Interactive Story Telling
for
Presentation with Visualization

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Visualization – what for?

- **General definition**:
  Visualization = utilizing **computer graphics** technology to enable **insight** into **data**

- **Task categories**:
  - visualization for **exploration** / **analysis**
    - exploration: detecting the unexpected
    - analysis: confirming/rejecting hypotheses
    - interactive visual information drill-down
    - visualization as expert tool
  - visualization for **presentation**
    - presentation: communication of findings to others
    - ranging between static and interactive graphics
    - includes visualization for "the masses"
    - special requirements wrt. comprehensibility, credibility

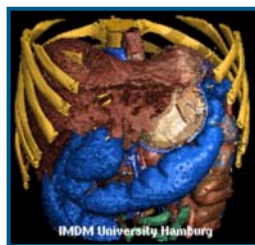## Some State of the Art

- How to present?
  (esp. wrt. interactive visualization)
  - images (with labels!)
  - animations
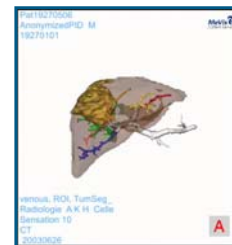 - semi-interactive graphics
  - interactive graphics
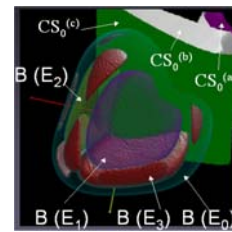
[VRVis (Mroz...)]

[VRVis (Mroz…)]   [Hamburg (Höhne…)]   [Magdeburg (Preim…)]

The Basic Idea (EuroVis 2007)

- 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
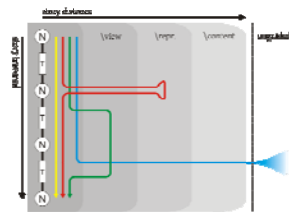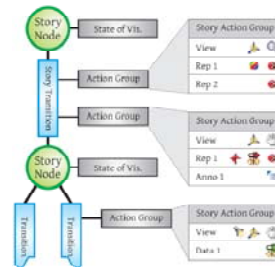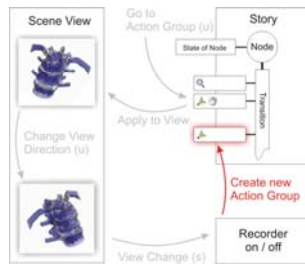   (diminuish disbelief)

Sample Story

- Analysis of a tripod fracture…
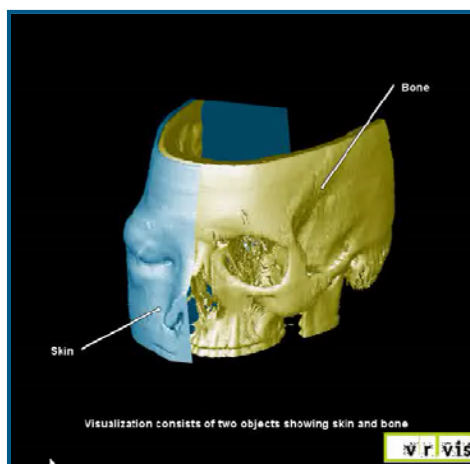
Overview

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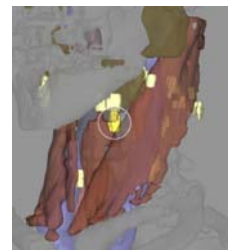- Story authoring, implementation

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
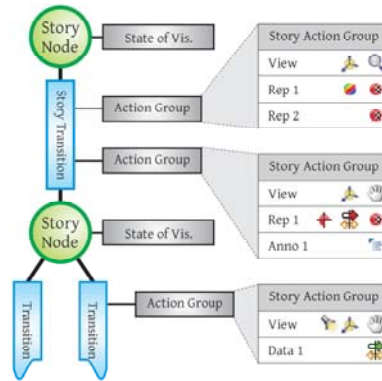
Sample Story Templates

- Information drill-down (á 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 traveral (FORALL features DO visualization)
  - cf. lymph nodes visualization [Krüger et al., EuroVis '05]

Three Layers of Interaction in Visualization

view params.   repr. params.   content params.

