

Referências Bibliográficas

- [All02] ALLAIRE, J.. **Macromedia Flash MX next-generation rich client.** Whitepaper, Adobe, 2002. <http://www.adobe.com/devnet/flash/whitepapers/richclient.pdf>. [1.1](#)
- [Bat08] BATES, C. D.; YATES, S.. **Scrum down: a software engineer and a sociologist explore the implementation of an agile method.** In: CHASE 2008: PROCEEDINGS OF THE 2008 INTERNATIONAL WORKSHOP ON COOPERATIVE AND HUMAN ASPECTS OF SOFTWARE ENGINEERING, p. 13–16, New York, NY, USA, 2008. ACM. [3.1.2](#)
- [Beh04] BEHR, J.; DÄHNE, P. ; ROTH, M.. **Utilizing X3D for immersive environments.** In: WEB3D '04: PROCEEDINGS OF THE NINTH INTERNATIONAL CONFERENCE ON 3D WEB TECHNOLOGY, p. 71–78, New York, NY, USA, 2004. ACM. [1.3](#)
- [Bos07] BOSS, G.; MALLADI, P.; QUAN, D.; LEGREGNI, L. ; HALL, H.. **Cloud Computing.** Whitepaper, High Performance On Demand Solutions (HiPODS), 2007. [2.1](#)
- [Bou07] BOURAS, C.; TEGOS, C.; TRIGLIANOS, V. ; TSIATSOS, T.. **X3D Multi-user Virtual Environment Platform for Collaborative Spatial Design.** In: ICDCSW '07: PROCEEDINGS OF THE 27TH INTERNATIONAL CONFERENCE ON DISTRIBUTED COMPUTING SYSTEMS WORKSHOPS, p. 40, Washington, DC, USA, 2007. IEEE Computer Society. [1.3](#), [2.5.4](#), [2.8](#)
- [But07] BUTTUSSI, F.; CHITTARO, L. ; COPPO, M.. **Using Web3D technologies for visualization and search of signs in an international sign language dictionary.** In: WEB3D '07: PROCEEDINGS OF THE TWELFTH INTERNATIONAL CONFERENCE ON 3D WEB TECHNOLOGY, p. 61–70, New York, NY, USA, 2007. ACM. [1.2](#)
- [Buy09] BUYYA, R.; YEO, C. S.; VENUGOPAL, S.; BROBERG, J. ; BRANDIC, I.. **Cloud computing and emerging IT platforms: Vision, hype,**

- and reality for delivering computing as the 5th utility. *Future Gener. Comput. Syst.*, 25(6):599–616, 2009. [2.1](#)
- [Dac03] DACHSELT, R.; RUKZIO, E.. **Behavior3D: an XML-based framework for 3D graphics behavior**. In: WEB3D '03: PROCEEDINGS OF THE EIGHTH INTERNATIONAL CONFERENCE ON 3D WEB TECHNOLOGY, p. 101–ff, New York, NY, USA, 2003. ACM. [1.3](#)
- [Dah08] DAHLAN, A. A.; NISHIMURA, T.. **Implementation of asynchronous predictive fetch to improve the performance of Ajax-enabled web applications**. In: IIWAS '08: PROCEEDINGS OF THE 10TH INTERNATIONAL CONFERENCE ON INFORMATION INTEGRATION AND WEB-BASED APPLICATIONS AND SERVICES, p. 345–350, New York, NY, USA, 2008. ACM. [3.5.4](#)
- [Deh04] DEHAAN, J.. **Flash MX 2004 - guia autorizado Macromedia**. Elsevier, 2004. [1](#)
- [Doi06] DOI, Y.; KAGAWA, K.. **An X3D generator plug-in for Eclipse in a Web-based Educational System for Programming**. In: PROCEEDINGS OF WORLD CONFERENCE ON EDUCATIONAL MULTIMEDIA, HYPERMEDIA AND TELECOMMUNICATIONS, p. 2523–2528, Chesapeake, VA: AACE, 2006. EDMEDIA. [1.1](#)
- [Dun03] DUNN, T. L.; WARDHANI, A.. **A 3D robot simulation for education**. In: GRAPHITE '03: PROCEEDINGS OF THE 1ST INTERNATIONAL CONFERENCE ON COMPUTER GRAPHICS AND INTERACTIVE TECHNIQUES IN AUSTRALASIA AND SOUTH EAST ASIA, p. 277–278, New York, NY, USA, 2003. ACM. [1.1](#)
- [Fri07] FRINCU, M. E.; PETCU, D.. **Remote Control for Graphic Applications**. In: SYMBOLIC AND NUMERIC ALGORITHMS FOR SCIENTIFIC COMPUTING, INTERNATIONAL SYMPOSIUM ON, p. 304–309, Los Alamitos, CA, USA, 2007. IEEE Computer Society. [1.3](#)
- [Gre05] GREHAN, R.. **Complex Object Structures, Persistence, and db4o**. Whitepaper, DBO, 2005. <http://www.odbms.org/download/006.01/Grehan/Complex/Object/Structures/May/2005.pdf>. [1.3](#), [2.8](#), [4.1.3](#)
- [Gre07] GREENBERG, S.. **Toolkits and interface creativity**. *Multimedia Tools Appl.*, 32(2):139–159, 2007. [2.2](#), [2.5.2](#), [3](#)

