

Proposal of RSS Extension for Security Information Exchange

2006/06/30

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<http://jvn.jp/>

Opening

We propose JVNRSS (JP Vendor Status Notes RSS) as a security information sharing and exchanging specification. JVNRSS is based on RSS 1.0 and uses the "<dc:relation>" field defined in the Dublin Core as a Relational ID to correlate security information issued by various sources. JVNRSS uses the reference URL specified in a security alert, for example, an URL of the Common Vulnerability Exposure, CERT Advisory, CERT Vulnerability Note and CIAC Bulletin.

In this presentation, firstly we'll explain the specification and applications of JVNRSS. Secondly, we'll introduce the result of our feasibility study on JVNRSS and lastly we'll propose the RSS Extension for security information sharing.

Contents

1. Vulnerability Information Handling Framework in Japan
2. JVN: JP Vendor Status Notes
3. Proposal of RSS Extension for Security Information Exchange

Vulnerability Information Handling Framework in Japan

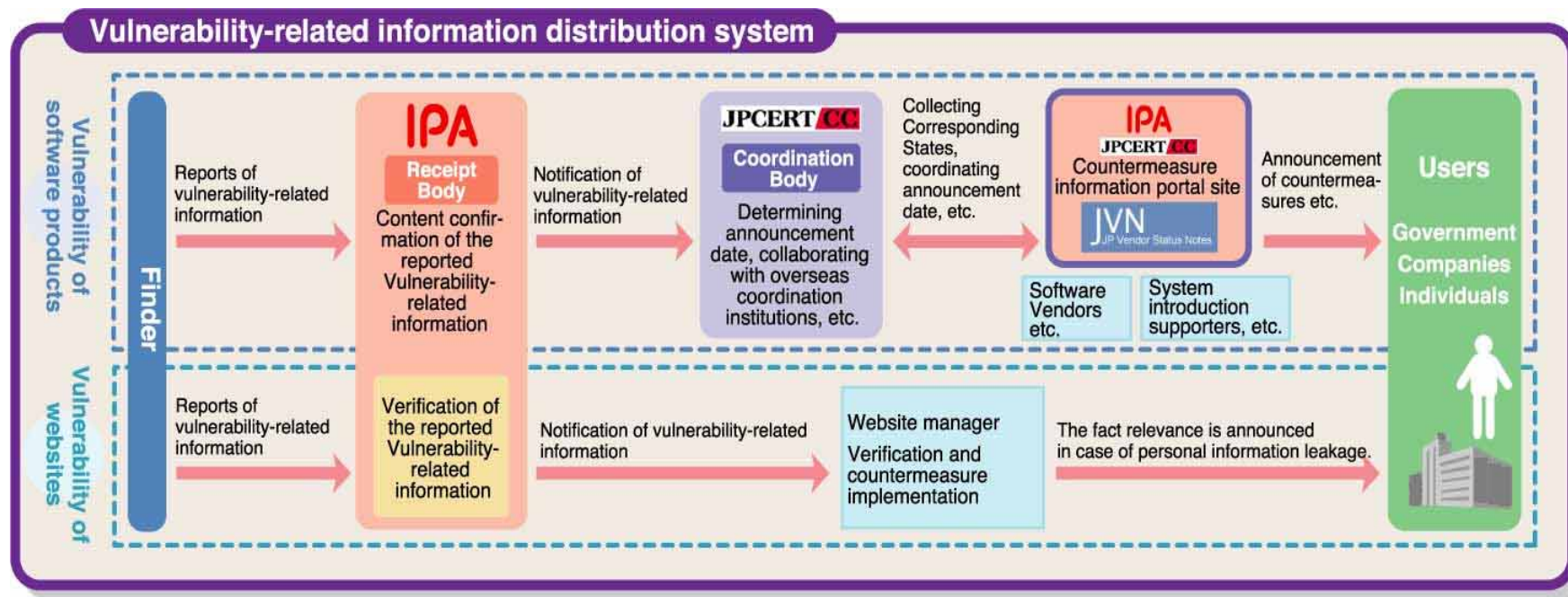


1.

Vulnerability Information Handling Framework in Japan

Under “the Guideline for Handling Vulnerability-related Information” Announced on July 7, 2004, into Effect on July 8, 2004

Government-private sector cooperation to promote a smooth information flow concerning vulnerabilities and countermeasures of software products/web site applications. The first vulnerability information handling mechanism that is based on the official rules.



Expected Effects

1. Promote proactive vulnerability response by vendors/web site operators
2. Curb neglect and improper publication of vulnerability information
3. Prevent leak of sensitive information and disruption of critical systems

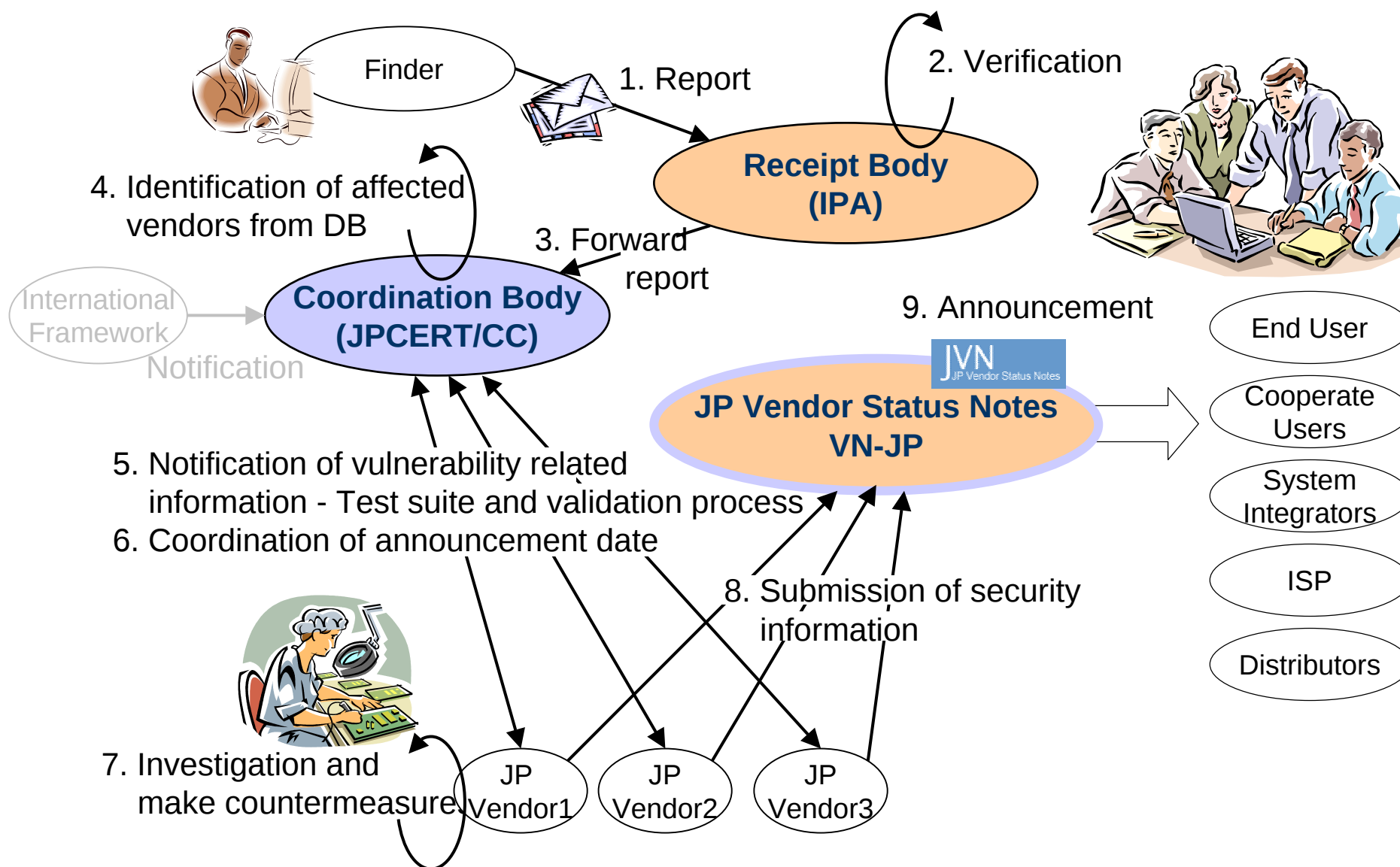
1.

Handling Framework for Vulnerability of Software product

- ▣ The Software Vulnerabilities Handling Framework defines the operational process for vulnerability information handling from a vulnerability's discovery to its release to the public.
 - Report a vulnerability to IPA
 - Coordinate the vulnerability information handling between JPCERT/CC and JP product vendors
 - Investigate and eliminate vulnerabilities in the products of each JP vendor
 - Announce security information on JVN
- ▣ JPCERT/CC collaborates with CERT/CC and NISCC on vulnerability information handling in the International framework.

1.

