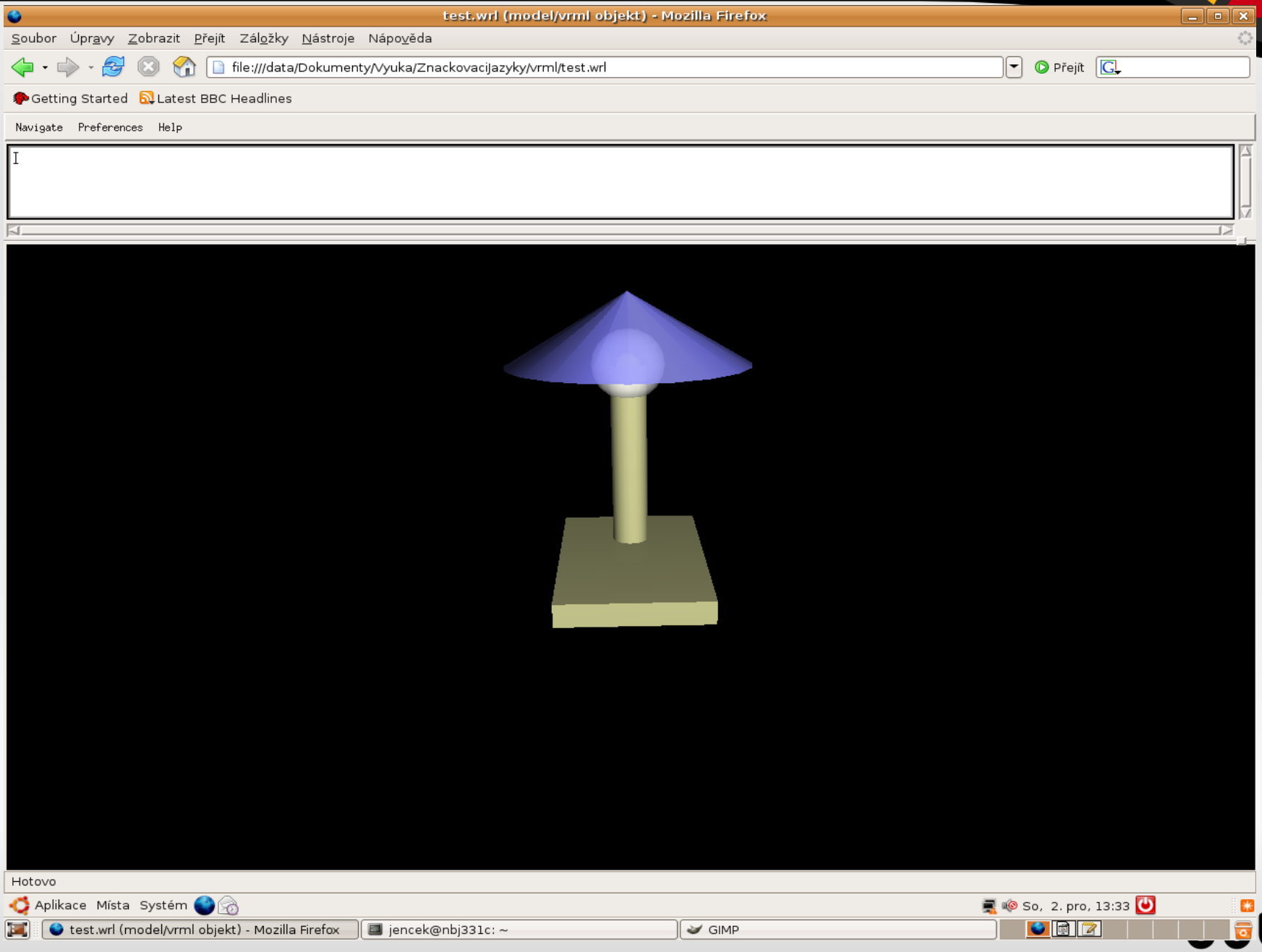
# Značkovací jazyky

VRML (Virtual Reality Modeling Language)

ubuntu

# VRML – Lampa


test.wrl (model/vrml objekt) - Mozilla Firefox
Soubor Úpravy Zobrazit Přejít Záložky Nástroje Nápověda
file:///data/Dokumenty/Vyuka/ZnackovaciJazyky/vrml/test.wrl
Přejít
Getting Started
Latest BBC Headlines
Navigate Preferences Help
Hotovo
Aplikace Místa Systém
So, 2. pro, 13:33
test.wrl (model/vrml objekt) - Mozilla Firefox
jencek@nbj331c: ~
GIMP

