

# Movement through the Hierarchy

- Long-haul -> Metro -> Enterprise -> Peripheral -> Backplane -> Board -> Chip
- Changing parameters : distance, power, form factor, NUMBERS OF DEVICES, COST
- For full success, we need
  - Low cost, high volume manufacturing
  - Technical breakthroughs compatible with Si

# Examples of What is Needed

- Low cost, high volume manufacturing
  - Integration with high yield
  - Modern mass manufacturing techniques, such as stamping, but with precisions beyond current state-of-the-art (NanoOpto, Optocon, DARPA)
- Technical innovation compatible with ICs
  - Silicon nanoparticle sources
  - Light propagation on metallic interconnects (Univ. Ottawa, Spectalis, Univ. Graz, Mark Brongersma at Stanford)