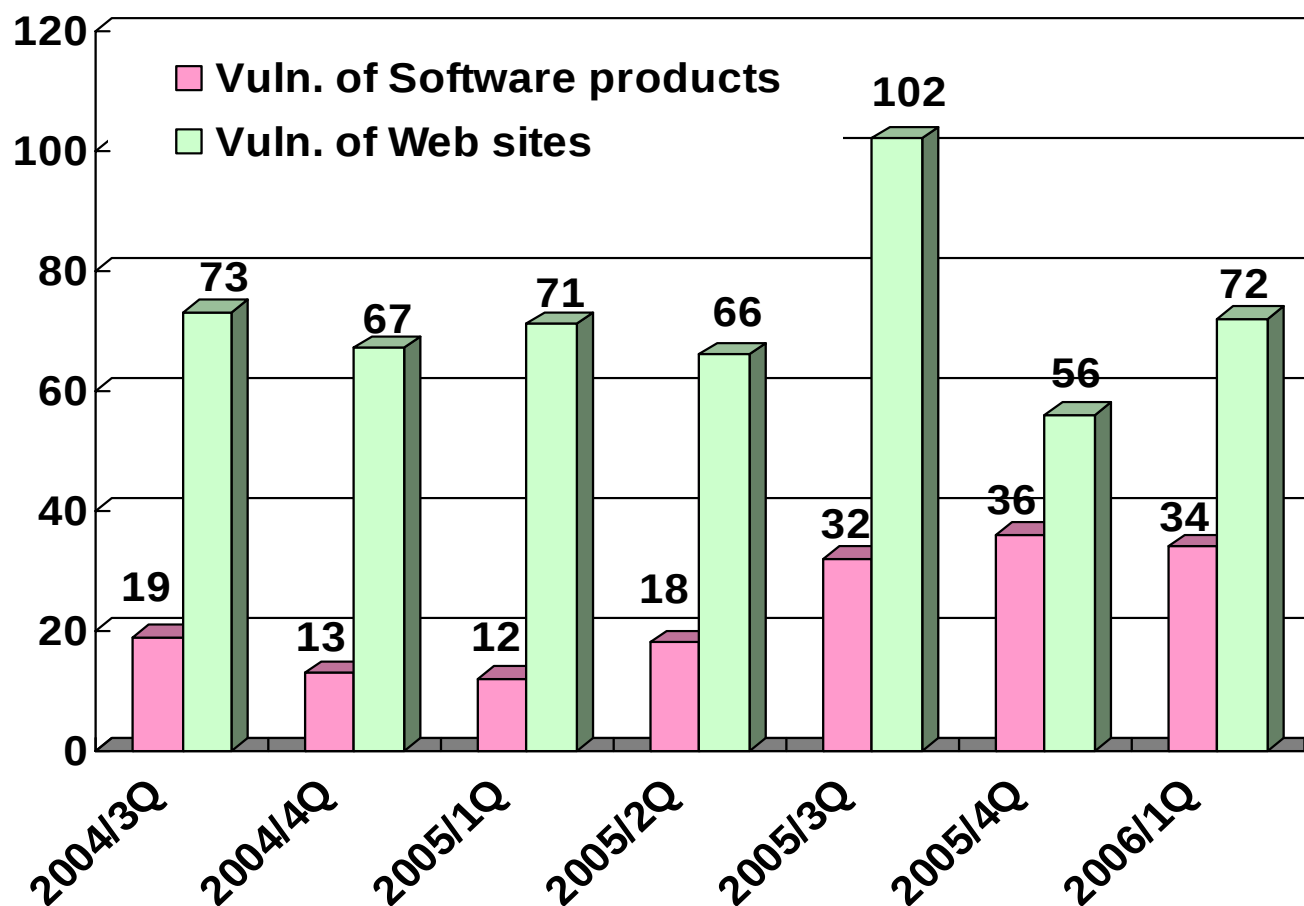
Handling Framework for Vulnerability of Software product



1.

Vulnerabilities reported Statistics 2004-2006

Vulnerabilities



<http://www.ipa.go.jp/security/index-e.html>

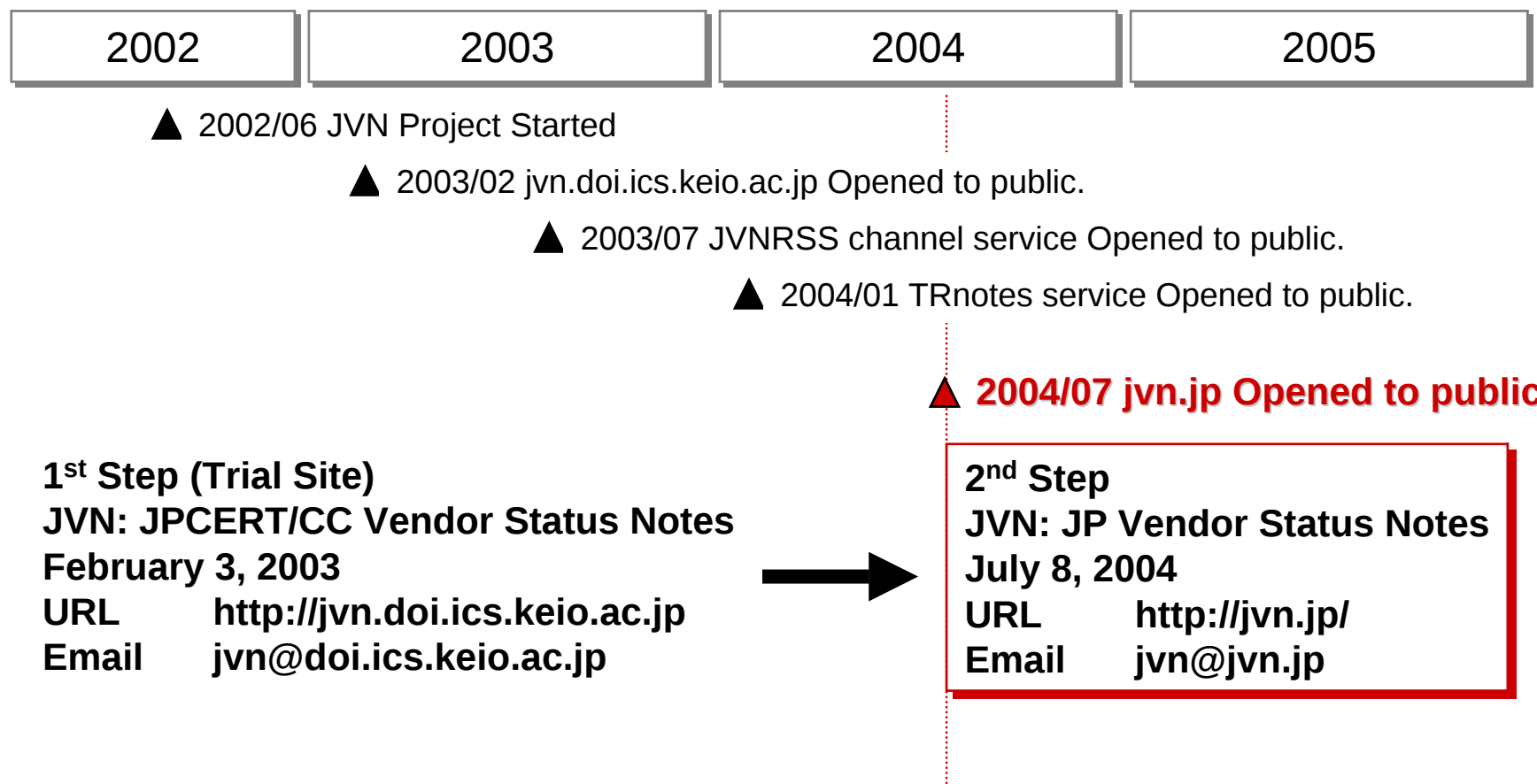
JVN: JP Vendor Status Notes



2.

JVN History

- ❑ JVN project started in 2003 to make a portal site of security information of domestic product vendors in Japan.