# VRML – Lampa - podstavec

```
#VRML V2.0 utf8
DEF lampa Transform {
children [
  Transform { #podstavec
      translation 0 0.01 0.04
    children Shape {
      appearance Appearance {
         material DEF seda Material {
         diffuseCol or 0.7 0.7 0.5
      }
    }
      geometry Box {size 0.12 0.02 0.2}
   }
  }
...
```

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# VRML – Lampa - noha

```
Transform { #nozka
        translation 0 0.09 0
    children Shape {
      appearance Appearance {
        material USE seda
      }
      geometry Cylinder {
        bottom FALSE top FALSE
        radius 0.015 height 0.18
      }
    }
}
```

# VRML – Lampa - žárovka

```
Transform { #zarovka
        translation 0 0.18 0
   children Shape {
      appearance Appearance {
        material Material {
          diffuseColor 1 1 1
          transparency 0.2
        }
      }
      geometry Sphere {
        radius 0.03
      }
   }
}
```

# VRML – Lampa – žárovka vlákno

```
Transform { #zarovka vnitrek
        translation 0 0.18 0
    children Shape {
      appearance Appearance {
        material Material {
          diffuseColor 1 1 0
        }
      }
      geometry Sphere {
        radius 0.01
      }
    }
}
```

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# VRML – Lampa – stínítko

```
Transform { #stinitko
        translation 0 0.21 0
    children Shape {
      appearance Appearance {
        material Material {
          diffuseColor 0.5 0.5 1
          transparency 0.2
        }
      }
      geometry Cone {
        bottom FALSE
        bottomRadius 0.1 height 0.06
      }
    }
}
```

# VRML – Textura

- ImageTexture
- PixelTexture
- MovieTexture

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# VRML – ImageTexture

```
appearance Appearance {
   texture ImageTexture {
      {url "texture.gif",
       "http://test.vsb.cz/tex.png"}
   }
}
```

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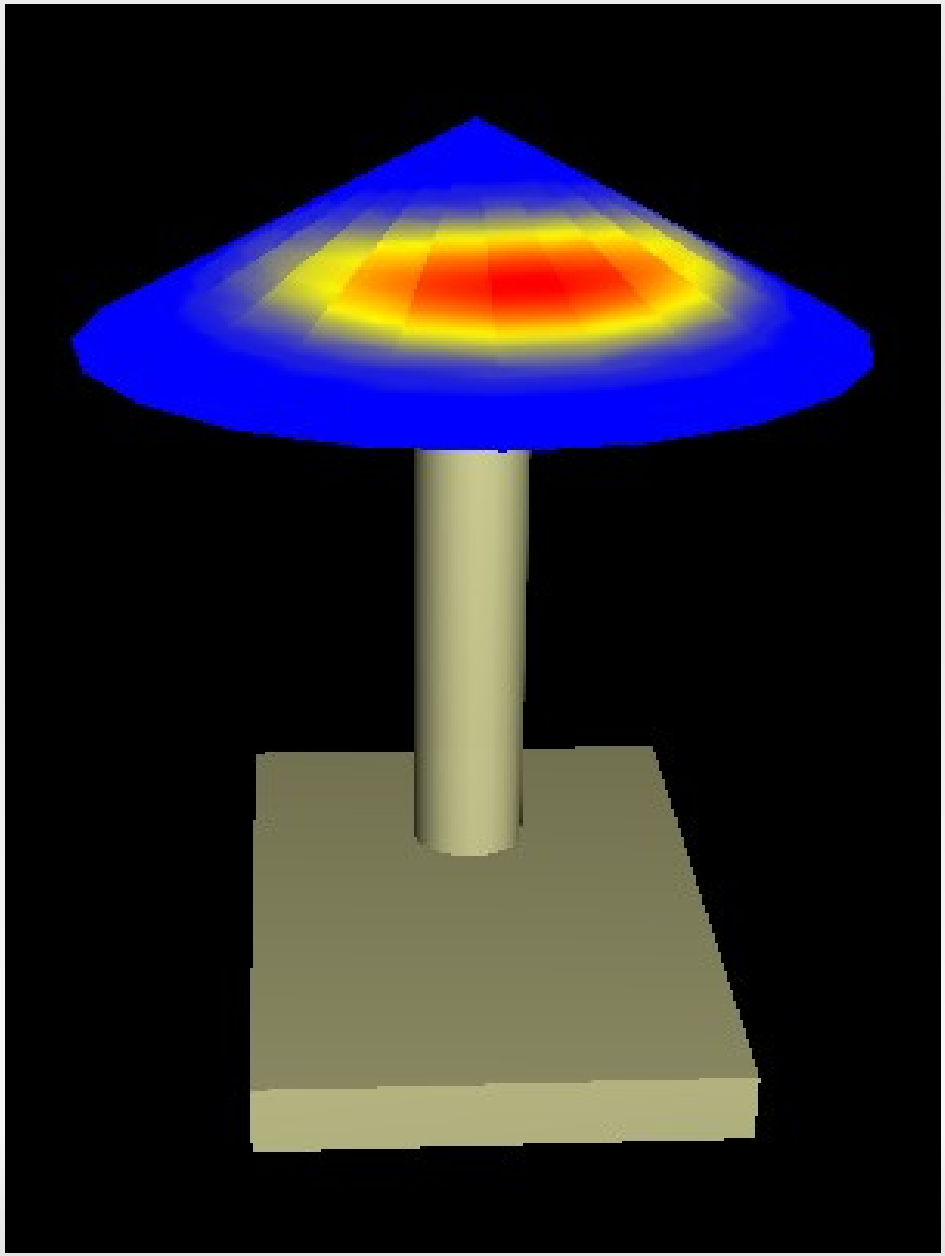
# VRML – ImageTexture