1. viewing/lighting

2. representation („how")

3. content („what")

Story Layout

story traversal

N

T

N

T

N

T

N

story nodes
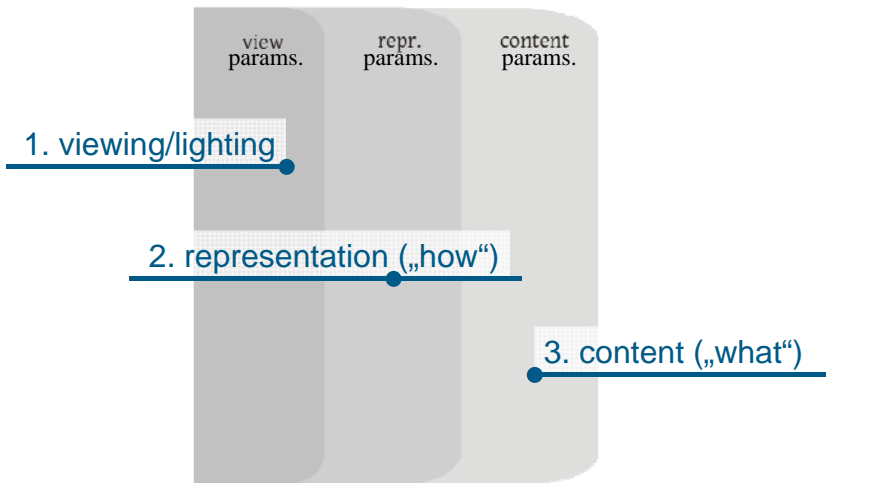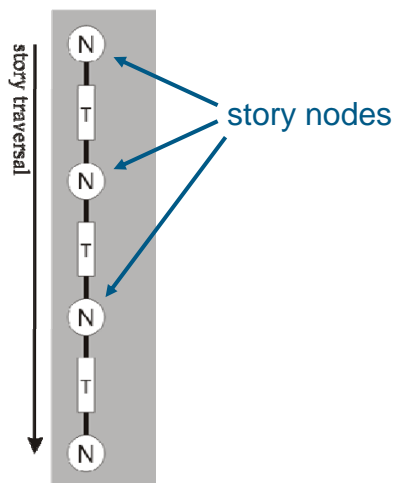
Passive Story Consumption

story traversal

N — T — N — T — N — T — N
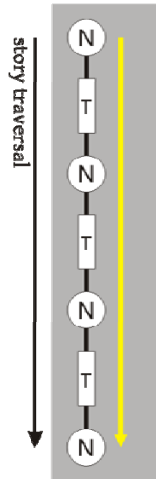
– default configuration, no interaction
– the story is consumed **like an animation**

Story Telling and Interaction

story distance

story traversal

N — T — N — T — N — T — N

\view   \repr.   \content   unguided

– how far do we go off the story during interaction?

