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A

Apêndice A - Estrutura do DWeb3D

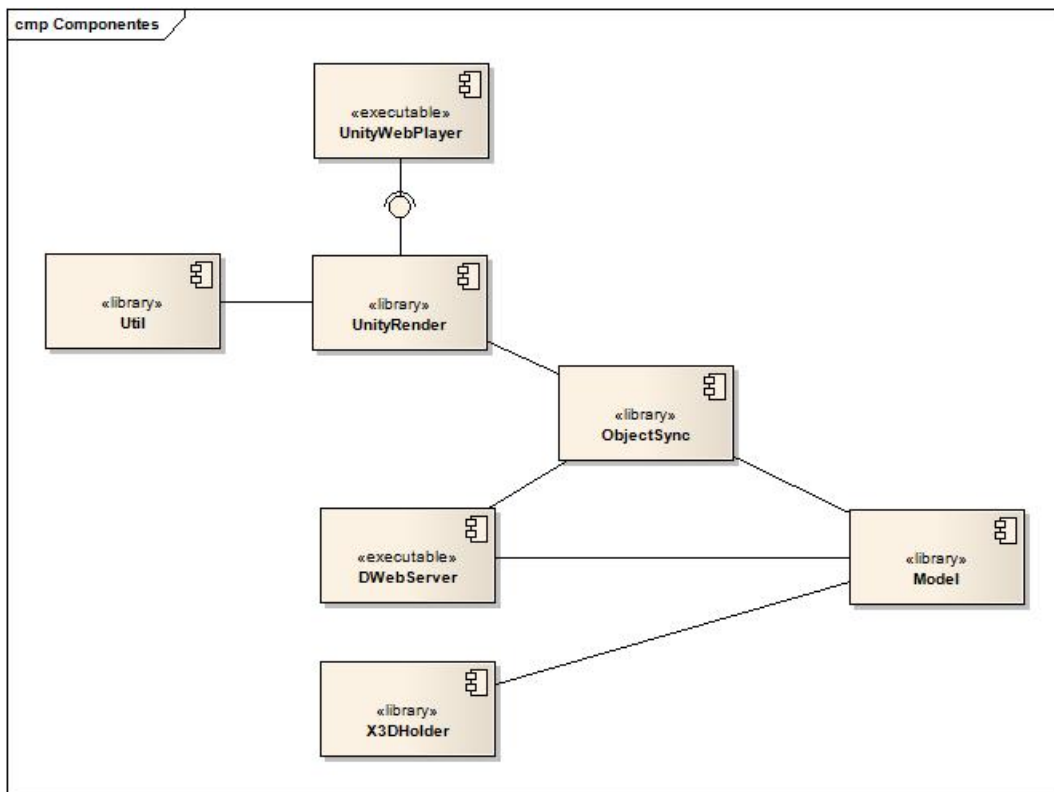


Figura A.1: Componentes.