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# VRML – Další uzly

- IndexedFaceSet
- Extrusion
- ElevationGrid
- IndexedLineSet
- PointSet
- Text

# VRML – Další uzly

- Group
- Billboard
- LOD (Level of Detail)

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# VRML – Viewpoint

- Místo pohledu
- Úhel pohledu
- Směr pohledu

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# VRML – Viewpoint

```
Viewpoint {
    position 0 0 2
    orientation 0 0 1 0
    description "Zepredu"
    fieldOfView 0.785398
}
```

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# VRML – Anchor

- Odkazy na další světy
- Odkazy na jiné soubory
- Odkazy na WWW stránky
- Odkazy na místa pohledu

# VRML – Anchor

```
Transform {
    scale 0.3 0.3 0.3
    children Anchor {
        url "1.wrl"
        children Shape {
          geometry Text {
            string "Ahoj"
          }
        }
    }
  }
}
```

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# VRML – Anchor

```
children Anchor {
    url ["1.wrl",
         "http://gis.vsb.cz"]
        children Shape {
          geometry Text {
            string "Ahoj"
          }
        }
    }
  }
}
```

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# VRML – Anchor

```
children Anchor {
    url ["#zepredu",
         "chyba.html"]
        children Shape {
          geometry Text {
            string "Zepredu"
          }
        }
    }
  }
}
```

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# VRML – NavigationInfo

- Základní nastavení prohlížeče

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# VRML – NavigationInfo

```
NavigationInfo {
    headlight FALSE
    speed 1.0
    type "EXAMINE"
    avatarSize [0.25, 1.6, 0.75]
}
```

