Components

Federal Rules

Interface Specification

R.T.I.

O.M.T.

FEDEP

# High Level Architecture

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# Components:

Federation Rules

- HLA consists of a set of 10 rules divided into two groups 5 rules for federations and 5 rules for federates
- These rules ensure proper interaction of simulations in a federation
- Describe the simulation and federate responsibilities

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# Components:

Federation Rules

- Defines RTI services

Interface Specification

- Identifies "callback" functions each federate must provide

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# Components:

Federation Rules

Interface Specification

O.M.T.

## Object Model Template

- Provides a common method for recording information
- Three key models are defined:
  - Federation Object Model (FOM)
  - Simulation Object Model (SOM)
  - Management Object Model (MOM)

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# Federal Rules:

## 5 federation rules

1. Every Federation Federation shall have a FOM, documented in accordance with the OMT
2. All representation of objects in the FOM shall be in the federates, not in the RTI
3. During a federation execution, all exchange of FOM data among federates shall occur via the RTI
4. During a federation execution, federates shall interact with the RTI in accordance with the HLA interface specification
5. During a federation execution, an attribute of an instance of an object shall be owned by only one federate at any given time

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# Federal Rules:

## 5 federate rules

6. Every federate shall have a SOM, documented in accordance with the OMT

7. Federates shall be able to update and/or reflect any attributes of objects in their SOM, and send and/or receive SOM interactions externally, as specified in their SOM

8. Federates shall be able to transfer and/or accept ownership of attributes dynamically during a federation execution, as specified in their SOM

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# Federation Rules:

## 5 federate rules

9. Federates shall be able to vary the conditions under which they provide updates of attributes of objects, as specified in their SOM

10. Federates shall be able to manage local time in a way which will allow them to coordinate data exchange with other members of a federation.

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# Interface:

- Federation Management
- Declaration Management
- Object Management
- Ownership Management
- Data Distribution Management
- Time Management

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# R.T.I.:
## Run Time Infrastructure

What is the RTI?

- Software that provides common services to simulation systems
- Implementation of the HLA Interface Specification
- An architectural foundation encouraging portability and interoperability

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# H.L.A.
Part I

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# R.T.I.:
## Run Time Infrastructure

What is the RTI?

R.T.I. Services

- Separate simulation and communication
- Improves on older standards (e.g., DIS)
- Facilitates construction and destruction of federations
- Supports object declaration and management between federates
- Assists with federation time management
- Provides efficient communications to logical groups of federates

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# O.M.T.:
## Object model Template

Object model Template

- Provides a common framework for HLA object model documentation
- Fosters interoperability and reuse of simulations and their components

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# O.M.T.:
## Object model Template

Object Model Template

Required Information

- Object Class Structure Table
- Object Interaction Table
- Attribute/parameter Table
- FOM/SOM Lexicon

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# O.M.T.:
## Object model Template

Object model Template

Required Information

Optional Information

- Component Structure Table
- Associations Table
- Object Model Metadata

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# O.M.T.:
## Object model Template

Object model Template

Required Information

Optional Information

Object Models

Federation Object Model

(F.O.M.)

- One per federation
- Introduces all shared information
- Contemplates inter-federate issues

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# O.M.T.:
## Object model Template

Object model Template

Required Information

Optional Information

Object Models

**Simulation Object Model**

(S.O.M.)

- One per federate
- Describes salient characteristics of a federate
- Presents objects and interactions that can be used externally
- Focuses on the federate's internal operation

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# O.M.T.:
## Object model Template

Object model Template

Required Information

Optional Information

Object Models

Management Object Model

(M.O.M.)

- Universal definition
- Identifies objects and interactions used to manage a federation