- [Hei02] HEINS, T.; HIMES, F.. **Creating Learning Objects With Macromedia Flash MX**. Whitepaper, Adobe, 2002. <http://www.mystery-productions.com/hyper/flashmxlo.pdf>. 1.1
- [Hua09] HUANG, J.; CHENG, B.. **Interactive Visualization for 3D Pipelines Using Ajax3D**. In: NETWORKING AND DIGITAL SOCIETY, INTERNATIONAL CONFERENCE ON, p. 21–24, Los Alamitos, CA, USA, 2009. IEEE Computer Society. 1.3
- [Jou08] JOURDAIN, S.; FOREST, J.; MOUTON, C.; NOUAILHAS, B.; MONIOT, G.; KOLB, F.; CHABRIDON, S.; SIMATIC, M.; ABID, Z. ; MALLETT, L.. **ShareX3D, a scientific collaborative 3D viewer over HTTP**. In: WEB3D '08: PROCEEDINGS OF THE 13TH INTERNATIONAL SYMPOSIUM ON 3D WEB TECHNOLOGY, p. 35–41, New York, NY, USA, 2008. ACM. 2.5
- [Kha89] KHANNA, A.; ZINKY, J.. **The revised ARPANET routing metric**. SIGCOMM Comput. Commun. Rev., 19(4):45–56, 1989. 2.1
- [Liu07] LIU, S.; LI, J. ; WANG, X.. **Local Reputation for P2P MMOG Design**. In: PDCAT '07: PROCEEDINGS OF THE EIGHTH INTERNATIONAL CONFERENCE ON PARALLEL AND DISTRIBUTED COMPUTING, APPLICATIONS AND TECHNOLOGIES, p. 523–528, Washington, DC, USA, 2007. IEEE Computer Society. 2.5.1
- [Lug05] LUGMAYR, A.; KALLI, S.. **Using Metadata-based SVG and X3D Graphics in Interactive TV** . Springer London, 2005. 1.3
- [Par06] PARISI, T.. **Ajax3D: The Open Platform for Rich 3D Web Applications**. Whitepaper, Media Machines, Inc, 2006. 1.1, 1.3, 2.7.1
- [Par08] PARK, Y. S.; LEE, J. H.; CHOI, H. R.; KIM, H. S.; JUNG, J. U. ; PARK, J. Y.. **Development of an RIA-based user interface for promotion of effectiveness in marine transportation**. In: ACS'08: PROCEEDINGS OF THE 8TH CONFERENCE ON APPLIED COMPUTER SCIENCE, p. 366–372, Stevens Point, Wisconsin, USA, 2008. World Scientific and Engineering Academy and Society (WSEAS). 3.5.4
- [Pud07] PUDER, A.. **A cross-language framework for developing AJAX applications**. In: PPPJ '07: PROCEEDINGS OF THE 5TH INTERNATIONAL SYMPOSIUM ON PRINCIPLES AND PRACTICE OF PROGRAMMING IN JAVA, p. 105–112, New York, NY, USA, 2007. ACM. 3.5.4

