**Synthetic Signing - SiGML Notation**

- **ViSiCAST project (2000-2003)** [1]: sign language for deaf people using virtual human avatars – driven by motion capture data, but more flexibly by synthetically generated animation data.
- **SiGML[2]**: input notation for the synthetic signing system; an XML application; consists of a number of modules; Gestural SiGML module is used to specify manual and non-manual aspects of sign sequences.
- Gestural SiGML is based on the Hamburg Notation System, HamNoSys [3] – a well established phonetic transcription system for sign languages.
- Non-Manual SiGML can describe the action of distinct articulators: shoulders, body, head, eye-gaze, eye-brows, eye-lids, nose, mouth-gestures (speech-independent) and mouth-pictures – visible speech characteristics, defined by SAMPA codes.
- SiGML Signing: a software system developed to generate on-screen animations synthetically in real-time from SiGML/HamNoSys input texts.
- SiGML Signing implements a processing pipeline (below).

**AnimGen**

- AnimGen [4] is the key component in the processing pipeline
- Given a description of the avatar's physical characteristics and an avatar-independent SiGML sign sequence, AnimGen combines these to generate a sequence of animation frames to make the avatar perform the signs.
- Each frame defines a static pose of the avatar's skeleton and face.
- A facial configuration is a weighted sum of predefined *morphs* – i.e. elementary deformations of the face.
- Each non-manual SiGML element is encoded as a combination of *morph trajectories*, each specifying a maximum weight for a morph, with set-up, hold, and decay times. These trajectories may be combined in series and in parallel.

**Mapping: SiGML Non-Manual to Morph Animation Sequence**

**References**