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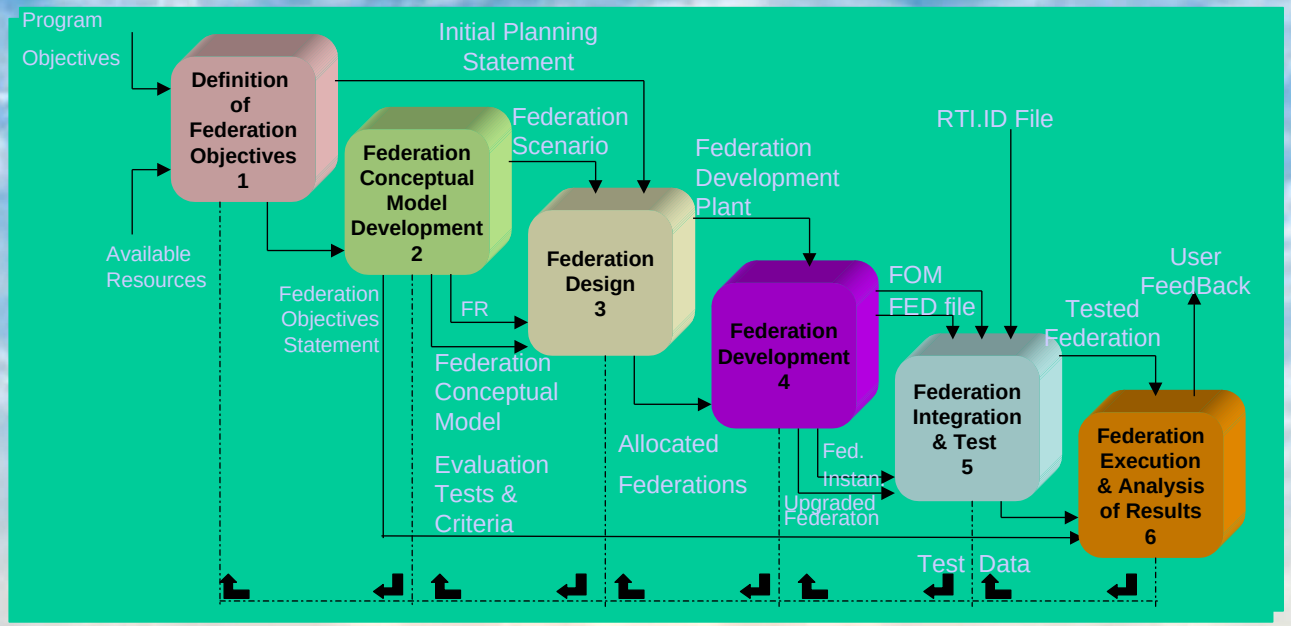
# Federation Development Process

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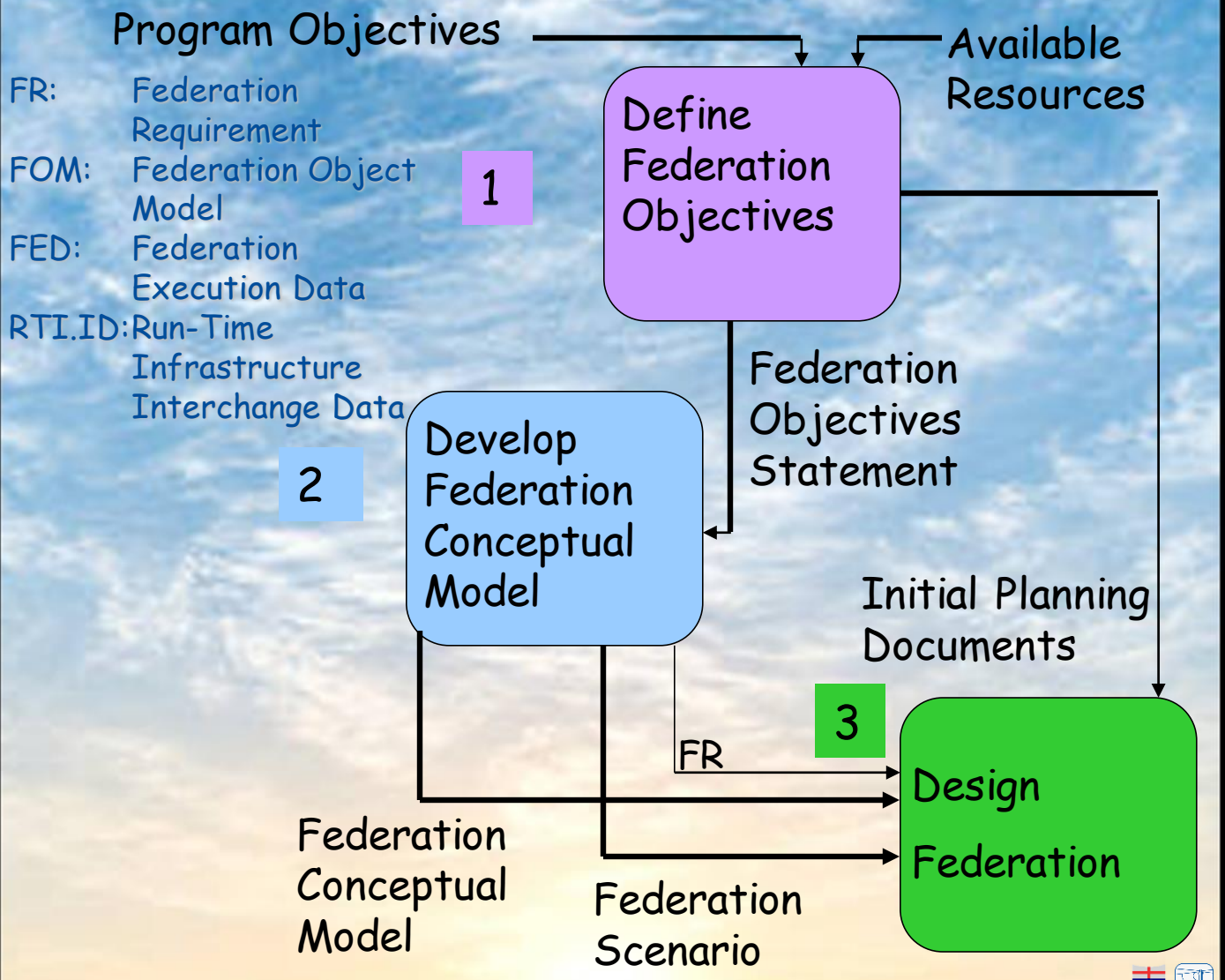
# Federation Development Process

