

# 行政院國家科學委員會專題研究計畫 成果報告

## 智慧財產價值分析系統〔II〕 研究成果報告(精簡版)

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延伸標記語言

**中文摘要：**

本研究主要目的是在研究解析美國專利轉讓資料以及 2007 新版美國專利磁帶資料，並尋找一種方法將其分解、統整並匯入資料庫。

## ABSTRACT

Keyword: USPTO Patent Assignment Data、USPTO Patent Data、Patent Red Book、XML

The goal of this study is to understand the schema of USPTO Patent Assignment Data and the 2007 version of USPTO Patent Data. And then find a way to parse, aggregate and import into relational database.

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## 第壹章 前言

在知識經濟時代來臨以後，企業經營的致勝關鍵已經不再是靠廠房、設備、勞力及資本數量等因素來影響。而是漸漸的被具有高附加價值、可重複再利用的智慧財產取代。智慧財產所包含的範圍很廣，例如品牌、產品、產值、市場、投資組合、技術授權、競爭情報等等商業資訊，除此之外，專利是最能代表一家公司的創新研發能量的智慧財產之一。在近年來政府所推動的兩兆雙星或者綠色矽島等計畫中，都將創新研發視為高科技產業的核心競爭力指標。也因此專利受到政府或者企業經營者的重視。擁有了創新技術的智慧財產權，等於是在創新研發上製造了門檻。不僅能創造競爭優勢，更能透過專利的授權、轉移、佈局、融資、作價投資等策略提高獲利機會。

然而專利資訊本身是高度結構化的資訊。以往這類資料皆為紙本，在資訊的取得上既不方便也沒有效率。在各國專利局的努力之下，近十年的專利電子化已經漸漸普遍。在各國皆以開始公布電子化專利資訊的同時，資訊格式不統一的問題也開始發生。所以先進國家的專利局便開始發展統一的專利描述語言，使用的描述語法為 XML。本研究是針對美國專利局所發佈的新版 Redbook ICE 4.2 格式資料作為研究標的。進行有效率資料格式的拆解與歸納統整。

## 第貳章 研究目的

### 第一節 研究動機與目的

本研究主要目的是針對美國專利局所發佈之專利轉讓 XML 資料以及新版磁帶資料（格式為 Redbook ICE 4.2）進行研究。並將其拆解統整至資料庫。以期後續可於專利指標分析上進行輔助。希望研究成果有助於瞭解完整之專利結構化資料於專利指標分析之研究，並能提出後續研究之方向及改善方法。因此，本論文的研究目的可歸納如下：

1. 整理目前國內外相關文獻，瞭解XML、DTD、XML Schema語法。
2. 整理目前國內外相關文獻，研究美國專利轉讓資料XML格式。
3. 整理目前國內外相關文獻，研究新版Redbook ICE 4.2格式。
4. 研究目前國內外相關專利資訊提供網站，透過操作瞭解其背後資訊整合的架構。
5. 配合專利本身特性，發展合適且有效率之拆解以及統整方法。
6. 實作一系統，可有效率的針對美國專利局之磁帶資料進行拆解並匯入資料庫。

### 第二節 研究架構與研究流程

本研究將針對美國專利局專利轉讓 XML 資料及新版 Redbook ICE 4.2 磁帶資料進行研究與分析，主要分成三大部分：

1. 定義與設計：首先確定研究主題與目的
2. 實驗：以參考文獻為基礎，擬訂研究方式與架構，往後則建立實驗系統，並藉由實驗數據以及資料累積來進行調整。而後不斷進行修正。
3. 結論：藉由實驗數據來進行探討，得到本研究的成果。

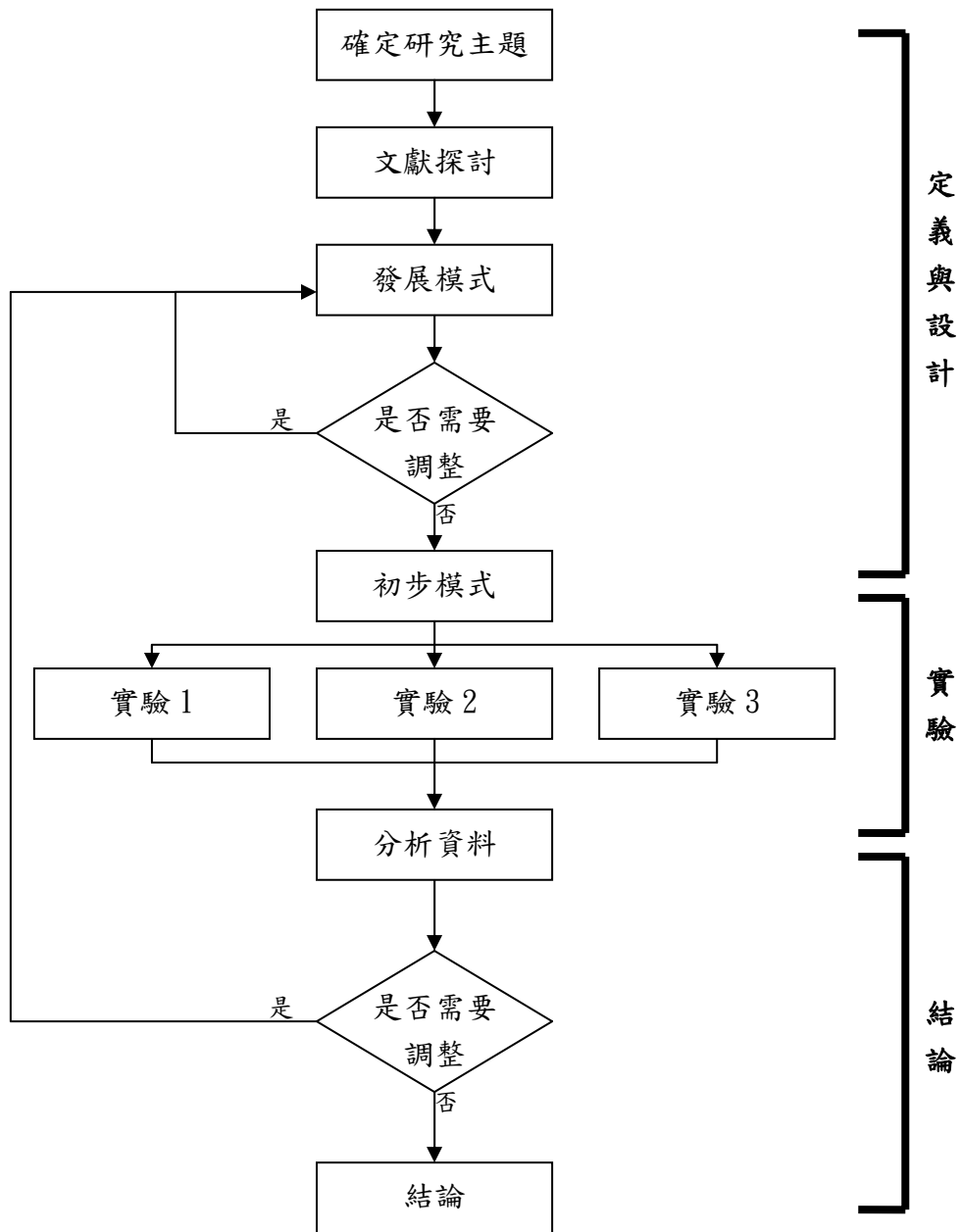


圖 1 研究架構

## 第參章 文獻探討

### 第一節 XML (EXtensible Markup Language)

#### (二) XML 的定義與歷史

XML 全稱為 Extensible Markup Language，中文翻譯為可延伸標記語言、可擴展標記語言或者可延伸標示語言。是一種置標語言。標記指電腦所能理解的訊息符號，通過此種標記，電腦之間可以處理包含各種信息的文章等。如何定義這些標記，既可以選擇國際通用的標記語言，比如 HTML，也可以使用象 XML 這樣由相關人士自由決定的標記語言，這就是語言的可擴展性。XML 是從標準通用置標語言 (SGML) 中簡化修改出來的。它主要用到的有 XML、XSL、XBRL 和 XPath 等[Wikipedia]。

XML 是從 1996 年開始有其雛形，並向 W3C (全球資訊網聯盟) 提案，而在 1998 二月發佈為 W3C 的標準 (XML1.0)。XML 的前身是 SGML (The Standard Generalized Markup Language)，是自 IBM 從 60 年代就開始發展的 GML (Generalized Markup Language) 標準化後的名稱。而 GML 的重要概念為有兩個，一為文件中能夠明確的將標示與內容區隔，二為有文件的標籤使用方法均一致 [Wikipedia]。

1978 年，ANSI 將 GML 加以整理規範，發佈成為 SGML，1986 年起為 ISO 所採用 (ISO 8879)，並且被廣泛地運用在各種大型的文件計畫中，但是 SGML 是一種非常嚴謹的文件描述法，導致過於龐大複雜 (標準手冊就有 500 多頁)，難以理解和學習，進而影響其推廣與應用 [Wikipedia]。

於是，人們對 SGML 進行了簡化衍生出 HTML。HTML 簡單，在初期沒有任何定義文檔外觀的相關方法，僅用來在瀏覽器裡顯示網頁文件。而後，隨著網際網路的發展，人們為了控制其文件樣式，擴充了描述如何顯現資料的標籤。在



Netscape™ 與 Microsoft™ 之間的瀏覽器大戰後，HTML 標準權威性遭受重大的考驗。之後到了 HTML 4.0 時，W3C 又恢復了其地位[Wikipedia]。

同時 W3C 意識到 HTML 的原罪[Wikipedia]：

不能解決所有解釋資料的問題 - 像是影音檔或化學公式、音樂符號等其他型態的內容。

效能問題 - 需要下載整份文件，才能開始對文件做搜尋的動作。

擴充性、彈性、易讀性均不佳。

為了解決以上問題，專家們使用 SGML 精簡製作，並依照 HTML 的發展經驗，產生出一套使用上規則嚴謹，但是簡單的描述資料語言，正是所謂的 XML[Wikipedia]。

### (一) XML 的用途

XML 的用途主要有三，第一為解釋資料 (Metadata)，其目的是為了描述其他文件或線上資訊。第二為組態檔案 (Configuration Files)，用途為描述軟體的組態參數。第三為豐富文件 (Rich Documents)，可供自定文件描述並使其更豐富。

### (二) XML 的延伸

經過多年的發展，目前使用 XML 為描述語言的標準已經有非常多種，舉例如下：

MathML 是供數學使用的標示語言：一些重要的數學編輯程式目前已經開始支援讀取及寫出 MathML 的格式，預期短期內會大幅的取代 TeX。

XHTML 是較 HTML 4.0 更新的提議中的規格，使用較為嚴格的 XML 語法：大多數的瀏覽器已經可以接受 XHTML 格式的資料了；較嚴格的語法使得使用 Web 環境的個人數位助理 (PDA) 更容易設計及使用。

資源描述架構 (Resource Description Framework, RDF) 使得 WWW 上的資源可以確切的進行交換：例如，Red Hat 版本的 Linux 中的套裝軟體管理程式 (Package Manager) 就使用 RDF 進行自動軟體升級。

無線電標示語言 (Wireless Markup Language, WML) 是一種經過壓縮的 XML，使得資料可以送到無線電話。

CommerceNet 是一些主要的軟體廠商與貿易公司所組成的組織。這個組織正在發展一系列的文件類別定義 (DTD) 供電子商務使用。

## 第二節 Redbook 於 2007 年的改變

### (一) 官方的改變說明

美國專利局針對 RedBook 的資料格式，在 2007 年於前置處理語言上有做了很多的改進。透過這些改進將有助於解析引擎的產生。摘要美國專利局所做的解釋如下：

Beginning Thursday, February 1, 2007 there will be an 8 week parallel process (February 1, 2007 through March 29, 2007) for both patent grants and patent published applications.

This parallel process will include the new Red Book ICE DTD version 4.2 and the current production Red Book ICE DTD version 4.1. The weekly output from the new Red Book ICE DTD version 4.2 process will be created the day after the issue date of the production process (Red Book ICE DTD version 4.1) and be disseminated on DVD-ROM via FedEx.

In both Patent Grants and Patent Published Applications, the changes are limited to:

- 1). The Red Book ICE dtd file name has changed and the version date has changed as noted below:

Patent Grants:

```
<!DOCTYPE us-patent-grant SYSTEM " us-patent-grant-v42-2006-08-23.dtd "
[ ]>
<us-patent-grant lang="EN" dtd-version=" v4.2 2006-08-23 "
file="US07137000-20061114.XML" status="PRODUCTION" id="us-patent-grant"
country="US" date-produced="yyyymmdd" date-publ="yyyymmdd">
```

Patent Published Applications:

```
<!DOCTYPE us-patent-application SYSTEM "
us-patent-application-v42-2006-08-23.dtd " [ ]>
<us-patent-application lang="EN" dtd-version=" v4.2 2006-08-23 "
file="US20060260000A1-20061116.XML" status="PRODUCTION"
id="us-patent-application" country="US" date-produced="yyyymmdd"
date-publ="yyyymmdd">
```

- 2). Red Book ICE elements sub (subscript) and sup (superscript) have been added to elements b (bold), i (italic), and u (underline). This results in a reduction in markup since the bold/italic/underline tags no longer need to be closed and reopened to activate the superscript/subscript outside of the highlight tags (Note: This change applies to both Patent Grants and Patent Published Applications).

Example in v4.1:

```
<i>e=v{square root over (a</i>< sup ><i >2</ i></ sup ><i >+b</ i>< sup ><i >2</
i></ sup ><i >)}</i>
```

Example in v4.2:

```
<i>e=v{square root over (a<sup>2</sup>+b<sup>2</sup>)}</i>
```

- 3). Added new overscore element o to elements b (bold) , i (italic), u (underline), claim-text, crossref, dd (definition description), dt (definition term), figref, heading, invention-title, li (list item), othercit, p (paragraph), smallcaps, sub, sub2, sup, sup2 and us-claim-statement. This replaces the descriptive text markup (Note: This change applies to both Patent Grants and Patent Published Applications).

