This suite of services is targeted at clients who require hardened prototypes to demonstrate their materials, fabrication tools or circuit product ideas. In addition to printed electronic components, these prototypes can include thin-film electronics elements fabricated by conventional large-area electronics, advanced driver design and working delivered systems.

Prototype system design

PARC has built backplanes for a wide variety of display and non-display applications. Designs include pixels with current drive, high-voltage drive, homodyne detection, image detection, ionizing radiation detection and a variety of other unique capabilities. Peripheral electronics may include multiplexers, shift registers and simple control circuits. Circuit simulation is used to validate system electrical performance. Packaging, mechanics and drivers form an integral part of the system design.

Technology selection

Performance and functionality are the major drivers for technology selection. The technology set available at PARC includes:

- Amorphous silicon (TFTs, photodiodes)
- Laser recrystallized polysilicon (TFTs, HV-TFTs, diodes)
- GIZO (Gallium Indium Zinc oxide) (TFTs)
- Organic semiconductors and dielectrics, nanoparticle metals (printed TFTs, photodiodes)
- Substrate materials include glass, plastic and steel foils
- MEMS capability for mechanical sensors and connectors
- Ferroelectric and piezoelectric polymers

Prototype fabrication and testing

Capabilities include:

- Class 10 clean room for thin-film electronics fabrication
- 6-inch wafer handling capability
- Array tester design
- Driver design and fabrication
- System integration into demonstrable systems

PARC can fabricate and deliver tested full system prototypes in small quantities (up to 100, depending on complexity) and has helped transfer numerous technologies to production.