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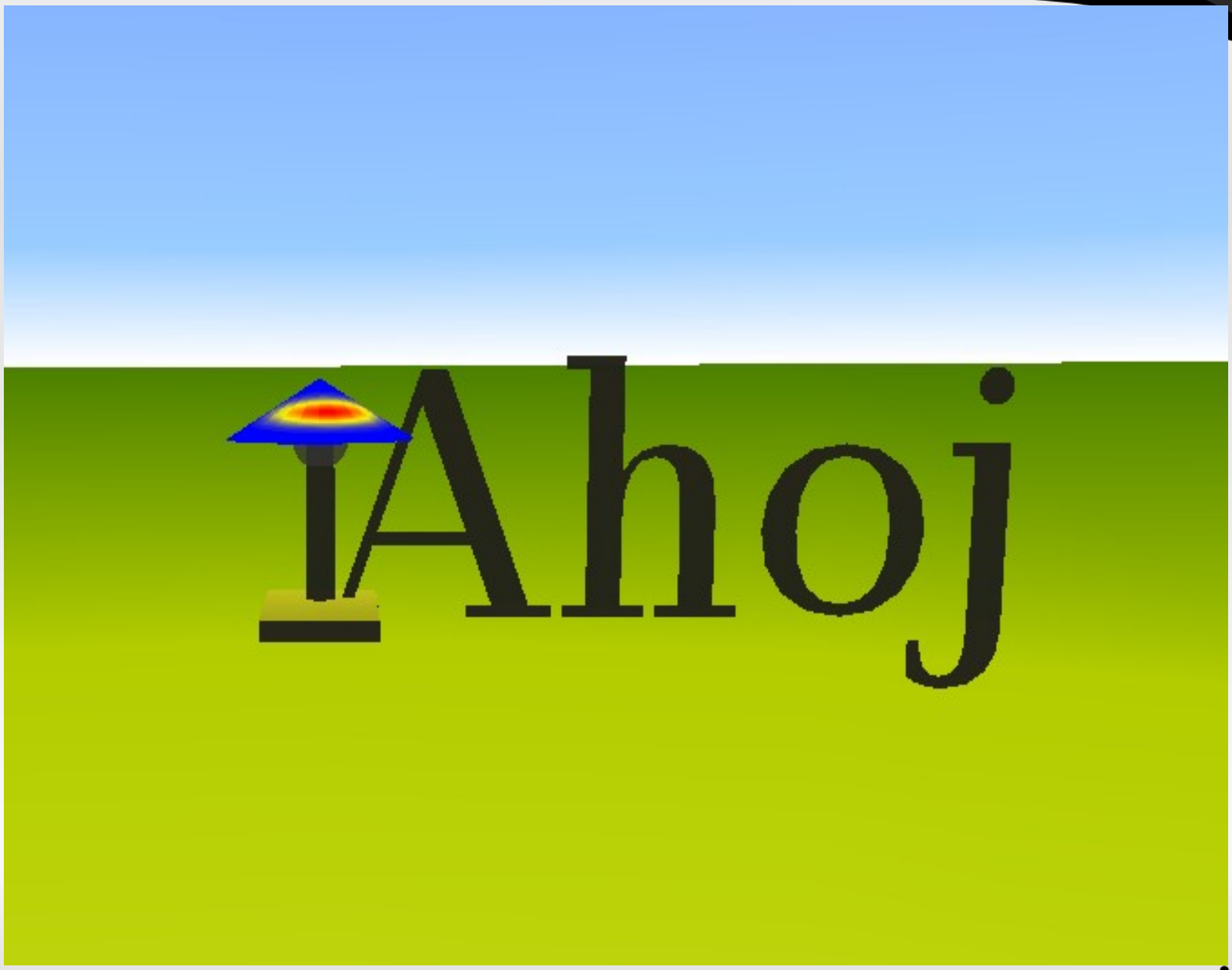
# VRML – Background

- Koule – barvy a přechody barev
- Krychle – obrázky
- Kombinace

# VRML – Background

```
Background {
    skyColor [0 0 1,
              0.6 0.8 1,
              1 1 1]
    skyAngle [1.5 , 1.57]
    groundColor [1 1 0.3,
                 0.7 0.8 0,
                 0.3 0.5 0]
    groundAngle [1.4, 1.57]
}
```

