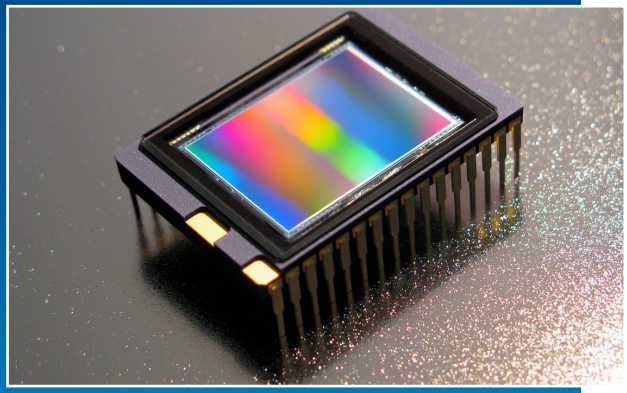
Technology Transfer and Astronomy

Some products that were improved with technology transfer from astronomy: cell phones, digital cameras and computer hardware and software.

Spinoff technologies are commercial products or services which have been developed through research and development contracts that are re-purposed for everyday applications.



Using declassified military technology, astronomers developed CCD detectors, which can now be found in many digital cameras. Credit: Moravian Instruments

This image features the Gemini North telescope during laser guide star operations. Astronomy has advanced the use of laser technology that can be adopted by other fields. Credit: International Gemini Observatory/AUR/Joy Pollard

Innovation Driver

Astronomy significantly impacts our everyday lives. Not only does astronomy add to human knowledge, it contributes to our technology and economy by driving innovation in the pursuit of newer instruments, processes and software. Some of the best examples are in optics and electronics: improvements in imaging technology, mobile phones, Global Positioning Systems, solar panels and CT scanners.

Technology transfer between astronomy and industry results in a wide range of products and services. Enhanced imaging techniques developed for astronomy are now used for medical and industrial spectroscopy, industrial digital imaging, and innovative livestock fencing. Radio astronomy technology and methods led to the development of medical tools, devices, and data-processing methods. Technology originally developed for observing X-ray sources in space is now routinely used for security screening.

Modern CT scanner, one of the medical technology transfers from astronomy research. https://en.wikipedia.org/wiki/CT_scan

Astronomy Technology Transfer

- **Computer Hardware**
- **Software Development**
- **Communications**
- **Digital Imaging**
- **Optics**
- **Medical Imaging**
- **Data Processing**

Currently, one of the most popular applications for deep-UV spectrometers is pharmaceutical quality control, where the technology can measure ingredients and detect contaminants with extreme accuracy. Credit: sanjeri via Getty Images/NASA

Medical Monitoring and More

Both astronomy and medicine require high-resolution, accurate and detailed images thus providing a great deal of technology transfer between the two disciplines.

Aerospace and defense shares much of its technology with astronomy — specifically in telescope and instrument hardware, imaging, and image-processing techniques. Additionally, technology for astronomy has been used to evaluate the possibility of new renewable energy sources.

Fundamental Research

We live in a world with many urgent problems. These problems all benefit from fundamental research, which, in addition to adding to human knowledge, makes concrete contributions to technology and to our economy. Investments in astronomy are investments in a better future for us all.

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For More Information

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