Simple Part 1.jpg

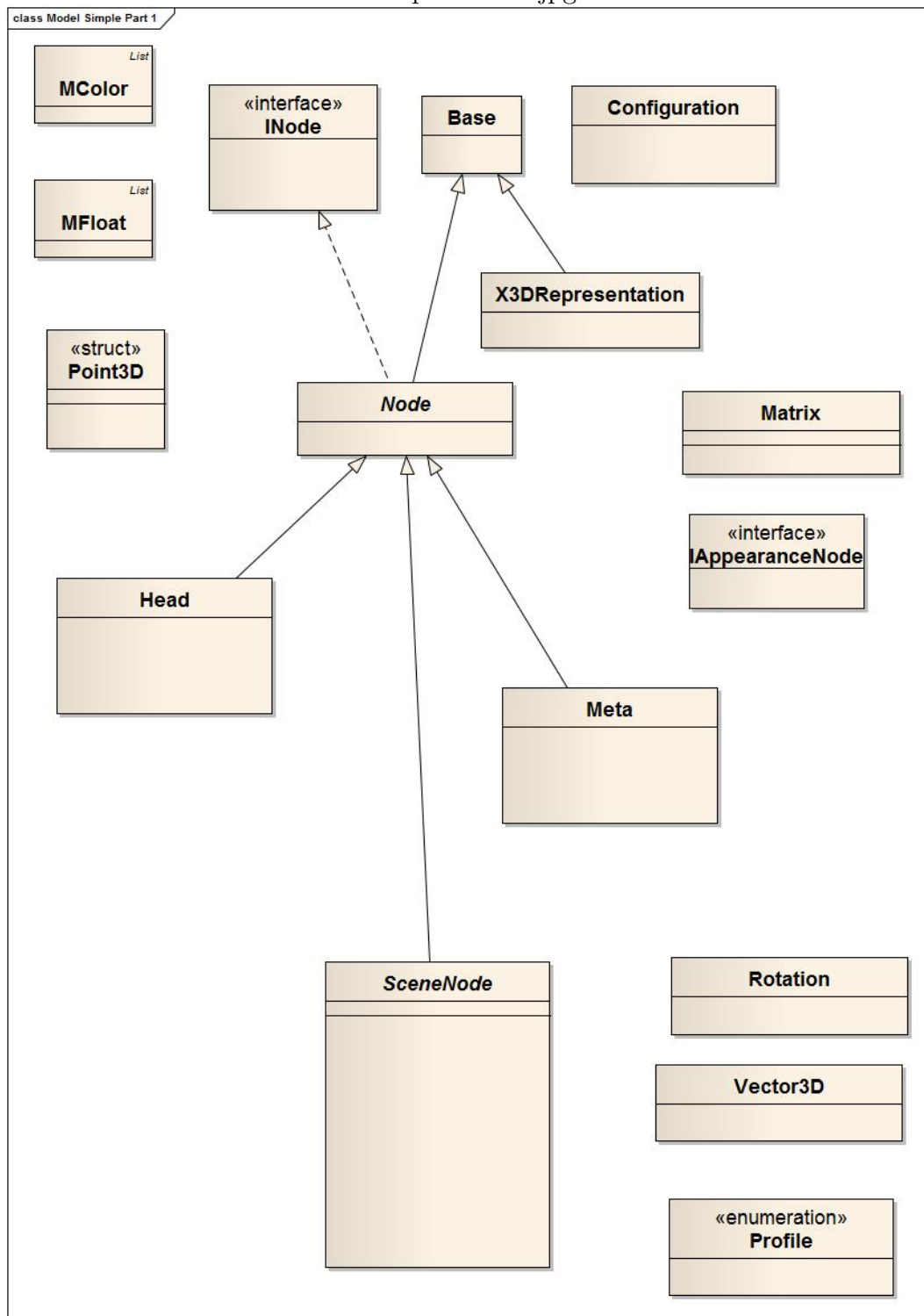


Figura A.2: Modelo de classes.