- [Rik97] RIKK CAREY, G. B.. **Annotated VRML 97 Reference Manual**. DevPress, 1997. 1.1
- [Rio08] RIORDAN, R.. **Head First Ajax**. O'Reilly Media, 2008. 3.5.4
- [Rit06] TURKOWSKI, R.. **Web3D Consortium X3D Revision to add Physics, Particle Systems, UI Enhancements, Realistic Motion**. Whitepaper, Media Machines, Inc. Disponível em: http://www.web3d.org/images/uploads/pdfs/Web3D_Consortium-X3D_Revision_1.pdf Acesso em 30/12/2009, 2006. 1.2
- [Rou04] O'ROURKE, C.. **A Look at Rich Internet Applications**. Oracle Magazine, 2004. 3.5.4
- [San04] SANTOS, R. J. D.; BATTAIOLA, A. L. ; DUBIELA, R. P.. **Aspectos Fundamentais da Criação de jogos em Shockwave 3D**. WJogos / SBGames 2004, Simpósio Brasileiro de Jogos de Computador e Entretenimento Digital, 2004. 1.1
- [Sch01] SCHWABER, K.. **Agile Software Development with SCRUM**. Prentice Hall, 2001. 3.1.2
- [Tay05] TAY, V.. **Massively Multiplayer Online Game (MMOG) - A Proposed Approach for Military Application**. In: CW '05: PROCEEDINGS OF THE 2005 INTERNATIONAL CONFERENCE ON CYBERWORLDS, p. 396–400, Washington, DC, USA, 2005. IEEE Computer Society. 2.5.1
- [Web97] CONSORTIUM, W.. **Virtual Reality Modeling Language**. Disponível em: <http://www.web3d.org/x3d/specifications/vrml/ISO-IEC-14772-VRML97/> Acesso em: 10 julho 2009, 1997. 1.1
- [Web07] WEBER, J. C.; PARISI, T.. **An Open Protocol for Wide-area Multi-user X3D**. Proceedings of the twelfth international conference on 3D Web technology, p. 133–136, 2007. 1.3, 2.5.5
- [Web08] CONSORTIUM, W.. **Extensible 3D (X3D)**. Disponível em: <http://www.web3d.org/x3d/specifications/ISO-IEC-19775-1.2-X3D-AbstractSpecification/> Acesso em: 11 julho 2009, 2008. 1.1