Story Playback with Interactive Approval

story distance

story traversal

\view \repr. \content unguided

- 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.)
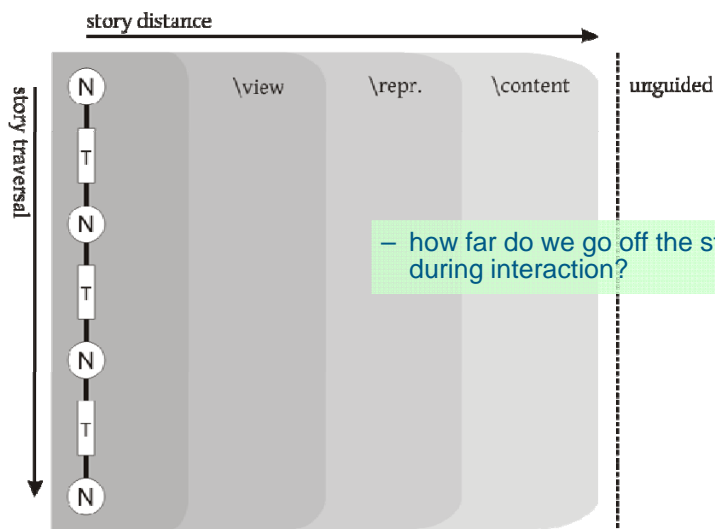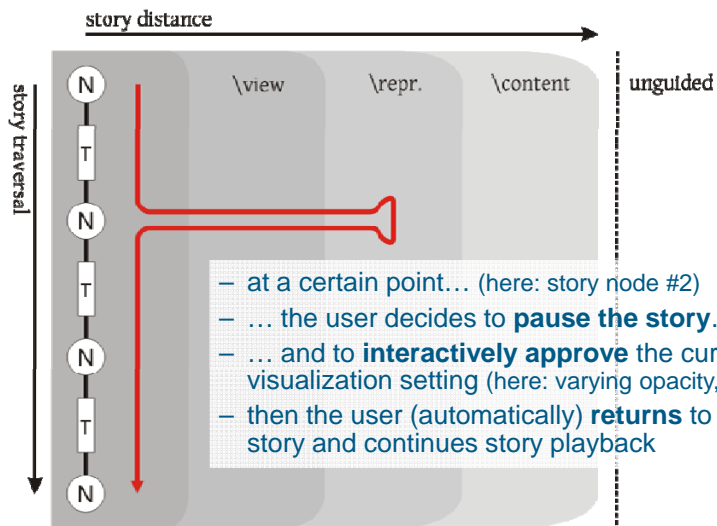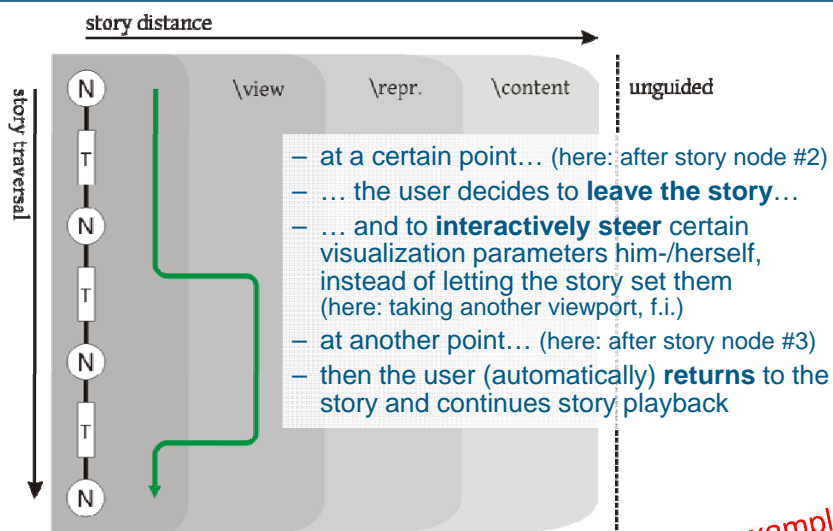- then the user (automatically) **returns** to the story and continues story playback

example

Semi-Interactive Story Playback

story distance

story traversal

\view \repr. \content unguided

- 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

example

Total Separation from the Story

story distance

story traversal

\view \repr. \content unguided

N
T
N
T
N
T
N

– 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)
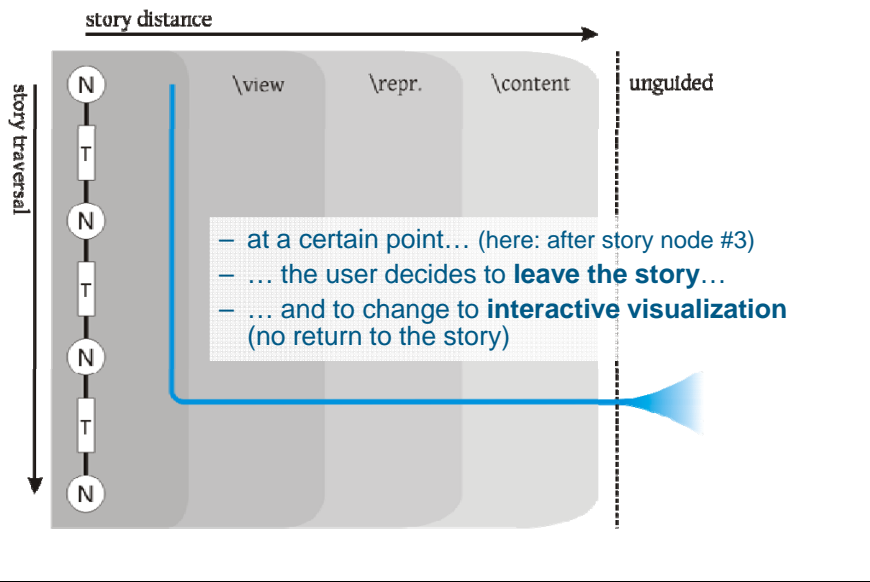
All Four Interaction Patterns

