The Comprehensive IPC Reform Search: Mission Impossible?

Terri Dockter & Robert Austin
FIZ Karlsruhe
Agenda

• Review of IPC Reform
• Implementation of IPC Reform on STN
  – Focus on DWPI\textsuperscript{SM} and INPADOCDB
  – Search, display and analysis fields
  – STN IPC thesaurus feature
• A few search tips
International Patent Classification

• In-depth classification system assigned by patent offices around the world
  – Unified system for all patent documents worldwide
  – Used to establish patentability of patent applications

• Administered by WIPO
  – Based on the Strasbourg Agreement of 1971
  – Patent Cooperation Treaty (PCT) signatory authorities must classify patent publications using IPC codes

• 7 editions prior to IPC Reform (1968-2005)
  – 5 level hierarchy covering all technologies
  – Top level split into 8 sections (A-H)
Why Was IPC Reform Needed?

- Different needs at large versus small patent offices around the world
  - 5 year revision cycle
  - Level of detail
- Additional limitations pre-reform
  - Originally paper-based
  - No backfile reclassification
Main Features of IPC Reform

• A new two level scheme
  – Core for smaller patent offices
  – Advanced for larger patent offices

• Backfile reclassification
  – Worldwide Master Classification Database (MCD) created and maintained by the EPO
  – Backfile reclassification for pre-2006 documents
  – All documents subject to on-going reclassifications
  – MCD made available to patent information vendors

• More frequent revisions
  – First revision 2007.01, quarterly revisions planned
Advanced level

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<td>Side-members</td>
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<td>5/22</td>
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Core level

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From January 2006, many patent offices assign IPCs at the Advanced Level, while others assign IPCs at the Core Level.
### Authorities in INPADOCDB and DWPI Which Assign IPC’s at the Core Level

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(* Core/Advanced authorities)
### IPC Attributes

#### Attributes for IPC 1-7

- **MAIN**
- **SECONDARY**
- **ADDITIONAL**
- **INDEX**
- **INITIAL**
- **RECLASSIFIED**
- **CURRENT**
- **ORIGINAL**

#### Status of the IPC codes

- **ICI**
- **IC**
- **O**

#### Assigning Patent Office

- **EP, DE, US, ..**
- **C**
- **A**
- **S**
- **F**
- **L**
- **I**
- **N**
- **-**

#### IPC Reform Level

- **CORE**
- **ADVANCED**
- **SUBCLASS**

#### Position of the IPC code

- **FIRST**
- **LATER**

#### Significance of the IPC code

- **INVENTION**
- **NON-INVENTION**
- **HUMAN**
- **MACHINE**
- **SOFTWARE**

#### Method of assignment

- **ROLLED UP CORE**

(* Assigned by STN)
First Revision of IPC Reform Entered Into Force on Jan 1\textsuperscript{st}, 2007

• Advanced level codes were added
  – Processes for making harmful chemical substances harmless: A62D0003-00
  – Circuits or apparatus for the conversion of electric power:
    H02M0001-00  H02M0007-48  H02M0007-515  H02M0007-538  H02M0007-5387

• It is expected that up to 60,000 patent publications will eventually be reclassified
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(* Most of these are “gazette announcements” like GBA0 or FIA0 documents.)
Agenda

• Review of IPC Reform
• Implementation of IPC Reform on STN
  – Focus on DWPI\textsuperscript{SM} and INPADOCDB
  – Search, display and analysis fields
  – STN IPC thesaurus feature
• A few search tips
# IPC Reform Status in STN Databases

<table>
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</table>

The invention IPC reform code is in **bold**.

**Core and Advanced** classification codes are provided in STN patent databases.
STN Patent Databases Provide IPC Reclassification Data from the MCD

INPADOCDB provides all available reclassification data from the EPO MCD database (87% reclassified).

A number of other STN databases currently provide little or no EPO MCD IPC reclassification data.
This publication was originally classified with a Main IPC 7 classification.