A

Apêndice A - Estrutura do DWeb3D

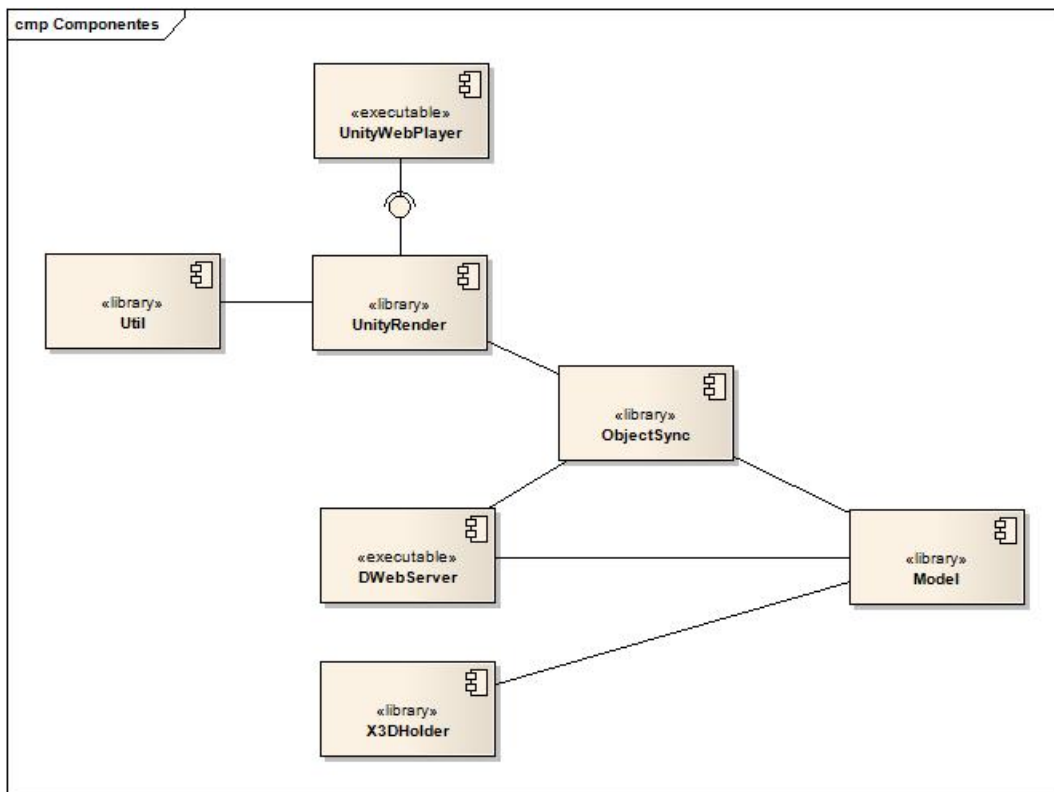


Figura A.1: Componentes.

