# Introduction Background

- Scoliosis: 3D deformation of the spine and trunk
- Delicate instrumentation surgery in severe cases
- Typical surgery:





Traditional training tools (synthetic & cadaveric spines): major drawbacks



Synthetic Spine



**Cadaveric Spine** 

 VR technologies and computer simulations: solutions for an alternative training tool

#### Preoperative planning with S3

## Introduction Context

- S3: Spine Surgery Simulator (Aubin et al., 2008)
  - Preoperative planning tool with standard GUI
  - Patient-specific 3D geometric model of the spine
  - Patient-specific
    biomechanical model
    using flexible
    mechanisms







## • VRS3: Virtual Reality S3 (Plouznikoff, 2004)





Interaction through 3D wand

## • CVrS3: Collaborative VRS3 (Boulay, 2006)







### CS3: Collaborative Haptic Spine Surgery Simulator



- New dimension: haptics
- Integration and structuring