Core and Advanced reclassification data from the EPO MCD is available on STN.
This Presentation Focuses on IPC
Reform in Two Major STN Patent Files

• INPADOCDB
  – Coverage of 80 patent authorities
  – Author abstract and titles
  – IPC, ECLA, ICO, IDT and National Classifications
  – Legal status including STN assigned categories
  – Patent and non-patent citations for 12 authorities

• Derwent World Patents Index®
  – Coverage of 41 patent authorities
  – Enhanced patent title and abstract
  – Thomson indexing and classifications
  – Author abstracts, titles and first claim
  – IPC and US National Classifications
Reminder: An INPADOCDB Patent Family Comprises Multiple Database Records

- **Record 1**
  - Publication 1: EP913216 A1
  - Publication 2: EP913216 B1
  - Legal Status

- **Record 2**
  - Publication 1: US2001600589 A1
  - Publication 2: US6338379 B2
  - Legal Status

- **Record n**
  - Publication 1: DE69807815 D1
  - Publication 2: DE69807815 T2
  - Legal Status

63 mil publications | 51 mil records | 35 mil patent families

All publications which are **directly** or **indirectly** linked via a priority application number form an INPADOCDB patent family. This is a broader definition than DWPI.
Reminder: All Members of a DWPI Patent Family Reside in a Single Database Record

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</table>

**basic index extension BIEX**

**invention part**

value-added text

*Title, Abstract*

**members part**

original text

*Title, Abstract, Main Claim*

All publications which have priorities in common with the DWPI basic patent form a DWPI patent family. This is a narrower definition than INPADOCDB.
Standardized IPC Reform Search Fields in All STN Patent Files

• /IPC is the IPC super search field
  – Both post and pre-reform codes are searchable in either post or pre-reform IPC format
    => S H01J0037-04/IPC (Reform format)
    => S H01J037-04/IPC (pre-Reform format)

• /IPC.KW is the IPC keyword field
  – IPC Reform keywords (attributes) and abbreviations

• The (S) operator links codes with keywords
  => S H01J0037-32/IPC (S) INVENTION /IPC.KW
  => S H01J0037-32/IPC (NOTS) RC /IPC.KW
IPC is Searchable in Patent Databases to Various Named Levels of Detail

- **Section**
  - => S E!!! /IPC Fixed Construction

- **Class**
  - => S E01! /IPC Construction of roads, railways, etc.

- **Subclass**
  - => S E01D /IPC Construction of bridges, viaducts, etc.

- **Group**
  - => S E01D0019 /IPC Construction elements for bridges

- **Subgroup**
  - => S E01D0019-12 /IPC Fastening railway tracks to bridges
### STN IPC Display Fields and Formats

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IPC display provides a simple family (invention) de-duplicated list of IPCs.

IPC.TAB display provides a tabular version of the family (invention) IPCs.

IPC.TAB.M display provides the full IPC attribute details for all DWPI patent family publications (members) in tabular form.
## IPC Reform Displays in INPADOCDB

**=> D IPC.TAB.F**

IPC.TAB.F display provides the full IPC attribute details in tabular form for all records which form the INPADOCDB patent family.

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</tbody>
</table>

STN | FIZ Karlsruhe
Display and Analysis of IPC Codes Following the IPC Reform

• Use a SET command to normalize IPC pre-reform codes to IPC Reform format
  => SET ICFORMAT ON PERM

• This setting applies IPC Reform format for pre-reform codes
  – Displays pre-Reform codes in Reform format
  – Uses IPC Reform format for STN ANALYZE
  – Provides a consistent multi-file environment
STN SELECT and ANALYZE Codes Are Available for IPC Reform Data

- **IPC**  All IPC Codes
- **IPC.F** First listed IPC and/or old ICM code
- **IPC.A** Selects all advanced level
- **IPC.AI** Selects all advanced level invention
- **IPC.C** Selects all core level
- **IPC.CI** Selects all core level invention
- **IPCI**  IPC Initial Classification
- **IPCR**  IPC Reclassification
Use SET ICFORMAT to Normalize IPC
Pre-Reform Codes to Reform Format

=> FILE INPADOCDB
=> S SPUTTERING CATHODE
L1  343 SPUTTERING CATHODE
   (SPUTTERING (W) CATHODE)