Simple Part 1.jpg

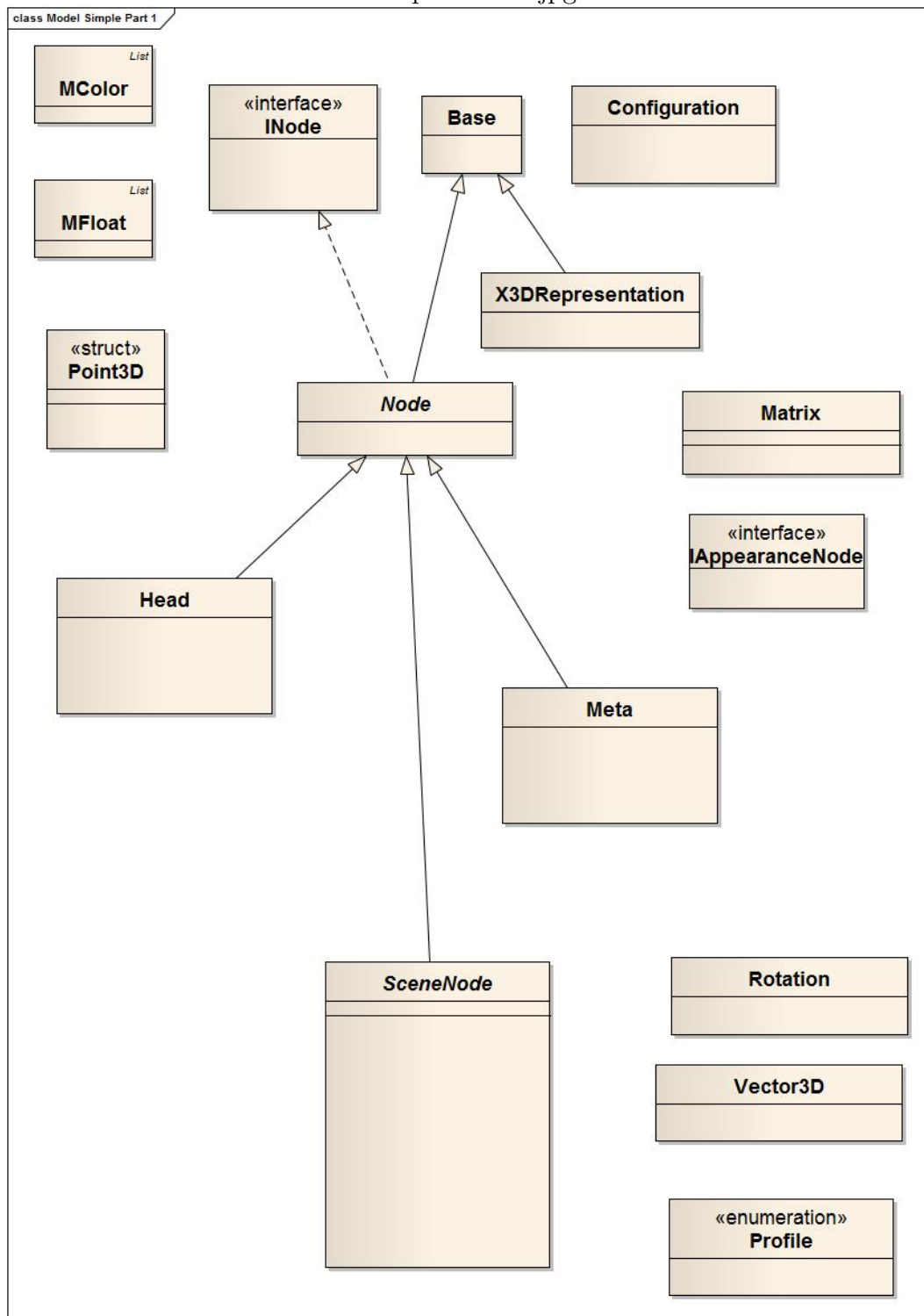


Figura A.2: Modelo de classes.

Simple Part 2.jpg

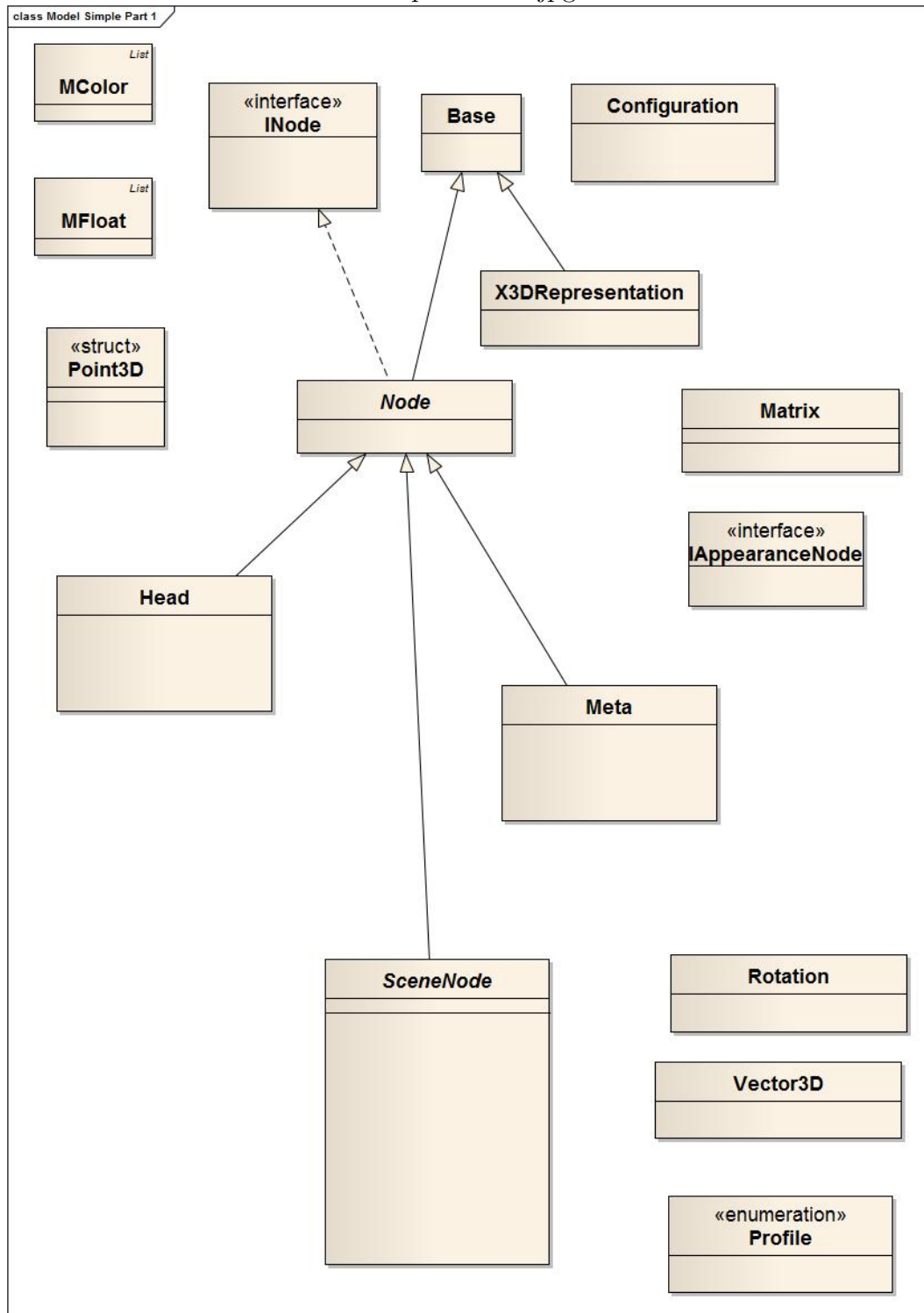


Figura A.3: Modelo de classes.