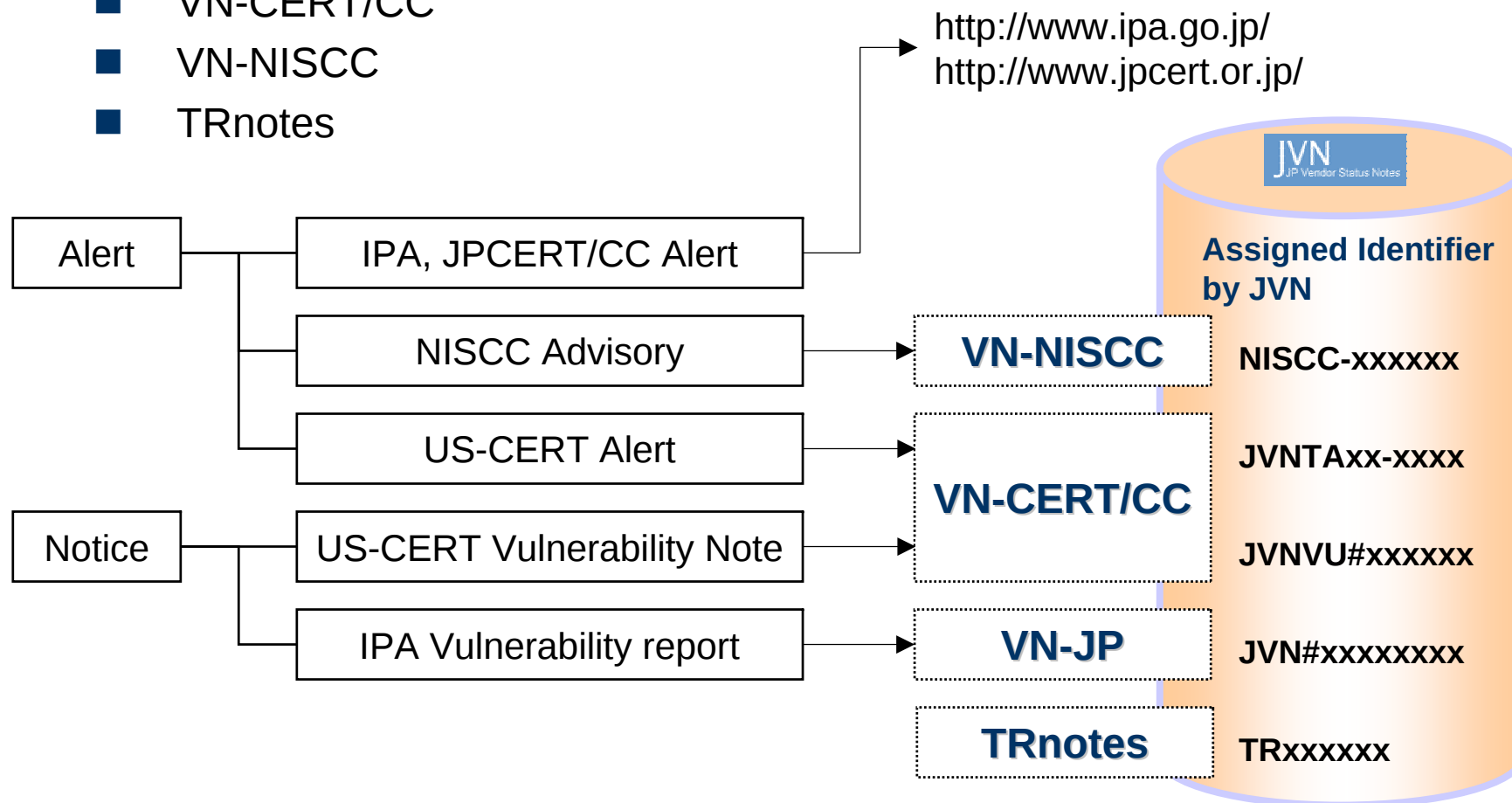
- July 2004, “JP Vendor Status Notes (JVN)” was launched as a portal site to offer security information on domestic product vendors under the vulnerability information handling framework in Japan.
 - Provide the Vendor Status Notes (VN) and the status Tracking Notes (TRnotes).
 - **“Vendor Status Notes (VN)”** VN is a service providing information on how to fix vulnerabilities. It is similar to the “CERT Vulnerability Notes” and follows up the IPA/JPCERT Vulnerability reports, US-CERT Alerts, US-CERT Vulnerability Notes and NISCC Advisories.
 - **“Status Tracking Notes (TRnotes)”** is a service providing information on the incidents, specifically what worms do, when the exploit codes were released and what the countermeasures are.

2.

Information Categories at JVN

- “JP Vendor Status Notes (JVN)” has four information categories.

- VN-JP
- VN-CERT/CC
- VN-NISCC
- TRnotes



2.

JVN Top page (http://jvn.jp/)

JP Vendor Status Notes - Microsoft Internet Explorer

ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

アドレス(D) http://jvn.jp/ 移動 リンク

JVN
JP Vendor Status Notes

Last updated: 14:46 2004/09/30

Home
About JVN
VN - JP
VN - CERT/CC
VN - NISCC
TRnotes
Product Vendor List

Related Sites

JPCERT/CC
ISDAS
IPA/ISEC
Report a Vulnerability
CERT/CC
NISCC
CVE

JPCERT/CC
IPA

Topics

- 2004-07-08: Public Opened
- 2004-07-20: Workshop of Vulnerability Information Handling

Vendor Status Notes — JP [INDEX](#)

- [JVN#67B82FA3](#): Multiple SSL-VPN products fail to set the "Secure" attribute of a cookie
- [JVN#F88C2C13](#): desknet's vulnerable to script execution via certain HTML mail
- [JVN#FF73142E](#): Virus Baster Cooperate Edition vulnerable to information leak

VN-JP
Notified via IPA

Vendor Status Notes — CERT/CC [INDEX](#)

- [JVNTA04-261A](#): Multiple vulnerabilities in Mozilla products
- [JVNTA04-260A](#): Microsoft Windows JPEG component buffer overflow
- [JVNTA04-247A](#): Vulnerabilities in MIT Kerberos 5

VN-CERT/CC
Notified via CERT/CC

Vendor Status Notes — NISCC [INDEX](#)

- [NISCC-161190](#): Vulnerability Issues with Business Objects WebIntelligence Product
- [NISCC-403518](#): Vulnerability Issues with the Apache Web Server
- [NISCC-380375](#): Vulnerability Issues in MIME

VN-NISCC
Notified via NISCC

Status Tracking Notes [INDEX](#)

- [TRTA04-260A](#): Microsoft Windows JPEG component buffer overflow [2004/09/30 01:19]
- [TRIN-2004-01](#): W32/Novarg.A Virus [2004/09/20]
- [TRTA04-261A](#): Multiple vulnerabilities in Mozilla products

TRnotes

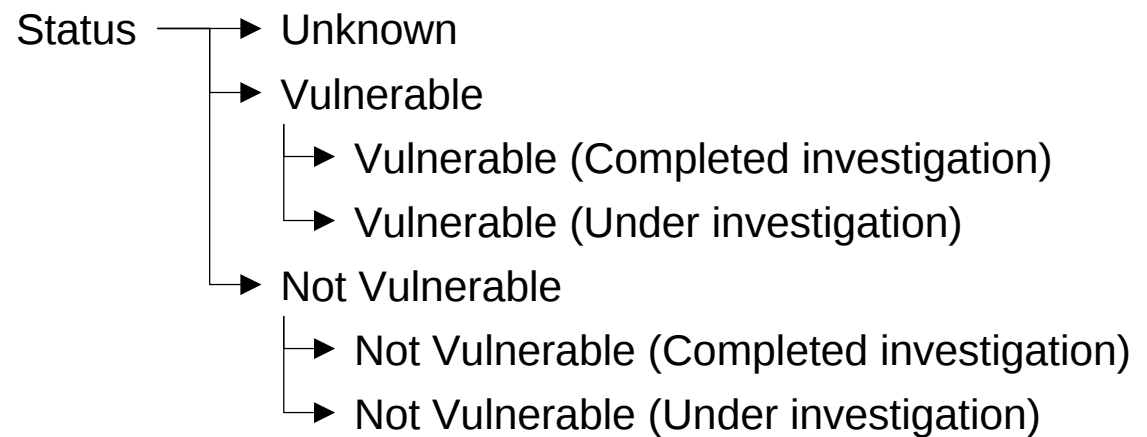
2.

Vendor Status Notes (VN)

- ❑ “Vendor Status Notes (VN)” includes a list of JP product vendors who may have been affected by the reported vulnerabilities.
- VN has three information categories such as VN-JP, VN-CERT/CC and VN-NISCC.
- Each web page consists of the overview of the problem, its impact, vendor information and related information.

JVN#12345678	
Title	
Overview	
Impact	
Vendor Information	
Reference	
Revisions	

Vendor Information includes Vendor Name, Status and Last Update. There are five categories as Status.



2.

Example of Vendor Status Notes (VN)

Vendor Name	Status	Last Update
Fujitsu	Not Vulnerable (Completed investigation)	2004/08/26
MIRACLE Linux	Vulnerable (Completed investigation)	2004/08/24
Turbo Linux	Vulnerable (Completed investigation)	2004/08/23
TechMatrix	Not Vulnerable (Completed investigation)	2004/08/17

2.

Vendor Status Notes (TRnotes)

- ❑ “Status Tracking Notes (TRnotes)” includes a list of event/time information on incidents concerning vulnerabilities.
 - Each web page consists of the overview, timeline concerning a vulnerability and related information.
 - The purpose of TRnotes is in sharing the timeline of the incident, which includes worm activities, the date exploit codes were released and the countermeasure against security incidents. The information is based on public information.

TRxxxxxxx
Title
Overview
Event Information
Reference

Event Information includes followings.

- Date the vulnerability was discovered
- Date any advisories are released
- Date exploit codes are published
- Date worms are produced
- Published alerts from governments.
- Additional resources, such as a government agency etc.

2.

