

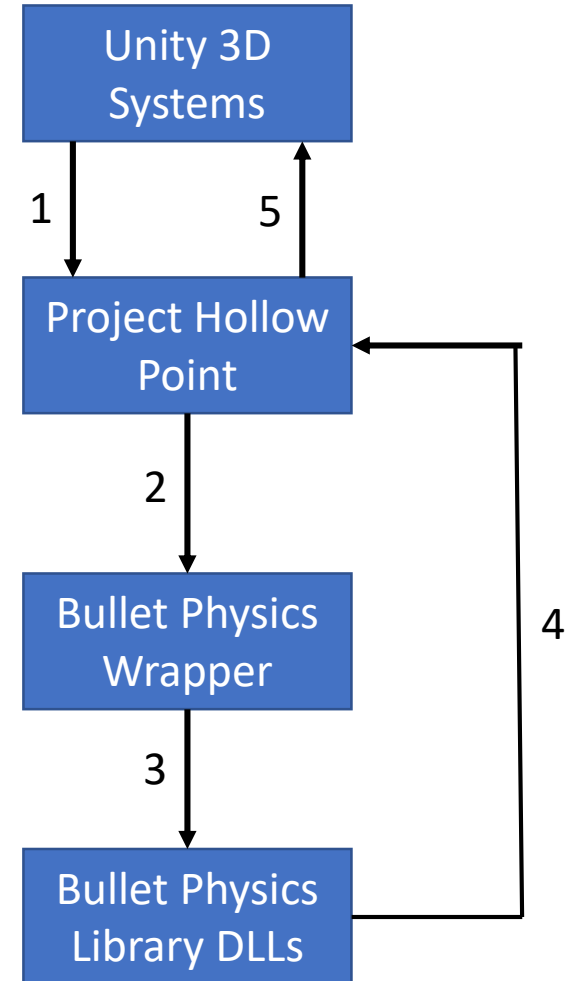
# Non Class Diagrams

May 1741

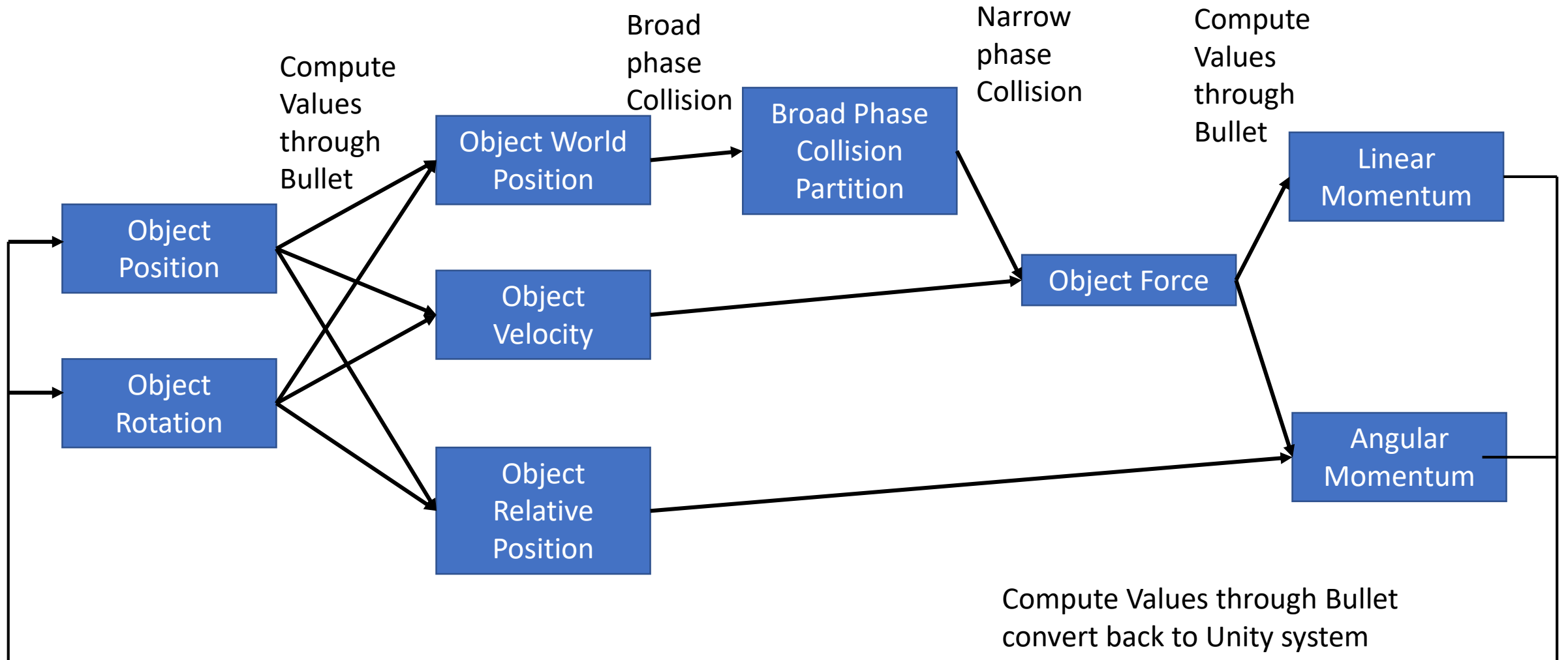
Travis Evers

# High Level System Overview

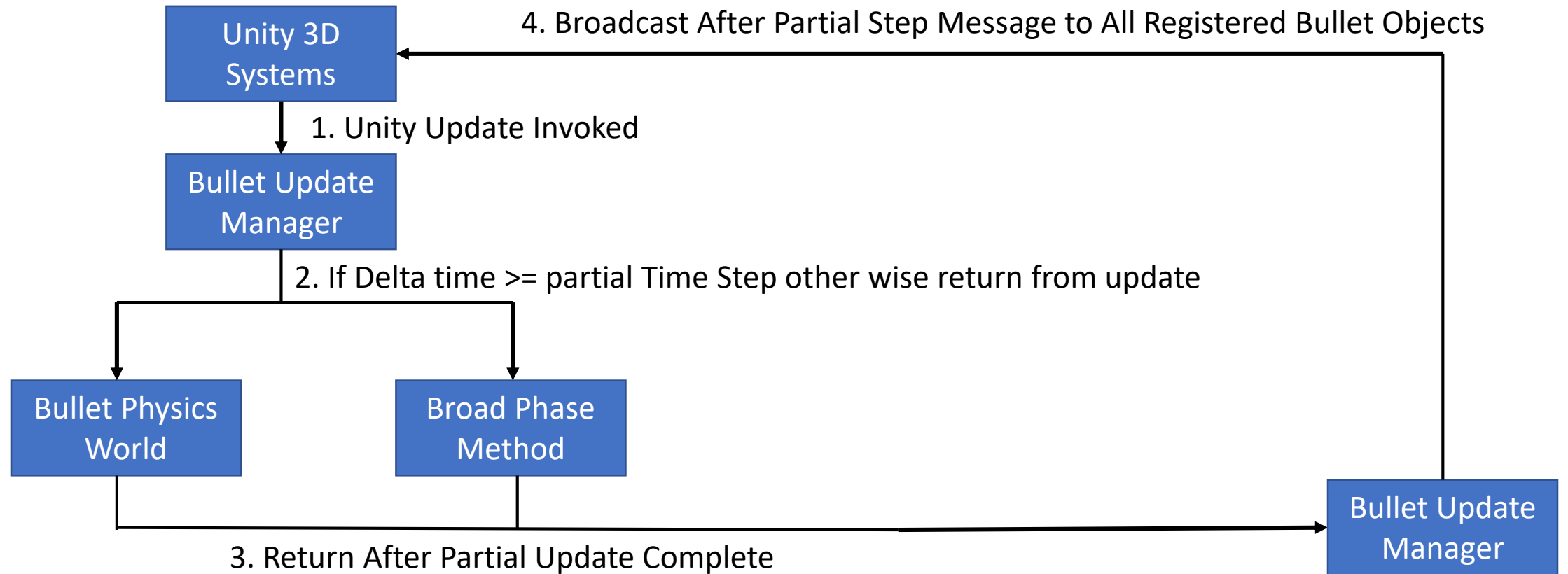
1. Unity sends timing information to Project Hollow Point.
2. Project Hollow Point Formats data for use in the Wrapper, as well as controlling when Bullet Physics Updates.
3. Wrapper sends data into the Bullet Physics Library DLLs so it can be processed.
4. Project Hollow Point takes update information and broadcast after partial Physics Updated and after fixed Update Messages.
5. Project Hollow Point converts back to Unity 3D's data format for rendering