=> SET ICFORMAT ON
SET COMMAND COMPLETED

=> ANALYZE L1 IPC 1-
L2  ANALYZE L1 1- IPC : 194 TERMS

=> D TOP 5
L2  ANALYZE L1 1- IPC : 194 TERMS

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<td>210</td>
<td>61.22</td>
<td>H01J0037-32</td>
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<td>420</td>
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<td>54.23</td>
<td>C23C0014-34</td>
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<td>401</td>
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<td>53.35</td>
<td>C23C0014-35</td>
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<td>5</td>
<td>110</td>
<td>53</td>
<td>15.45</td>
<td>C23C0014-36</td>
</tr>
</tbody>
</table>

The INPADOCDB file provides author abstracts and titles for 42 patent authorities.

SET ICFORMAT ON
ensures that pre-Reform IPC codes are the same length as modern IPC
Reform codes, providing consistent analysis throughout the backfile.
The STN IPC Thesaurus

• STN provides the hierarchical structure of IPC codes as an online IPC thesaurus
• The IPC thesaurus features relationship codes useful for browsing and searching
  – IPC Reform CORE and ADVANCED codes
  – Broader (BT) and narrower (NT) terms
• See HELP THESAURUS and RCODE
<table>
<thead>
<tr>
<th>Code</th>
<th>Content</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>All advanced levels</td>
<td>E A01N0047-02+ADV/IPC</td>
</tr>
<tr>
<td>ALL</td>
<td>All Associated Terms (BT, SELF, NT, RT)</td>
<td>E C01C003-00+ALL/IPC</td>
</tr>
<tr>
<td>BRO (MAN)</td>
<td>Complete Class</td>
<td>E C01C+BRO/IPC</td>
</tr>
<tr>
<td>BT, BTn</td>
<td>Broader Terms (SELF, BT)</td>
<td>E C01F001-00+BT/IPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E C08L0061-08+BT3/IPC</td>
</tr>
<tr>
<td>COR</td>
<td>Corresponding CORE level</td>
<td>E A01N0047-04+COR/IPC</td>
</tr>
<tr>
<td>ED</td>
<td>Complete title of the SELF term and IPC manual edition</td>
<td>E C01F001-00+ED/IPC</td>
</tr>
<tr>
<td>HIE</td>
<td>Hierarchy Terms (Broader and Narrower Terms) (BT, SELF, NT)</td>
<td>E C01C003-00+HIE/IPC</td>
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<tr>
<td>INDEX</td>
<td>Complete title of the SELF term</td>
<td>E C01F001-00+INDEX/IPC</td>
</tr>
<tr>
<td>KT</td>
<td>Keyword Terms (catchwords) (SELF, KT)</td>
<td>E CYANOGEN+KT/IPC</td>
</tr>
<tr>
<td>NEXT</td>
<td>Next Classification</td>
<td>E C01C001-00+NEXT5/IPC</td>
</tr>
<tr>
<td>NT</td>
<td>Narrower Terms (SELF, NT)</td>
<td>E C01C+NT/IPC</td>
</tr>
<tr>
<td>PREV</td>
<td>Previous Classification</td>
<td>E C01C001-12+PREV10/IPC</td>
</tr>
<tr>
<td>RT (SIB)</td>
<td>Related Terms (SELF, RT)</td>
<td>E C01C003-20+RT/IPC</td>
</tr>
<tr>
<td>TI</td>
<td>Complete Title of the SELF Term and Broader Terms (BT, SELF)</td>
<td>E C01F001-00+TI/IPC</td>
</tr>
</tbody>
</table>
The +HIE Relationship Code Provides an Overview of the Code Hierarchy

<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
<th>Type</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>E4</td>
<td>1770</td>
<td>BT1</td>
<td>H01J0037-00/IPC</td>
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<tr>
<td>E5</td>
<td>25540</td>
<td>--</td>
<td>H01J0037-32/IPC</td>
</tr>
<tr>
<td>E6</td>
<td>7041</td>
<td>NT1</td>
<td>H01J0037-34/IPC</td>
</tr>
<tr>
<td>E7</td>
<td>172</td>
<td>NT1</td>
<td>H01J0037-36/IPC</td>
</tr>
</tbody>
</table>

