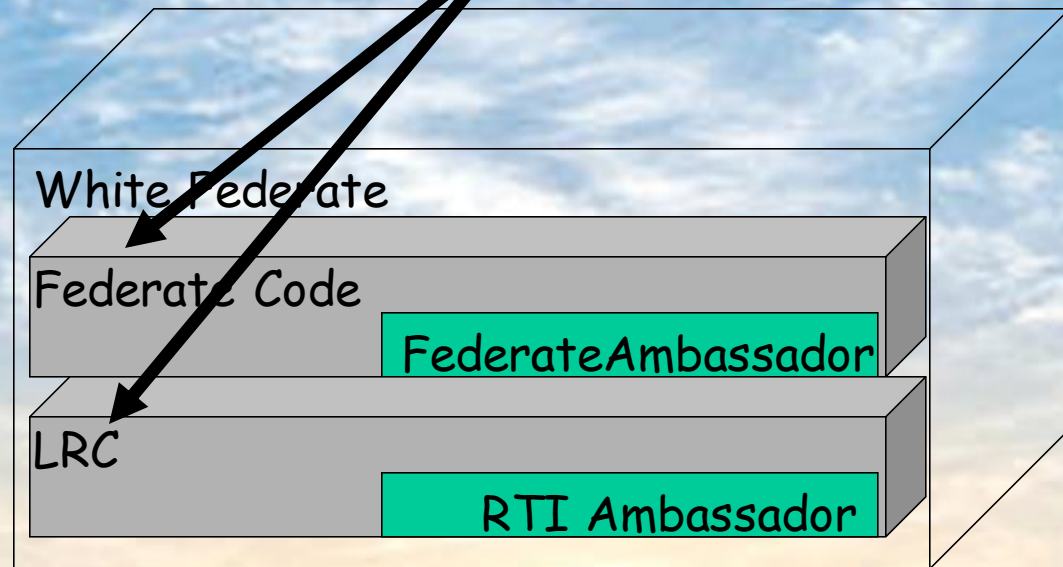
Federates
Components

Federation
Execution
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Federate Components

How
compound
a
federate

The (local or external) component) glances at the internal processing as specified in the IFSpec



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Federate Components

How
compound

a
federate

The
"Ambassador"