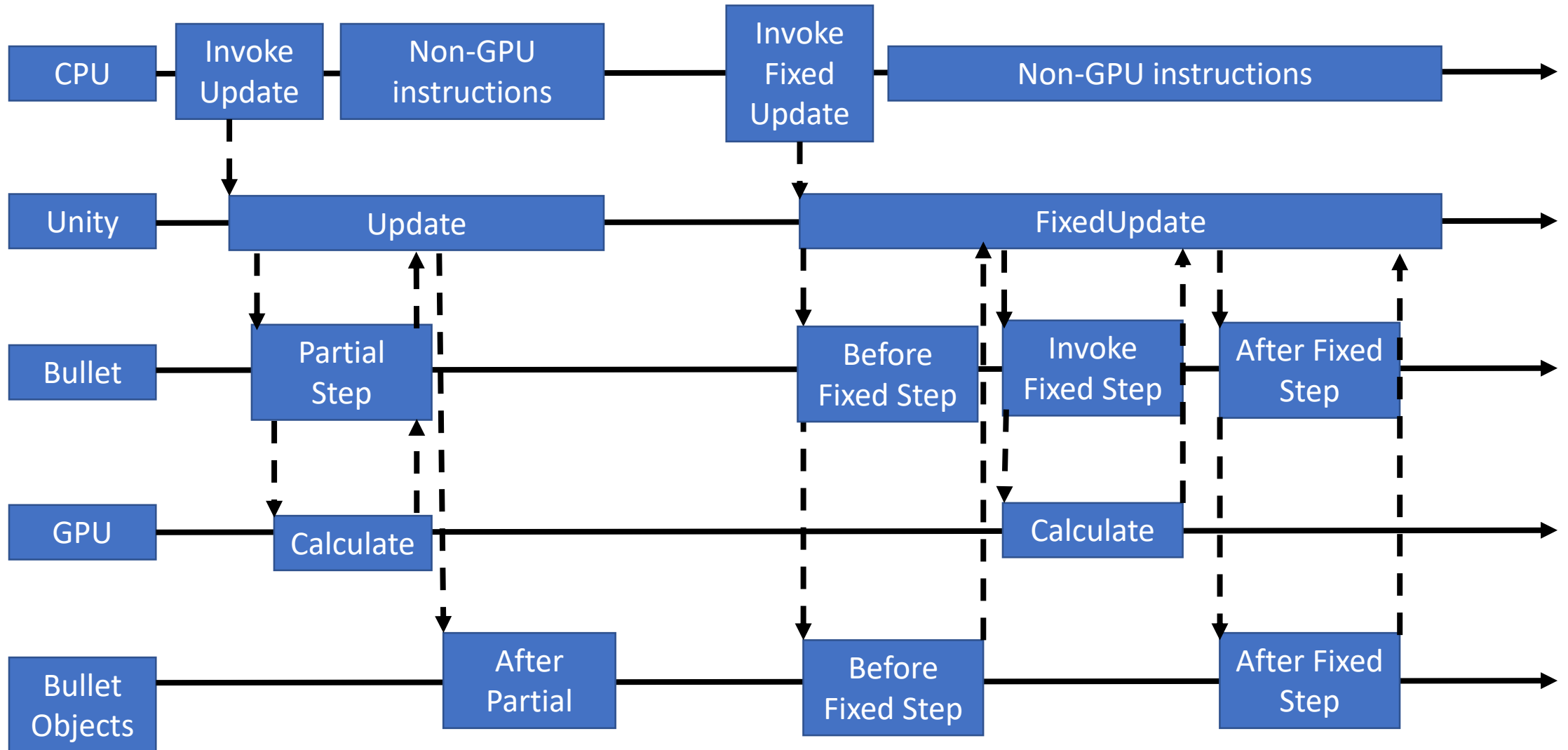
# Simulation Overview



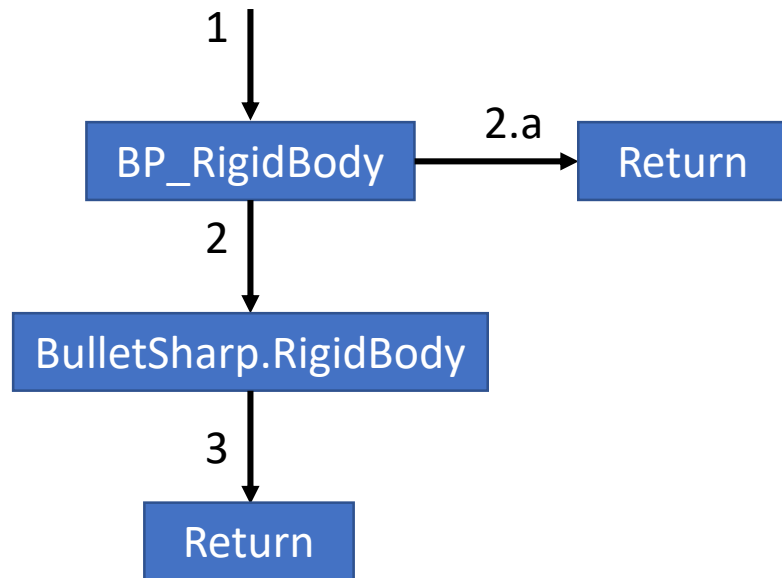
# General Update Workflow



# Timing Diagram Update/ Fixed Update



# Rigid Body Add Impulse



1. `BP_RigidBody.AddImpulse(Unity3D.Vector3 impulse)` invoked
  2. If Rigid Body is in Physics world space Set `_rigidBody = BulletSharp.RigidBody.ApplyImpulse(impulse.ToBullet())`
  3. Return
- 2.a. If Rigid Body is not in physics world space return

This is pretty much the outline for all impulse, torque, and force modifications to the Rigid Body, just change the `BulletSharp.RigidBody` method invoked

# Primitive Creation

1. CreateNew(Unity3D.Vector3 pos, Unity3d.Quaternion rot) invoked
2. Create new Unity3D.GameObject
3. Add BP\_Primitive() to new Game object//using the actual concrete class
4. buildMesh() invoked on new primitive
5. Assign name to Game Object
6. Return Game Object

# Build Mesh

1. Get component sharedMesh and set to BP\_PrimitiveSettings.Build()
2. Get Component with type equal to the shape being built
3. Set dimensions from the mesh settings to the shape

# Collision Object Notes

Collision Objects are added to the current active physics world through the update manager when the collision object is enabled. This done via an event handler and delegate functions.

Collision objects are removed as listeners when they are disabled

Each object also has the ability to broadcast messages to child components when the persistent manifold is visited and when it is finished, this is to improve timing control.