



## Overview

Emergent Space Technologies, Inc. can assess and evaluate new technologies and architectures for use in satellite operations and can advise missions on options and strategies for development, integration, or re-engineering.

## Background

Under today's budget pressures, satellite operations is moving from a static, closed paradigm to one that is more dynamic and open. Many COTS technologies and tools exist to aid in this migration, but they must be evaluated and, once chosen, integrated to provide effective solutions. Organizations that have both the computer science and the aerospace engineering backgrounds are needed to full understand the issues and options.

Emergent, with its mix of information technologists and aerospace engineers, is uniquely qualified to evaluate new mission operations technologies, prototype tools, and integrate solutions. Emergent has performed this role for the NASA Goddard Space Flight Center. We have performed studies to compare and contrast competing technology solutions. We have prepared deployment plans, scripting what must be done to integrate new tools. And we have lead the integration of new technologies into an multi-mission operations center.

## Evaluation

The Earth Observing System program at NASA GSFC has re-engineered the manner in which scientists remotely monitor their satellite instruments. Emergent evaluated the Telescience Resource Toolkit (TReK) as an alternative to existing plans. Emergent demonstrated TReK as it might be used, presented the strengths and weaknesses of TReK over the current plan, and included schemes for migrating from the current plan to TReK or using the two in parallel.

## Prototyping

The SMEX program was considering replacing a hardware-based phone system with a software-based voice over IP (VoIP) solution. In addition to studying VoIP technology and evaluating the Internet Voice Distribution System (IVoDS) tool, Emergent prototyped IVoDS deployment in the SMEX operations center and allowed operators to use the tool in an operational setting before deciding.

## Benchmarking

The GPM mission was considering message oriented middleware-based ground system architecture. Emergent created benchmarking suites that tested the middleware performance in a simulated ground system and analyzed the issues related to integrating ground system components via the middleware.