Example in v4.1:

```
diameter {overscore ( d )} <sub>z </sub>in
```

Example in v4.2:

diameter **<o ostyle="single"> d </o> <sub>z </sub>**in

- 4). The non-lengthy sequence listing file naming conventions have been modified to conform to existing naming conventions. Within the Red Book ICE Patent Grants and Patent Published Application zip files non-lengthy sequence listings are included as a 2nd xml file and that file name has changed.

Patent Grants:

Example in v4.1:

US07136759-20061114-**SEQLIST**.XML

Example in 4.2:

US07136760-20061114-**S00001**.XML

Patent Published Application:

Example in v4.1:

US20060254503A1-20061116-**SEQLIST**.XML

Example in v4.2:

US20060254503A1-20061116-**S00001**.XML

- 5). The lengthy sequence listing file naming conventions have also changed. Lengthy sequence listings are not included within the Red Book ICE Patent Grant and Patent Published Application zip files. Instead there is a placeholder table within the primary xml document that references a USPTO web site to access the lengthy sequence listing data, and the full lengthy sequence listing is included within the weekly delivery supplemental folder. Within the supplemental folder the sequence listing file is no longer a single zip file. Beginning with the Red Book ICE v4.2 a

separate folder for the lengthy sequence listing data is created and the data appears as un-compressed text within the folder.

Patent Grants:

Example in v4.1:

20061114-SUPP\UTIL07135\US07135290-20061114-SUPP. **ZIP** containing file  
US07135290-20061114- **SEQLST.SEQ**

Example in v4.2:

20061114-SUPP\UTIL07135\US07135290-20061114-SUPP.ZIP\US07135290-2006  
1114- **S00001.TXT**

Patent Published Applications:

Example in v4.1:

20061116-SUPP\UTIL0257\US20060257420A1-20061116-SUPP containing file  
US20060257420A1-20061116- SEQLST.SEQ

Example in v4.2:

20061116-SUPP\UTIL0257\US20060257420A1-20061116-SUPP.ZIP containing file  
US20060257420A1-20061116- S00001.TXT

- 6). Landscape drawing identification has been added to the image element (img) using attribute orientation. This is not a DTD change - the attribute is now being populated for landscape images in Red Book ICE DTD v4.2 for Patent Grants. This attribute will be populated for Patent Published Applications in the very near future.

Example in v4.1: `<img id="EMI-D00007" he="143.09mm" wi="122.26mm" file="US20070006380A1-20070111-D00007.TIF" alt="embedded image" img-content="drawing" img-format="tif"/>`

Example in v4.2: `<img id="EMI-D00007" he="143.09mm" wi="122.26mm" orientation="landscape" file="US20070006380A1-20070111-D00007.TIF" alt="embedded image" img-content="drawing" img-format="tif"/>`

- 7). In both Red Book ICE for Patent Grants and Patent Published Applications, the open-index/manifest reporting has changed to include a full inventory of the patent grants or patent published applications zip file content, and to include lengthy table data (xml, TIF, and text).

The Red Book ICE DTD version 4.2 for Patent Published Applications will include TIF and text Lengthy Tables beginning in the 1 st calendar quarter of 2007. The Red Book ICE DTD version 4.2 for Patent Grants will include Lengthy Tables data sometime after the 1 st calendar quarter of 2007, with the exact issue date to be announced. All lengthy table data will be included within the weekly delivery supplemental folder in a format similar to the lengthy sequence listing delivery.

## (二) 2007 年 Redbook 的磁帶資料內容目錄架構

```

20061116-SUPP
+---DTDS
|   DTDS.zip
|
+---UTIL0257
| \---US20060257971A1-20061116-SUPP
|   US20060257971A1-20061116-S00001.TXT           <-- lengthy sequence
listing example
|
\---UTIL0260
  +---US20060260017A1-20061116-SUPP
  |   US20060260017A1-20061116-S00001.TXT           <-- lengthy sequence
  listing example
  |
  +---US20060260018A1-20061116-SUPP
  
```

```

| \---US20060260018A1-20061116-T00001          <-- lengthy table TIFF
example
|      US20060260018A1-20061116-T00001-0001.TIF
|      US20060260018A1-20061116-T00001-0002.TIF
|      ...
|      US20060260018A1-20061116-T00001-0220.TIF
|      US20060260018A1-20061116-T00001-0221.TIF
|
+---US20060260019A1-20061116-SUPP
| |  US20060260019A1-20061116-S00001.TXT          <-- lengthy sequence
listing example
| |
| |  +---US20060260019A1-20061116-T00001          <-- lengthy table TIFF
example
| |      US20060260019A1-20061116-T00001-0001.TIF
| |      US20060260019A1-20061116-T00001-0002.TIF
| |      ...
| |      US20060260019A1-20061116-T00001-0160.TIF
| |      US20060260019A1-20061116-T00001-0161.TIF
| |
| |  \---US20060260019A1-20061116-T00002          <-- lengthy table TIFF
example
|      US20060260019A1-20061116-T00002-0001.TIF
|      US20060260019A1-20061116-T00002-0002.TIF
|      ...
|      US20060260019A1-20061116-T00002-0073.TIF
|      US20060260019A1-20061116-T00002-0074.TIF
|
\---US20060260020A1-20061116-SUPP
      US20060260020A1-20061116-S00001.TXT          <-- lengthy sequence
listing example
      US20060260020A1-20061116-T00001.TXT          <-- lengthy table
CD/text example
      US20060260020A1-20061116-T00002.TXT          <-- lengthy table
CD/text example
      ...
      US20060260020A1-20061116-T00006.TXT          <-- lengthy table

```

**CD/text example**

US20060260020A1-20061116-T00007.TXT

&lt;-- lengthy table

**CD/text example**

Grant Lengthy Sequence listing example:

20061114-SUPP

+---DTDS

| DTDS.zip

|

\---UTIL07135

+---US07135290-20061114-SUPP

| US07135290-20061114-S00001.TXT

&lt;-- lengthy sequence listing

**example**

|

+---US07135334-20061114-SUPP

| US07135334-20061114-S00001.TXT

&lt;-- lengthy sequence listing

**example**

|

+---US07135549-20061114-SUPP

| US07135549-20061114-S00001.TXT

&lt;-- lengthy sequence listing

**example**

|

\---US07135560-20061114-SUPP

US07135560-20061114-S00001.TXT

&lt;-- lengthy sequence listing

**example**



## 第肆章 研究方法

本研究綜合第參章相關文獻的探討結果，進行研究之設計，研究設計中包含了系統架構、設計、實驗流程以及驗證方法，分述如下。

### 第一節 系統架構

系統包含解析引擎產生器、專利資料驗證器、解析引擎評估及使用者介面四大部分。每個部分的說明如下：

1. 解析引擎產生器：負責從專利轉讓資料 DTD 以及新版Redbook ICE 4.2 DTD產生專利資料解析引擎，並將專利欄位拆解，取得專利書目欄位。
2. 專利資料驗證器：透過準備好的驗證資料，驗證解析引擎的正確性，以及資料的完整性。
3. 分類引擎評估：透過物件分析、資料掃瞄、時間判讀以及空間應用等方面，評估解析引擎的整體效能。
4. 使用者介面：使用者可以透過使用者介面操作系統的相關功能。

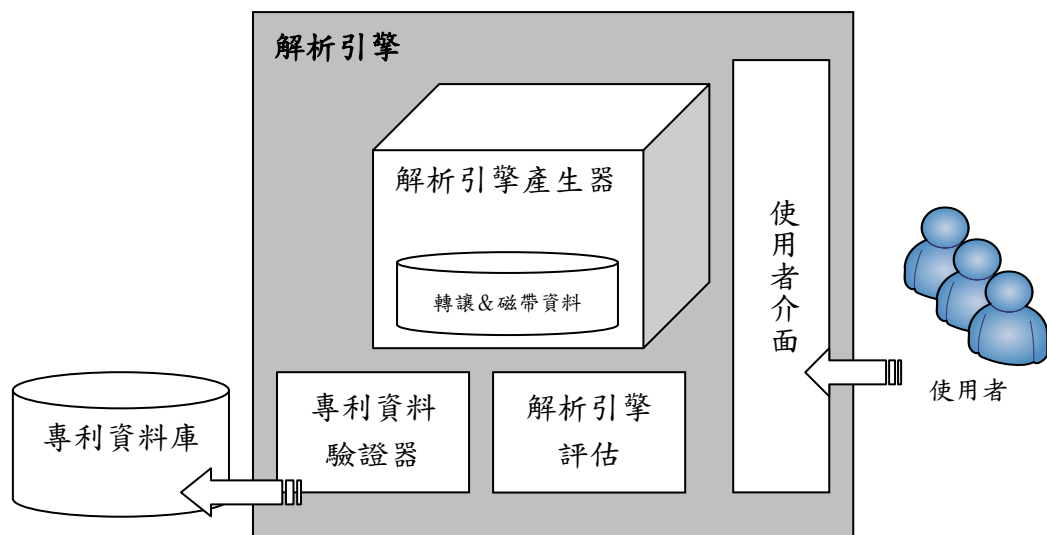


圖 2 系統架構圖

### 第二節 實驗流程

本研究透過事先設計好之實驗流程進行研究。透過依系統化的流程可清楚得知各步驟的產出以及預期成果。並可重複套用到其他欲研究之資料格式上。

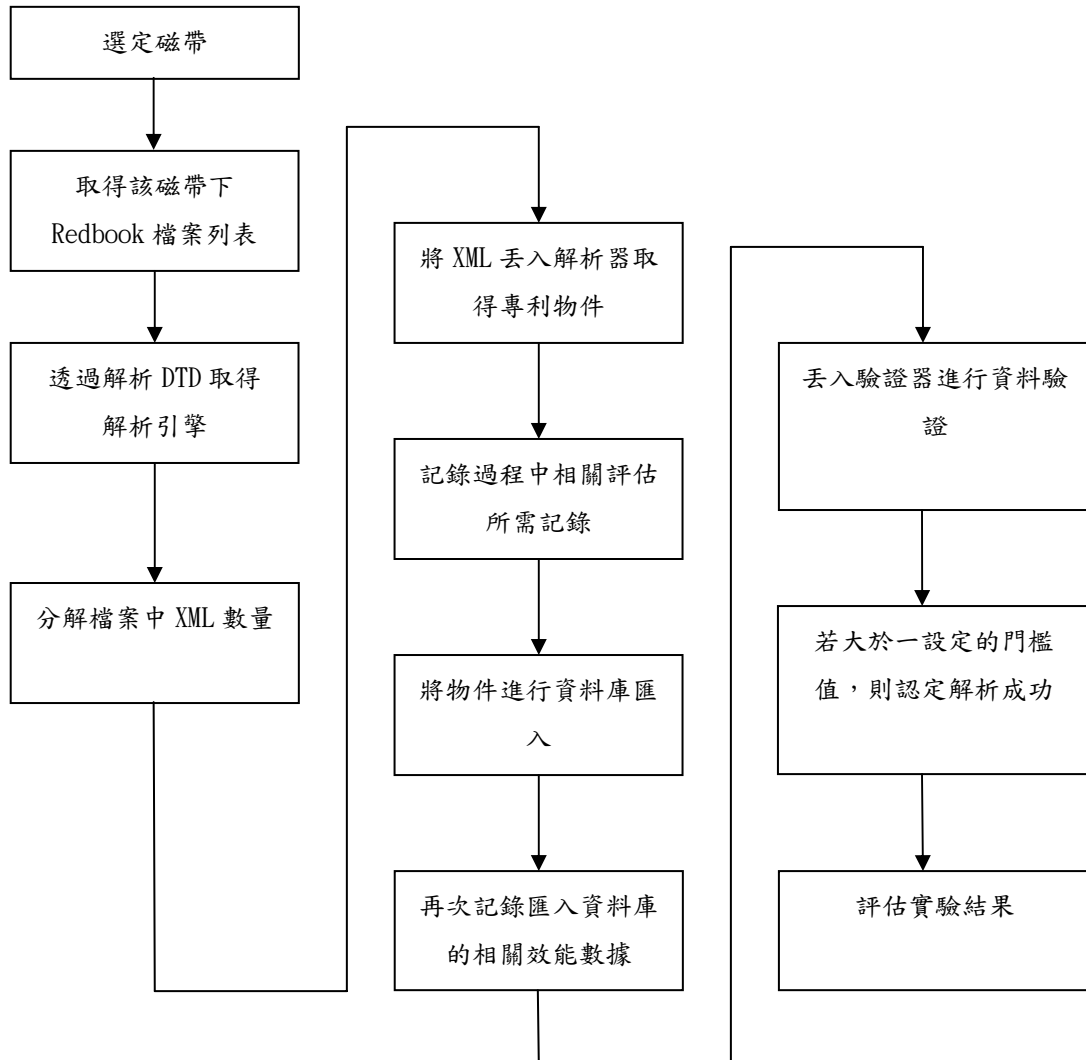


圖 3 實驗流程

## 第五章 結論與建議

### 第一節 研究結論

根據去年的研究結論中，我們採用 BufferedReader 進行資料讀取。並針對新版的 XML 格式撰寫 parser。讓程式可以自動判斷所解析的 XML 的 Redbook 版本。再載入對應的 parser 進行資料解析。不過專利發明人、專利申請人一樣必須透過同樣的統一程序來處理。將採用同樣的方式，在處理完所有的專利資料後再一次性校正。

## 附錄一 Redbook ICE 4.2 DTD

<?xml version='1.0' encoding='utf-8' ?>

<!--

**Document Type Definition for United States Patent Grant Publications**

**USPTO-modified version of WIPO Standard ST.36 DTD xx-patent-document**

**Reference this DTD as PUBLIC "-//USPTO//DTD us-patent-grant v4.2 2006-08-23//EN"**

**Alias: Grant Red Book (GRB)**

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**\*\*\*\*\* Revision History \*\*\*\*\***

**2006-08-23 B. Cox**

**. Changed o element attribute name style to ostyle.**

**2006-07-26**

**. Added sub and sup elements to b, i, u.**

**. Added overscore element o (#PCDATA | b | i | smallcaps | sup | sub )\***

**..to b, i, u, claim-text, crossref, dd, dt, figref, heading, invention-title,**

**..li, othercit, p, smallcaps, sub, sub2, sup, sup2 and us-claim-statement.**

**2005-08-25**

**. Added us-field-of-classification-search element to bibliographic-data. the content model including  
..a new us-classification-ipcr(#PCDATA) element.**

**. Added us-claim-statement element to make a place for the claim lead-in text.**

**. US-localized sequence-list-doc element. Added optional p element to the content models.**

**. Added a new us-megatable-doc element.**

**. Added ENTITY % tbl.entry.att "id ID #IMPLIED" to calcs table model.**

**. Removed wipo.ent reference.**

**. Removed classification-ipc element from bibliographic-data.**

**. Changed comment on us-divisional-reissue,INID code from B631 to B41US.**

**. Changed comment on us-371c124-date to read"PCT Section 371(c)(1)(2)(4)date. ST.32  
equivalency = B864US".**

2004-12-02

. Added optional `us-provisional-application-status(#PCDATA)` to `us-provisional-application` element.

