



Client: Alaska Railroad Corporation  
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## Lessons about Usable Information Products

Thinking about document usability lately? If you find yourself re-creating documentation from your suppliers to meet user needs, it may be a symptom of market conditions. Without hearing the “voice of the customer,” your suppliers might be ignorant about the usability of the documents they provide.

Technical Communication (TechCom) Specialists are experts in examining documents for usability. Through document analysis, TechCom Specialists provide solutions to help you — the Subject Matter Expert. They study audience analysis, information design, technical writing and editing, usability analysis, SME interviewing, and technical communication ethics.

Consult with TechCom Specialists, either in your local community or in your remote communities on the web. You will learn why documents need to be revised for usability, and they can offer you advice about the information products they design for subject matter experts, and point-of-service users like your customers.

## E-Learning and Informative Posters

Subject Matter Experts (SMEs) can benefit from information products like e-learning to help train, and remind, what point-of-service users should know and remember. By using e-learning, users will have easy refresher courses at their conveyance. E-learning products can simply be created by using advanced digital design tools and interactive media.



Figure 1. E-Learning prototype for instructing users on Locomotive Lead Positioning.

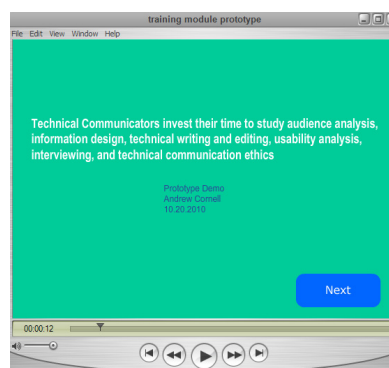


Figure 2. E-Learning prototype for instructing users on Technical Communication.



Figure 3. Informative poster created for a subject-matter-expert to address and describe three safety terms about Rubber Glove Work safety.

At times, users need reminders about safety like the dangers of electrical systems, or reminders about regulations like the procedures that address environmental idle emission standards. Technical Communication Specialists can recommend materials and genres to provide point-of-service information directly to users in their environment.

*Technical Communication Specialists design information products by using cutting edge digital design tools, applying knowledge about materials and context, and selecting the most appropriate cost-effective print production method.*

For SMEs without resources and knowledge in digital design, Technical Communication Specialists can act as project managers and collaborate with design professionals.

## Document Analysis for Usability

Point-of-service OEM equipment users need documentation to perform tasks. According to academic studies in cognitive task analysis, readers must recognize characters, words, paragraphs and comprehend information by finding meaning in the paragraph and the document. It becomes difficult when equipment users want to perform a procedure to perform a simple task, but stressed when information is hard to find — a problem in document usability. Users become discouraged from reading and using a difficult document. It becomes worse when users must perform difficult tasks under extreme stress — a documented fact in the nuclear and locomotive industries. Technical Communication Specialists have the knowledge and skill to examine a document for usability. These professionals can issue technical reports to explain why documents are hard to use, and recommend ways to help point-of-service users.

**Shutdown Delay after Road or Yard Service**

In order to avoid unnecessary interruptions to normal operations, the Auto Start system delays engine shutdown after all other shutdown conditions are met if the locomotive was in service before automatic shutdown was called for.

The type of locomotive service performed before the engine shutdown requirements are met determines how long shutdown is delayed: road service (greater speeds for longer times) results in longer delays than yard service (slower speeds).

During the shutdown delay, EM2000 generates the following crew message:

AUTOMATIC ENGINE SHUTDOWN DELAYED - PRESS STOP TO SHUT DOWN LOCAL ENGINE NOW.

Pressing the STOP key below that crew message shuts down the local engine.

If the STOP key is not immediately pressed, another message, such as the following appears under the message above to enable the crew to extend the local engine shutdown delay:

AUTOMATIC ENGINE SHUTDOWN DELAYED - PRESS RESET FOR ADDITIONAL 30 MINUTES.

The actual amount of additional delay is specified by the railroad.

Pressing RESET initiates the additional local engine shutdown delay.

**When will engine automatically restart?**

If Auto Start status is ENABLED, the Auto Start system automatically restarts the engine after either of the following conditions is true for one minute:

- Engine coolant temperature not high enough
- Locomotive battery voltage not high enough

3-20 SD70MAC-T2 FIRE Gen II Operator's Manual vHPE

Figure 4. Screen shot from a single page in a 200 page operators manual. The sample is an unclear procedure with tasks, feedback, software, hardware, indication.


SME interviews show that users need effective materials. The SME recreates another document to help train, support subordinates, but relies on knowledge about writing and desktop software. User context is remote and in extreme conditions.

Source: AARC, Electro-Motive, 10.23.2010

**Start Sequence for Front and Rear Propulsion Engines**

DIESEL GENERATOR is Running

- 1 Configure CAB SETUP for LEAD operation



- 2 Depress FRONT IGNITION ON push button switch
- 3 Check ENGINE LIGHT and STOP ENGINE LIGHT are lit during self-check
- 4 Depress FRONT START SWITCH. Engine cranks for 5 - 7 sec. or until started

Figure 5. Screen shot from a 33" x 25" context oriented information product. The sample is a proposed solution from a TechCom Specialist.

