Authoring Tool Problem Description

An XML based data modeling language called Extensible Postal Product Modeling Language (EPPML) is currently being developed to enable postal carriers to fully describe their products’ requirements, specifications, and rules, allowing customers to understand and use the products. Postal products can be described through instance documents that conform to the EPPML schema. These documents are referred to as Carrier Product Definition Files (CPDFs).

As expected for a computer modeling language, CPDF files are very precise, and their meaning is clear to people who thoroughly understand XML and the EPPML schema. However, they are likely to be completely unintelligible to people without technical expertise. The people selected by postal carriers to describe their products will almost certainly be very strong in their knowledge of the carrier’s product range, but are likely to have limited technical experience and no desire or means to understand the EPPML schema. Therefore, it is necessary to create a software tool that will translate a non-technical user’s description of postal products into CPDF files.

The CPDF Authoring Tool will serve several functions:

- **Create** – the user will be able to create a set of CPDF files that fully describe a carrier’s range of postal products.
- **Add** – the user will be able to add new postal products to the carrier’s line up.
- **Remove** – the user will be able to remove an existing product from the line up.
- **Modify** – the user will be able to modify an existing product.
- **Custom schema** – the user may wish to create a specialized schema to assist with creation of CPDF documents.

There are many unique challenges to address in the design of such a tool:

- **Non-technical users** – as described above, the expected users will have no technical expertise, so the application will have to insulate them entirely from the details of EPPML.
- **Huge amounts of data** – the EPPML schema describes 17 categories of data that can be entered for a postal product. Each of these categories will contain several units of information, and many of them will be used multiple times for a single product, yielding several hundred values that need to be entered for each product. Since a carrier can have dozens of products, a single user may be entering tens of thousands of pieces of data through this tool. This will require design considerations far beyond what is found on typical data entry systems like web forms and wizards.
- **Widespread repetition** – carriers have various types of product rules. Some will apply to the carrier’s entire range of products, some will apply to a specific subset of products, and some will only apply to a single product. Entering the same rules for every single product would be unacceptably tedious and error prone. The EPPML schema has included an inheritance hierarchy mechanism to handle this problem, but it is likely that this kind of model will not match with the users’ conceptual model of a postal product.
range. The users’ conceptual model must be determined, and a mechanism designed to eliminate repetitive data entry in accordance with this model.

- **Intricate links and nesting** – The EPPML schema contains many elements that are tied to each other or nested in complex ways. For example, “rule” elements contain pointers to “action” elements, and “information requirement” elements can stand on their own or be enclosed inside of a rule. The authoring tool must present all of this information in a straightforward way that can be easily understood by non-technical users and will reduce the chance for errors.

- **Complex data** – A typical web form will ask for information that the user has memorized (name, address, …) or is able to easily copy from somewhere else (credit card number). CPDF files, however, require deep knowledge of postal products. It is unlikely that anybody has all of the rules memorized, and they must therefore be looked up and interpreted from various documents and web sites. The complexity involved in finding this information must be taken into account in the design process.

- **Infrequent use** – Postal products do not tend to change particularly rapidly, so after a carrier’s initial product range has been described, it could be months or years before this tool is used again. Users will therefore not be willing to invest very much in learning to use the tool, and learnability must be a primary objective.

These issues as well as standard usability criteria will be taken into account through several rounds of user research, design, evaluation, and prototyping to arrive at an optimal design for the CPDF Authoring Tool.