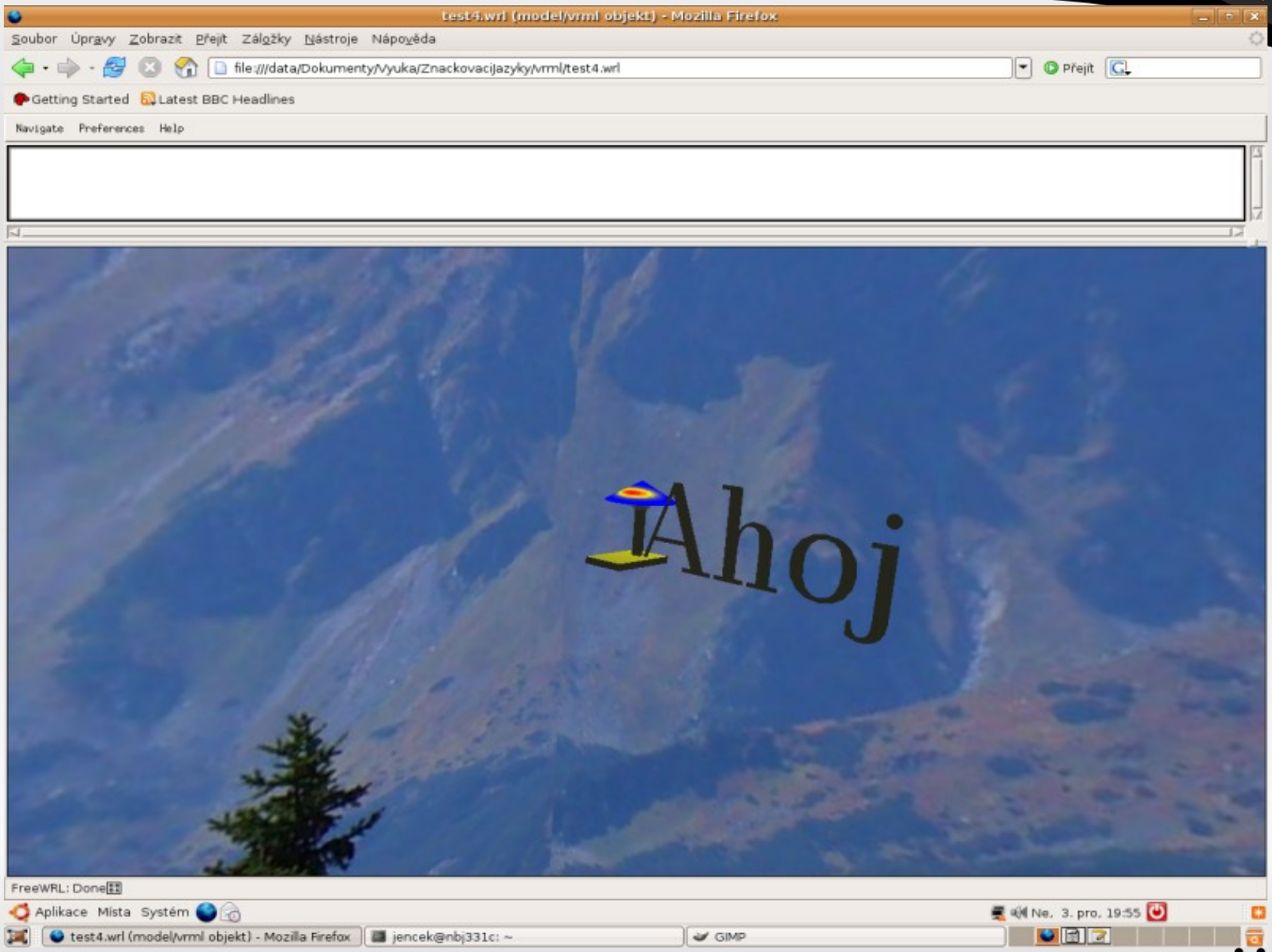
# VRML – Background



# VRML – Background

```
Background {
 frontUrl "fr.jpg"
 backUrl "bc.jpg"
 leftUrl "lf.jpg"
 rightUrl "rg.jpg"
 topUrl "tp.jpg"
 bottomUrl "bt.jpg"
}
```

# VRML – Background

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# VRML – Světlo

- Svítilna avatara
- DirectionalLight
- PointLight
- SpotLight

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# VRML – PointLight

```
Transform { #zarovka svetlo
      translation 0 0.18 0
        children PointLight {
          color 1 1 0
          intensity 1
          on TRUE
        }
}
```

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# VRML – Fog

```
Fog { #mlha
      color 1 1 1
      visibilityRange 10
      fogType „LINEAR“
}
```

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# VRML – Sound

- Prostorový zvuk

# VRML – Události

- ProximitySensor
- TimeSensor

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# VRML – Události

```
DEF Svetlo SpotLight { on FALSE }
DEF Akce ProximitySensor { ... }

ROUTE Akce.isActive TO Svetlo.on
```

# VRML – Manipulace

- CylinderSensor
- PlaneSensor
- SphereSensor
- TouchSensor

# VRML – Manipulace

```
DEF Tocitko CylinderSensor {}
DEF Lampa Transform { ... }

ROUTE Tocitko.rotation_changed TO
  Lampa.set_rotation
```

# VRML – Skriptování

- JavaScript
- Java

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# VRML – Prototypy

- Vlastní definice prototypů
- Možnost parametrizace

# VRML – Inline

- Skládání světů

# Použité zdroje

- Žára J. VRML 97 Laskavý průvodce virtuálními světy
- http://www.web3d.org/

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