Federate Ambassador

- ◆ RTI communicate with federate requesting FederateAmbassador function member

RTI Ambassador

- ◆ Federate requires RTI services request RTIAmbassador member function

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Federates
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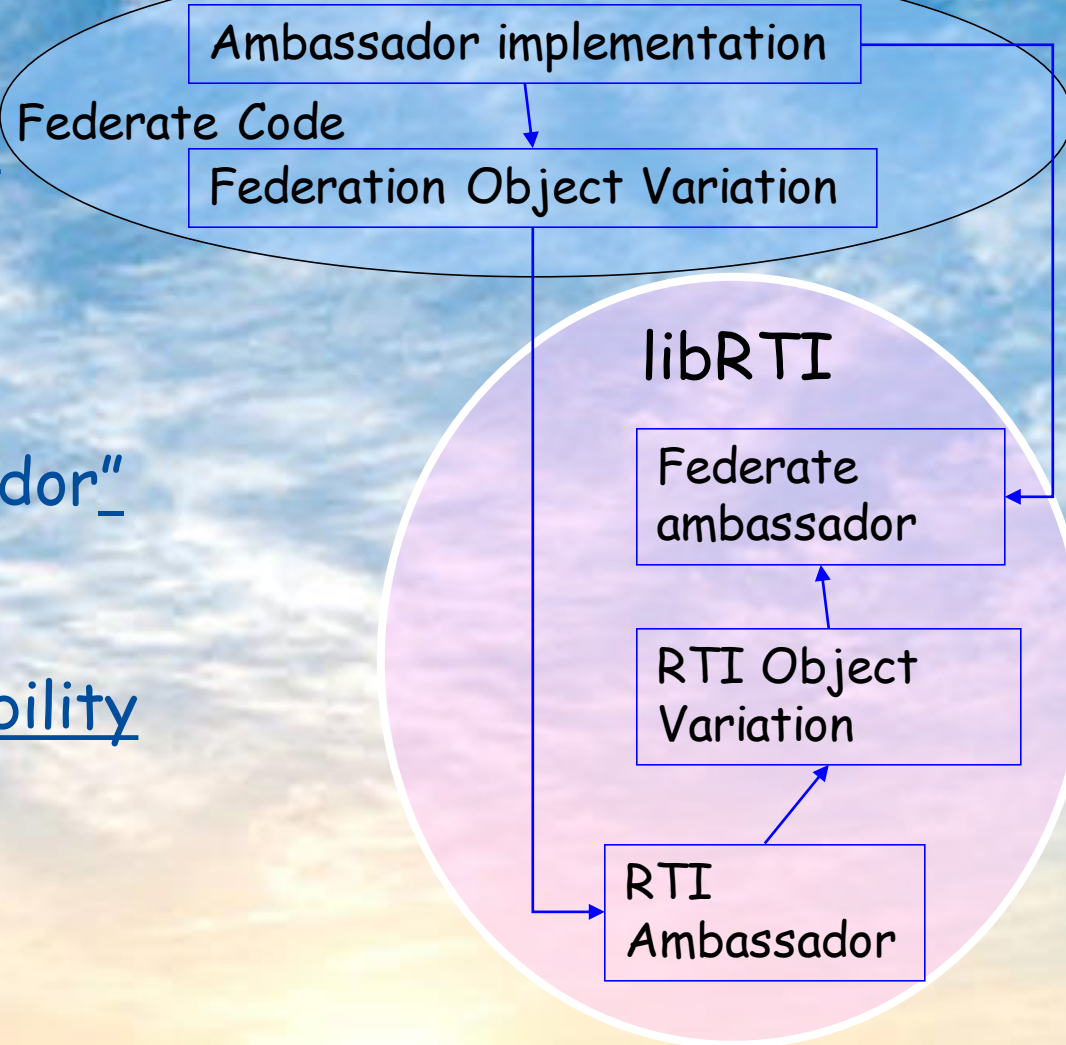
Federation
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Federate Components

How
compound
a
federate

The
"Ambassador"

"code"
Responsibility



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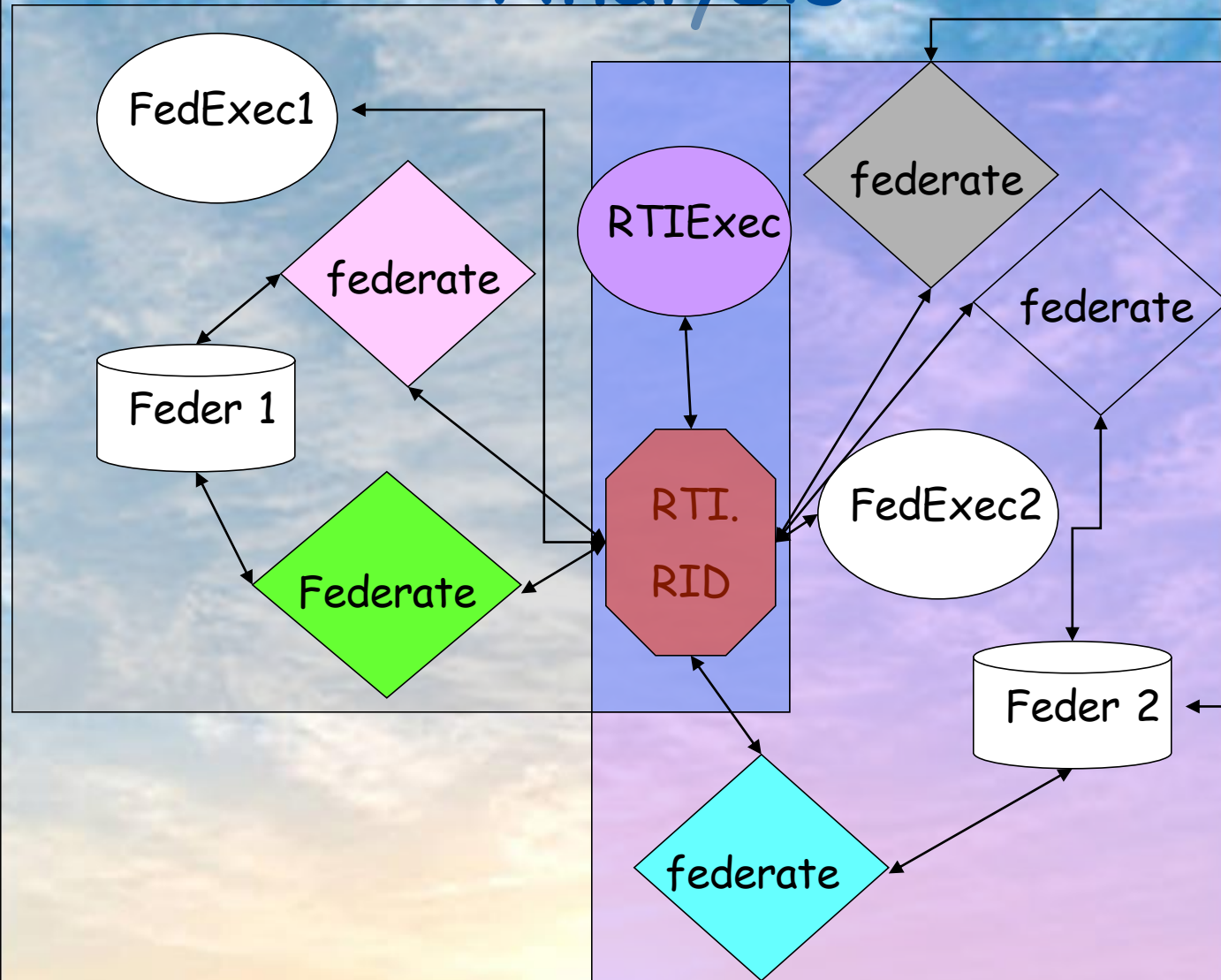
Part II