Example of Vendor Status Notes (TRnotes)

JP Vulnerability Notes - Status Tracking Note TRTA04-260A - Microsoft Internet Explorer

ファイル(F) 編集(E) 表示(V) お気に入り(A) ツール(T) ヘルプ(H)

About JVN

VN - JP

VN - CERT/CC

VN - NISCC

TRnotes

Product Vendor List

Related Sites

JPCERT/CC

ISDAS

IPA/ISEC

Report a Vulnerability

CERT/CC

NISCC

CVE

JPCERT/CC

IPA

Status Tracking Notes

TRTA04-260A

Microsoft Windows JPEG component buffer overflow

Event List

Time (JST)	Event Information
2004-09-15 05:22	Microsoft sent the Japanese Security information of Sep. 2004 by Email. #Post-Date: Tue, 14 Sep 2004 13:22:15 -0700
2004-09-17 04:58	US-CERT TA04-260A #Post-Date: Thu, 16 Sep 2004 15:58:16 -0400
2004-09-23 03:38	Full-Disclosure "Microsoft Windows MS04-028 JPEG Overflow Shellcoded Exploit" #Cid: ms04-28-cmd.c #Tested: Windows XP + SP1 #Post-Date: Wed, 22 Sep 2004 11:38:18 -0700 (PDT)
2004-09-23 15:22	Bugtraq "NEW GDI+ JPEG Remote Exploit" #Cid: JpegOfDeath.c #Tested: Windows XP + SP1 #Post-Date: 23 Sep 2004 06:22:54 -0000
2004-09-23 23:55	ISS AlertCon ① => ②
2004-09-24 13:49	ISSKK announces an alert "Microsoft GDI+ JPEG Processing Exploitation". #ISSXPU: Network Sensor 22.31 #Last-Modified: Fri, 24 Sep 2004 04:49:46 GMT

Proposal of RSS Extension for Security Information Exchange



3.

Research motivation

- How we can provide a more efficient security information distribution service for the security administrators that helps them reduce their workload related to collecting and grouping various information and take care of security incidents.

Distribution designed to encourage reusing of information

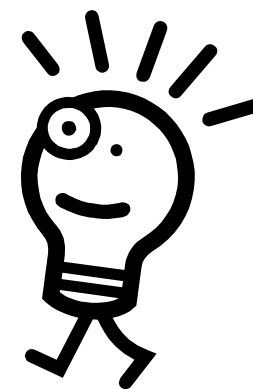
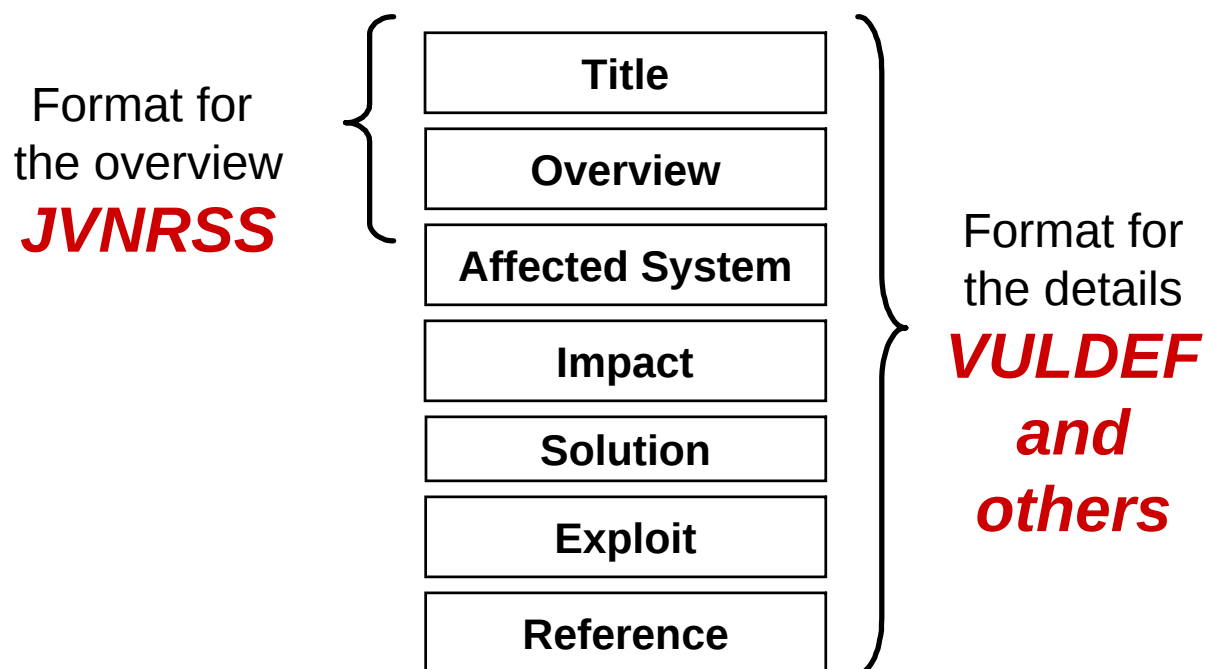
More efficient aggregation of information from product vendors



3.

JVNRSS (JP Vendor Status Notes RSS)

- ▣ Keywords for the solution
 - Semantic Web
 - RSS (RDF Site Summary)



Using JVNRSS, an XML format to describe the overview, is an essential point in the security information exchange.

□ JVNRSS

- Summary format for security information exchange.
- Based on RSS 1.0 and use the field <dc:relation> of Dublin Core as index of grouping security information.

```

<item rdf:about="URL of security information">
  <title>Title</title>
  <link>URL of security information</link>
  <description>Outline of security information</description>
  <dc:publisher>Product vendor name</dc:publisher>
  <dc:creator>Contact point information</dc:creator>
  <dc:identifier>Security information ID</dc:identifier>
  <dc:relation>Relational ID (1) {CVE|CERT-CA|CERT-VU|etc.}</dc:relation>
  <dc:relation>Relational ID (2) {CVE|CERT-CA|CERT-VU|etc.}</dc:relation>
  <dc:relation>      :      :      </dc:relation>
  <dc:date>Date last updated</dc:date>
  <dcterms:issued>Date first published</dcterms:issued>
  <dcterms:modified>Date last updated</dcterms:modified>
</item>

```

3.

JVNRSS Example

- ❑ **ID:** JVNNU#834865
- ❑ **Title:** Sendmail contains a race condition
 - **Reference:** <http://www.us-cert.gov/cas/techalerts/TA06-081A.html>
 - **Reference:** <http://www.kb.cert.org/vuls/id/834865>
 - **Reference:** <http://cve.mitre.org/cgi-bin/cvename.cgi?name=2006-0058>

```
<item rdf:about="http://jvn.jp/cert/JVNNU%23834865">
  <title>Sendmail contains a race condition</title>
  <link>http://jvn.jp/cert/JVNNU%23834865</link>
  <description>A race condition in Sendmail may allow a remote attacker ... </description>
  <dc:publisher>JVNRSS-DEV project</dc:publisher>
  <dc:creator>jvn@jvn.jp</dc:creator>
  <dc:identifier>JVNNU#834865</dc:identifier>
  <dc:relation>http://www.us-cert.gov/cas/techalerts/TA06-081A.html</dc:relation>
  <dc:relation>http://www.kb.cert.org/vuls/id/834865</dc:relation>
  <dc:relation>http://cve.mitre.org/cgi-bin/cvename.cgi?name=2006-0058</dc:relation>
  <dc:date>2006-04-03T10:30+09:00</dc:date>
  <dcterms:issued>2006-03-23T04:00+09:00</dcterms:issued>
  <dcterms:modified>2006-04-03T10:30+09:00</dcterms:modified>
</item>
```

3.

JVNRSS Application: Visualized JVNRSS

- Offer the summary of JVN articles through other websites.



3.

JVNRSS Application: Visualized TRnotes

□ Arrange all events by time.

The screenshot displays the JVNRSS application interface, which visualizes TRnotes (RSS feeds) as a timeline of events. The interface is divided into several sections:

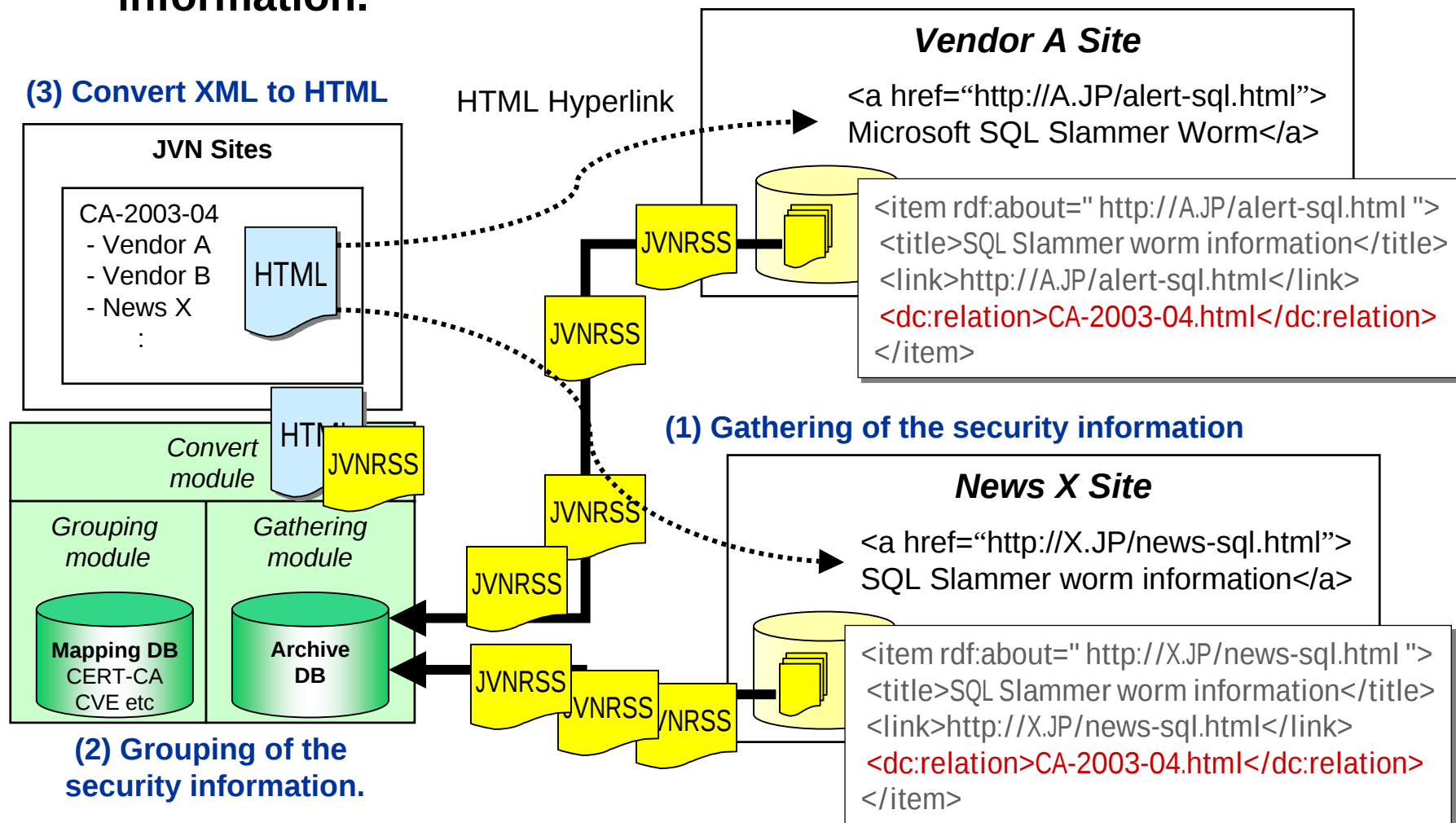
- Sidebar (Left):** Contains a list of categories or feeds, including "Microsoft Windows and In". A link is provided: "[Link to Japanese Site] TAO released updates that add vulnerabilities in Windows".
- Main Timeline Area:** Shows a series of event cards arranged chronologically. Each card includes a date and time, a title, and a brief description. For example:
 - 2005.08.10 07:32:** Microsoft Security Bulletin Summary for August, ...
 - 2005.08.10 08:16:** Technical Cyber Security Alert TA05-021 A: Micro...
 - 2005.08.12 00:00:** Microsoft Windows Plug-and-Play Service Remote Overflow (Universal Exploit + no crash shellcode)
 - 2005.08.12 23:37:** Full-Disclosure: (MS05-039) Microsoft Windows P...
 - 2005.08.14 00:00:** Trendmicro: WORM_ZOTOB.A
 - 2005.08.15 00:23:** SANS Institute MS05-039 Worm in the wild
 - 2005.08.17 09:00:** Symantec ThreatCON (1) => (2)
 - 2005.08.17 11:00:** ISS AlertCon (1) => (3)
 - 2005.08.17 11:00:** Malicious Software Removal Tool 1.7.1
- Event Detail View (Right):** A large box displays the details of the selected event (2005.08.12 23:37). It includes the full title, a link to the original source, a DC relation to a US-CERT alert, and the timestamp. The XML-like structure of the TRnote is shown:


```
<item rdf:about="http://www.security-express.com/archives/bugtraq/2005-08/0181.html">
  <title>[Full-disclosure] (MS05-039) Microsoft Windows Plug-and-Play Service Remote Overflow
  (Universal Exploit + no crash shellcode)</title>
  <link>http://www.security-express.com/archives/bugtraq/2005-08/0181.html</link>
  <dc:relation>http://www.us-cert.gov/cas/techalerts/TA05-221A.html</dc:relation>
  <dc:date>2005-08-12T23:37+09:00</dc:date>
</item>
```
- Bottom Controls:** Includes navigation buttons for "LATEST", "SELECTED", and "OLDEST", a "FILE" button, and a progress bar.

3.

JVNRSS Application: Security information gathering system

- Reduce workload in collecting and grouping security information.

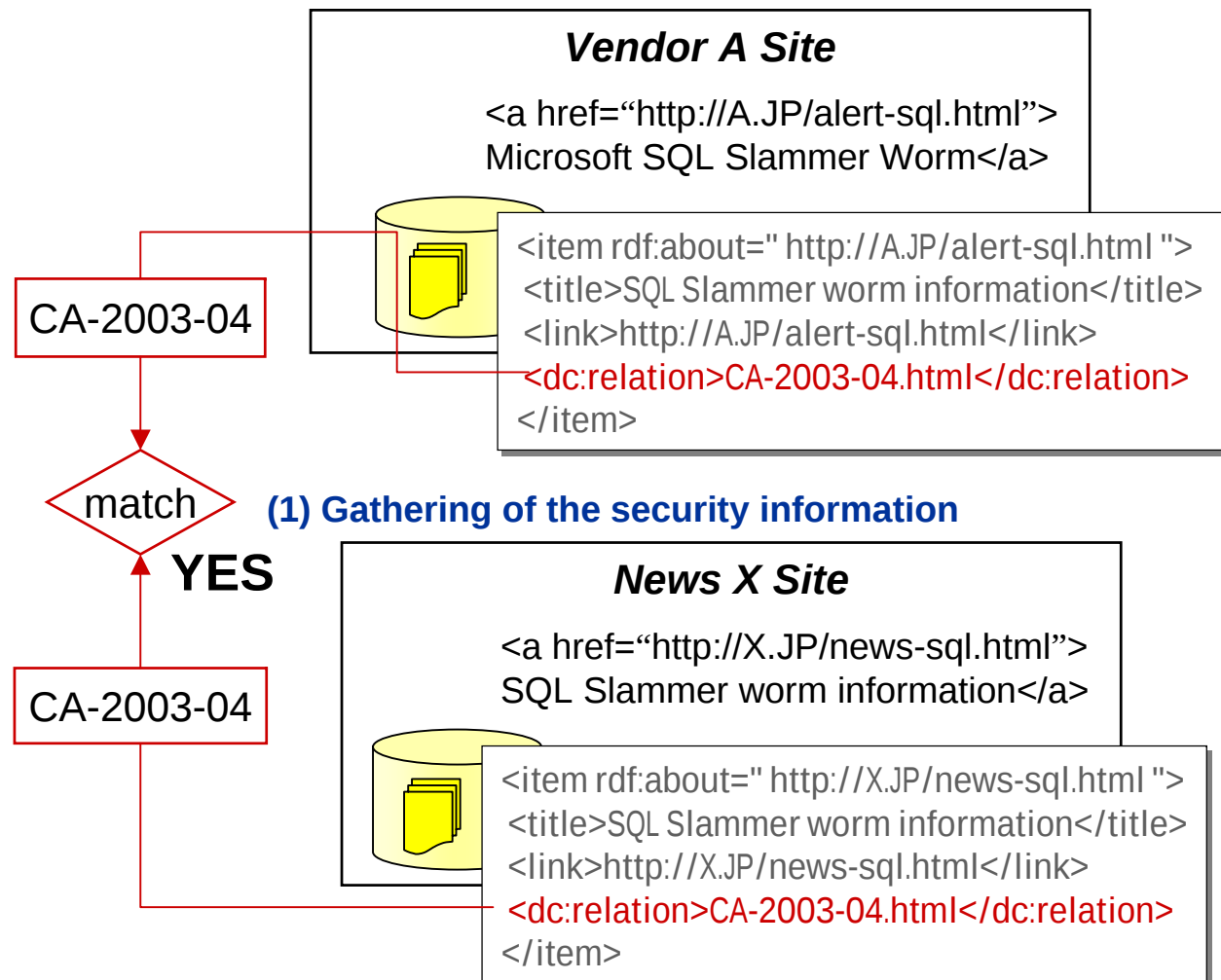
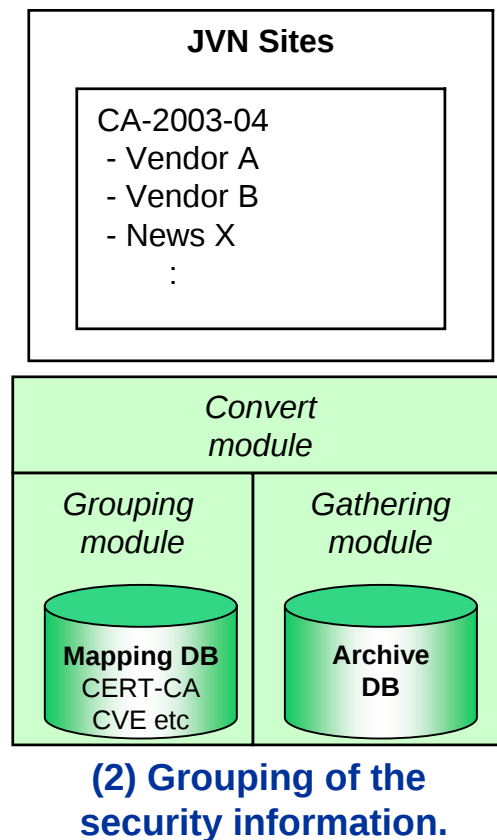


3.