2004-10-28

- . Added `us-deceased-inventor*` to `us-bibliographic-data-grant`. The content model .. of `us-deceased-inventor` is `addressbook` with required sequence attribute.
- . Changed pre attribute `xml:space` to `(preserve) #FIXED 'preserve'`.
- . Added 'undefined' value to `img` attribute `img-content`. Renamed value `flow-chart` to `flowchart` and `chemistry` to `chem`.
- . Changed `chem-type` attribute of `chem` element from required to implied.
- . Changed the order of `crossref` element in `p` element to before `figref`.
- . Added id `ID #IMPLIED` attribute to `sequence-list` element and removed `country` attribute.
- . Changed the order of attributes in a few elements in compliance with WIPO DTDs.
- . Changed the order of `sub2` and `sup2` elements in `sub`, `sup` element in compliance with WIPO DTDs.
- . Changed the place holder elements `math` and `table` content model to `EMPTY`.
- . Changed `num` attributes from required to implied in `nplcit` and `patcit`.
- . Added `classifications-ipcr` to `citation` element.
- . Changed `dl` element attribute `tsize` from `NMTOKEN` to `CDATA` type.
- . Changed `subname` `subname-type` `CDATA` to `subname-type (editor | translator | other-subname-type) 'editor'`
- . Changed `type-of-correction` element to optional in `correction` element.

2004-09-27

- . Change in `mathml2` dtd reference to work around with Microsoft MSXML3 parser .. 'Default Namespace Declaration not supported in DTD' issue in Internet Explorer.
- .. `MATHML.xmlns.attrib` is set to nothing instead of setting `MATHML.xmlns` to nothing.

2004-09-08

- . Added `phone?`, `fax?`, `email?` to `authorized-officer` element.
- . Change element `subname` attribute `subname-type` from `CDATA #IMPLIED` to .. `subname-type (editor | translator) 'editor'`.
- . Changed element `us-rights` attribute `applicant-ref` `CDATA #REQUIRED` back to .. `to-dead-inventor` `CDATA #REQUIRED`.

2004-07-19

- . Changed us-rights content model from empty to #PCDATA.
- . Changed rel-passage content model from(text | (passage+ , category? , rel-claims?)+)
  - .. to rel-passage (text | (passage+ , category\* , rel-claims\*)+).
- . Changed number-of-drawing-sheets and number-of-figures in figures element
  - .. from required to optional.
- . Changed patent-family content model to patent-family(priority-application |
  - .. (family-member+|text) and added id attribute.
- . Removed examiner-group element. Populate department element in
  - .. the examiner name-group instead.
- . Added gazette-reference element and gazette-num elements.
- . Replaced bulletin-gazette element with gazette-reference element used in
  - .. correction and pct-or-regional-publishing-data element.
  - .. Added gazette-reference to correction element.
- . Removed cited-patents and cited-others with citation content model.
  - .. Replaced us-references-cited with references-cited new content model.
- . Removed dates-of-public-availability element and all sub elements.
- . Changed chemistry content model to (img | (chem,img?)).
  - .. Added a place holder element chem for future chemistry xml root element.
  - .. chem element has id, file and chem-type attributes.
- . Added sequence-list-doc element and modified sequence-list element.
  - .. Replaced sequence-list with sequence-list-doc in us-patent-grant.
  - .. Changed sequence-list country attribute type to #CDATA.
- . Changed addressbook lang to optional.
- . Added claim-type to claim and claims elements.
- . Added new element classifications-ipcr to us-bibliographic-data and field-of-search.
  - ..classifications-ipcr include one or more classification-ipcr. classifications-ipcr
  - ..include the following elements:
    - .. ipc-version-indicator
    - .. classification-level
    - .. section
    - .. class(reuse)
    - .. subclass
    - .. main-group
    - .. subgroup
    - .. symbol-position
    - .. classification-value
    - .. action-date

- .. **generating-office**
- .. **classification-status**
- .. **classification-data-source**
- . Added pre to **claim-text,dd,li**.
- . Changed **nplcit** (**text | (article | book | online | othercit)\***)
- .. to (**text | article | book | online | othercit**).
- . Added **further-classification** to **classification-locarno**.
- . Added sequence attribute to **further-classification** element.
- . Changed **he** and **wi** to **#CDATA** in **img** and **doc-page**.
- . Changed **id** attribute of **crossref** to **IDREF** type.
- . Added **flow-chart** to **img-content** allowed values and changed **DNA** to **dna**.
- . Changed **date** attribute to **date-produced** in element **us-patent-grant**.
- . Added **date-publ** attribute to element **us-patent-grant**.
- . Changed **bibliographic-data id** attribute to **ID** type.
- . Changed **address\_group** text element from optional to required.
- . Changed text element in **depository** to **#PCDATA**.
- . Renamed **table-external-ref** element to **table-external-doc**.
- .. Changed **external-type** attribute in **table-external-doc** to optional.
- . Changed **parent-PCT-document** to **parent-pct-document**.
- . Added **id ID #IMPLIED** to **addressbook,application-reference**,
- .. **classification-ipc,classification-locarno** ,new element
- .. **classifications-ipc,classification-ipc,priority-claim** and **publication-reference**.

#### 2004-04-15 H. Li

- . Added **num** attribute to **li** element.
- . Changed content model **maths** from (**img | math**) to (**img | (math,img?)**).
- . Added **date** attribute to element **us-patent-application**.
- . Added **math, chemistry, table, program-listing** to **img-content** allowed values
- .. and changed **dna** to **DNA**.
- . Add **figref** to **li, dd, claim-text** elements and **table cell entry**.
- . Changed **subname?** to **subname\*** in **serial, article** and **online** elements.
- . Renamed **table-external** element to **table-external-ref**.

#### 2004-03-04 B. Cox

- . Renamed **us-continued-prosecution-application** to
- .. **us-issued-on-continued-prosecution-application**

- .. and renamed attribute from cpa-text to grant-cpa-text**
- .. and changed attribute value (see below).**

#### **2004-02-14**

- . Removed tiff-file attribute from us-math element.**
- . Changed date to date? in disclaimer.**

#### **2004-02-12**

- . Renamed element references-cited to us-references-cited.**
- . Renamed element cited-patents to us-cited-patents.**
- . Added element us-classification to us-cited-patents.**

#### **2003-11-23**

- . Changed us-math element attribute idref (IDREF) to idrefs (IDREFS).**
- . Element othercit modified to support highlighting.**
- . Added subname-type to element subname.**

#### **2003-10-31**

- . Modified element us-rights to contain legal-representative information.**
- . Changed element related-publication content model from (#PCDATA) to (#PCDATA | document-id)\*.**
- . Added new optional element parent-PCT-document to the content model of parent-doc.**
- . Added attributes pgwide, orient, & tabstyle to the cals table attributes to support required composition features (see entity tbl.table.att).**
- . Element crossref modified to support highlighting.**

#### **2003-10-09**

- . Added (img?) content model to us-math element.**
- . Added more uspto specific character entities to the wipo.ent, please update accordingly.**

#### **2003-08-14**

- . Changed comments on elements and attributes from PCT to USPTO practice.**
- . Moved us-continued-prosecution-application text from comment to cpa-text attribute.**
- . Moved us-sir-flag text from comment to sir-text attribute.**

#### **2003-08-07**



- . Changed following id attribute type from CDATA to ID: abstract, claims, description, drawings.
- . Changed following idref attribute type from CDATA to IDREF: us-chemistry, us-math.
- . please note we leave crossref idref attribute type as CDATA.

2003-06-10

- . Added assignees element.
- . Added id attr for author element.
- . changed depository content model to (text|address)\*.
- . Reverse sequence of address? and name in imprint.
- . Added lang to deceased-inventor.
- . Changed table-external from empty to #PCDATA and changed external-type attribute.
- . Added sup2 and sub2.
- . Added pre to p.
- . Added lang attr to nplcit.
- . Added class-type attr to class element.
- . Added figure-labels attr to figure element.

2002-05-10 Bruce B. Cox

- . First public draft.

\*\*\*\*\* End Revision History \*\*\*\*\*-->

<!--us-patent-grant, root element of the document and contains within it all elements, content, and references to external entities, that constitute the document. Contains a bibliographic section (front page information), abstract, description, claim list, and possibly drawings. An abstract is required for all types of U.S. patents except for design patents.

ST.32 name: PATDOC.

Attributes:

lang = ISO639 code for language of document (US: fixed "EN" for publishing)

dtd-version = dtd version number

file = filename of an instance of this DTD

status = status of the document; (US: not used for publishing)

id = ID for the root element, unique within the instance

country = WIPO ST.3 code (US: fixed "US")

file-reference-id = applicant's or agent's file reference (docket number), if any

-->

<!ELEMENT us-patent-grant (doc-page+ | (us-bibliographic-data-grant , abstract\* , drawings? , description , us-sequence-list-doc? , us-megatable-doc?,table-external-doc\* , us-chemistry\* , us-math\* ,us-claim-statement , claims))>

```
<!ATTLIST us-patent-grant lang          CDATA #REQUIRED
                        dtd-version      CDATA #IMPLIED
                        file              CDATA #IMPLIED
                        status            CDATA #IMPLIED
                        id                 ID   #IMPLIED
                        country           CDATA #REQUIRED
                        file-reference-id CDATA #IMPLIED
                        date-produced     CDATA #IMPLIED
                        date-publ        CDATA #IMPLIED >
```

```
<!--to include mathml2.dtd  change MATHML2_DTD value to "INCLUDE",
change MATH_PLACEHOLDER value to "IGNORE", the same for the TABLE_DTD
and TABLE_PLACEHOLDER
```

```
INCLUDE
```

```
IGNORE
```

```
-->
```

```
<!ENTITY % UNICODE_PLANE1D_ESCAPE "INCLUDE">
```

```
<!ENTITY % MATHML2_DTD "INCLUDE">
```

```
<!ENTITY % TABLE_DTD "INCLUDE">
```

```
<!ENTITY % MATH_PLACEHOLDER "IGNORE">
```

```
<!ENTITY % TABLE_PLACEHOLDER "IGNORE">
```

```
<![%UNICODE_PLANE1D_ESCAPE; [
```

```
  <!ENTITY % plane1D  "&#38;#xE">
```

```
]]>
```

```
<![%MATHML2_DTD; [
```

```
<!-- DTD MathML2: maintained by W3C.  Download from:
```

```
  http://www.w3.org/TR/MathML2/DTD-MathML-20010221.zip
```

```
  If using nsgmls-based parser (SP, Near & Far Designer, etc.)
```

```
  Uncomment 'mathml-charent-module' switch below or replace the
```

Referenced MathML2 DTD with the version downloadable from:

<http://www.w3.org/Math/DTD/dtd-sp.zip>

This notice copied from: <http://www.w3.org/Math/DTD/>

"DTD for nsgmls

Some systems (including the popular nsgmls parser) may not be able to process files using 'plane 1' characters which have Unicode numbers higher than #xFFFF. The versions of the DTD provided here incorporate the modifications mentioned above, but the high characters are replaced by the equivalent mchar construct `<mchar name="..." />` this allows the DTD to be read and for MathML files to be validated using such systems."

-->

<!--ENTITY % mathml-charent.module "IGNORE" -->

<!ENTITY % MATHML.prefixed "IGNORE">

<!--Work around with Microsoft MSXML3 parser in IE-->

<!ENTITY % MATHML.xmlns.attrib "">

<!--import MathML2 dtd -->

<!ENTITY % mathml2 PUBLIC "-//W3C//DTD MathML 2.0//EN" "mathml2.dtd">

%mathml2;

]]>

<![%TABLE\_DTD; [

<!-- DTD OASIS Open XML Exchange Table Model.

Maintained by OASIS; download from:

<http://oasis-open.org/specs/soextblx.dtd>

Note that the FPI in soextblx.dtd refers to itself as 'calstblx'.

That convention has been followed here.

-->

<!-- create content for title element in table -->

<!ENTITY % title "<!ELEMENT title (#PCDATA | b | i | u | sup | sub | smallcaps)\* > ">

%title;

<!--override OASIS Exchange <entry> model -->

```

<!ENTITY % tbl.entry.mdl "(#PCDATA | b | i | u | sup | sub | smallcaps | br
| patcit | nplcit | bio-deposit | crossref | figref | img
| dl | ul | ol | chemistry | maths)* ">

<!--import OASIS Exchange model -->
<!ENTITY % calstblx PUBLIC "-//OASIS//DTD XML Exchange Table Model 19990315//EN"
"soextblx.dtd">
<!ENTITY % yesorno "NMTOKEN" >
<!ENTITY % tbl.table.att " pgwide %yesorno; #IMPLIED
orient (port | land) #IMPLIED
tabstyle NMTOKEN #IMPLIED">
<!ENTITY % tbl.entry.att "id ID #IMPLIED">
%calstblx;
]]>
<![%MATH_PLACEHOLDER; [
<!--(PLACEHOLDER:w3c math dtd)-->
<!ELEMENT math EMPTY>
]]>
<![%TABLE_PLACEHOLDER; [
<!--(PLACEHOLDER:cals table dtd)-->
<!ELEMENT table EMPTY>
]]>

<!ENTITY % name_group "'((name | (prefix? , (last-name | orgname) , first-name? , middle-name? ,
suffix? , iid? , role? , orgname? , department? , synonym*)) , registered-number?)">

<!ENTITY % address_group "'((address-1? , address-2? , address-3? , mailcode? , pobox? , room? ,
address-floor? , building? , street? , city? , county? , state? , postcode? , country) | text)">

<!--(US: not used in publication.)-->
<!ELEMENT absno (#PCDATA)>

<!--(US: not used in publication.)-->
<!ELEMENT abst-problem (p+)>

<!ATTLIST abst-problem id ID #IMPLIED >
<!--A concise summary of the disclosure.-->

```

<!ELEMENT abstract (doc-page+ | (abst-problem , abst-solution) | p+)>

<!ATTLIST abstract id ID #IMPLIED  
lang CDATA #IMPLIED  
status CDATA #IMPLIED >

<!--(US: not used in publishing.)-->

<!ELEMENT abst-solution (p+)>

<!ATTLIST abst-solution id ID #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT accepted (date)>

<!--

-->

<!ELEMENT action-date (date)>

<!--Earlier document to which this is an addition. INID 61, ST.32 equivalency = B610.-->

<!ELEMENT addition (relation)>

<!--Additional information. ST.32 equivalency = B513.-->

<!ELEMENT additional-info (#PCDATA)>

<!--

-->

<!ELEMENT address (%address\_group;)>

<!--Address, first line.-->

<!ELEMENT address-1 (#PCDATA)>

<!--Address, second line.-->

<!ELEMENT address-2 (#PCDATA)>

<!--Address, third line.-->

<!ELEMENT address-3 (#PCDATA)>

<!--ADDRESSBOOK GROUP: Holds name and contact information for individuals/organizations.

