

H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

H.L.A.

Part III

Messages
H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

Time
Advance

Messages H.L.A.:

Updates

- ◆ Send and receives new attributes values for each time step ending
(Send: Update Attribute Values)
(Receives: Reflect attribute Values)

H.L.A.

Part III

Messages
H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

Time
Advance

Messages H.L.A.:

Updates

Interaction

- ◆ Send and receives parameters describing events when happens
(Send:Send Interaction)
(Receives : Receive Intraction)

H.L.A.

Part III

Messages
H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

Time
Advance

Mechanisms:

Subscription
and publication

Publication/Subscription

- Publish Object Class
- Subscribe Object Class

Objects

Object registration

- Register Object Instance
- Discover Object Instance

Interaction

Publication/Subscription

- Publish Interaction Class
- Subscribe Interaction Class

Messages Order:

Two message order types

T.S.O.

Time Stamped Order

- Message delivered to federate in the indicated order
- RTI guarantees no messages in the past

R.O.

Receive Order

- Message delivered to federate in the sent order

H.L.A.

Part III

Messages

H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

Time
Advance

Time-constrating and Time-Regulating

- ◆ To receive a TSO message in the established time to federate has to declare its Time Constrained
- ◆ To send a message TSO a federate have to declare to be Time Regulating
- ◆ Default, federates aren't neither TC neither TR
- ◆ To became TC, it's used RTI "Enable Time Constrained"
- ◆ To became TR, it's used RTI service "Enable Time Regulation"

H.L.A.

Part III

Messages

H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

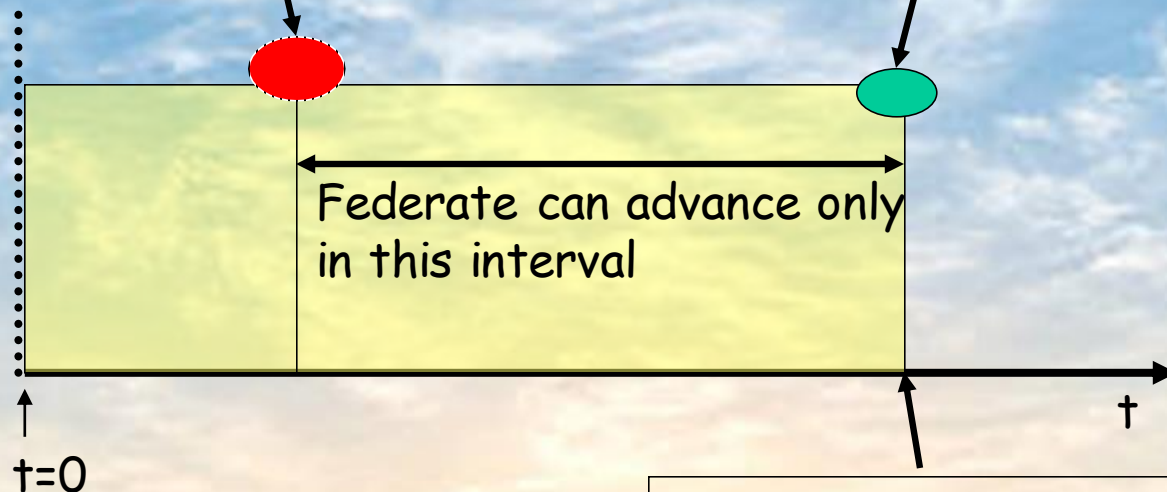
Time
Advance

Logical Time:

Time Constrained Federates

Current federate Logical
Time

Other federates
can't send
messages before
LBTS



LBTS
Lower Bound Time Stamp

H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

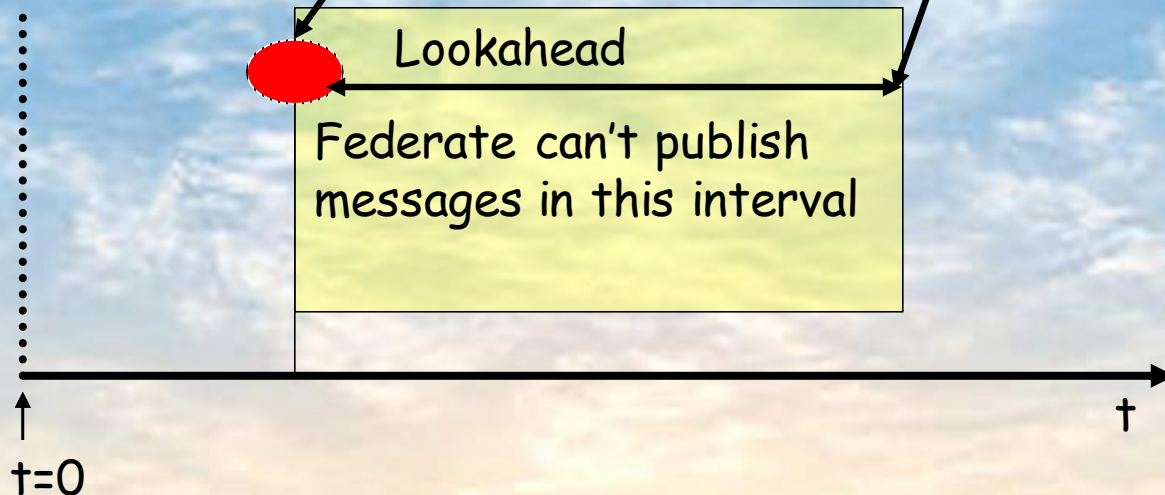
Logical Time:

Time Constrained
Federates

Time
Regulating
Federates

Current federate Logical
Time

Effective federate
Logical Time



H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

Time Advance

Time advance

Request

Continuous Simulators

- ◆ In order to request a time advance, it is used the RTI Service "Request Time Advance"
- ◆ RTI will notify when it becomes possible to advance in time based on a call to "Time advance Grant"

H.L.A.