Simple Part 2.jpg

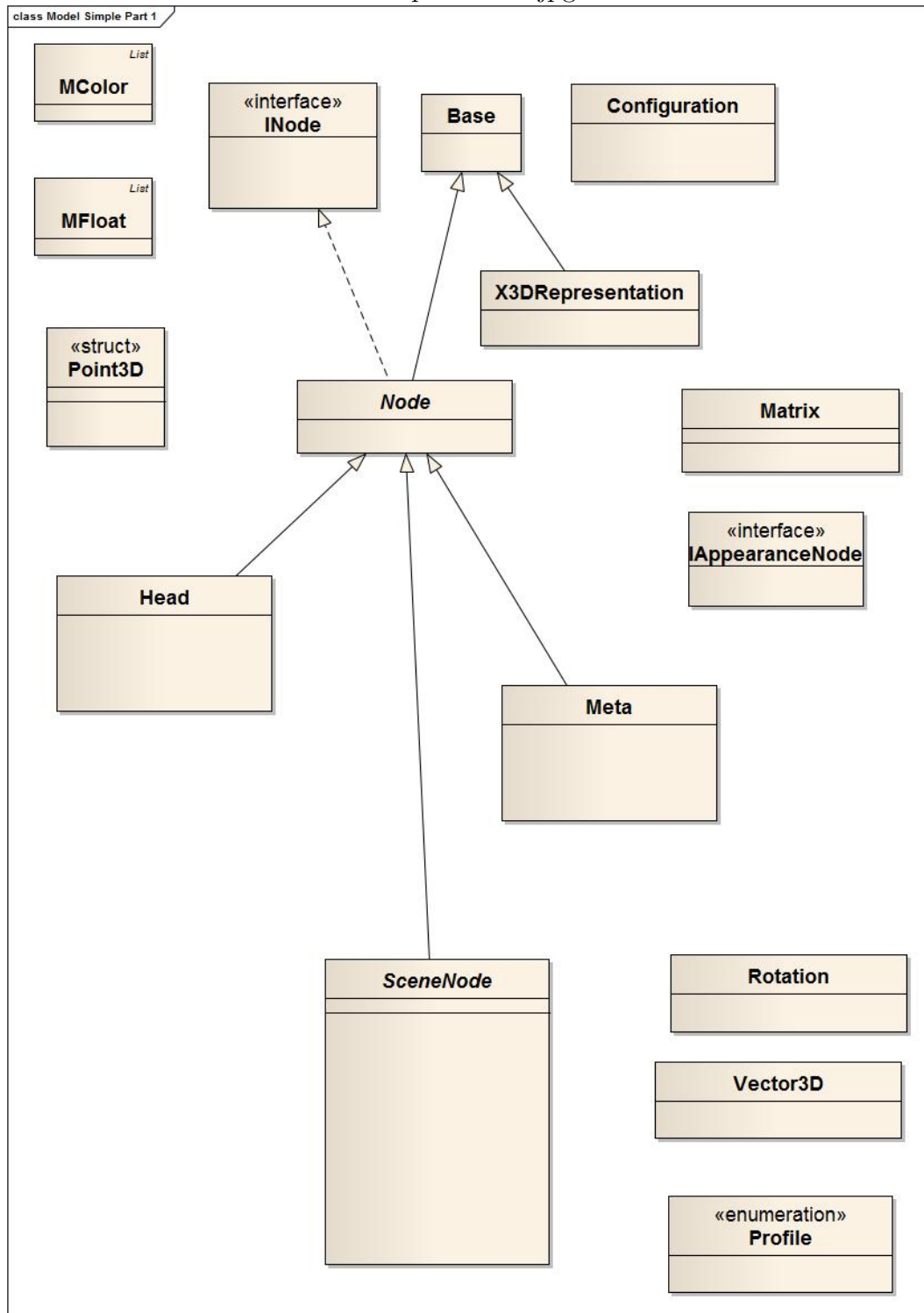


Figura A.3: Modelo de classes.

