

Abstract

Many U.S. cities are expanding passenger rail transit to improve transportation system performance. This is particularly the case in Los Angeles and has presented specific challenges for Los Angeles Metro's rail maintenance, safety, and external emergency services personnel. Rail maintenance personnel require familiarity with the location of stations and a variety of rail equipment (crossing gates, power supply, signals, etc.) for routine maintenance and especially during emergency incidents. A common question asked by Metro field personnel is "Where is the equipment item located?"

Typically, answering this question would require prior field knowledge, engineering drawings, or computer systems, none of which may be available in an emergency. However, as part of a solution, a paper-based, pocket size Rail Equipment Locator Map (RELM) was developed for Metro's Traction Power department. While these maps proved useful, the development process presented challenges involving quality assurance, mapping and data management.

The goal of this study was to establish a viable development, production and maintenance methodology that would improve quality, require less development time while fitting Metro's current hardware/software environment. Combining Esri desktop geographic information system (GIS) tools including ArcGIS, ArcCatalog, ArcPy, MS Access local database management software, MS PowerPoint, and MS Visual Basic for Applications with partial automation, required less time to update the new RELM test product, while achieving format consistency, improved spatial accuracy, and reduced risk of errors. In the final analysis, the new methodology demonstrated a significant time based benefit-to-cost ratio improvement and should result in greater rail operations efficiency.