

Collapsible Electronic Paper Display



ATOM Inc.

Inglewood, CA
www.atominc.us



Contact:

Huaping Li
Chief Scientist
ATOM Inc.
atominc.us@gmail.com

Topic Number: N171-004

SYSCOM: Marine Corps Systems
Command (MCSC)
www.marcorssyscom.marines.mil

Program Sponsor: David Keeler

Other Potential Programs:

PM Supply and Maintenance Systems (SMS) - Test, Measurement and Diagnostic Equipment (TMDE), Electronic Maintenance Support System (EMSS), Combat Operations Center (COC) – displays, Ground Combat – wearable display, US Army

Current TRL: 8

Projected TRL: 8 / Q2 2022

Keywords:

Flexible Display, OLED, Rollable Devices, EMSS, Electronics, Software, Maps, Maintenance, Wearable

Innovation Center at 2022 Navy Gold Coast



September 6 – 8, 2022

THE CHALLENGE

Currently, there is no viable implementation of this technology that supports the need generated by the Marine Corps maintenance concept of operation. There is no portable display that can be stored in a compact, rugged configuration and then be capable of expanding to a large screen size during use.

THE INNOVATION

The flexible and rollable Organic Light-Emitting Diode (OLED) displays will be driven by a thin-film transistor backplane. The thin-film transistors are approximately two nanometers thick, transparent, intrinsically flexible, mechanically strong, and environmentally stable. These advantages could make rollable OLED displays suitable candidates to meet applicable ruggedized standards (MIL-STD-810) in its collapsed/stored state in order to maintain survivability in the operational environment. When the display is in use, it will provide reliable operation in typical outdoor maintenance environments where dust, humidity, heat, and cold can vary from 0 to 50 degrees Celsius. The display system is able to display videos, PDF files through the developed browser, and other video displays. Users can manipulate the files using their fingers on the system's touch screen.

This development initiative is to enhance the usefulness of the Enhanced Mobile Satellite Services (EMSS) for the Marine Corps Maintainer who troubleshoots and repairs Marine Corps equipment, in a variety of facilities and environmental conditions, worldwide.

THE NAVY BENEFIT

This innovation/technology provides a lightweight, thin, flexible, view-screen, capable of optimal bending in normal powered operation. The thin film transistor backplane driven OLED display was engineered into a roller frame that can be used as an independent device or connected to other computers with software to add notes, highlights, or comments that can be saved in an overlay of the image and retrieved later if desired.

THE FUTURE

The continued R&D is to engineer 14" and larger size OLED displays in roller frame. Atom Inc. is working on wearable screens to be commercialized for athletes and military forces.