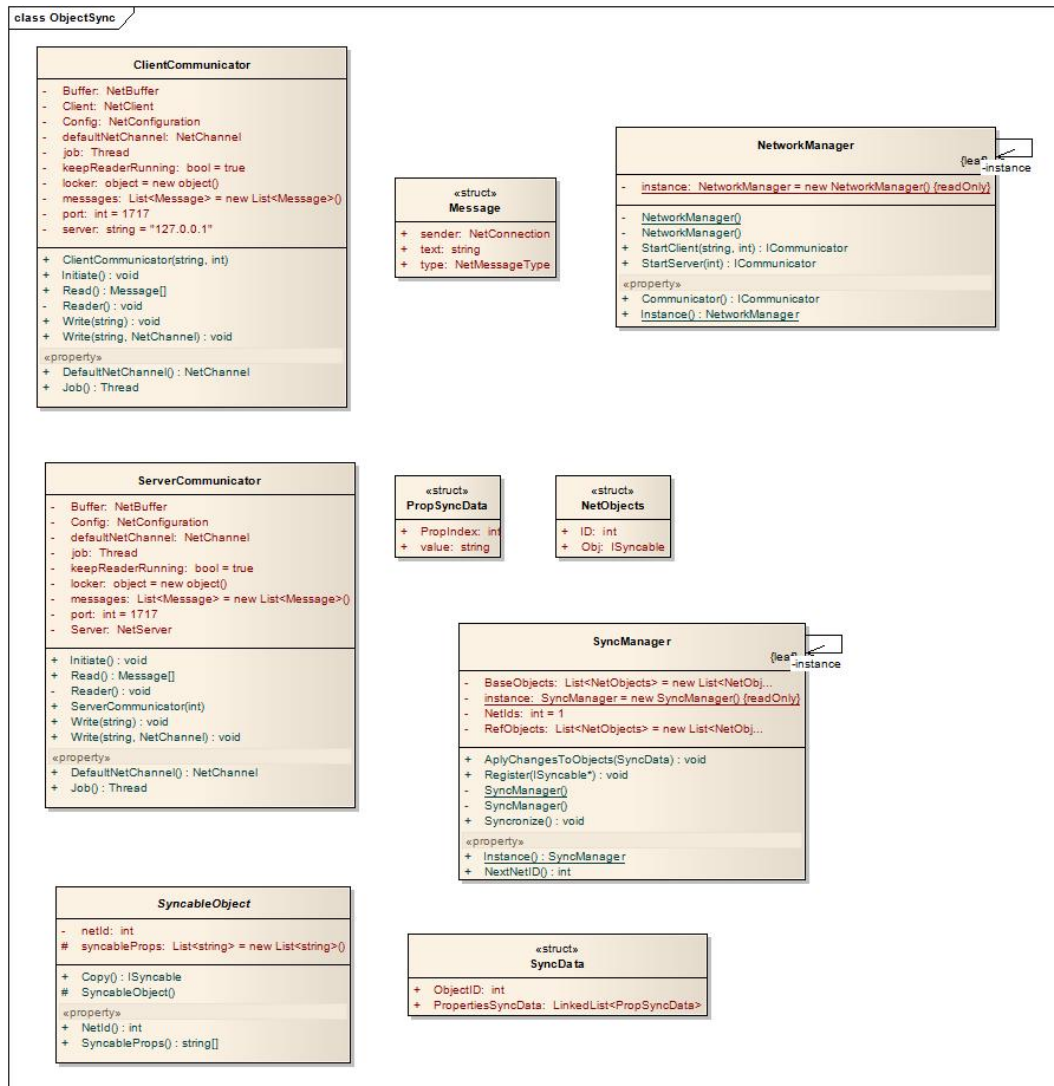


Figura A.4: Classes ObjetSync.



Figura A.5: Casos de uso principais.

B**Apêndice B - Conteúdo do exemplo contedo um cena X3D.**

Conteúdo do arquivo Exemplo.x3d

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE X3D PUBLIC "ISO//Web3D//DTD X3D 3.0//EN"
  "http://www.web3d.org/specifications/x3d-3.0.dtd">
<X3D profile='Immersive' >
<head>
  <meta name='Vizthumbnail' content='Thumb_Exemplo_x3d5142461251326236.jpg' />
  <meta name='ExportTime' content='19:37:16' />
  <meta name='ExportDate' content='8/26/2009' />
  <meta name='VivatyStudioVersion' content='709' />
  <meta name='VivatyStudioSource' content='exemplo.fxw' />
</head>
<Scene>
<Viewpoint DEF='Viewpoint1'
  description='Viewpoint1'
  jump='true'
  fieldOfView='0.785'
  position='-.07491 1.22863 13.5781'
  orientation='0 0 1 0' />
<Transform DEF='dad_Box1'
  translation='2.01815 1.03237 -.03759'>
  <Shape DEF='Box1'
    containerField='children'>
    <Appearance
      containerField='appearance'>
      <Material DEF='Red'
        containerField='material'
        ambientIntensity='0.200'
        shininess='0.200'
        diffuseColor='1 0 0' />
    </Appearance>
```

```
<Box DEF='GeoBox1'  
  containerField='geometry'  
  size='2.01509 2 2' />  
</Shape>  
</Transform>  
<Transform DEF='dad_Cylinder1'  
  translation='-3.04034 1.94938 .0928'>  
  <Shape DEF='Cylinder1'  
    containerField='children'>  
    <Appearance  
      containerField='appearance'>  
      <Material  
        containerField='material'  
        USE='Red' />  
      </Appearance>  
      <Cylinder DEF='GeoCylinder1'  
        containerField='geometry'  
        height='4.000'  
        radius='1.538' />  
    </Shape>  
  </Transform>  
</Scene>  
</X3D>
```

C

Apêndice C - Código para um chat padrão sem o uso do Toolkit

```
while ( this.clientSocket.Connected )
{
    //Descobre o tipo do comando.

    byte [] buffer = new byte [4];
    int readBytes = this.networkStream.Read(buffer , 0 , 4);
    if ( readBytes == 0 )
        break;
    CommandType cmdType =
        (CommandType)( BitConverter.ToInt32(buffer , 0) );

    //Lê o tamanho do IP

    buffer = new byte [4];
    readBytes = this.networkStream.Read(buffer , 0 , 4);
    if ( readBytes == 0 )
        break;
    int senderIPSize = BitConverter.ToInt32(buffer , 0);