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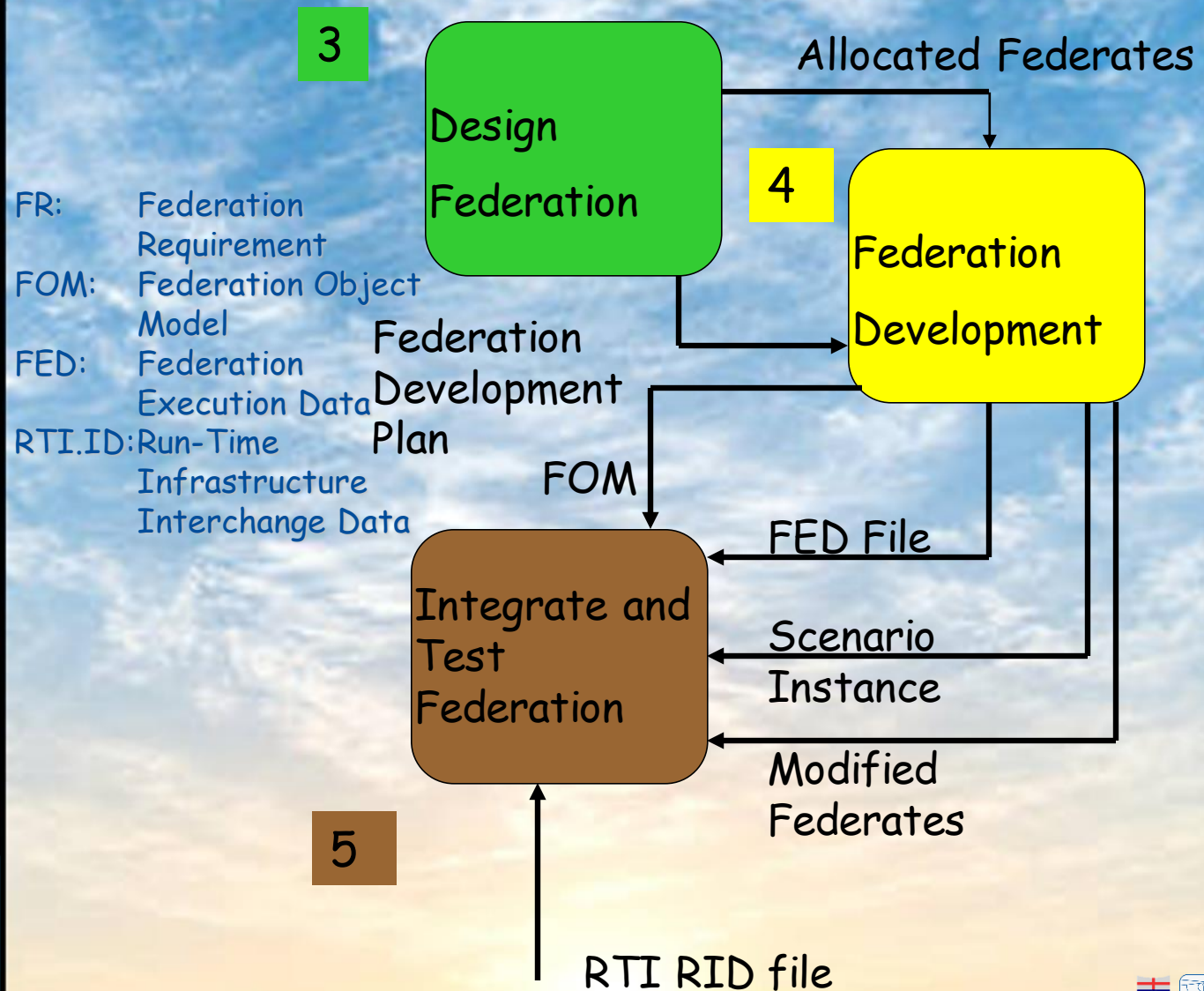


