

# Next Generation 3D City Models

## – Summary and Discussion

- 3D Computer Graphics 35 years ago
  - The Movie Man
  - The Nematode Worm Man
- What are our limitations and imaginative failures now?
  - Not hardware?!
  - Imagination?
  - Cross-discipline constraints?
    - We make progress professionally by specialising but many of the most interesting opportunities are in the gaps

# Next Generation 3D City Models

## – Summary and Discussion

- Big issue, now as in 1993 (Forstner), CAD/GI integration
  - Avoidance of duplication and NIH is a key goal. Thomas Liebich put the information exchange case perfectly (GIS, Architecture, Civil Engineering)
- Seamless integration is the ultimate goal.
- Are we any closer? Can it be brought about?
  - We all talk XML nowadays!
  - Many institutional barriers to overcome but many pressures to do so
- How can we define the key ‘fuzzy’ domain boundaries?



# Next Generation 3D City Models

## – Modelling

- Balance between modelling for visualisation performance and for analysis (Potsdam)
- Managing LoD, transitions and transactions
  - ‘quality’ or ‘fidelity’
- Versioning across LoD and History (Bonn)
- Semantics of IFC, bridging the ‘gap’ (Karlsruhe)
- Interiors (Delft) – is this really CAAD?
- Use of ‘knowledge’ (Geneva, Hannover)
- Current lack of full 3D support in mainstream DBMS, how to protect our developments? (Oracle 11?) – Snowflake approach important

# Next Generation 3D City Models

## – Acquisition

- EuroSDR Building extraction
  - Full impact of Laser-Scanning yet to come
  - Is there enough mutual understanding and benefit?
- ‘back to basics’ approach of TeleAtlas
  - Implications for the marketplace?
- Range of requirements (Reinmettall)
- CyberCity experiences
  - What are the critical market drivers?
- When will the emphasis shift to ‘Update’?
  - When the ‘attribution’ exceeds the ‘geometry’
  - How well placed will we be for this?

# Next Generation 3D City Models

## – Visualisation

- Photo Realism or non-Photo Realism?
  - Purpose
  - Economics
  - Which will be more amenable for update?
- Compression is important
  - Don't tell me, show me!
  - UK GML experience
- Our visualisations assume 4am on a Summer morning!

# Next Generation 3D City Models – Integration

- Volker had already taken the point on compression
- Request for connectivity on CityGML (Stuttgart)
- Importance of using ‘knowledge’
  - Conflation of vector framework and terrain (Hannover)
  - Zonal/layer fragmentation (aachen)
  - Schema translation (GeoNova)
- Usefulness of Terrain Service (Nebiker)

# Next Generation 3D City Models

## – Standards

- W3DS specification
  - Increasing support
- VRML and GML shortfalls (minor?)
- GXL and/or CityGML?
- Standards are key, but we must ‘get our ducks in a row’. Good chance for positive effects, but have to get the politics right.

# Next Generation 3D City Models

## – Comments and Gaps

- Take note of the experience of the past
  - Why do we not have any annotation on our visualisations?
  - Don't get hung up on realism alone, information needs to be conveyed
    - Street names, key buildings
    - Optional Annotations (if well placed) or bubble clicks
  - Public Access has to be easy or rejection.
- More realism in vegetation, people (if only to give scale), vehicles
  - Or if this an 'application level issue', show how it can be done, easily?

# Next Generation 3D City Models

## – Comments and Gaps

- Track what is going on in ‘Incremental Update’
- Generalisation in 2D is making great strides, partly through separating ‘model’ and ‘carto’ aspects. Generalisation in 3D is coming onto the agenda
  - Better dialogue between the mappers and the 3D modellers would be fruitful here
- We know ‘knowledge’ is key
  - Dialogue with Semantic Web folk and formal ontologies

# Next Generation 3D City Models

## – Comments and Gaps

- The Sensor Web will have a huge impact in the next few years.
  - Add some levels of ‘dynamics’ to our models
  - Interesting that one presentation (Stuttgart) is already starting to address this
- Do we need to consider Grid Computing?
  - Maybe, but Moore’s Law should continue to provide for a while?

# Next Generation 3D City Models

## – Final Conclusions

- Europe is in a strong, leading, position in this field
  - UK has some catching up to do!
- Keep it up, esp. in the Standards arena
- Thank you to Thomas and Gerhard
  - And many others