The LANG attribute is REQUIRED for certain document types, e.g. the JPO PCT Request where

names and addresses may be repeated in two different languages. If no structure possible use

text.-->

```
<!ELEMENT addressbook ((%name_group; , address , phone* , fax* , email* , url* , ead* , dtext?)
| text)>
```

```
<!ATTLIST addressbook id ID #IMPLIED
                        lang CDATA #IMPLIED >
```

<!--Address floor, e.g., 10th.-->

```
<!ELEMENT address-floor (#PCDATA)>
```

<!--(US: not used in publication.)-->

```
<!ELEMENT advantageous-effects (heading* , p+)>
```

```
<!ATTLIST advantageous-effects id ID #IMPLIED >
```

<!--ST.32 name: B741-->

```
<!ELEMENT agent (addressbook+)>
```

```
<!ATTLIST agent sequence CDATA #REQUIRED
                rep-type (agent | attorney | common-representative ) #REQUIRED
>
```

<!--Information regarding Agents or common representatives.-->

```
<!ELEMENT agents (customer-number | agent+)>
```

<!--(US: not used in publication.)-->

```
<!ELEMENT alttitle (#PCDATA)>
```

<!--(US: applicant is always the inventor. Use "applicant" with applicant type attribute of "applicant-inventor.")-->

```
<!ELEMENT applicant (addressbook+ , nationality , residence , us-rights* , designated-states? ,
designated-states-as-inventor?)>
```

```
<!ATTLIST applicant sequence CDATA #REQUIRED
                    app-type (applicant | applicant-inventor ) #REQUIRED
                    designation (all | all-except-us | us-only | as-indicated )
#REQUIRED >
```

<!--Applicants information.-->

```
<!ELEMENT applicants (applicant+)>
```

<!--Identification of a patent application.-->

<!ELEMENT application-reference (document-id)>

<!ATTLIST application-reference id ID #IMPLIED  
appl-type CDATA #REQUIRED >

<!--(US: not used in publication.)-->

<!ELEMENT article (text | (author\* , atl? , subname\* , (serial | book) , absno? , location? , class\* ,  
keyword\* , cpyrt? , artid? , refno\*))>

<!--(US: not used in publication.)-->

<!ELEMENT artid (#PCDATA)>

<!--(US: for assignee type, one of the following codes is placed in the role element. Assignee types  
for U.S. patents are taken from the following table: 01 Unassigned; 02 United States company or  
corporation; 03 Foreign company or corporation; 04 United States individual; 05 Foreign  
individual; 06 U.S. Federal government; 07 Foreign government; 08 U.S. county government; 09  
U.S. state government.) ST.32 name: B730.-->

<!ELEMENT assignee (%name\_group; | addressbook)>

<!--

-->

<!ELEMENT assignees (assignee+)>

<!--ST.32 name: B747.-->

<!ELEMENT assistant-examiner (%name\_group; , electronic-signature?)>

<!--(US: not used in publication.)-->

<!ELEMENT atl (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT author (%name\_group; | addressbook)>

<!ATTLIST author id ID #IMPLIED >

<!--

-->

<!ELEMENT authorized-officer (%name\_group; , phone? ,fax? ,email? , electronic-signature?)>

<!--(US: not used in publication.)-->

<!ELEMENT avail (#PCDATA)>

<!--Bold formatting.-->

<!ELEMENT b (#PCDATA | i | u | smallcaps)\*>

<!--(US: not used in publication.)-->

<!ELEMENT background-art (heading\* , p+)+>

<!ATTLIST background-art id ID #IMPLIED >

<!--A non-PKI electronic signature.-->

<!ELEMENT basic-signature (fax-image | text-string | click-wrap)>

<!--(US: not used in publication.)-->

<!ELEMENT best-mode (heading\* , p+)+>

<!ATTLIST best-mode id ID #IMPLIED >

<!--Biological accession number: the identification assigned to the biological material by the depository.-->

<!ELEMENT bio-accno (#PCDATA)>

<!--Biological deposit citation (US EFS: biological-deposit).-->

<!ELEMENT bio-deposit (depository , bio-accno , date? , term? , dtext?)>

<!ATTLIST bio-deposit id ID #IMPLIED

num CDATA #REQUIRED

url CDATA #IMPLIED

dnum CDATA #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT book (text | (author\* , (book-title+ | conference) , (subtitle? , subname\* , edition? , imprint? , descrip? , series? , absno? , location\* , isbn\* , pubid? , vid? , bookno? , notes? , class\* , keyword\* , cpyrt? , refno\*)))>

<!--(US: not used in publication.)-->

<!ELEMENT bookno (#PCDATA)>



<!--(US: not used in publication.)-->

<!ELEMENT book-title (#PCDATA)>

<!--(US: not used in publishing.) Line break within a paragraph.-->

<!ELEMENT br EMPTY>

<!--Building information in address, e.g., Hoffman building.-->

<!ELEMENT building (#PCDATA)>

<!--(US: used for different data types depending on context.)-->

<!ELEMENT category (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT chapter (#PCDATA)>

<!--

-->

<!ELEMENT chem EMPTY>

<!ATTLIST chem id ID #IMPLIED  
file CDATA #REQUIRED  
chem-type CDATA #IMPLIED >

<!--Chemical formulae, ring structures, Markush structures, etc. (US: see us-chemistry as well.)-->

<!ELEMENT chemistry (img | (chem , img?))>

<!ATTLIST chemistry id ID #IMPLIED  
num CDATA #REQUIRED >

<!--Child Document. ST.32 equivalency = CDOC.-->

<!ELEMENT child-doc (document-id)>

<!--

-->

<!ELEMENT citation ((patcit | nplcit) , corresponding-docs\* , rel-passage\* , category\* ,  
rel-claims\* , classification-ipc? , classifications-ipc? , classification-national?)>

<!ATTLIST citation srep-phase CDATA #IMPLIED >

<!--City or town name.-->

<!ELEMENT city (#PCDATA)>

<!--

-->

<!ELEMENT claim (claim-text+)>

<!ATTLIST claim id ID #IMPLIED  
num CDATA #REQUIRED  
claim-type CDATA #IMPLIED >

<!--Reference to a claim.-->

<!ELEMENT claim-ref (#PCDATA)>

<!ATTLIST claim-ref idref IDREFS #REQUIRED >

<!--

-->

<!ELEMENT claims (doc-page+ | claim+)>

<!ATTLIST claims id ID #IMPLIED  
lang CDATA #IMPLIED  
claim-type CDATA #IMPLIED  
status CDATA #IMPLIED >

<!--The text of the claim; recursion of claim-text indicates claim step hierarchy and should be rendered accordingly.-->

<!ELEMENT claim-text (#PCDATA | claim-text | claim-ref | b | i | u | sup | sub | smallcaps | br | pre |  
crossref | figref | img | chemistry | maths | tables)\*>

<!--(US: not used in publication.)-->

<!ELEMENT class (#PCDATA)>

<!ATTLIST class class-type CDATA #IMPLIED >

<!--

-->

<!ELEMENT classification-data-source (#PCDATA)>

<!--International Patent Classification (IPC) data. INID 51. ST.32 name = B510-->

<!ELEMENT classification-ipc (edition , main-classification , further-classification\* ,  
(additional-info | linked-indexing-code-group | unlinked-indexing-code)\* , text?)>

```
<!ATTLIST classification-ipc id ID #IMPLIED >
<!--
-->
<!ELEMENT classification-ipc (ipc-version-indicator , classification-level? , section , class ,
subclass , main-group? , subgroup? , symbol-position? , classification-value? , action-date? ,
generating-office? , classification-status? , classification-data-source?)>

<!ATTLIST classification-ipc id ID #IMPLIED
sequence CDATA #IMPLIED >
<!--
-->
<!ELEMENT classification-level (#PCDATA)>

<!--For design patents only. Formerly included in IPC main classification. The Locarno
Classification (LC) is formatted as fixed-length records as described here: Positions 1-2, "Class" (2
numeric, right justified, leading zeros); positions 3-4, "Subclass" (2 numeric, right justified, leading
zeros). ST.32 name: B511-->
<!ELEMENT classification-locarno (edition , main-classification , further-classification* , text?)>

<!ATTLIST classification-locarno id ID #IMPLIED >
<!--Domestic or national classification. INID 52. ST.32 equivalency = B520-->
<!ELEMENT classification-national (country , edition? , main-classification ,
further-classification* , (additional-info | linked-indexing-code-group | unlinked-indexing-code)* ,
text?)>

<!ATTLIST classification-national id ID #IMPLIED >
<!--
-->
<!ELEMENT classifications-ipc (classification-ipc+)>

<!ATTLIST classifications-ipc id ID #IMPLIED >
<!--
-->
<!ELEMENT classification-status (#PCDATA)>

<!--
```

-->

<!ELEMENT classification-value (#PCDATA)>

<!--A simple 'signature', e.g., clicking a button labeled 'accept' or 'I agree'.-->

<!ELEMENT click-wrap EMPTY>

<!--Cited document column, first.-->

<!ELEMENT colf (#PCDATA)>

<!--Cited document column, last.-->

<!ELEMENT coll (#PCDATA)>

<!--Cited document column numbers.-->

<!ELEMENT column (#PCDATA | colf | coll)\*>

<!--(US: not used in publication.)-->

<!ELEMENT conference (text | (conftitle , date? , confno? , confplace? , confsponsor\*))>

<!--(US: not used in publication.)-->

<!ELEMENT confno (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT confplace (#PCDATA | address)\*>

<!--(US: not used in publication.)-->

<!ELEMENT confsponsor (#PCDATA | addressbook)\*>

<!--(US: not used in publication.)-->

<!ELEMENT conftitle (#PCDATA)>

<!--Earlier application of which the present document is a continuation. ST.32 equivalency = B631.-->

<!ELEMENT continuation (relation)>

<!--Document of which this is a continuation-in-part. ST.32 equivalency = B632.-->

<!ELEMENT continuation-in-part (relation)>

<!--Document of which this is a continuing reissue. ST.32 equivalency = B633.-->

<!ELEMENT continuing-reissue (relation)>

<!--Correction information. ST.32 equivalency = B665.-->

<!ELEMENT correction (document-corrected , type-of-correction? , gazette-reference? , text?)>

<!--Address used for general correspondence.-->

<!ELEMENT correspondence-address (customer-number | addressbook+)>

<!--

-->

<!ELEMENT corresponding-docs (document-id | nplcit)\*>

<!--Country: use ST.3 country code, e.g. DE, FR, GB, NL, etc. Also includes EP, WO, etc.-->

<!ELEMENT country (#PCDATA)>

<!--County, parish, department, etc.-->

<!ELEMENT county (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT cpyrt (#PCDATA)>

<!--Cross reference to any other element in the instance with an identifier (id).-->

<!ELEMENT crossref (#PCDATA | b | i | u | sup | sub | smallcaps)\*>

<!ATTLIST crossref idref IDREF #REQUIRED >

<!--Customer number for agents.-->

<!ELEMENT customer-number (#PCDATA)>

<!--Components of a date. Format: YYYYMMDD.-->

<!ELEMENT date (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT datecit (date)>

<!--(US: not used in publication.)-->

<!ELEMENT date-search-completed (date)>

<!--(US: not used in publication.)-->

<!ELEMENT date-search-report-mailed (date)>

<!--Definition description.-->

<!ELEMENT dd (#PCDATA | b | i | u | sup | sub | smallcaps | br | pre | patcit | nplcit | bio-deposit |  
crossref | figref | img | ul | ol | chemistry | maths)\*>

<!--Deceased inventor name.-->

<!ELEMENT deceased-inventor (%name\_group);>

<!ATTLIST deceased-inventor sequence CDATA #IMPLIED  
lang CDATA #IMPLIED >

<!--Name of department, division, section, etc.-->

<!ELEMENT department (#PCDATA)>

<!--Information regarding the facility storing the biological deposit.-->

<!ELEMENT depositary (#PCDATA | address)\*>

<!--(US: not used in publication.)-->

<!ELEMENT descrip (#PCDATA)>

<!--Description. Specification of the invention.-->

<!ELEMENT description (doc-page+ | (invention-title? , (technical-field | background-art |  
disclosure | description-of-drawings | best-mode | mode-for-invention | industrial-applicability |  
sequence-list-text | (heading\* , p+)+))>

<!ATTLIST description id ID #IMPLIED  
lang CDATA #IMPLIED  
status CDATA #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT description-of-drawings (heading\* , p+)+>

<!ATTLIST description-of-drawings id ID #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT designated-states (country\* , (region , country+)\*>

