Ability to sense state of the surrounding environment



Interpret/react immediately using global-scale **bodies of knowledge**

Graphics systems have traditionally been built around a high level of end-to-end integration and optimization

- The graphics pipeline
- **—** The game engine
- Today, web+mobile app programming involves a federation of systems and paradigms:
 - Applications are mash ups of technologies, programming systems, and services
 - Underlying architectures also "mashups" of processors and IP ____
- Key questions:
 - **Algorithms for this ecosystem?** _____
 - Abstractions: Is a "mash up" of abstractions appropriate for this context? Can a more integrated "visual computing pipeline" provide ease-of-programming and implementation optimization benefits in this diverse ecosystem?