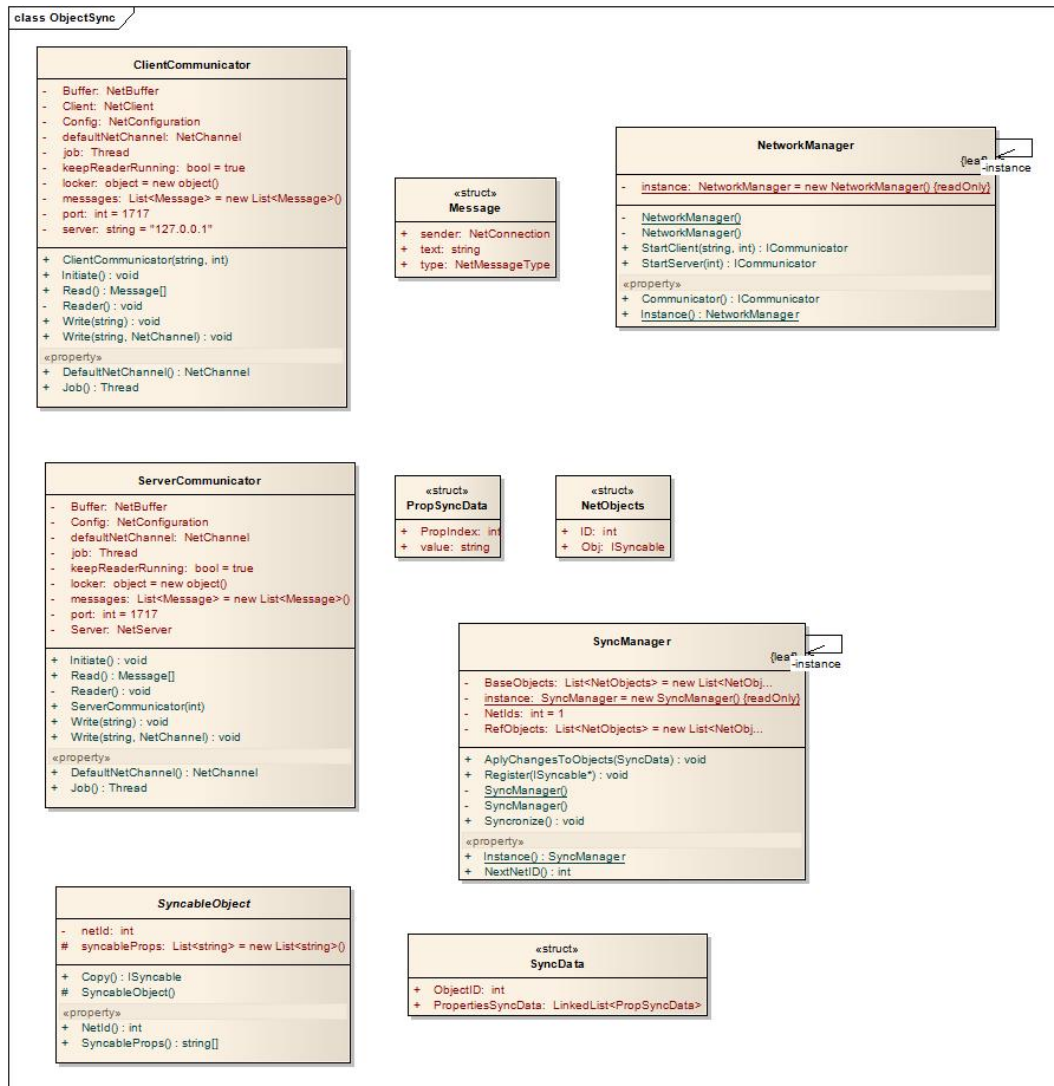


Figura A.4: Classes ObjetSync.

