Challenges and Perspectives of Procedural Modelling and Effects is a brief survey of differrent techniques used for generating realistic terrains, streets, buildings, water and damage modelling and other typical assets used in video games and related products. Fletcher et al. identify the need for more research in this area in order to provide better techniques to auto-generate content. The utlization of such techniques would greatly accelerate the work of asset creators. Procedurally generated content with a high degree of realism can effectively serve as a base for artists and reduce the amount of work needed.

In addition of the very userful overview of current techniques for procedural content generation, the authors propose a very general framework for a complete virtual world. The framework can certainly be of value to some in the video game industry especially when used in conjunction with current developments in the field.

The publication covers a number of procedural techniques from previous works that are being employed in video games and the middleware. The said techniques include:

1. Terrain Generation – height maps and erosion
2. Street Planning – Voronoi Diagrams, Subdivision, Noise, L-Systems, Glass et al.
3. Buidling Generation – Basic Shapes and Shape Grammars by Muller et al.
4. Water Effects – waves, ship trails, shoreline waves by Jeschke et al. and Larsson et al.
5. Damage Representation – Deformations and Fractures, ArtDefo, Finite Element Method (FEM) and Shell

The authors make a clear distinction between techniques viable for real-time applications and those that are rehter computationally expensive.
The paper then provides a flowchart representing the proposed framework for procedural world. Following the flowchart is the brief overview of major steps in the framework and how each step can incorporate previosuly mentioned techniques.

The paper covers techniques that are meant to work on typical gaming hardware. It is pointed out that some methods must be heavily simpliefied to run on crrently available systems and only further advancement of the hardware or further research can provide higher level of sophistication.

The use of figures is very limited throughout the paper. There are several descriptions in the text that are difficult visualise and the use of figures would definitely enhance reader's comprehension of the material conveyed.

In general, not much research work is contained in the publication. Its value centers around the overview of currently used techniques. The framework proposed by the authors is merely a guideline and would only benefit people who are willing to familiarize themselves with basic concepts. However, the authors hope the framework will be developed further and eventually implemented in software.

References

David Fletcher, Yong Yue, and Majid Al Kader. 2010. Challenges and Perspectives of Procedural Modelling and Effects. In *Proceedings of the 2010 14th International Conference Information Visualisation* (IV '10). IEEE Computer Society, Washington, DC, USA, 543-550. DOI=10.1109/IV.2010.80 http://dx.doi.org/10.1109/IV.2010.80