Some Context

- Visualization point of view:
  - starting point: a visualization task (e.g., exploration, analysis, or presentation)
  - question: can story telling help?

- Alternatively (not now):
  - starting point: a story
  - question: can visualization help?

Previous work:
- Story Telling for Presentation in Volume Visualization, M. Wohlfart and H. Hauser, EuroVis 2007
- Advanced Storytelling for Volume Visualization, A. E. Lie (Master student at UiB.no), 2009

Wishes for Today

- Learning more about story telling (and related techniques)
- Focusing on story telling for visualization (not so much on visualization for story telling)
- Story telling for cases where objectivity is 1st priority (not where opinions / interpretations are central)
- Story telling for exploration / analysis? (as opposed to presentation)
Previous Work (EuroVis 2007)

- **Visualization**
  - supporting exploration & analysis
  - supporting presentation & communication

  \[\Rightarrow \textit{different goals!}\]

- **Visualization for presentation**
  - getting your message across (cf.: Chinese whispers!)
  - two main goals:
    - minimize information loss!
    - maximize credibility!

Some State of the Art

- **How to present?**
  (esp. wrt. interactive visualization)
  - images (with labels!)
  - animations
  - semi-interactive graphics
  - interactive graphics

- [VRVis (Mroz…)]
- [Hamburg (Höhne…)]
- [Magdeburg (Preim…)]
The Basic Idea

■ Improve **comprehensibility**
  ■ **challenge/problem:**
    loaded vis. results difficult to (fully) understand
  ■ **approach/solution:**
    preserve the creation of a visualization result
    (not only the final picture)

■ Improve **credibility**
  ■ **challenge/problem:**
    „sink or swim“ visualization
    („believe it or …“)
  ■ **approach/solution:**
    enable the interactive reinvestigation on demand
    (diminish disbelief)

Sample Story

■ Analysis of a tripod fracture…
Overview

- Visualization stories
- Story telling and interaction
- Sample story
- Story authoring, implementation
**Story Model**

- From **story node** to **story node** (cf. keyframe anim.),
  - usually the story stops here for a moment
  - usually nodes are annotated
- via **story transitions**, which are composed of **action groups**, that join **actions** together which should be done in parallel

**Sample Story Templates**

- Information drill-down (à la Shneiderman et al.)
  - overview first
  - zoom & filter
  - details on demand
- Comparative visualization
  - e.g., left side vs. right side (symmetric datasets)
  - e.g., pre-operative vs. post-operative (multiple datasets)
- Iterative investigation
  - feature set traversal (FORALL features DO visualization)
  - cf. lymph nodes visualization [Krüger et al., EuroVis ’05]
Three Layers of Interaction in Visualization

1. viewing/lighting
2. representation ("how")
3. content ("what")

Story Layout

story nodes
Passive Story Consumption

- default configuration, no interaction
- the story is consumed like an animation

Story Telling and Interaction

- how far do we go off the story during interaction?
Story Playback with Interactive Approval

– at a certain point… (here: story node #2)
– … the user decides to **pause the story**…
– … and to **interactively approve** the current visualization setting (here: varying opacity, f.i.)
– then the user (automatically) **returns** to the story and continues story playback

Semi-Interactive Story Playback

– at a certain point… (here: after story node #2)
– … the user decides to **leave the story**…
– … and to **interactively steer** certain visualization parameters him-/herself, instead of letting the story set them (here: taking another viewport, f.i.)
– at another point… (here: after story node #3)
– then the user (automatically) **returns** to the story and continues story playback
Total Separation from the Story

- at a certain point… (here: after story node #3)
- … the user decides to **leave the story**…
- … and to change to **interactive visualization** (no return to the story)

All Four Interaction Patterns

- **passive story playback**
- **st. telling with interactive approval**
- **semi-interactive story playback**
- **total separation from story**
Story Authoring

- Story generation, then story editing

Implementation

- Based on RTVR (Java)
Story Telling for Presentation

- New approach to improve
  - comprehensibility
  - credibility
- Presentation relevant (often costly)
- Semi-interactive visualization
  - guided interaction (if interaction at all)
  - adapts to user preferences
- Future opportunities
  - automatic export of reports
  - delayed / remote cooperation (joint analysis)
  - documentation

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Workshop Questions / Considerations

- What techniques/approaches to use in visualization (and which not)?
- Story telling in objective visualization (no intended interpretation)?
- Story telling outside the presentation context (in exploration/analysis)?