Part III

Messages

H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

Time
Advance

Time Advance

Time advance

Request

Discrete Event Simulators

- ◆ RTI service "Next Event Request" request as time advance the following time.
- ◆ RTI will notify when it'll be possible to advance in the time by a "Next Event Grant" call and it'll specify the advance time guaranteed

H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

Time Advance

Time advance

Request

Federates TR and TC

Federates send and receive TSO data, must be TR and TC

TC: RTI don't allow to this federate to advance in time until he don't receive all the messages sent to him from other federates

H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time
management

Logical Time

Time
Advance

Time Advance

Time advance

Request

Federates TR and TC

Federates send and receive TSO data, must be TR and TC

TR: RTI prevents other federates from advancing in time until this federate don't send all data

H.L.A.

Part III

Messages

H.L.A.

Publication
Subscription

Messages
Order

Time
management

Logical Time

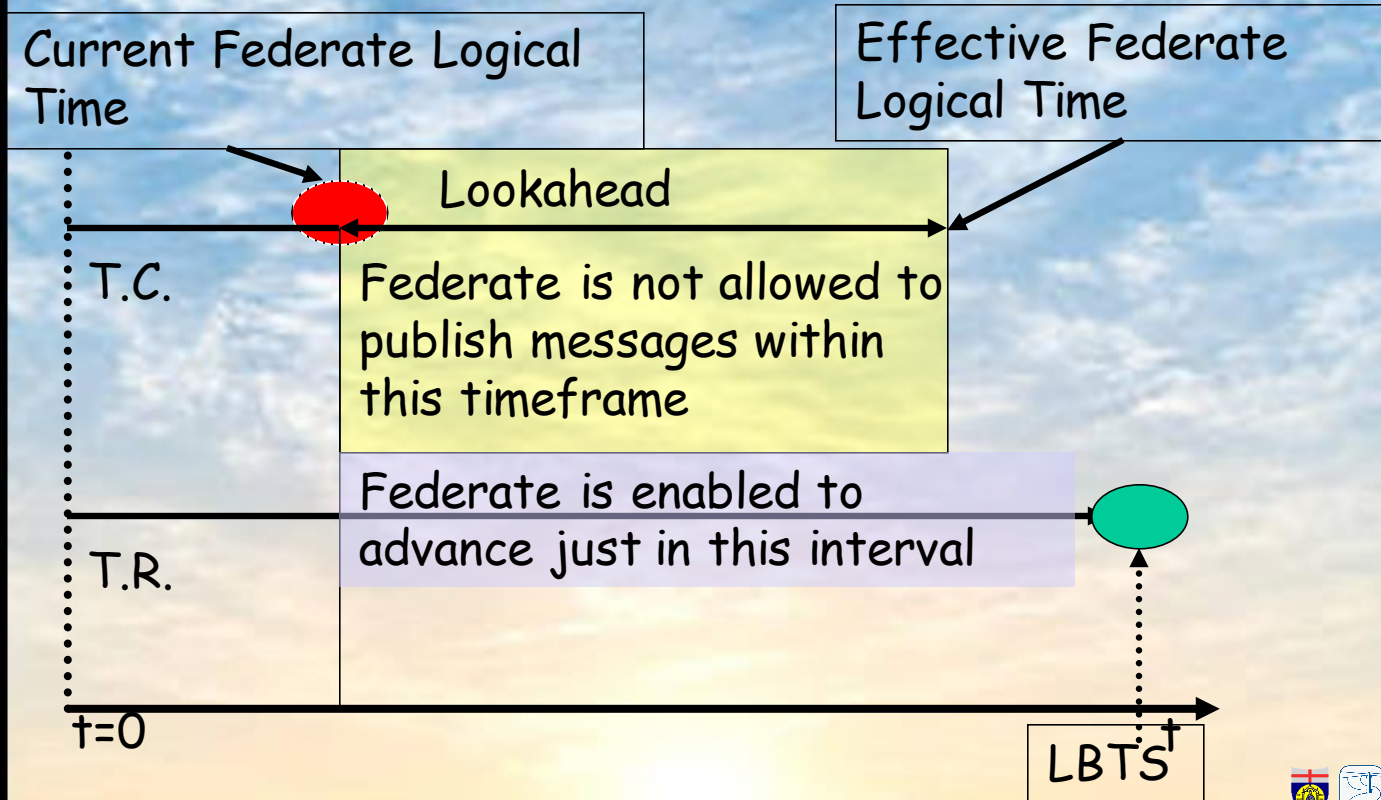
Time
Advance

Time Advance

Time advance

Request

Federates are both TR and TC



H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

Time Advance

Time advance

Request

Federates are both TR and TC

When we receive other messages?

The messages can be received when we are in state Time-Advancing

A Federate evolve in state Time Advancing through:

Time Advancing Request

Next Event Request

H.L.A.

Part III

Messages

H.L.A.

Publication

Subscription

Messages

Order

Time

management

Logical Time

Time

Advance

Time Advance

Time advance

Request

Federates are both TR and TC

When we receive other messages?

The messages can be received when we are in state Time-Advancing

In order to receive RO messages in other messages it is possible to use:

Enable Asynchronous Delivery