story distance

story traversal

\view \repr. \content unguided

N
T
N
T
N
T
N

passive story playback

st. telling with interactive approval

semi-interactive story playback

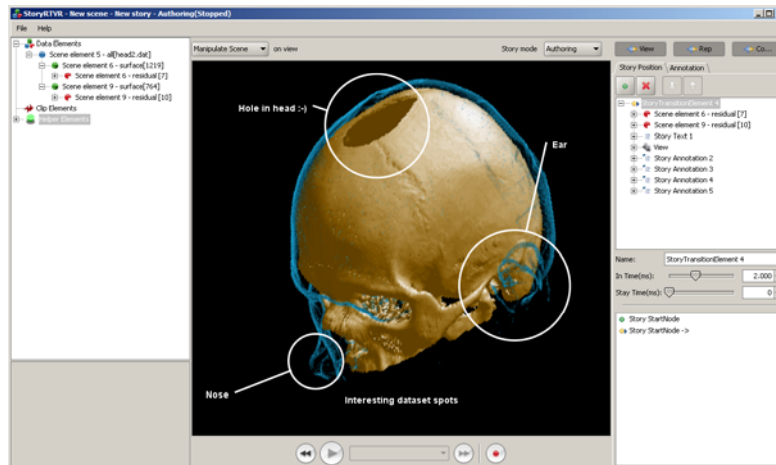total separation from story
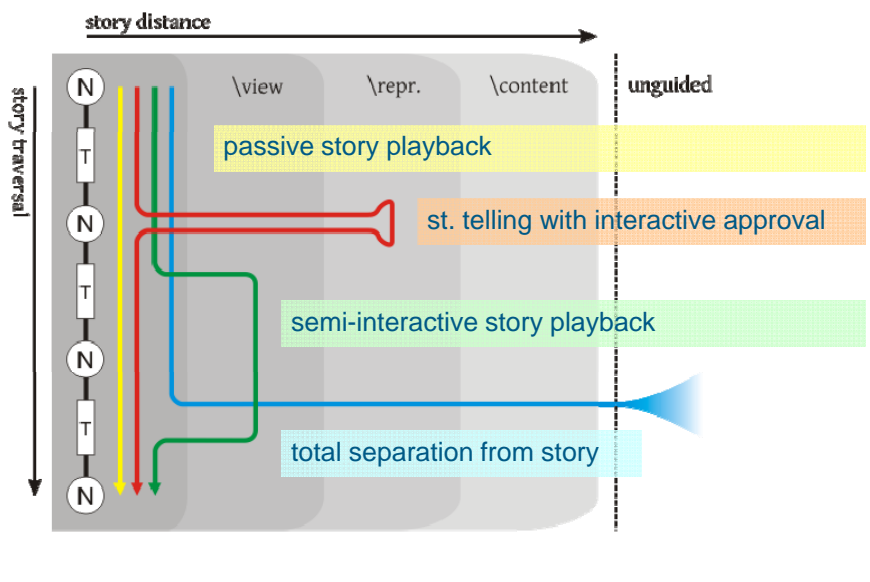
Story Authoring

- **Story generation**, then **story editing**
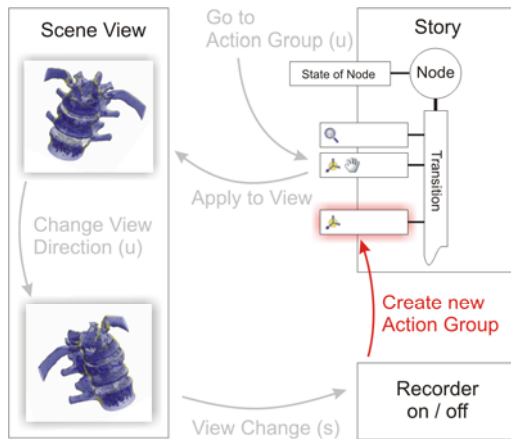
Implementation

- 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

Acknowledgements

- **Michael Wohlfart** (did his Master on all this)
- **Lukas Mroz** – RTVR, support, much more! ;–)
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- *You!* for your attention!

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