---

**E4** 1770 BT1 H01J0037-00/IPC
Discharge tubes...
CORE
VALID FROM 19680901 TO PRESENT (IPC EDITION: 1-8)

**E5** 25540 --> H01J0037-32/IPC
. Gas-filled discharge tubes....
CORE
VALID FROM 19680901 TO PRESENT (IPC EDITION: 1-8)

**E6** 7041 NT1 H01J0037-34/IPC
. . operating with cathodic sputtering
ADVANCED
VALID FROM 19680901 TO PRESENT (IPC EDITION: 1-8)

**E7** 172 NT1 H01J0037-36/IPC
. . for cleaning surfaces while plating....
ADVANCED
VALID FROM 19800101 TO PRESENT (IPC EDITION: 3-8)

The CORE and ADVANCED relationships are clearly marked.
Agenda

• Review of IPC Reform
• Implementation of IPC Reform on STN
  – Focus on DWPI\textsuperscript{SM} and INPADOCDB
  – Search, display and analysis fields
  – STN IPC thesaurus feature
• A few search tips
Core Codes Rolled-up from Advanced
IPC Codes are Provided on STN

- Corresponding core codes for advanced codes are generated (rolled-up) and provided in STN records
- Rolled-up core (RC) codes are typically provided by patent offices, database producers or the EPO MCD
- If any RC codes are missing then STN generates and applies the appropriate rolled-up codes as needed
- RC code attributes are standardized by STN to “RC” and "MACHINE”, regardless of attributes in the original data
- Searching core codes automatically retrieves any narrower advanced level codes in the hierarchy
- If desired, the STN assigned “RC” attribute can be used to exclude RC codes from a core level code search
Use the “RC” Attribute to Exclude Rolled-up Core Codes

=> FILE INPADOCDB
=> E H01J0037-34+CORE/IPC
E1 6967 --&gt; H01J0037-34/IPC
E2 25146 CORE H01J0037-32/IPC
********** END **********
=> S H01J0037-34+CORE/IPC
L3 25396 H01J0037-34+CORE/IPC (2 TERMS)
=> D IPC
L3 ANSWER 1 OF 25396 INPADOCDB COPYRIGHT 2007 EPO/FIZ KA on STN
IPCI H01J0037-36 [I,A]; H01J0037-32 [I,C*]  
=> S H01J0037-34+CORE/IPC (NOTS) RC/IPC.KW
L4 25299 H01J0037-34+CORE/IPC (NOTS) RC/IPC.KW
=> D IPC
L4 ANSWER 1 OF 25299 INPADOCDB COPYRIGHT 2007 EPO/FIZ KA on STN
IPCI H01J0037-32 [I,A]; H01J0037-32 [I,C*]  

Searching a core code retrieves both intellectually indexed CORE codes, and rolled-up core codes.

Rolled-up core (RC) codes are marked with an asterisk (*).

Exclude RC’s using (NOTS) proximity.

An intellectually assigned core code answer.
ECLA Codes in INPADOCDB Offer Additional Search Options Beyond IPC’s

<table>
<thead>
<tr>
<th>ECLAS Definitions</th>
<th>H01J0037-34 is both an IPC and an ECLA (/EPC) code.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric discharge tubes or discharge lamps (spark-gaps H01T; accelerators H05H)</td>
<td></td>
</tr>
<tr>
<td>Discharge tubes with provision for introducing objects or material to be examined or processed therein (H01J33/00, H01J40/00, H01J41/00, H01J47/00, H01J49/00 take precedence; contactless testing of electronic circuits using electron beams G01R31/05; [N: particle accelerators H05H])</td>
<td></td>
</tr>
<tr>
<td>Gas-filled discharge tubes, [N: e.g. for surface treatment of objects such as by means of chemical reactions (general methods or devices for heat treatments of ferrous C21D1/38; methods of carburising or nitriding of metals in general C23C8/00; metallic material C23C8/36, C23C14/02, C23C18/50; methods for coating, plating H01L21/00; heating by discharge H05B) operating with cathodic sputtering (H01J37/36 takes precedence; [N: methods of cathodic sputtering C23C14/34])</td>
<td></td>
</tr>
</tbody>
</table>

ECLA typically offers an additional level of detail beyond IPC codes.