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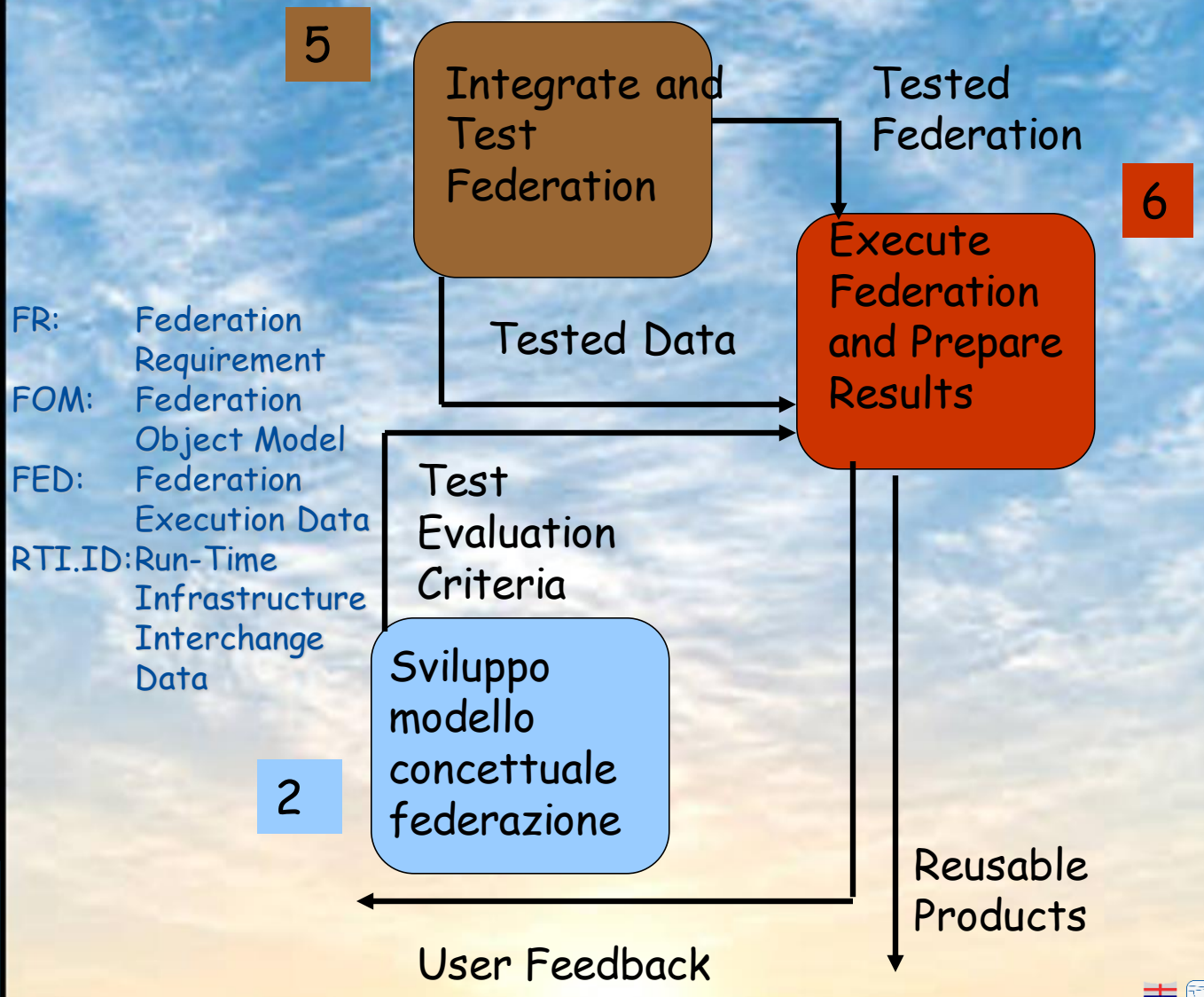


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