

# A stratified approach for sound spatialization

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## ABSTRACT

We propose a multi-layer structure to mediate essential components in sound spatialization. This approach will facilitate artistic work with spatialization systems, a process which currently lacks structure, flexibility, and interoperability.

## 2 NEED FOR INTEROPERABILITY

Creative work with spatialization is disproportionately bound to the particular software, rendering techniques, storage formats and playback systems used. There are great individual and context-related differences in the compositional use of spatialization, and no one spatialization system that could satisfy every artist.

This lack of flexibility hinders creative processes, interchangeability, and possibilities for reproducing works outside of their original context.

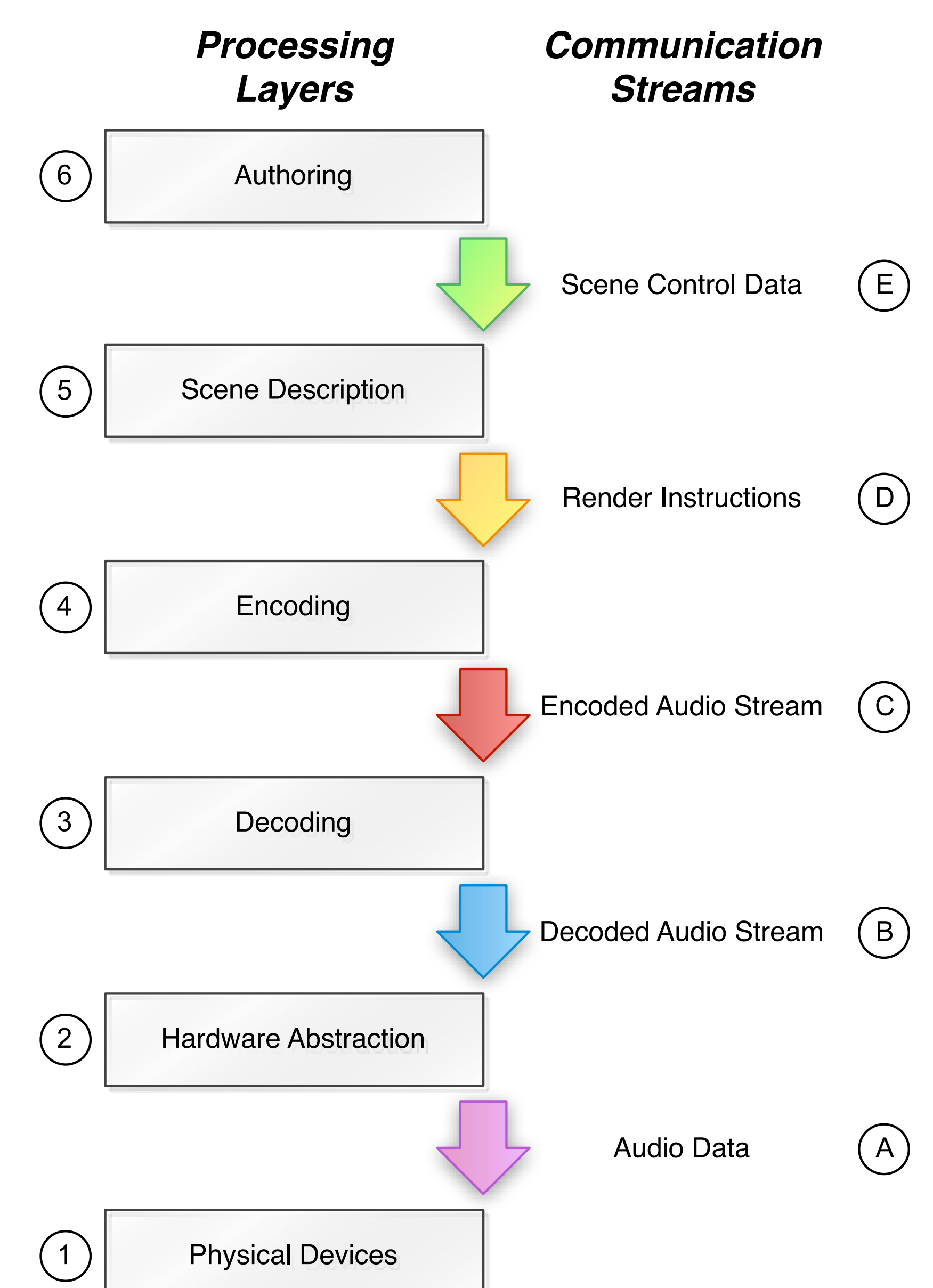
Varying spatialization applications must be readily combined to guarantee efficient workflow for sound spatialization. This requires a common structure, flexibility, and interoperability across all involved components.