<!--(US: not used in publication.)-->

<!ELEMENT designated-states-as-inventor (country\* , (region , country+)\*)>

<!--Disclaimer date. ST.32 equivalency = B473-->

<!ELEMENT disclaimer (date? , text?)>

<!--(US: not used in publication.)-->

<!ELEMENT disclosure ((tech-problem | tech-solution | advantageous-effects)\* | (heading\* , p+))>

<!ATTLIST disclosure id ID #IMPLIED >

<!--Earlier application from which the present document has been divided out. INID 62. ST.32 equivalency = B620.-->

<!ELEMENT division (relation)>

<!--Definition list.-->

<!ELEMENT dl (dt , dd)+>

<!ATTLIST dl tsize CDATA #IMPLIED

compact (compact) #IMPLIED

id ID #IMPLIED >

<!--The number of the referenced document.-->

<!ELEMENT doc-number (#PCDATA)>

<!--(US: Not used in publishing) DOCUMENT or PAGE. This is primarily to be used when data for the whole or major sections of an application are in image format OR other formats such as pdf. Page range attributes are given when required: pp - page range; ppf - first page; ppl - last page. The 'img' may also be used for complete pages, eg., in drawings. Recommended id = docp01, docp02, etc. -->

<!ELEMENT doc-page EMPTY>

<!ATTLIST doc-page id ID #IMPLIED

he CDATA #REQUIRED

wi CDATA #REQUIRED

type (jpg | pdf | tif) #REQUIRED

alt CDATA #IMPLIED

pp CDATA #IMPLIED

ppf CDATA #IMPLIED

```
ppl          CDATA #IMPLIED
file         CDATA #REQUIRED
color                (color | bw ) #IMPLIED
orientation        (portrait | landscape ) 'portrait' >
<!--Document being corrected. ST.32 equivalent = B666.-->
<!ELEMENT document-corrected (document-id)>

<!--Document identification refers to patents and patent applications only. See WIPO ST.14.-->
<!ELEMENT document-id (country , doc-number , kind? , name? , date?)>

<!ATTLIST document-id  lang CDATA #IMPLIED >
<!--The drawing pages.-->
<!ELEMENT drawings (doc-page+ | figure+)>

<!ATTLIST drawings  id      ID      #IMPLIED
                  lang    CDATA #IMPLIED
                  status  CDATA #IMPLIED >
<!--Term to be defined.-->
<!ELEMENT dt (#PCDATA | b | i | u | sup | sub | smallcaps)*>

<!ATTLIST dt  id ID #IMPLIED >
<!--Where structured data is not possible, enter text -->
<!ELEMENT dttext (#PCDATA)>

<!--Electronic address; use for other than email.-->
<!ELEMENT ead (#PCDATA)>

<!--(US: not used in publication.)-->
<!ELEMENT edate (#PCDATA)>

<!--Edition statement. Indicates the edition of the classification schedule.-->
<!ELEMENT edition (#PCDATA)>

<!--A signature represented by electronic means.-->
<!ELEMENT electronic-signature (basic-signature | enhanced-signature)>

<!ATTLIST electronic-signature  date          CDATA #REQUIRED
```



place-signed CDATA #IMPLIED >

<!--Email address.-->

<!ELEMENT email (#PCDATA)>

<!--A PKI / PKCS #7 digital signature data type.-->

<!ELEMENT enhanced-signature (pkcs7)>

<!--Persons acting on the document. ST.32 equivalency = B745-->

<!ELEMENT examiners (primary-examiner? , assistant-examiner? , authorized-officer?)>

<!-- -->

<!ELEMENT family-member (document-id)>

<!--Fax number, format undefined.-->

<!ELEMENT fax (#PCDATA)>

<!--A TIFF image of a signature.-->

<!ELEMENT fax-image EMPTY>

<!ATTLIST fax-image file CDATA #REQUIRED >

<!--Field of search. INID 58; ST.32 equivalency = B580-->

<!ELEMENT field-of-search (classification-ipc | classifications-ipcr | classification-national)+>

<!--The number of the figure.-->

<!ELEMENT fig-number (#PCDATA)>

<!--A reference to a figure; e.g., "...as shown in figure 1..."-->

<!ELEMENT figref (#PCDATA | b | i | u | sup | sub | smallcaps)\*>

<!ATTLIST figref idref IDREFS #IMPLIED

num CDATA #IMPLIED >

<!--A figure. (US: often equates to one drawing page that might contain multiple figures.)-->

<!ELEMENT figure (img)>

<!ATTLIST figure id ID #IMPLIED

num CDATA #REQUIRED

figure-labels CDATA #IMPLIED >

```
<!--Drawing pages with figures. ST.32 name: B590-->
<!ELEMENT figures (number-of-drawing-sheets? , number-of-figures? , figure-to-publish?)>

<!--Figure(s) to be published on front page or in Official Gazette.-->
<!ELEMENT figure-to-publish (fig-number+)>

<!--First or given name(s).-->
<!ELEMENT first-name (#PCDATA)>

<!--Further/secondary classification. ST.32 equivalency = B512/B522 (US: XR classification)-->
<!ELEMENT further-classification (#PCDATA)>

<!ATTLIST further-classification id ID #IMPLIED
                                sequence CDATA #IMPLIED >

<!--
-->
<!ELEMENT gazette-num (#PCDATA)>

<!--Patent bulletin / gazette information. ST.32 equivalency = B405-->
<!ELEMENT gazette-reference (gazette-num , date , text?)>

<!ATTLIST gazette-reference id ID #IMPLIED
                             country CDATA #IMPLIED
                             lang CDATA #IMPLIED >

<!--
-->
<!ELEMENT generating-office (country)>

<!--Heading. Level attribute determines indentation and style.-->
<!ELEMENT heading (#PCDATA | b | i | u | sup | sub | smallcaps)*>

<!ATTLIST heading level (1 | 2 | 3) #IMPLIED
                  id ID #IMPLIED >

<!--(US: not used in publication.)-->
<!ELEMENT history (text | (received | accepted | revised | misc))>

<!--(US: not used in publication.)-->
```

<!--ELEMENT hostno (#PCDATA)>

<!--(US: not used in publication.)-->

<!--ELEMENT hosttitle (#PCDATA)>

<!--Italic formatting.-->

<!--ELEMENT i (#PCDATA | b | u | smallcaps)\*>

<!--Individual id, format undefined.-->

<!--ELEMENT iid (#PCDATA)>

<!--Image data is used for any kind of image: art work, figures, complex work units (math, tables, chemistry), etc.-->

<!--ELEMENT img EMPTY>

| <!--ATTLIST img | id          | ID   | #IMPLIED   |
|-----------------|-------------|--|------------|
|                 | he          | CDATA  | #REQUIRED  |
|                 | wi          | CDATA  | #REQUIRED  |
|                 | file        | CDATA  | #REQUIRED  |
|                 | alt         | CDATA  | #IMPLIED   |
|                 | img-content | (drawing  <br>photograph  <br>character  <br>dna  <br>undefined  <br>chem  <br>table  <br>math  <br>program-listing  <br>flowchart ) | 'drawing'  |
|                 | img-format  | (jpg   tif   st33   st35 )   | #REQUIRED  |
|                 | orientation | (portrait   landscape )  | 'portrait' |
|                 | inline      | (yes   no )  | 'no' >     |

<!--(US: not used in publication.)-->

<!--ELEMENT imprint (text | (address? , name , pubdate\*))>

<!--(US: not used in publication.)-->

<!ELEMENT industrial-applicability (heading\* , p+)+>

<!ATTLIST industrial-applicability id ID #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT ino (#PCDATA)>

<!--Title of the Invention.-->

<!ELEMENT invention-title (#PCDATA | b | i | u | sup | sub)\*>

<!ATTLIST invention-title id ID #IMPLIED

lang CDATA #IMPLIED >

<!--The individual or entity responsible for creating the matter that protection is sought for. (US: populated only when the inventor was unable to be the applicant.)-->

<!ELEMENT inventor (addressbook+ , designated-states?)>

<!ATTLIST inventor sequence CDATA #REQUIRED

designation (all | all-except-us | us-only | as-indicated )

#IMPLIED >

<!--Inventors information.-->

<!ELEMENT inventors (inventor | deceased-inventor)+>

<!--

-->

<!ELEMENT ipc-version-indicator (date)>

<!--(US: not used in publication.)-->

<!ELEMENT isbn (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT issn (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT issue (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT keyword (#PCDATA)>

<!--Document kind code; e.g. A1.-->  
<!ELEMENT kind (#PCDATA)>

<!--Lapse of patent. ST.32 equivalency = B475-->  
<!ELEMENT lapse-of-patent (document-id , text?)>

<!--Last, family, surname.-->  
<!ELEMENT last-name (#PCDATA)>

<!--The scientific name of the plant.-->  
<!ELEMENT latin-name (#PCDATA)>

<!--Length of Grant. ST.32 equivalency = B474-->  
<!ELEMENT length-of-grant (#PCDATA)>

<!--List item.-->  
<!ELEMENT li (#PCDATA | b | i | u | sup | sub | smallcaps | br | pre | patcit | nplcit | bio-deposit |  
crossref | figref | img | dl | ul | ol | chemistry | maths)\*>

<!ATTLIST li id ID #IMPLIED  
num CDATA #IMPLIED >

<!--Referenced line within cited work.-->  
<!ELEMENT line (#PCDATA | linef | linel)\*>

<!--Cited document line, first.-->  
<!ELEMENT linef (#PCDATA)>

<!--Cited document line, last.-->  
<!ELEMENT linel (#PCDATA)>

<!--(US: not used for publishing.) Linked indexing code. ST.32 equivalency = B514/B524.-->  
<!ELEMENT linked-indexing-code-group (main-linked-indexing-code ,  
sub-linked-indexing-code+)>

<!--(US: not used in publication.)-->  
<!ELEMENT location (text | (serpart? , sersect? , chapter? , pp? , column? , para? , line?))>

<!--Organizational mail code.-->

<!ELEMENT mailcode (#PCDATA)>

<!--Main classification. ST.32 equivalency = B511/B521 (US: OR classification)-->

<!ELEMENT main-classification (#PCDATA)>

<!--

-->

<!ELEMENT main-group (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT main-linked-indexing-code (#PCDATA)>

<!--This is image data or coded according to mathml, version 2.-->

<!ELEMENT maths (img | (math , img?))>

<!ATTLIST maths id ID #IMPLIED

num CDATA #REQUIRED >

<!--Middle name(s) or initial(s).-->

<!ELEMENT middle-name (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT misc (#PCDATA | date)\*>

<!--(US: not used in publication.)-->

<!ELEMENT mode-for-invention (heading\* , p+)>

<!ATTLIST mode-for-invention id ID #IMPLIED

mode-num CDATA #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT msn (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT mst (#PCDATA)>

<!--Name: if no distinction or detail can be given. Also to be used for: personal (natural person) and

corporate (legal entity) names.-->

<!ELEMENT name (#PCDATA)>

<!ATTLIST name name-type (legal | natural) #IMPLIED >

<!--Country of nationality.-->

<!ELEMENT nationality (country)>

<!--(US: not used in publication.)-->

<!ELEMENT notes (#PCDATA)>

<!--Non-Patent Literature (NPL) CITation; (US: use text option ONLY. No structured data will be published.)-->

<!ELEMENT nplcit (text | article | book | online | othercit)>

<!ATTLIST nplcit id ID #IMPLIED  
num CDATA #IMPLIED  
lang CDATA #IMPLIED  
file CDATA #IMPLIED  
npl-type CDATA #IMPLIED  
medium CDATA #IMPLIED  
url CDATA #IMPLIED >

<!--Total number of claims in the grant.-->

<!ELEMENT number-of-claims (#PCDATA)>

<!--Total number of drawing pages submitted. ST.32 name: B595-->

<!ELEMENT number-of-drawing-sheets (#PCDATA)>

<!--Number of figures. ST.32 equivalency = B596-->

<!ELEMENT number-of-figures (#PCDATA)>

<!--Where the earlier application is an ARIPO application,indicate at least one country party to the PARIS convention for the protection of industrial property or one member of the WTO for which that earlier application was filed.-->

<!ELEMENT office-of-filing ((region , country?) | country)>

<!--Ordered Lists: attribute 'ol-style' - recommded use: 1 arablic numbers 1, 2, 3, ... a lower alpha a, b, c, ... A upper alpha A, B, C, ... i lower roman i, ii, iii, ... I upper roman I, II, III, ....-->

<!ELEMENT ol (li+)>

<!ATTLIST ol id ID #IMPLIED  
compact (compact) #IMPLIED  
ol-style CDATA #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT online (text | (author\* , online-title\* , hosttitle? , subname\* , edition? , (serial | book)? , imprint? , pubdate? , history? , series? , hostno? , location? , notes? , avail , class\* , keyword\* , cpyrt? , issn? , isbn? , datecit? , srchterm\* , srchdate? , refno\*))>

<!--(US: not used in publication.)-->

<!ELEMENT online-title (#PCDATA)>

<!--Organisation name or company name.-->

<!ELEMENT orgname (#PCDATA)>

<!--Other citations. Format not defined.-->

<!ELEMENT othercit (#PCDATA | b | i | u | sup | sub)\*>

<!--Paragraph. Recommended id = p01, p02, etc. num = 001, 002, etc. (US: ID is unique in the instance. Num indicates sequence of paragraphs for display.)-->

<!ELEMENT p (#PCDATA | b | i | u | sup | sub | smallcaps | br | pre | dl | ul | ol | crossref | figref | patcit | nplcit | bio-deposit | img | chemistry | maths | tables | table-external-doc)\*>

<!ATTLIST p id ID #IMPLIED  
num CDATA #REQUIRED >

<!--Referenced paragraph within cited work.-->

<!ELEMENT para (#PCDATA | paraf | paral)\*>

<!--Cited paragraph, first.-->

<!ELEMENT paraf (#PCDATA)>

<!--Cited paragraph, last.-->

<!ELEMENT paral (#PCDATA)>

<!--Describes parent document. ST.32 equivalency = PARENT.-->

<!ELEMENT parent-doc (document-id , parent-status? , parent-grant-document? ,



parent-pct-document?>

<!--If the parent document was granted.-->

<!ELEMENT parent-grant-document (document-id)>

<!--

-->

<!ELEMENT parent-pct-document (document-id)>

<!--Status of the parent document.-->

<!ELEMENT parent-status (#PCDATA)>

<!--Parties to the application.-->

<!ELEMENT parties (applicants , inventors? , correspondence-address? , agents?)>

<!--(US: not used in publication.)-->

<!ELEMENT passage (#PCDATA)>

<!--Patent Citation within abstract, description or claims.-->

<!ELEMENT patcit (text | (document-id , rel-passage\*))>

```
<!ATTLIST patcit  id          ID          #IMPLIED
                  num         CDATA      #IMPLIED
                  dnum        CDATA      #IMPLIED
                  dnum-type   CDATA      #IMPLIED
                  file         CDATA      #IMPLIED
                  url          CDATA      #IMPLIED >
```

