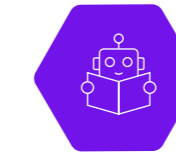




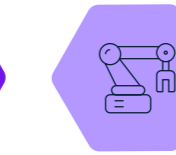
## The impact of omniscience

# Imagine if... nano and micro machines were everywhere

Robotics



Smart manufacturing



**By 2071, nano and micro machines are commonplace, and capable of salvaging power from their environments. They have a wide range of roles from micro drones; microscopic sensors and nanoprobes; to micro effectors able to interact with the human body.**

Ubiquitous surveillance becomes possible using insect sized micro drones, allowing highly covert applications as well as providing resilience through sheer numbers. Micro devices become commonplace in medical applications allowing both internal investigations and diagnostics, while also opening up the possibility for highly targeted micro surgical and medical interventions.

Micro devices also find roles in repairing and maintaining smart cities augmenting and supplementing robot deployed in maintenance roles. The implementation of sophisticated swarm algorithms allows these devices to self organize to carry out complex and intricate tasks. Suddenly it seems that these inter-networked machines are everywhere.

These devices pose new security challenges given the limited power budget available to secure their communications links, and limited onboard processing available. The swarm control algorithms and potential for emergent behaviors raises new questions over the verification of the reliability and integrity of those devices.