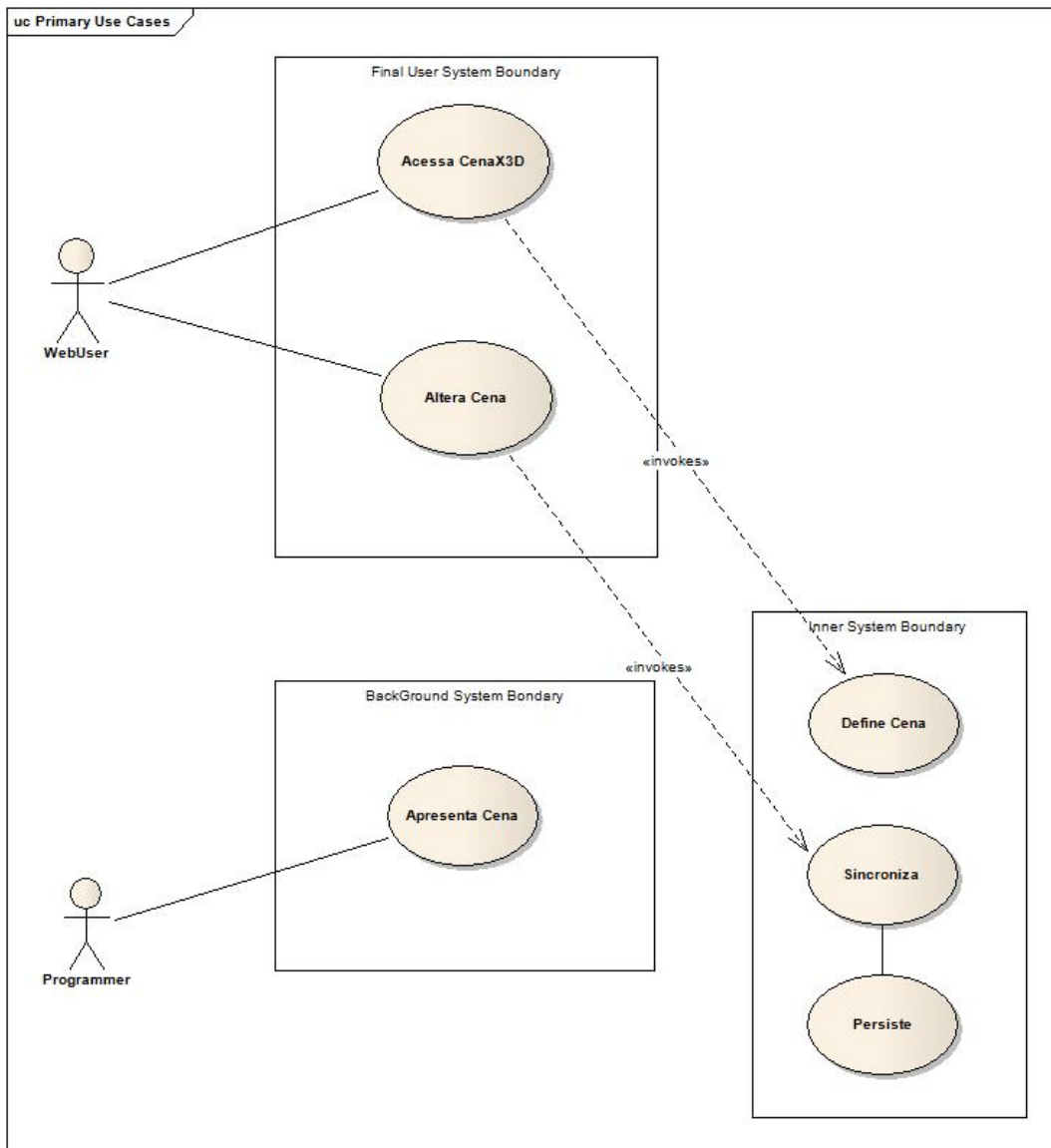


Figura A.5: Casos de uso principais.

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;
}
```