Browse ECLA definitions at: http://v3.espacenet.com/eclasrch
Extend an IPC Search to ECLA to Retrieve Additional Relevant Answers

=> S H01J0037-34?/EPC NOT H01J0037-34/IPC
L5 62 H01J0037-34?/EPC NOT H01J0037-34/IPC
=> D BIB IPC EPC
L5 ANSWER 1 OF 62 INPADOCDB COPYRIGHT 2007 EPO/FIZ KA on STN
AN 52928950 INPADOCDB ED 20070405 EW 200714 UP 20070405 UW 200714
TI MODULAR DEVICE FOR COATING SURFACES.
IN CSELELTIBOR; JILEKMOJMIR
PA PLATIT AG; PIVOT A.S.
PI KR 2007007251 A 20070115
PIT KRA OFFICIAL GAZETTE OF THE UNEXAMINED PATENTS
DAV 20070115 unexamined-printed-without-grant
STA PRE-GRANT PUBLICATION
AI KR 2006-7008721 A 20060504
AIT KRA Patent application
PRAI EP 2003-405753 A 20031017 (EPA)
PRAIT EPA Patent application
IPCI C23C0014-32 [I,A]; C23C0014-34 [I,A]; C23C0014-32 [I,C*]; C23C0014-34 [I,C*]
EPC C23C0014-34F H01J0037-34

ECLA (/EPC) are standardized to IPC Reform format for ease-of-searching.

Unique records are often found by extending an IPC search to include ECLA.
Thomson Scientific Value-added IPC Attributes “99” and “98” in DWPI

- Thomson Scientific assigns IPC’s at the subclass level in DWPI to any patent publications which have no patent office assigned IPC codes
  - An attribute of “99” is searchable in /IPC.KW
  - E.g. S H01J/IPC (S) 99/IPC.KW
- From January 2006, Thomson Scientific also applies its own “rolled-up” core codes, wherever they are missing from patent office data
  - An attribute of “98” is searchable in /IPC.KW
  - E.g. S H01J0037-32/IPC (NOTS) 98 /IPC.KW
If IPC’s are Missing Thomson Scientific
Assigns IPC’s at the Subclass Level

=> FILE WPINDEX

=> S H01J?/IPC AND SPUTTER? (2A) COAT? AND VACUUM (2A) CHAMBER?
L1 99 H01J?/IPC AND SPUTTER? (2A) COAT? AND VACUUM (2A) CHAMBER?

=> D BIB IPC 15

L1 ANSWER 15 OF 99 WPINDEX COPYRIGHT 2007
AN 2006-472148 [48] WPINDEX
DNN N2006-385501 [48]
TI Magnetron sputtering arrangement for use in e.g. sputter coating
chamber, has drive establishing relative movement between magnetic
field and sputtering surface, where movement describes rhombus-shaped
path with pointed corners
DC V05
IN WAGNER I
PA (BALV-C) UNAXIS BALZERS AG
PI WO--2006063484 A1 20060622 (200648) * EN 63[22]
ADT WO--2006063484 A1 2005WO-CH0000755 20051216
PRAI 2004US-000637164P 20041217
IPCI H01J [,S]

A subclass level IPC search refined with words often finds unique answers.

This relevant WO-A1 document was classified at the subclass level
(H01J) by Thomson Scientific.
Summary

- The change from IPC7 to IPC Reform was much more complex than for earlier revisions.
- The backfile reclassification project provides retrieval of older documents with new codes, but is not implemented in every patent database.
- Throughout 2007 IPC Reform will continue to be a challenge for Patent Offices, database producers, vendors and patent searchers.
- On STN, use the /IPC search field for pre- and post-reform codes, and SET ICFORMAT ON.
The Comprehensive IPC Reform Search: Mission Impossible?

Terri Dockter & Robert Austin
FIZ Karlsruhe