JVNRSS Application: Proposal grouping (correlation) mechanism

□ The grouping mechanism using Relational ID without mapping DB.

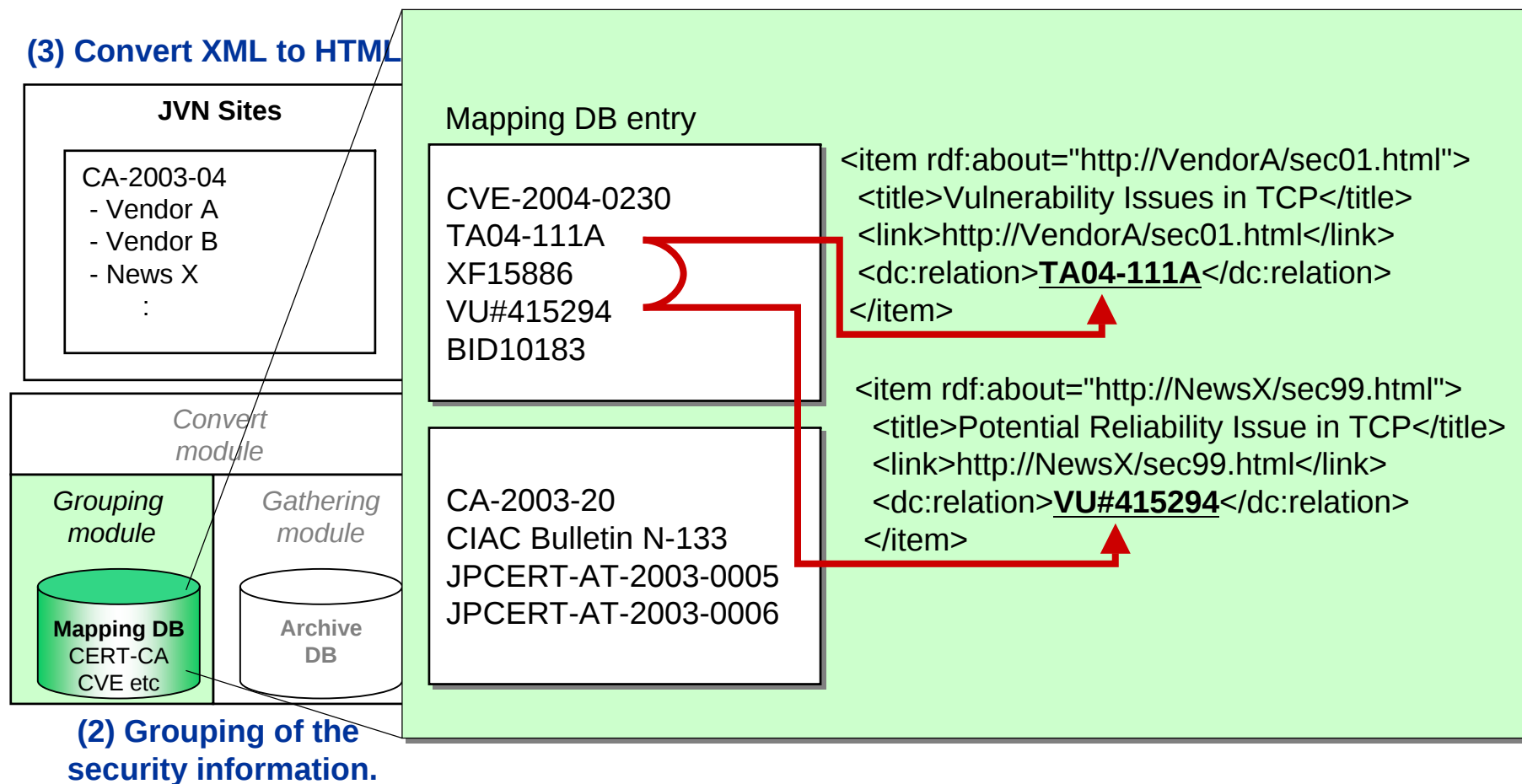
(3) Convert XML to HTML



3.

JVNRSS Application: Proposal grouping (correlation) mechanism

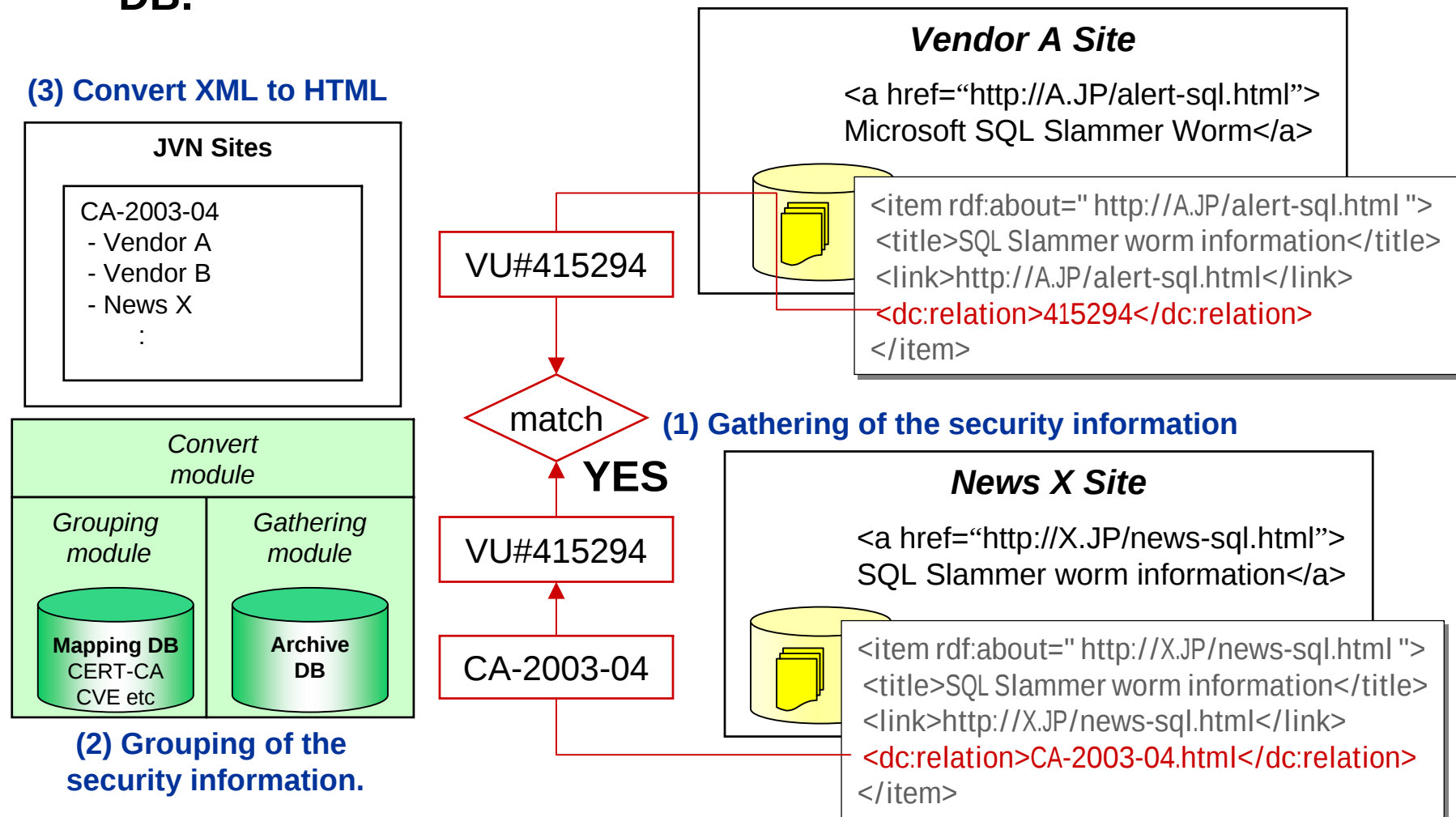
- The grouping mechanism using Relational ID with mapping DB.



3.