Federation Components

Federates Components

Federation Execution Analysis

Federation Execution Analysis



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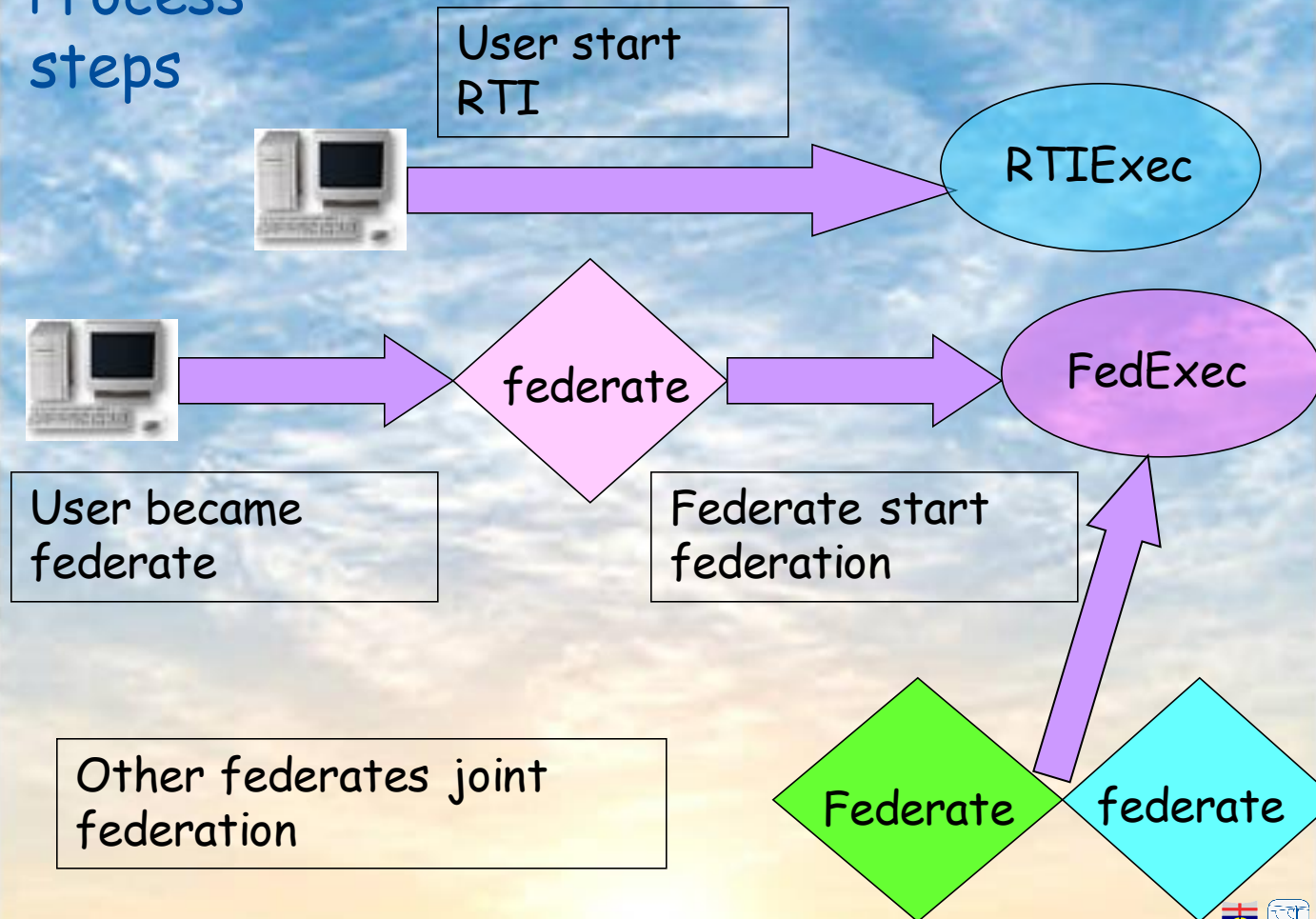
Federation Components

