Slide 3:
Interactive ray casting refers to a real-time rendering technique used in computer visualization, where rays are traced through a 3D volume to create visual representations that can be interactively explored and manipulated by a user in response to their actions.
Modular design: meaning provides a straightforward way to change either the volume-sampling technique or the compositing technique, without changing both.
application-programming interface (API)

Slide 5:
ASI: means tasks can be done simultaneously without waiting for the previous task to finish, with data being transferred in forms of streams, not stored in disks.

Slide 6:
2. so as the volume of data increases, the performance of our model doesn't start decreasing.
4. "In-core" means data stored in the primary memory (RAM) of a computing system.
"Out-of-core" refers to data that is too large to fit entirely in the available primary memory (RAM) of a computing system.

Slide 9:
Ma one of the authors of this paper
Fidelity: faithfullness.
multi-resolution volume rendering: framework designed to optimize rendering performance and quality by adaptively selecting the appropriate level of detail for different parts of the volume.
3. Terascale: 1 TB data
3. Adaptive rendering is a technique used in computer graphics to dynamically adjust the level of detail in a rendered image based on diff. Factors.

Slide 10:
structured volumetric data: 3D data stored in a structured manner, mostly like a regular grid, allowing efficient storage, retrieval and processing.
unstructured tetrahedral meshes: unorganized 3D mesh used to represent irregular geometries, with tetrahedron as the basic building block.
adaptive mesh refinement datasets: datasets characterized by their ability to dynamically adapt to grid resolution to capture the regions of interest.

Slide 12:
4. Meaning instead of sending intermediate data values and reduction results to disk, they are streamed directly to new mapper and reducer nodes for further processing.

Slide 13:
Mars: "In-core" means data stored in the primary memory (RAM) of a computing system.
CellMR: Partial reductions on resident data: technique involves performing intermediate reduction operations on data that is already present on each processing unit in a parallel system.
Slide 15:
Using GPU for steps increases performance as transferring a brick of the volume to GPU take less than 1% of the time it takes to load a small chunk of brick on the CPU.

- How? B/c the GPU's VRAM is 10 times faster than the CPU's DRAM.
- *And now kanishk will continue by explaining them in detail*