<!--Patent family members.-->

<!ELEMENT patent-family (priority-application , (family-member+ | text))>

```
<!ATTLIST patent-family  id ID          #IMPLIED >
```

<!--PCT or regional filing information. INID 86; ST.32 equivalency = B860.-->

<!ELEMENT pct-or-regional-filing-data (document-id , us-371c124-date?)>

<!--PCT or regional publication information. INID 87; ST.32 equivalency = B870.-->

<!ELEMENT pct-or-regional-publishing-data (document-id , gazette-reference?)>

<!--Telephone number, format undefined.-->

<!ELEMENT phone (#PCDATA)>

<!--PKCS7 digital signature.-->

<!ELEMENT pkcs7 EMPTY>

<!--(US: not used in publication.)-->

<!ELEMENT place-of-search (country)>

<!--Post Office Box number.-->

<!ELEMENT pobox (#PCDATA)>

<!--Postal code or zip code.-->

<!ELEMENT postcode (#PCDATA)>

<!--Cited document page numbers.-->

<!ELEMENT pp (#PCDATA | ppf | ppl)\*>

<!--Cited document page , first.-->

<!ELEMENT ppf (#PCDATA)>

<!--Cited document page, last.-->

<!ELEMENT ppl (#PCDATA)>

<!--Indicates that the white space of the text should be preserved at rendering. In all cases, a fixed-width font should be used.-->

<!ELEMENT pre (#PCDATA)>

<!ATTLIST pre id ID #IMPLIED  
xml:space (preserve) #FIXED 'preserve'  
listing-type (sequence | program-listing | other) #REQUIRED >

<!--Title: e.g., Mr., Mrs., Dr. etc.-->

<!ELEMENT prefix (#PCDATA)>

<!--ST.32 name: B746-->

<!ELEMENT primary-examiner (%name\_group; , electronic-signature?)>

<!--Priority application number. INID 31; ST.32 equivalency = B310.-->

<!ELEMENT priority-application (document-id)>

<!--Priority claim.-->

<!ELEMENT priority-claim (country , doc-number? , date , office-of-filing? ,  
(priority-doc-requested | priority-doc-attached?))>

<!ATTLIST priority-claim id ID #IMPLIED  
sequence CDATA #REQUIRED  
kind (national | regional | international )

#REQUIRED >

<!--Applications in which priority is claimed.-->

<!ELEMENT priority-claims (priority-claim+)>

<!--(US: not used in publication.)-->

<!ELEMENT priority-doc-attached EMPTY>

<!--(US: not used in publication.)-->

<!ELEMENT priority-doc-requested EMPTY>

<!--(US: not used in publication.)-->

<!ELEMENT pubdate (#PCDATA | sdate | edate | time)\*>

<!--(US: not used in publication.)-->

<!ELEMENT pubid (#PCDATA)>

<!--Identification of a published patent document.-->

<!ELEMENT publication-reference (document-id)>

<!ATTLIST publication-reference id ID #IMPLIED >

<!--(US: not used in publication.)-->

<!ELEMENT received (date)>

<!--Document of which this is a reexamination. ST.32 equivalency = B645.-->

<!ELEMENT reexamination (relation)>

<!--

-->

<!ELEMENT references-cited (text | (citation+ , date-search-completed? , date-search-report-mailed? , place-of-search? , search-report-publication? , searcher?))>

<!--(US: not used in publication.)-->

<!ELEMENT refno (#PCDATA)>

<!ATTLIST refno id ID #IMPLIED >

<!--The region for which protection or exclusion (depending upon context) is desired.-->

<!ELEMENT region (country)>

<!--Registered number, format undefined.-->

<!ELEMENT registered-number (#PCDATA)>

<!--Document being reissued. INID 64. ST.32 equivalency = B640.-->

<!ELEMENT reissue (relation)>

<!--Previously published document concerning same application. INID 65. ST.32 equivalency = B650.-->

<!ELEMENT related-publication (#PCDATA | document-id)\*>

<!--

-->

<!ELEMENT relation (parent-doc , child-doc)>

<!--(US: used for different data types depending on context.)-->

<!ELEMENT rel-claims (#PCDATA)>

<!--Relevant passage within cited document.-->

<!ELEMENT rel-passage (text | (passage+ , category\* , rel-claims\*)+)>

<!--Country of residence.-->

<!ELEMENT residence (country)>

<!--(US: not used in publication.)-->

<!ELEMENT revised (date)>

**<!--Role, e.g. President, Chairman, etc.-->**

**<!ELEMENT role (#PCDATA)>**

**<!--Address room; e.g., Room 55B.-->**

**<!ELEMENT room (#PCDATA)>**

**<!--When present, signifies that the application was filed under Rule 47, indicating the applicant(s) refused to execute the application or could not be found.-->**

**<!ELEMENT rule-47-flag EMPTY>**

**<!--(US: not used in publication.)-->**

**<!ELEMENT sdate (#PCDATA)>**

**<!--**

**-->**

**<!ELEMENT searcher (%name\_group; | addressbook)>**

**<!--(US: not used in publication.)-->**

**<!ELEMENT search-report-publication (document-id+)>**

**<!--**

**-->**

**<!ELEMENT section (#PCDATA)>**

**<!--Sequence listing that conforms to WIPO Standrad ST.25. (US: markup in XML as in ARB v2.5. See us-sequence-listing.dtd.)-->**

**<!ELEMENT sequence-list EMPTY>**

<b>&lt;!ATTLIST sequence-list</b>	<b>id</b>	<b>ID</b>	<b>#IMPLIED</b>
	<b>file</b>	<b>CDATA</b>	<b>#REQUIRED</b>
	<b>lang</b>	<b>CDATA</b>	<b>#IMPLIED</b>
	<b>carriers</b>	<b>(internal-electronic   external-electronic   paper ) #IMPLIED</b>	
	<b>seq-file-type</b>	<b>CDATA</b>	<b>#FIXED 'ST.25'</b>
	<b>status</b>	<b>CDATA</b>	<b>#IMPLIED &gt;</b>

<!--Sequence listing free text WIPO ST.25: "36. Where the sequence listing part of the description contains free text, any such free text shall be repeated in the main part of the description in the language thereof. It is recommended that the free text in the language of the main part of the description be put in a specific section of the description called "Sequence Listing Free Text".-->  
<!ELEMENT sequence-list-text (heading\* , p+)+>

<!ATTLIST sequence-list-text id ID #IMPLIED >

<!--(US: not used in publication.) -->

<!ELEMENT serial (sertitle , alttitle? , subname\* , issue? , imprint? , pubdate? , descrip? , notes? , issn? , isbn? , pubid? , vid? , ino? , cpyrt?)>

<!--(US: not used in publication.)-->

<!ELEMENT series (text | (mst , msn? , issn?))>

<!--(US: not used in publication.)-->

<!ELEMENT serpart (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT sersect (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT sertitle (#PCDATA)>

<!--Small capitals.-->

<!ELEMENT smallcaps (#PCDATA | b | u | i)\*>

<!--(US: not used in publication.)-->

<!ELEMENT srchdate (date)>

<!--(US: not used in publication.)-->

<!ELEMENT srchterm (#PCDATA)>

<!--Region of country eg. state, province, etc.-->

<!ELEMENT state (#PCDATA)>

<!--Street may contain house number or house name.-->

<!ELEMENT street (#PCDATA)>

<!--Subscripted text-->

<!ELEMENT sub (#PCDATA | b | u | i | sup2 | sub2)\*>

<!--Second level subscripted text.-->

<!ELEMENT sub2 (#PCDATA | b | u | i)\*>

<!--

-->

<!ELEMENT subclass (#PCDATA)>

<!--

-->

<!ELEMENT subgroup (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT sub-linked-indexing-code (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT subname (%name\_group; | addressbook)>

<!ATTLIST subname subname-type (editor | translator | other-subname-type) 'editor' >

<!--Document for which this is a substitute. INID 66. ST.32 equivalency = B660.-->

<!ELEMENT substitution (relation)>

<!--(US: not used in publication.)-->

<!ELEMENT subtitle (#PCDATA)>

<!--Name suffix (e.g., II, Jr., Dip., Ing., BA, etc.)-->

<!ELEMENT suffix (#PCDATA)>

<!--Superscripted text-->

<!ELEMENT sup (#PCDATA | b | u | i | sup2 | sub2)\*>

<!--Superscripted text.-->

<!ELEMENT sup2 (#PCDATA | b | u | i)\*>

<!--

-->

<!ELEMENT symbol-position (#PCDATA)>

<!--Synonym.-->

<!ELEMENT synonym (#PCDATA)>

<!ELEMENT table-external-doc (#PCDATA)>

<!ATTLIST table-external-doc	id	ID	#IMPLIED
	file	CDATA	#REQUIRED
	lang	CDATA	#IMPLIED
	carriers		(internal-electronic   external-electronic   paper ) #IMPLIED
	external-type		(math   chemistry   program-listing   other ) #IMPLIED
	status	CDATA	#IMPLIED >

<!--This is image data or coded according to OASIS Exchange model with modified cell 'entry' content.-->

<!ELEMENT tables (img | table)>

<!ATTLIST tables	id	ID	#IMPLIED
	num	CDATA	#REQUIRED >

<!--(US: not used in publication.)-->

<!ELEMENT technical-field (heading\* , p+)+>

<!ATTLIST technical-field	id	ID	#IMPLIED >
---------------------------	----	----	------------

<!--(US: not used in publication.)-->

<!ELEMENT tech-problem (heading\* , p+)+>

<!ATTLIST tech-problem	id	ID	#IMPLIED >
------------------------	----	----	------------

<!--(US: not used in publication.)-->

<!ELEMENT tech-solution (heading\* , p+)+>



<!ATTLIST tech-solution id ID #IMPLIED >  
<!--Identifies the period of time during which the depository must be able to furnish samples of the biological material.-->  
<!ELEMENT term (#PCDATA)>

<!--If no structure is possible, enter content verbatim.-->  
<!ELEMENT text (#PCDATA)>

<!--A simple text string used as the basic electronic signature, e.g., John Doe /john doe/.-->  
<!ELEMENT text-string (#PCDATA)>

<!--Time; format HHMM.-->  
<!ELEMENT time (#PCDATA)>

<!--Type of correction. ST.32 equivalency = B667.-->  
<!ELEMENT type-of-correction (#PCDATA)>

<!--Underscore: style - single is default.-->  
<!ELEMENT u (#PCDATA | b | i | smallcaps)\*>

<!ATTLIST u style (single | double | dash | dots) 'single' >  
<!--Unordered Lists list-style may be empty for lists with no bullet or other symbol default list-style is 'bullets'.-->  
<!ELEMENT ul (li+)>

<!ATTLIST ul id ID #IMPLIED  
list-style (bullet | dash | none) 'bullet'  
compact (compact) #IMPLIED >

<!--(US: not used for publishing).-->  
<!ELEMENT unlinked-indexing-code (#PCDATA)>

<!--Universal Resource Locator; e.g. www.wipo.int.-->  
<!ELEMENT url (#PCDATA)>

<!--PCT Section 371(c)(1)(2)(4)date. ST.32 equivalency = B864US-->  
<!ELEMENT us-371c124-date (date)>

<!--Patent applications in the U.S. are numbered consecutively from 1 through 999,999, after which the numbering restarts from 1. To distinguish between the different applications that would otherwise have the same number, a series code is prefixed to the serial number. Series codes can also be used to distinguish various application types. A series code consists of a two-digit number, left padded with zero where necessary, representing the following time periods and document types: 02 = through 1947-12-31; 03 = 1948-01-01 through 1959-12-31; 04 = 1960-01-01 through 1969-12-31; 05 = 1970-01-01 through 1978-12-31; 06 = 1979-01-01 through 1986-12-31; 07 = 1987-01-01 through 1992-12-31; 08 = 1993-01-01 through 1997-12-29; 09 = 1997-12-30 and after; 02 through 28 = Utility application; 29 = Design application; 60 = Provisional application; 90 = Reexamination request.

