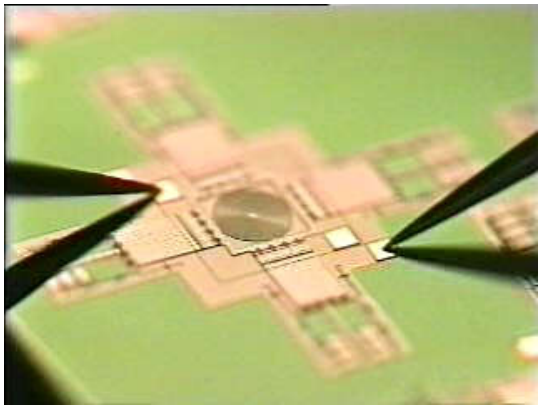
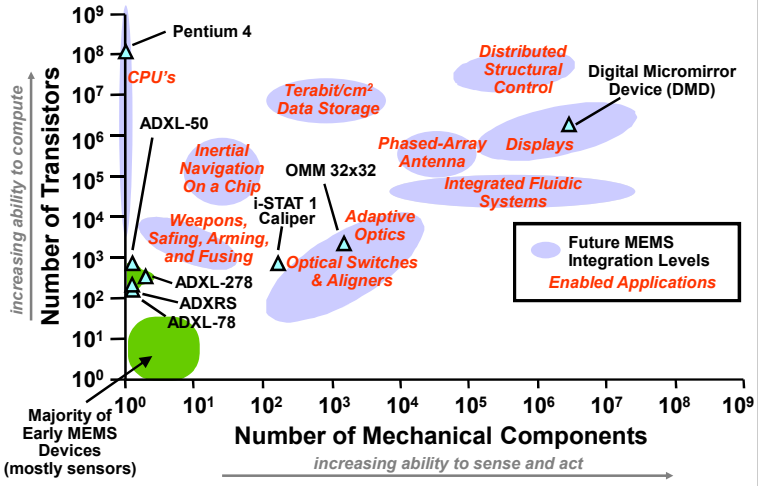
3D Direct-Assembled Tunable L



[Ming Wu, UCLA]

Technology Trend and Roadmap for MEMS

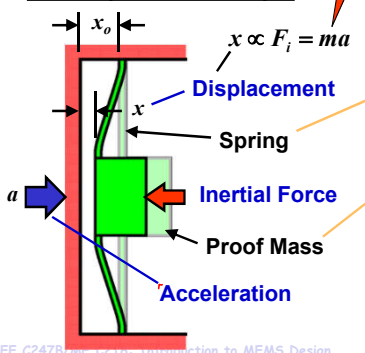


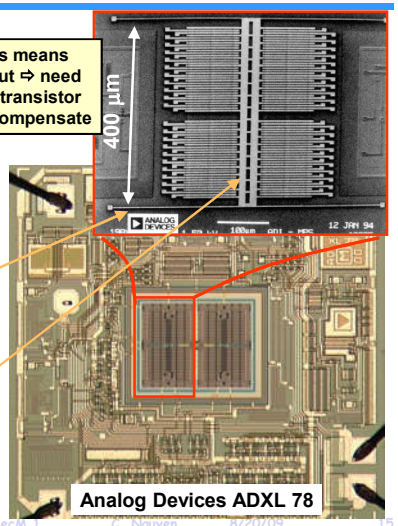
Example: Micromechanical Accelerometer

- *The MEMS Advantage:*
  - >30X size reductio
    accelerometer mec
  - allows integration

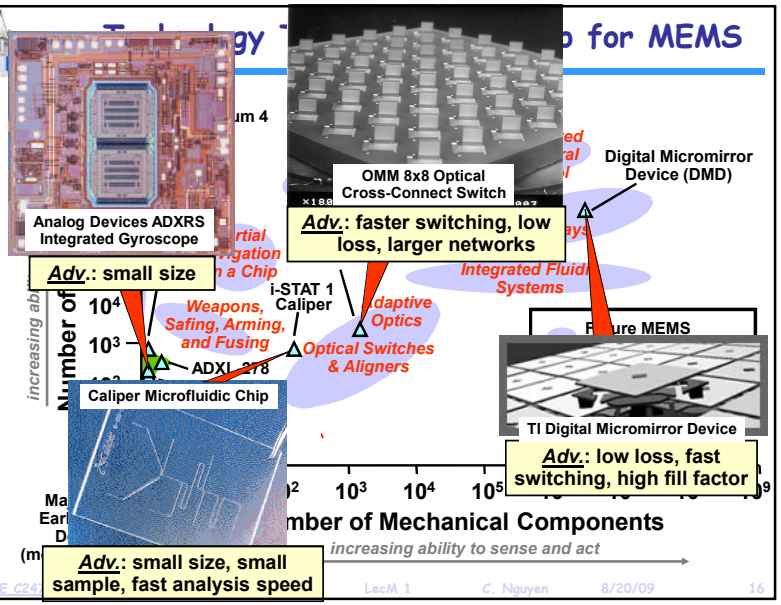
Tiny mass means small output ⇨ need integrated transistor circuits to compensate

Basic Operation Principle

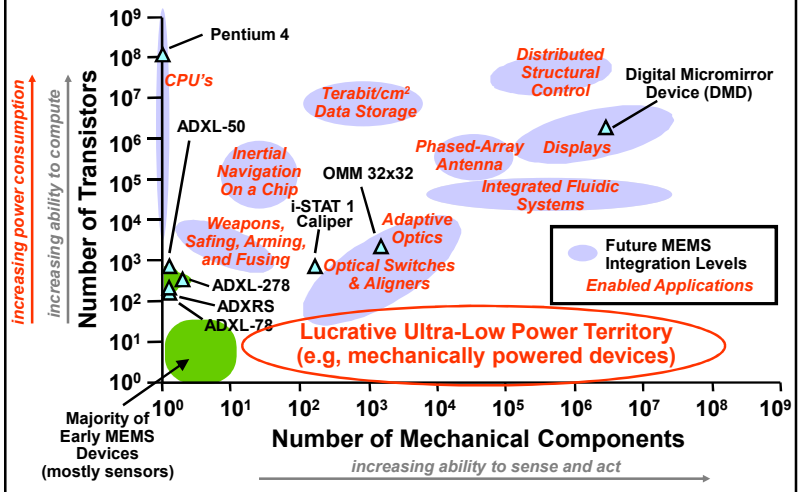




Technology Trend and Roadmap for MEMS



Technology Trend and Roadmap for MEMS



Benefits of Size Reduction: MEMS

- Benefits of size reduction clear for IC's in elect. domain
  - size reduction ⇨ speed, low power, complexity, economy
- MEMS: enables a similar concept, but …

MEMS extends the benefits of size reduction *beyond* the electrical domain

Performance enhancements for application domains beyond those satisfied by electronics in the same general categories

Speed	⇨ Frequency ↑ , Thermal Time Const. ↓
Power Consumption	⇨ Actuation Energy ↓ , Heating Power ↓
Complexity	⇨ Integration Density ↑ , Functionality ↑
Economy	⇨ Batch Fab. Pot. ↑ (esp. for packaging)
Robustness	⇨ g-Force Resilience ↑