When dealing with spatialization, the workflow comprises a number of steps. We propose to conceptually organize them according to six layers according to levels of abstraction. Each layer provides services to the layer above it and receives services from the layer below it.

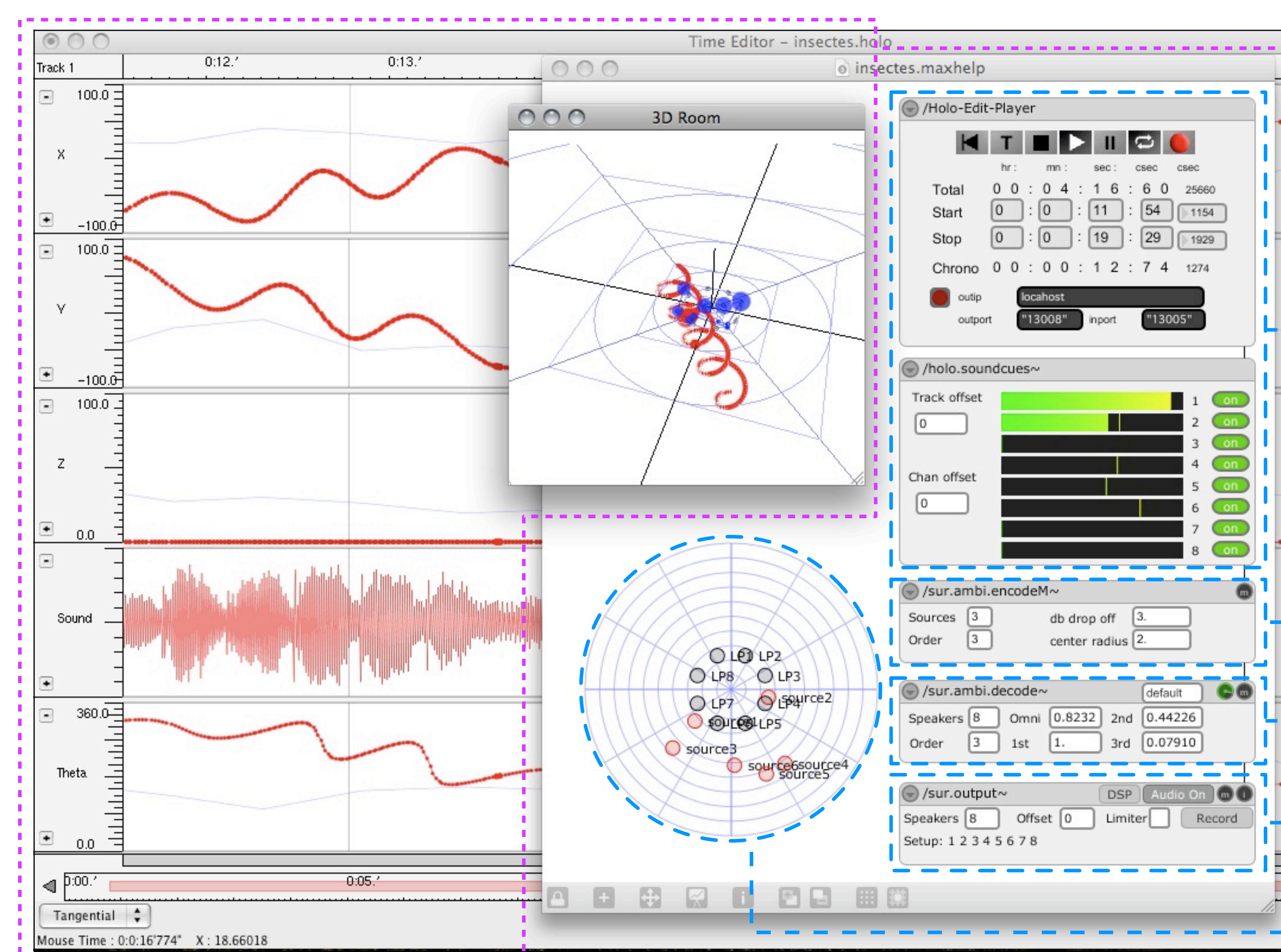
The paper presents the layers, and the communication streams passing sound and control data between layers. Prototype implementations are discussed combining:

- ✓ **Jamoma** - A modular framework for Max.
- ✓ **The ICST Ambisonics Tools** for Max.
- ✓ **SpatDIF** - Spatial Sound Description Interchange format.
- ✓ **Holo-Edit** - A graphical editor of sound trajectories.

## 3 STRATIFIED APPROACH



## 4 IMPLEMENTATION



**Authoring Layer**  
Holo-Edit Communication

**Encoding Layer**  
Ambisonics Encoder

**Decoding Layer**  
Ambisonics Decoder

**Hardware Abstraction Layer**  
Accessing the DAC~

**Authoring Layer**  
ICST Ambimonitor