ST.32 name: B211US.-->

<!ELEMENT us-application-series-code (#PCDATA)>

<!--Bibliographic information included on the front page of a patent. Contains document identification, domestic filing data, foreign priority data, public availability dates or term of protection, technical information, related patent or application information, parties concerned with the document, and data related to international conventions. ST.32 name: SDOBI-->

<!ELEMENT us-bibliographic-data-grant (publication-reference , us-sir-flag? , application-reference , us-application-series-code , priority-claims? , us-issued-on-continued-prosecution-application? , rule-47-flag? , us-term-of-grant? , classifications-ipcr? , classification-locarno? , classification-national , invention-title , us-botanic? , references-cited? , number-of-claims? , us-exemplary-claim\* , field-of-search?,us-field-of-classification-search? , figures? , us-microform-quantity? , us-related-documents? , parties , us-deceased-inventor\* , assignees? , examiners? , pct-or-regional-filing-data? , pct-or-regional-publishing-data? , patent-family? , bio-deposit? , text\*)>

```
<!ATTLIST us-bibliographic-data-grant id ID #IMPLIED
                                lang CDATA #IMPLIED
                                status CDATA #IMPLIED
                                country CDATA #IMPLIED >
```

<!--Plant patent botanical information. ST.32 name: BOTANIC-->

<!ELEMENT us-botanic (latin-name , variety)>

<!--External files containing alternative formats of chemical structures.-->

<!ELEMENT us-chemistry EMPTY>

```
<!ATTLIST us-chemistry idref IDREF #REQUIRED
                    cdx-file CDATA #REQUIRED
                    mol-file CDATA #REQUIRED >
```

```
<!ELEMENT us-claim-statement (#PCDATA | b | i | u | sup | sub | smallcaps)*>
```

```
<!ELEMENT us-classifications-ipcr (#PCDATA)>
```

```
<!ELEMENT us-deceased-inventor (addressbook)>
```

```
<!ATTLIST us-deceased-inventor sequence CDATA #REQUIRED >
```

```
<!--Document (parent) of which the document in hand (child) is a divisional reissue. If there is more than one divisional reissue, siblings are indicated by multiple occurrences of child. ST. 32 name: B641US.-->
```

```
<!ELEMENT us-divisional-reissue (us-relation)>
```

```
<!--Claim for publication in Official Gazette. ST.32 name: B578US-->
```

```
<!ELEMENT us-exemplary-claim (#PCDATA)>
```

```
<!ELEMENT us-field-of-classification-search (us-classifications-ipcr | classification-national)+>
```

```
<!--Continued prosecution application flag. If this element is present, the value of the cpa-text attribute shall be rendered on the front page of the patent grant publication.-->
```

```
<!ELEMENT us-issued-on-continued-prosecution-application EMPTY>
```

```
<!ATTLIST us-issued-on-continued-prosecution-application grant-cpa-text CDATA #FIXED
'This patent issued on a continued prosecution application (CPA) filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provision of 35 U.S.C. 154(a)(2).' >
```

```
<!--External files containing alternative formats of mathematical equations.-->
```

```
<!ELEMENT us-math (img?)>
```

```
<!ATTLIST us-math idrefs IDREFS #REQUIRED
                    nb-file CDATA #REQUIRED >
```

```
<!ELEMENT us-megatable-doc (p) >
```

```
<!--If there is an optical-microform appendix (microfiche, microfilm, microcard, etc.), the number
```

of microforms followed by the number of pages imaged thereon (separated by a comma) are placed in this element. ST.32 name: B594US-->

<!ELEMENT us-microform-quantity (#PCDATA)>

<!--Provisional application that is the basis of the document in hand. ST.32 name: B680US.-->

<!ELEMENT us-provisional-application (document-id, us-provisional-application-status?)>

<!--Status of the provisional application that is the basis of the document in hand.-->

<!ELEMENT us-provisional-application-status (#PCDATA)>

<!--Present when a reissue application was merged with a reexamination proceeding. The issuing document is a reissue patent which shows the following Reexamination results statement on the reissue patent front page, immediately following the abstract. NNNNN represents the Reexamination Request Number, and YYYYMMDD the filing date. "The questions raised in reexamination request No.90/NNNNN, filed YYYYMMDD, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 USC 307 as provided in 37 CFR 1.570(e)." Document (parent) under reexamination that merged with the reissue proceedings from which the document in hand (child) resulted. ST.32 name: B645US.-->

<!ELEMENT us-reexamination-reissue-merger (relation)>

<!--Various relationships between the patent in hand and other patent grants or applications. Contains either an additional application, a divisional application, continuations, reissues, divisional reissues, reexamination, merged reissues reexamination, substitute, or provisional application. ST.32 name: B600.-->

<!ELEMENT us-related-documents (addition | division | continuation | continuation-in-part | continuing-reissue | reissue | us-divisional-reissue | reexamination | us-reexamination-reissue-merger | substitution | us-provisional-application | utility-model-basis | correction | related-publication)+>

<!--If there is more than one divisional reissue, siblings are indicated by multiple occurrences of child.-->

<!ELEMENT us-relation (parent-doc , child-doc+)>

<!--This person is successor to the rights of an inventor who is deceased, insane, or legally incapacitated.-->

<!ELEMENT us-rights (#PCDATA)>

```

<!ATTLIST us-rights to-dead-inventor CDATA #REQUIRED
                kind                (heir |
                                     heiress |
                                     executor |
                                     executrix |
                                     estate |
                                     legal-representative |
                                     administrator |
                                     administratrix |
                                     legal-representatives |
                                     heirs |
                                     executors |
                                     legal-heirs ) #REQUIRED >
  
```

```

<!ELEMENT us-sequence-list-doc ( p?, sequence-list)>
  
```

```

<!ATTLIST us-sequence-list-doc id      ID      #IMPLIED
                                lang    CDATA  #IMPLIED
                                status  CDATA  #IMPLIED >
  
```

**<!--Statutory Invention Registration (SIR) flag. If this tag is present, the value of the sir-text attribute shall be rendered on the front page of the patent grant publication. ST.32 name: B122US-->**

```

<!ELEMENT us-sir-flag EMPTY>
  
```

**<!ATTLIST us-sir-flag sir-text CDATA #FIXED 'A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C.157.' >**

**<!--Indicates that the term of the patent has been extended under 35 USC 154(b) by showing the length of the extension. The content of this tag must be literally either "5 years", or the number of days (as an integer) if the extension is less than five years. ST.32 name: B474US-->**

```

<!ELEMENT us-term-extension (#PCDATA)>
  
```

<!--Term of the patent grant. ST.32 name: B472-->

<!ELEMENT us-term-of-grant (text | length-of-grant | us-term-extension | disclaimer | lapse-of-patent)+>

<!--Document on which utility model is based. INID 67. ST.32 equivalency = B670.-->

<!ELEMENT utility-model-basis (relation)>

<!--The plant variety name.-->

<!ELEMENT variety (#PCDATA)>

<!--(US: not used in publication.)-->

<!ELEMENT vid (#PCDATA)>

## 附錄二 Patent Assignment DTD

```

<!--                                     -->
<!--=====
=====-->
<!-- USPTO Recordation Form Cover Sheet for Patent Assignments           -->
<!--                                     -->
<!--                                     -->
<!--=====
=====-->
<!-- Root Document Definition                                           -->
<!--=====
=====-->
<!NOTATION TIF SYSTEM "">
<!NOTATION TIFF SYSTEM "">
<!NOTATION JPG SYSTEM "">
<!ELEMENT patent-assignment (asgn-info, submission-type, conveyance-type, conveyance-text?,
conveying-parties, receiving-parties, correspondent, delivery-method, pages, state-accept,
signers-name, date-signed, email-address?, figures)>

<!ELEMENT asgn-info (asgn-title, asgn-version)>
<!ATTLIST asgn-info
    label CDATA #FIXED "asgn-info"
>
<!ELEMENT asgn-title EMPTY>
<!ATTLIST asgn-title
    label CDATA #FIXED "PATENT ASSIGNMENT"
    class CDATA #FIXED "primitive"
>
<!ELEMENT asgn-version EMPTY>
<!ATTLIST asgn-version
    label CDATA #FIXED "Electronic Version 1.0.1"
    class CDATA #FIXED "version"
    distribution CDATA #FIXED "2000-10-16">
<!--=====
  
```

```
=====>
<!-- SUBMITCODE - default value provided by GUI for this release -->
<!--=====
=====>
<!ELEMENT submission-type (#PCDATA)>
<!ATTLIST submission-type
    label CDATA #FIXED "Submission Type"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{1}"
>
<!--=====
=====>
<!-- REELFRAME -->
-->
<!--=====
=====>
<!ELEMENT reel-nr (#PCDATA)>
<!ATTLIST reel-nr
    label CDATA #FIXED "Reel Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{6}"
>
<!ELEMENT frame-nr (#PCDATA)>
<!ATTLIST frame-nr
    label CDATA #FIXED "Frame Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{4}"
>
<!--=====-->
<!-- CONVEYCODE -->
<!--=====-->
<!ELEMENT conveyance-type (conveyance-code, conveyance-text)>
<!ATTLIST conveyance-type
    label CDATA #FIXED "Conveyance Type Group"
>
<!ELEMENT conveyance-code EMPTY>
<!ATTLIST conveyance-code
```



```
label CDATA #FIXED "Brief"
class CDATA #FIXED "primitive"
convey-code-options CDATA #FIXED "ASSIGNMENT OF ASSIGNOR'S INTEREST |
MORTGAGE | LIEN | LICENSE | SECURITY INTEREST | MERGER | OPTION | DECREE OF
DISTRIBUTION | LETTERS OF TESTAMENTARY | LETTERS OF ADMINISTRATION |
CHANGE OF NAME | NUNC PRO TUNC ASSIGNMENT | COURT APPOINTMENT |
RELEASE BY SECURED PARTY | CONDITIONAL ASSIGNMENT | CONFIRMATORY
LICENSE | FREE FORM MESSAGE"
>
<!ELEMENT conveyance-text (#PCDATA)>
<!ATTLIST conveyance-text
label CDATA #FIXED "Brief Text"
class CDATA #FIXED "primitive"
data-format CDATA #FIXED ".{240}"
>
<!ELEMENT correspondent (telephone-nbr?, (customer-nbr | (corr-name1, addr1?, addr2?,
addr3?, addr4)))>
<!ATTLIST correspondent
label CDATA #FIXED "Correspondent"
>
<!ELEMENT telephone-nbr (#PCDATA)>
<!ATTLIST telephone-nbr
label CDATA #FIXED "Telephone No."
class CDATA #FIXED "primitive"
data-format CDATA #FIXED ".{20}"
>
<!ELEMENT customer-nbr EMPTY>
<!ATTLIST customer-nbr
label CDATA #FIXED "Customer Number"
class CDATA #FIXED "primitive"
data-format CDATA #FIXED ".{9}"
>
<!ELEMENT corr-name1 (#PCDATA)>
<!ATTLIST corr-name1
label CDATA #FIXED "Correspondent"
class CDATA #FIXED "primitive"
data-format CDATA #FIXED ".{40}"
```

```
>
<!ELEMENT addr1 (#PCDATA)>
<!ATTLIST addr1
  label CDATA #FIXED "Address 1"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{40}"
>
<!ELEMENT addr2 (#PCDATA)>
<!ATTLIST addr2
  label CDATA #FIXED "Address 2"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{40}"
>
<!ELEMENT addr3 (#PCDATA)>
<!ATTLIST addr3
  label CDATA #FIXED "Address 3"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{40}"
>
<!ELEMENT addr4 (city, state-country-name, zip-code?)>
<!ATTLIST addr4
  label CDATA #FIXED "Address 4"
>
<!--=====-->
<!-- FEEINFO -->
<!--=====-->
<!ELEMENT fee-information (fee-amount, fee-amount-user, payment-method, deposit-account-nr?,
fee-authorization?, fee-flag)>
<!ATTLIST fee-information
  label CDATA #FIXED "Fee Information"
>
<!ELEMENT fee-amount (#PCDATA)>
<!ATTLIST fee-amount
  label CDATA #FIXED "Fee Amount"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED "\d*"
>
```

```
<!ELEMENT fee-amount-user (#PCDATA)>
<!ATTLIST fee-amount-user
  label CDATA #FIXED "User Fee Amount"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED "\d*"
>
<!ELEMENT payment-method (#PCDATA)>
<!ATTLIST payment-method
  label CDATA #FIXED "Pay Code"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{1}"
>
<!ELEMENT deposit-account-nr (#PCDATA)>
<!ATTLIST deposit-account-nr
  label CDATA #FIXED "Deposit Account Number"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{7}"
>
<!ELEMENT fee-authorization (#PCDATA)>
<!ATTLIST fee-authorization
  label CDATA #FIXED "Fee Authorization"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{1}"
>
<!ELEMENT fee-flag (#PCDATA)>
<!ATTLIST fee-flag
  label CDATA #FIXED "Fee Flag"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{1}"
>
<!--=====-->
<!-- DOMREP -->
<!--=====-->
<!ELEMENT domestic-rep (name1, street, internal, city, state-country-name, zip-code)>
<!ATTLIST domestic-rep
  label CDATA #FIXED "Domestic Rep"
>
```

```
<!ELEMENT state-country-name (state-name | country-name)>
<!ATTLIST state-country-name
  label CDATA #FIXED "State-Country Name"
>
<!ELEMENT state-country-code (state-code | country-code)>
<!ATTLIST state-country-code
  label CDATA #FIXED "State-Country Code"
>
<!ELEMENT name1 (#PCDATA)>
<!ATTLIST name1
  label CDATA #FIXED "Name"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{240}"
>
<!ELEMENT street (#PCDATA)>
<!ATTLIST street
  label CDATA #FIXED "Street Address"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{50}"
>
<!ELEMENT internal (#PCDATA)>
<!ATTLIST internal
  label CDATA #FIXED "Internal Address"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{50}"
>
<!ELEMENT city (#PCDATA)>
<!ATTLIST city
  label CDATA #FIXED "City"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{40}"
>
<!ELEMENT state-name EMPTY>
<!ATTLIST state-name
  label CDATA #FIXED "State"
  class CDATA #FIXED "primitive"
  state-options CDATA #FIXED "ALABAMA | ALASKA | AMERICAN SAMOA | ARIZONA |
```

ARKANSAS | CALIFORNIA | COLORADO | CONNECTICUT | DELAWARE | DISTRICT OF  
COLUMBIA | FLORIDA | GEORGIA | GUAM | HAWAII | IDAHO | ILLINOIS | INDIANA |  
IOWA | KANSAS | KENTUCKY | LOUISIANA | MAINE | MARYLAND | MASSACHUSETTS |  
MICHIGAN | MINNESOTA | MISSISSIPPI | MISSOURI | MONTANA | NEBRASKA | NEVADA |  
NEW HAMPSHIRE | NEW JERSEY | NEW MEXICO | NEW YORK | NORTH CAROLINA |  
NORTH DAKOTA | NORTHERN MARIANA ISLANDS | OHIO | OKLAHOMA | OREGON |  
PENNSYLVANIA | PUERTO RICO | RHODE ISLAND | SOUTH CAROLINA | SOUTH DAKOTA  
| TENNESSEE | TEXAS | UTAH | VERMONT | VIRGINIA | VIRGIN ISLANDS, U.S. |  
WASHINGTON | WEST VIRGINIA | WISCONSIN | WYOMING"