Federates Components

Federation Execution Analysis

Federation execution Analysis

Process steps



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Federation execution Analysis

Federate interface specification

Process
steps

Interface

Specific interface shall an each service description and request necessary arguments and pre-conditions of its use

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Federation
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Analysis

Federation execution Analysis

Contents are:

Process
steps

Interface

- 1 Name
- 2 Arguments Supplied
- 3 Arguments Expected
- 4 Initial condition
- 5 Final condition
- 6 Exceptions
- 7 Related services

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Federation
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Federation execution Analysis

Base flow:

Process
steps

Interface

Base flow

- 1 Federation Creation
- 2 Statements manage
- 3 Management of temporal statements
- 4 Support services
- 5 Objects Management
- 6 Time Management
- 7 Federation destruction

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Federates
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Federation
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Analysis

Federation execution Analysis

Process
steps

Interface

Base
Flow

Es. code

```
try
{
    // attempt to create the federation executive
    rtiamb.createFederationExecution("Nave", "Nave.fed");
    ta.append("***FED_HW: created federation execution\n"); }
catch (FederationExecutionAlreadyExists ex)
{
    ta.append("***FED_HW: federation execution already exists \n");
    // this exception is okay, so fall through }
```


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Federation execution Analysis

Process
steps

Interface

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Flow

Es. code

Exceptions

Possible Exceptions

- ✦ Because federation-time is not valid
- ✦ Because federation-time is already expired
- ✦ Because TimeAdvanceRequest still pending
- ✦ Federate is not an executive member
- ✦ For a rescue in progress
- ✦ For a restore in progress
- ✦ For an RTI internal error

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Interface

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flow

Es. code

Exceptions

I "Tick"

```
// clear the time-advance flag from the last iteration
```

```
        fedamb.mTimeAdvanceGrant = false;  
// request a time-advance to 10 units after  
the current time
```

```
        rtiamb.timeAdvanceRequest(  
EncodingHelpers.encodeDouble
```

```
(fedamb.mCurrentTime + 10.0 ) );
```

```
// loop and tick until we receive the time  
advance
```

```
while (!fedamb.mTimeAdvanceGrant) {  
        rtiamb.tick(0.01, 0.5);  
}
```

```
        ta.append("***FED_HW: time grant to  
" + fedamb.mCurrentTime + "\n");
```