    //Lê o IP do cliente

    buffer = new byte [senderIPSize];
    readBytes =
        this.networkStream.Read(buffer , 0 , senderIPSize);
    if ( readBytes == 0 )
        break;
    IPAddress senderIP = IPAddress.Parse(
        System.Text.Encoding.ASCII.GetString(buffer));

    //Descobre o tamanho do nome do cliente.
```

```
buffer = new byte [4];
readBytes = this.networkStream.Read(buffer , 0 , 4);
if ( readBytes == 0 )
    break;
int senderNameSize = BitConverter.ToInt32(buffer , 0);

//Lê o nome do cliente

buffer = new byte [senderNameSize];
readBytes = this.networkStream.Read(buffer, 0, senderNameSize);
if ( readBytes == 0 )
    break;
string senderName =
    System.Text.Encoding.Unicode.GetString(buffer);

//Descobre o tamanho do nome do destinatário

string cmdTarget = "";
buffer = new byte [4];
readBytes = this.networkStream.Read(buffer , 0 , 4);
if ( readBytes == 0 )
    break;
int ipSize = BitConverter.ToInt32(buffer , 0);

//Lê o comando do destinatário

buffer = new byte [ipSize];
readBytes = this.networkStream.Read(buffer , 0 , ipSize);
if ( readBytes == 0 )
    break;
cmdTarget = System.Text.Encoding.ASCII.GetString(buffer);

//Descobre o tamanho dos meta dados

string cmdMetaData = "";
buffer = new byte [4];
readBytes = this.networkStream.Read(buffer , 0 , 4);
if ( readBytes == 0 )
    break;
```

```
int metaDataSize = BitConverter.ToInt32(buffer , 0);

//Lê os meta dados

buffer = new byte [metaDataSize];
readBytes = this.networkStream.Read(buffer , 0 , metaDataSize);
if ( readBytes == 0 )
    break;
cmdMetaData = System.Text.Encoding.Unicode.GetString(buffer);

Command cmd = new Command(cmdType,
                          IPAddress.Parse(cmdTarget), cmdMetaData);
cmd.SenderIP = senderIP;
cmd.SenderName = senderName;
this.OnCommandReceived(new CommandEventArgs(cmd));
}
this.OnServerDisconnected(new ServerEventArgs(this.clientSocket));
this.Disconnect();
}
```

D

Apêndice D - Trecho de código para transformação do grafo .NET em arquivo X3D

```
// Função para converter um cubo
private void RenderBox(Box box, Transf transform, Appearance appearance)
{
// Criando um objeto unity do tipo cubo
    GameObject cube = GameObject.CreatePrimitive(PrimitiveType.Cube);
// definindo que ele vai se comportar como um Rigidbody
// (Serve para colisão e simulações além de animação)
    cube.AddComponent("Rigidbody");
//Translação
    if (transform != null && transform.Translation != null)
        // Definindo a posição da translação
        //(no unity cada objeto tem a sua)
        cube.transform.position =
            new Vector3(currentTransform.Translation.Coords.X,
                currentTransform.Translation.Coords.Y,
                currentTransform.Translation.Coords.Z);

// Definindo a rotação
    if (transform != null && transform.Rotation != null)
        cube.transform.Rotate(new Vector3(currentTransform.Rotation.X,
            currentTransform.Rotation.Y,
            currentTransform.Rotation.Z),
            currentTransform.Rotation.A);

//Materiais
    foreach (var material in materials)
    {

        if (appearance != null)
        {
```

```
    if (material.Appearance.ToString() ==
        appearance.ToString())
    {
        //Definindo valores do material
        cube.renderer.material.color =
            new Color(material.M.DiffuseColor.R,
                material.M.DiffuseColor.G,
                material.M.DiffuseColor.B);
    }
}else
{
    // se não tem um específico utilizar o default
    cube.renderer.material.color
        = new Color(material.M.DiffuseColor.R,
            material.M.DiffuseColor.G,
            material.M.DiffuseColor.B);
}
}
// Aplicando a escala
cube.transform.localScale = new Vector3(box.Size.Coords.X,
    box.Size.Coords.Y, box.Size.Coords.Z);
// Definindo para não usar gravidade
cube.rigidbody.useGravity = false;
cube.rigidbody.isKinematic = true;
}
```