JVNRSS: Proposal grouping (correlation) mechanism

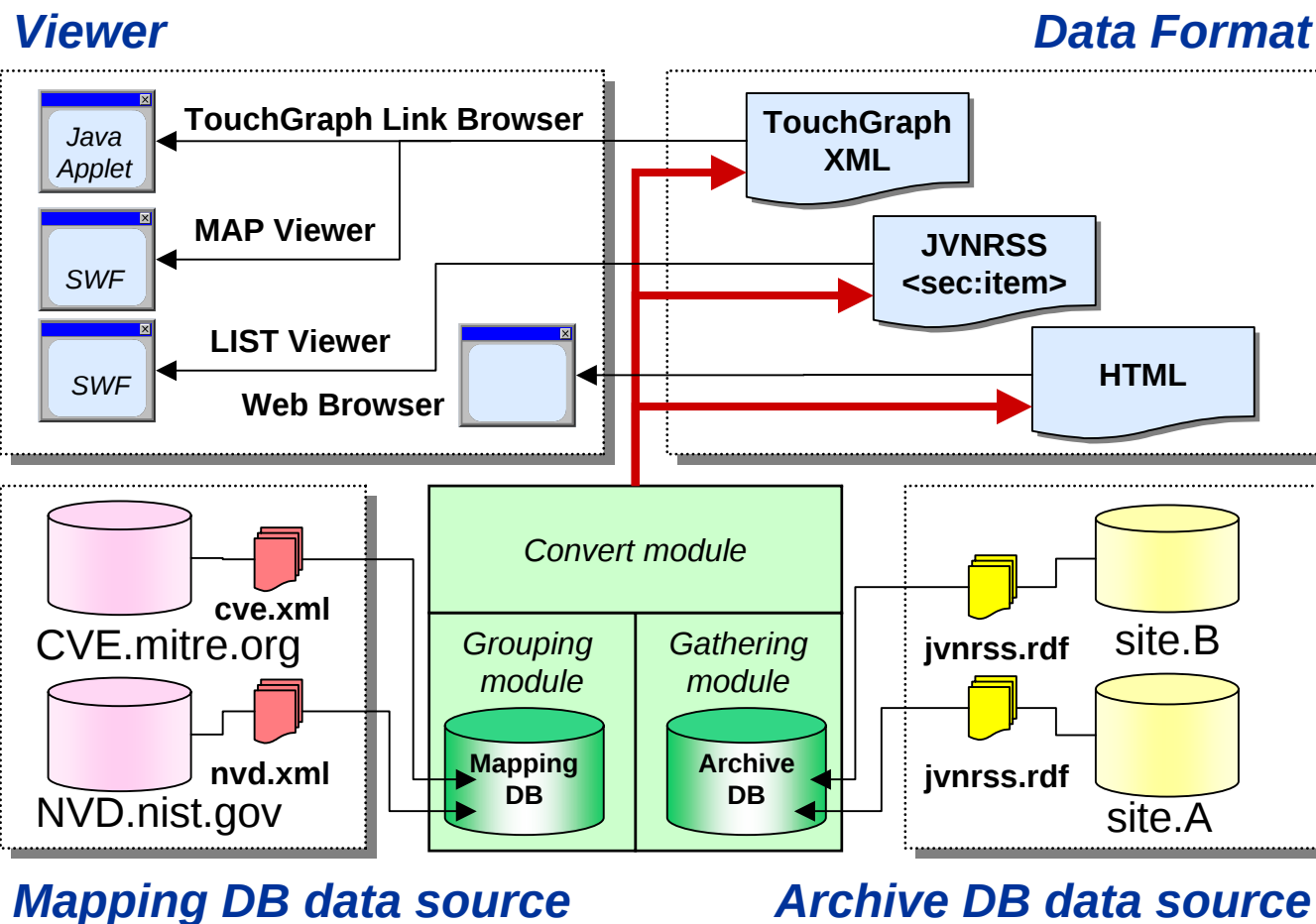
- The grouping mechanism using Relational ID with mapping DB.



- **CVE+** <http://jvnrss.ise.chuo-u.ac.jp/jtg/cve+/>
CVE+ is to make a relationship map between CVE and Japanese security information.
- **TRnotes** <http://jvnrss.ise.chuo-u.ac.jp/jtg/trn/>
TRnotes provides HTML based information, JVNRSS format and Visualized TRnotes.
- **XSL_swf** <http://jvnrss.ise.chuo-u.ac.jp/jtg/xswf/>
XSL_swf is FLASH tool for visualized JVNRSS and uses a part of XSL as a mechanism to describe how the document should be displayed.
- **RSS_dir** <http://jvnrss.ise.chuo-u.ac.jp/jtg/rssd/>
RSS_dir is concept of RSS directory for RSS channel. RSS directory describes a RSS channel tree with RSS format.
- **SIG_rdf** <http://jvnrss.ise.chuo-u.ac.jp/jtg/xsig/>