>

<!ELEMENT country-name EMPTY>

<!ATTLIST country-name

label CDATA #FIXED "Country"

class CDATA #FIXED "primitive"

country-options CDATA #FIXED "AFGHANISTAN | ALBANIA | ALGERIA | ANDORRA |  
ANGOLA | ANGUILLA | ANTARCTICA | ANTIGUA AND BARBUDA | ARGENTINA |  
ARMENIA | ARUBA | AUSTRALIA | AUSTRIA | AZERBAIJAN | BAHAMAS | BAHRAIN |  
BANGLADESH | BARBADOS | BELARUS | BELGIUM | BELIZE | BENIN | BERMUDA |  
BHUTAN | BOLIVIA | BOSNIA AND HERZEGOVINA | BOTSWANA | BOUVET ISLAND |  
BRAZIL | BRITISH INDIAN OCEAN TERRITORY | BRUNEI DARUSSALAM | BULGARIA |  
BURKINA FASO | BURUNDI | CAMBODIA | CAMEROON | CANADA | CANTON AND  
ENDERBURY ISLANDS | CAPE VERDE | CAYMAN ISLANDS | CENTRAL AFRICAN  
REPUBLIC | CHAD | CHANNEL ISLANDS | CHILE | CHINA | CHRISTMAS ISLAND |  
COCOS (KEELING) ISLANDS | COLOMBIA | COMOROS | CONGO | CONGO, THE  
DEMOCRATIC REPUBLIC OF THE | COOK ISLANDS | COSTA RICA | COTE D'IVOIRE |  
CROATIA | CUBA | CYPRUS | CZECH REPUBLIC | CZECHOSLOVAKIA | DENMARK |  
DJIBOUTI | DOMINICA | DOMINICAN REPUBLIC | DRONNING MAUD LAND | EAST  
TIMOR | ECUADOR | EGYPT | EL SALVADOR | ENGLAND | EQUATORIAL GUINEA |  
ERITREA | ESTONIA | ETHIOPIA | FALKLAND ISLANDS (MALVINAS) | FAROE ISLANDS |  
FIJI | FINLAND | FRANCE | FRENCH GUIANA | FRENCH POLYNESIA | FRENCH  
SOUTHERN AND ANTARCTIC TERRITORIES | FRENCH SOUTHERN TERRITORIES |  
GABON | GAMBIA | GEORGIA | GERMAN DEMOCRATIC REPUBLIC | GERMANY | GHANA  
| GIBRALTAR | GREAT BRITAIN | GREECE | GREENLAND | GRENADA | GUADELOUPE |  
GUATEMALA | GUINEA | GUINEA-BISSAU | GUYANA | HAITI | HEARD ISLAND AND  
MCDONALD ISLANDS | HOLY SEE (VATICAN CITY STATE) | HONDURAS | HONG KONG |  
HUNGARY | ICELAND | INDIA | INDONESIA | IRAN, ISLAMIC REPUBLIC OF | IRAQ |  
IRELAND | ISLE OF MAN | ISRAEL | ITALY | JAMAICA | JAPAN | JORDAN | KAZAKSTAN |

KENYA | KIRIBATI | KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF | KOREA, REPUBLIC OF | KUWAIT | KYRGYZSTAN | LAO PEOPLE'S DEMOCRATIC REPUBLIC | LATVIA | LEBANON | LESOTHO | LIBERIA | LIBYAN ARAB JAMAHIRIYA | LIECHTENSTEIN | LITHUANIA | LUXEMBOURG | MACAU | MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF | MADAGASCAR | MALAWI | MALAYSIA | MALDIVES | MALI | MALTA | MARSHALL ISLANDS | MARTINIQUE | MASQAT | MAURITANIA | MAURITIUS | MAYOTTE | MEXICO | MIRCRONESIA, FEDERATED STATES OF | MOLDOVA, REPUBLIC OF | MONACO | MONGOLIA | MONTSERRAT | MOROCCO | MOZAMBIQUE | MYANMAR | NAMIBIA | NAURU | NEPAL | NETHERLANDS | NETHERLANDS ANTILLES | NEUTRAL ZONE | NEW CALEDONIA | NEW ZEALAND | NICARAGUA | NIGER | NIGERIA | NIUE | NORFOLK ISLAND | NORTHERN IRELAND | NORWAY | NOT PROVIDED | NUNAVUT | OMAN | PACIFIC ISLANDS (TRUST TERRITORY) | PAKISTAN | PALAU | PANAMA | PANAMA CANAL ZONE | PAPUA NEW GUINEA | PARACEL ISLANDS | PARAGUAY | PERU | PHILIPPINES | PITCAIRN | POLAND | PORTUGAL | QATAR | REUNION | ROMANIA | RUSSIAN FEDERATION | RWANDA | SAINT HELENA | SAINT KITTS AND NEVIS | SAINT LUCIA | SAINT PIERRE AND MIQUELON | SAINT VINCENT AND THE GRENADINES | SAMOA | SAN MARINO | SAO TOME AND PRINCIPE | SAUDI ARABIA | SCOTLAND | SENEGAL | SEYCHELLES | SIERRA LEONE | SINGAPORE | SLOVAKIA | SLOVENIA | SOLOMON ISLANDS | SOMALIA | SOUTH AFRICA | SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS | SPAIN | SRI LANKA | STATELESS | SUDAN | SURINAME | SVALBARD AND JAN MAYEN | SWAZILAND | SWEDEN | SWITZERLAND | SYRIAN ARAB REPUBLIC | TAIWAN | TAJIKISTAN | TANZANIA, UNITED REPUBLIC OF | THAILAND | TIBET | TOGO | TOKELAU | TONGA | TRINIDAD AND TOBAGO | TUNISIA | TURKEY | TURKMENISTAN | TURKS AND CAICOS ISLANDS | TUVALU | UGANDA | UKRAINE | UNION OF SOVIET SOCIALIST REPUBLICS | UNITED ARAB EMIRATES | UNITED KINGDOM | UNITED STATES | URUGUAY | UZBEKISTAN | VANUATU | VENEZUELA | VIET NAM | VIET-NAM, DEMOCRATIC REPUBLIC OF | VIRGIN ISLANDS, BRITISH | WALES | WALLIS AND FUTUNA | WEST BANK/GAZA | WESTERN SAHARA | YEMEN | YEMEN, DEMOCRATIC | YUGOSLAVIA | ZAMBIA | ZIMBABWE"

>

<!ELEMENT state-code EMPTY>

<!ATTLIST state-code

label CDATA #FIXED "State Code"

class CDATA #FIXED "primitive"

state\_code-options CDATA #FIXED "AL | AK | AS | AZ | AR | CA | CO | CT | DE | DC | FL | GA | GU | HI | ID | IL | IN | IA | KS | KY | LA | ME | MD | MA | MI | MN | MS | MO | MT | NE | NV | NH | NJ | NM | NY | NC | ND | MP | OH | OK | OR | PA | PR | RI | SC | SD | TN | TX | UM | UT | VT |

```

VA | VI | WA | WV | WI | WY"
>
<!ELEMENT country-code EMPTY>
<!ATTLIST country-code
    label CDATA #FIXED "Country Code"
    class CDATA #FIXED "primitive"
    country_code-options CDATA #FIXED "AF | AL | DZ | AD | AO | AI | AQ | AG | AR | AM | AW
| AU | AT | AZ | BS | BH | BD | BB | BY | BE | BZ | BJ | BM | BT | BO | BA | BW | BV | BR | IO | BN |
BG | BF | BI | KH | CM | CA | CT | CV | KY | CF | TD | CHA | CL | CN | CX | CC | CO | KM | CG |
CD | CK | CR | CI | HR | CU | CY | CZ | CS | DK | DJ | DM | DO | NQ | TP | EC | EG | SV | ENG |
GQ | ER | EE | ET | FK | FO | FJ | FI | FR | GF | PF | FQ | TF | GA | GM | GE | DD | DE | GH | GI |
GBN | GR | GL | GD | GP | GT | GN | GW | GY | HT | HM | VA | HN | HK | HU | IS | IN | ID | IR | IQ
| IE | IOM | IL | IT | JM | JP | JO | KZ | KE | KI | KP | KR | KW | KG | LA | LV | LB | LS | LR | LY |
LI | LT | LU | MO | MK | MG | MW | MY | MV | ML | MT | MH | MQ | MR | MA | MU | YT | MX |
FM | MD | MC | MN | MS | MAX | MZ | MM | NA | NR | NP | NL | AN | NT | NC | NZ | NI | NE | NG |
NU | NF | NIR | NO | XP | NU | OM | PC | PK | PW | PA | PZ | PG | QP | PY | PE | PH | PN | PL | PT |
QA | RE | RO | RU | RW | SH | KN | LC | PM | VC | WS | SM | ST | SA | SCT | SN | SC | SL | SG | SK
| SI | SB | SO | ZA | GS | ES | LK | ZZ | SD | SR | SJ | SZ | SE | CH | SY | TW | TJ | TZ | TH | 54 | TG |
TK | TO | TT | TN | TR | TM | TC | TV | UG | UA | SU | AE | GB | US | UY | UZ | VU | VE | VN | VD |
VG | WLS | WF | PS | EH | YE | YD | YU | ZM | ZW"
>
<!ELEMENT zip-code (#PCDATA)>
<!ATTLIST zip-code
    label CDATA #FIXED "Zip Code"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{15}"
>
<!ELEMENT domestic-rep-attached (#PCDATA)>
<!ATTLIST domestic-rep-attached
    label CDATA #FIXED "Domestic Rep Flag"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{1}"
>
<!--=====-->
<!-- CONVEYPARTY -->
<!-- -->
<!-- sequence-nr indicates entry number -->

```

```

<!--=====-->
<!ELEMENT conveying-parties (conveying-party+)>
<!ATTLIST conveying-parties
    label CDATA #FIXED "Conveying Parties"
>
<!ELEMENT conveying-party (name1, sequence-nr, exec-dt)>
<!ATTLIST conveying-party
    label CDATA #FIXED "Conveying Party"
>
<!ELEMENT sequence-nr (#PCDATA)>
<!ATTLIST sequence-nr
    label CDATA #FIXED "Sequence Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED "\d*"
>
<!ELEMENT exec-dt (#PCDATA)>
<!ATTLIST exec-dt
    label CDATA #FIXED "Execution Date"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED "MM/DD/YYYY"
>
<!--=====-->
<!-- RECPARTY -->
<!-- -->
<!-- sequence-nr indicates entry number -->
<!--=====-->
<!ELEMENT receiving-parties (receiving-party+)>
<!ATTLIST receiving-parties
    label CDATA #FIXED "Receiving Parties"
>
<!ELEMENT receiving-party (name1, sequence-nr, street?, internal?, city, state-country-name,
zip-code?)>
<!ATTLIST receiving-party
    label CDATA #FIXED "Receiving Party"
>
<!--=====-->
<!-- PROPERTIES -->

```



```

<!--                                     -->
<!--   num-prop derived, value of 1 for version   -->
<!--=====-->
<!ELEMENT properties (numprop, (application-nr | patent-nr | pct-application)+)>
<!ATTLIST properties
    label CDATA #FIXED "Properties"
>
<!ELEMENT numprop (#PCDATA)>
<!ATTLIST numprop
    label CDATA #FIXED "Number of Properties"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED "\d*"
>
<!ELEMENT application-nr (#PCDATA)>
<!ATTLIST application-nr
    label CDATA #FIXED "Application Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{8}"
>
<!ELEMENT patent-nr (#PCDATA)>
<!ATTLIST patent-nr
    label CDATA #FIXED "Patent Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{7}"
>
<!ELEMENT pct-application (#PCDATA)>
<!ATTLIST pct-application
    label CDATA #FIXED "PCT Number"
    class CDATA #FIXED "primitive"
    data-format CDATA #FIXED ".{9}"
>
<!--=====-->
<!-- MARKNAME (only applies to Trademarks)   -->
<!--=====-->
<!--=====-->
<!-- New ePave User and App Identification and Data Admin   -->
<!--=====-->
  
```

```
<!ELEMENT pages (#PCDATA)>
<!ATTLIST pages
  label CDATA #FIXED "Pages"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED "\d*"
>
<!ELEMENT state-accept (#PCDATA)>
<!ATTLIST state-accept
  label CDATA #FIXED "Statement"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{1}"
>
<!ELEMENT signers-name (#PCDATA)>
<!ATTLIST signers-name
  label CDATA #FIXED "Signer Name"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{240}"
>
<!ELEMENT date-signed (#PCDATA)>
<!ATTLIST date-signed
  label CDATA #FIXED "Date Signed"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED "MM/DD/YYYY"
>
<!ELEMENT email-address EMPTY>
<!ATTLIST email-address
  label CDATA #FIXED "EMail"
  data-format CDATA #FIXED "?@??"
>
<!--=====
=====-->
<!-- Delivery Method Definition -->
<!--=====
=====-->
<!ELEMENT delivery-method (method, fax-nbr?)>
<!ATTLIST delivery-method
  label CDATA #FIXED "Delivery Method"
```

```
>
<!ELEMENT method (#PCDATA)>
<!ATTLIST method
  label CDATA #FIXED "Method"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{1}"
>
<!ELEMENT fax-nbr (#PCDATA)>
<!ATTLIST fax-nbr
  label CDATA #FIXED "Fax Number"
  class CDATA #FIXED "primitive"
  data-format CDATA #FIXED ".{20}"
>
<!--=====
=====-->
<!-- Figures (Attachments) Definition -->
<!--=====
=====-->
<!ELEMENT figures (figure*)>
<!ATTLIST figures
  label CDATA #FIXED "Figures"
  id CDATA #IMPLIED
>
<!ELEMENT figure (artwork, drawing-reference-character)>
<!ATTLIST figure
  label CDATA #FIXED "Image"
  class CDATA #FIXED "primitive"
  id CDATA #IMPLIED
>
<!ELEMENT artwork EMPTY>
<!ATTLIST artwork
  label CDATA #FIXED "Entity Reference"
  source CDATA #REQUIRED
>
<!ELEMENT drawing-reference-character (#PCDATA)>
<!ATTLIST drawing-reference-character
  label CDATA #FIXED "Order"
```

```
class CDATA #FIXED "primitive"  
>  
<!-- source CDATA #REQUIRED -->  
<!-- source-notation (tif | jpg) #REQUIRED-->  
<!-- alt CDATA #IMPLIED -->  
<!-- type (tif | jpg) #IMPLIED -->  
<!-- height CDATA #IMPLIED -->  
<!-- width CDATA #IMPLIED -->
```