The design relies on the mental model of the users experience with the system e.g. locomotive, controls, indicators. It places system information in one location for the user.

Source: Cornell, STC newsletter author, 10.23.2010

## Usability Problem Solving in AD-HOC Environments

Reader environments dictate the usability of documents in industry, and manufacturers find it hard to deliver usable documents that meet the needs of all readers and their environments. Excessive product support is one symptom where documents fail to meet usability requirements, and deliver AD-HOC (unplanned) documentation. Technical Communication Specialists can provide professional advice to Subject Matter Experts through informative interviews and document examination. From this advice, Technical Communications Specialists propose solutions to solve problems in document usability.

**Send Command**

Device outputs can also be controlled directly from the Status screen. This means that any controlled device can remotely be turned off or on. Use the **Send Command** link to carry out this operation.

Note: The Send Command screen is only available if the Telemetric model supports outputs.

**Change Settings**

**Send Command**

Device: 3095 Description: T646 v5 Test Device

Select the output you want to control, the duration of the output change, and the output change you want made, then press the **Send** button to send the command.

Output:  On  Momentary

**Send**

The drop-down list box on this screen displays all of the possible instructions that can be sent to the device. For example, if Pump 1 (Output 1) is currently off, select "Pump 1 On" and "Permanent" to turn it on. Note that each command can be either a permanent or a momentary contact closure. The duration of the momentary change is set in Local Programming. The factory default is five seconds. To carry out the change, click the **Send** button. The command will immediately be sent to the Telemetric device and the state change will occur within a few seconds.

Back on the Status screen, the output row in the table will change to a red background. This indicates a pending state change. When the device acknowledges the output change, this will change back to the normal table background color. Click on the **Refresh** link to update the Status page. Note that the time delay before the device's acknowledgement call is programmable, so there may be some variation in how soon the device acknowledges the contact change. The factory default delay time is three seconds.

**Remote Configuration Commands**

The web site gives you the ability to remotely change certain T646 programming parameters. This is carried out through the use of "Options." During local programming, the device can be set up with a number of different Options (settings) for certain parameters. These Options can then be remotely enabled and disabled from the web site. The following settings have remotely configurable options:

- Time-scheduled report frequency - 2 options for each of the four reports
- Analog 1 set points - 4 options
- Under Voltage set point - 4 options, plus disable command
- Over Voltage set point - 4 options, plus disable command
- Under Voltage trigger time - 2 options

Figure 6. Screen shot from a default AD-HOC software user guide. The user guide presents a simple procedure using text and basic paragraphs to help users find and send commands within a complex SCADA website.

Front-line product support reported excessive calls from customers who needed assistance to navigate a complex SCADA website user interface. Call profiles show that AD-HOC user documentation failed to meet system complexity.

Source: Technical Writer (SME), Telemetric, 10.23.2010

**Device List**  
Send Command T646

**Send commands to control the T646 Outputs and Settings**

The Send Command page is used to manually send commands for turning ON outputs, start Time Scheduled reports, reset the device, enable/disable features, and to chose limits and setpoints that are part of the T646 profile (see T646 Local Configuration Program).

**Navigation Menu**

- Event Based Actions
- Customer Information
- Messages & Recipients
- Missing Device Report
- Device Groups
- Data Export Setup
- Advanced Programming
- Device Profiles

**Navigation to the Send Command page**

- 1 At the left navigation menu, select Device List.
- 2 From the Device List page, select the **Group** id to navigate to its Status page.
- 3 At the top of the Status page, select **Send Command**.

Select **Change Settings to Reset the unit, Start and Stop Time Schedule reports, and disable or enable features.**

**Change Settings**

**Send Command**

Set Output 1 to Close

Set Output 1 to Open  
Set Output 2 Momentarily to Close  
Set Output 2 to Open  
Set Output 3 Momentarily to Open  
Set Output 3 to Close  
Set Output 3 Momentarily to Close  
Set Output 3 to Open  
Set Output 4 Momentarily to Open  
Set Output 4 to Close  
Set Output 4 Momentarily to Open  
Set Output 4 to Open  
Set Output 5 Momentarily to Close  
Set Output 5 to Close  
Set Output 5 to Open  
Set Output 6 Momentarily to Open  
Set Output 6 to Open

**Send**

**Send a Command**

- 1 At the pull-down menu, select the desired command.
- 2 To send the command, select the **Send** button.

You will see the **Output(s)** sent page that confirms the command was sent.

- 3 To complete the process, select the **Press to Continue** button.
- 4 You will see the device Status page.

**T646**  
Before sending a second command, wait 1 minute and view the device history to ensure the device acknowledges the command.

Page 1 of 2  
Navigation Guide

Figure 7. Screen shot from a new user guide created by product support team who studies at the graduate level in Technical Communication. Product Support responds to the customer in the field to help them understand and use complex technology.

The user guide relies on visual design techniques to create tasked based procedures, which allows a complete comprehensive guide to include all features and options within a complex website. A TechCom solution to AD-HOC documentation.

Source: Cornell, Product Support, 10.23.2010