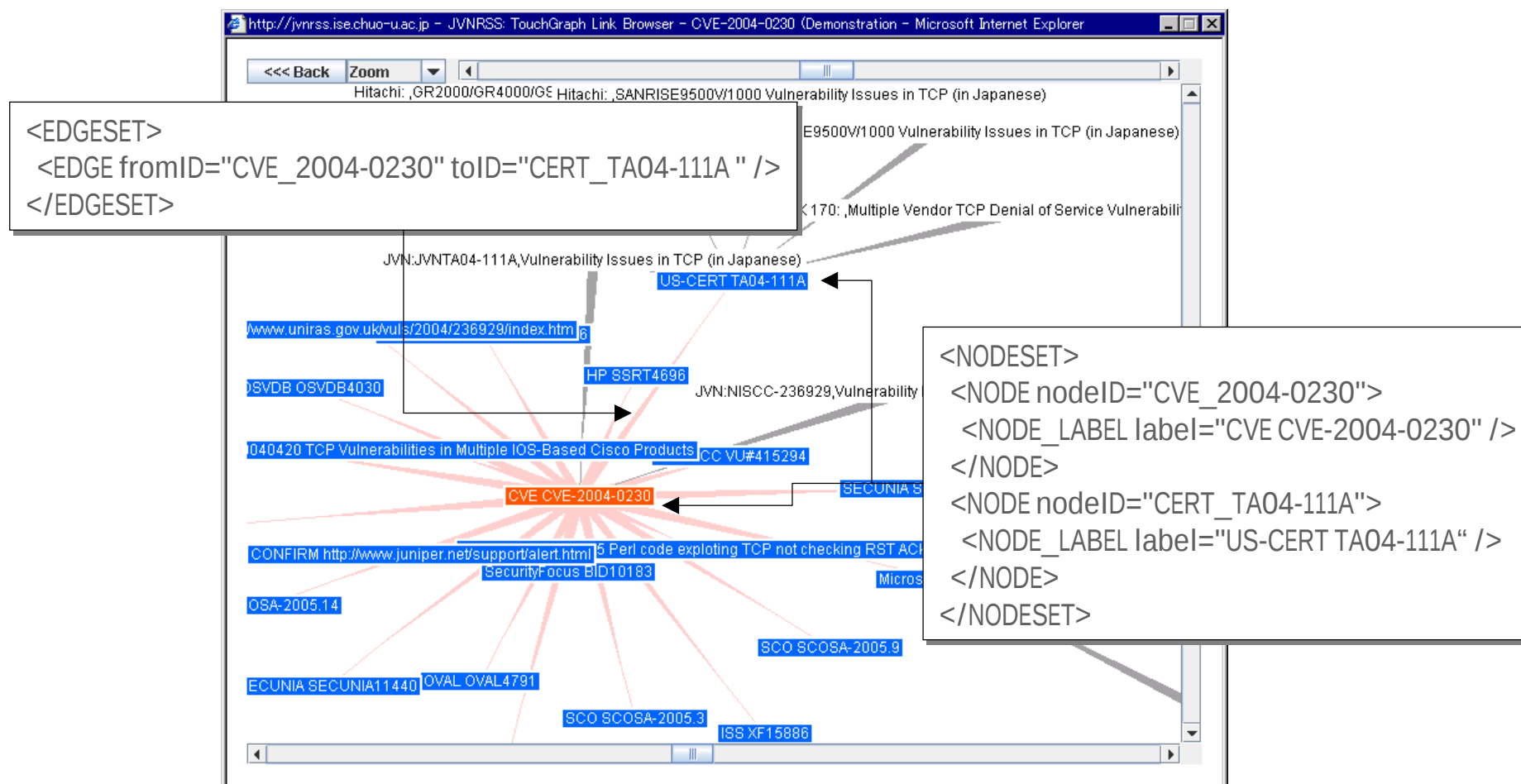
□ Prototype system

- **Modules:** gathering, grouping and convert

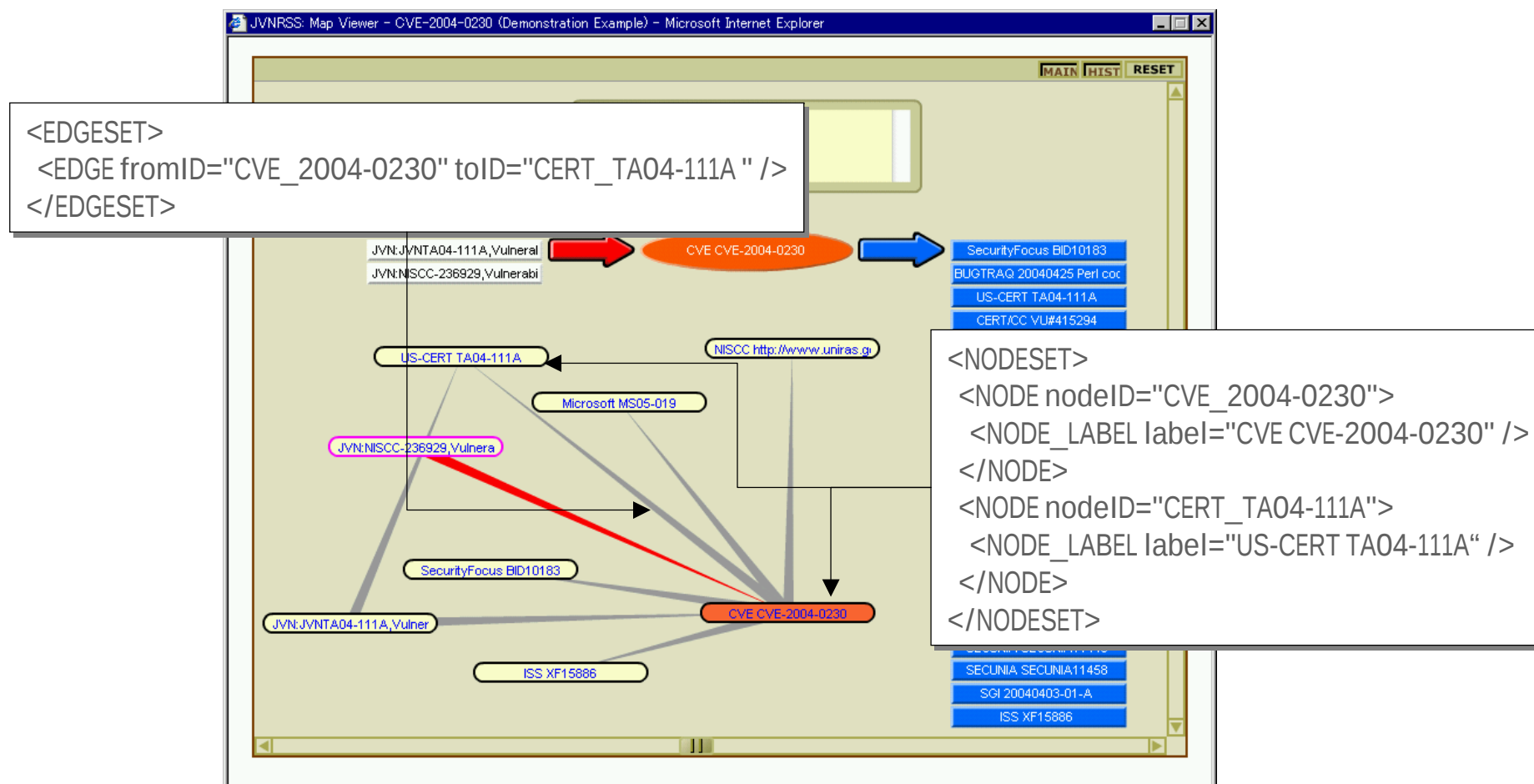


□ **Viewer:** TouchGraph Link Browser (Java Applet)

■ **Data Format:** TouchGraph XML format



- **Viewer:** Map Viewer (SWF)
- **Data Format:** TouchGraph XML format



□ **Viewer:** LIST Viewer (SWF)

■ **Data Format:** JVNRSS + <sec:item> format

The screenshot shows the 'JVNRSS: List Viewer - CVE-2004-0230 (Demonstration Example) - Microsoft Internet Explorer' window. The main content area displays a list of vulnerabilities. The entry 'JVNTA04-111A : Potential Reliability Issue in TCP (in Japanese)' is highlighted in yellow. A red bracket indicates that this entry is expanded to show details. A text box on the left shows the XML format for the highlighted entry:

```
<item rdf:about="http://www.us-cert.gov/cas/ ..." >
  <title>TA04-111A</title>
  <sec:item>
    <item rdf:about="http://jvn.jp/cert/JVNTA04-111A">
      <title>Potential Reliability Issue in TCP</title>
    </item>
    <item rdf:about="http://www.hitachi.co.jp/...">
      <title>GR2000/GR4000/GS4000/GS3000 ...</title>
    </item>
  </sec:item>
</item>
```

The bottom of the window shows the publisher information:

PUBLISHER:
JVN
DATE:
2005-04-01T18:00+09:00

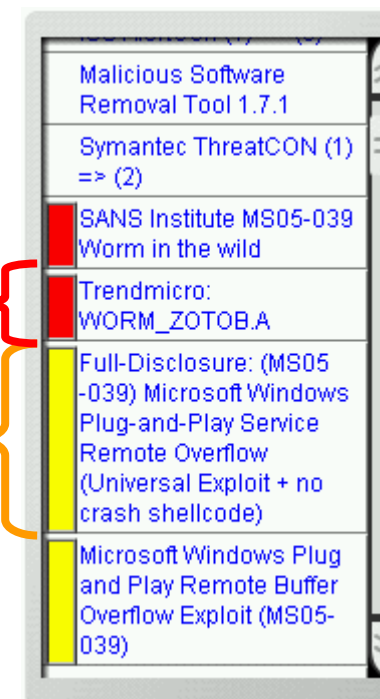
- XSL_swf is a FLASH tool for the visualized JVNRSS
 - XSL_swf refers to an XSL file to describe how a document should be displayed.

<?xml-stylesheet href="/trn.xsl" type="text/xsl" ?> **JVNRSS or RSS**

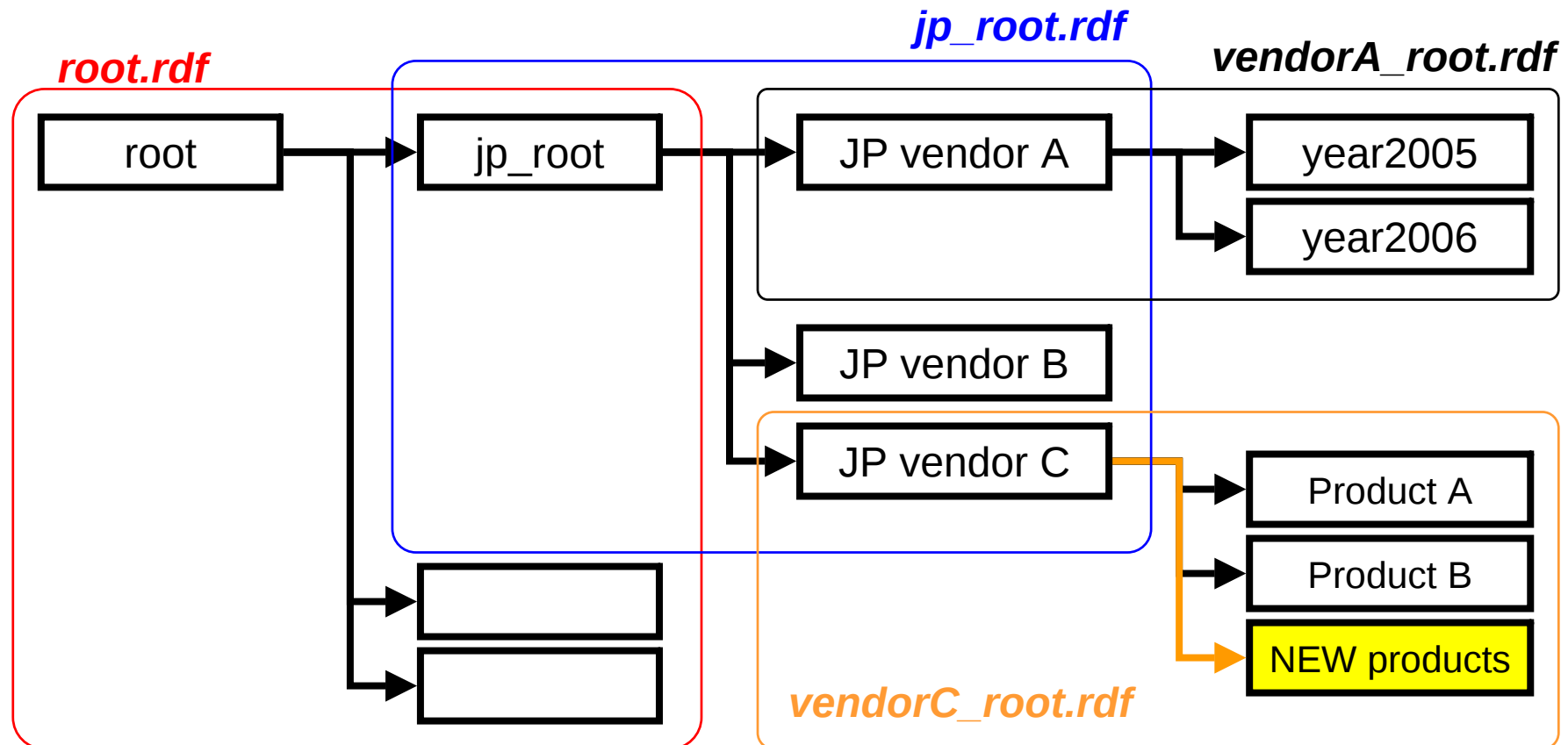
```
<item rdf:about="http://www.trendmicro.co.jp/ ... WORM_ZOTOB.A">
  <title>Trendmicro: WORM_ZOTOB.A</title>
  <link>http://www.trendmicro.co.jp/ ... WORM_ZOTOB.A</link>
</item>
<item rdf:about="http://www.security-express.com/ ... 0181.html">
  <title>[Full-disclosure] (MS05-039) Microsoft Windows Plug-and-Play ... </title>
  <link>http://www.security-express.com/ ... 0181.html</link>
</item>
```

<xsl:stylesheet version="1.0" **XSL**

```
<xsl:when test="rss:link='http://www.trendmicro.co.jp/ ... WORM_ZOTOB.A'">
  LEVEL1</xsl:when>
<xsl:when test="rss:link='http://www.security-express.com/ ... 0181.html'">
  LEVEL2</xsl:when>
```



- ❑ RSS_dir is a concept of the RSS directory for the RSS channel. RSS directory describes a RSS channel tree using the RSS format.
 - Check the feed for changes and react to the changes in an appropriate way

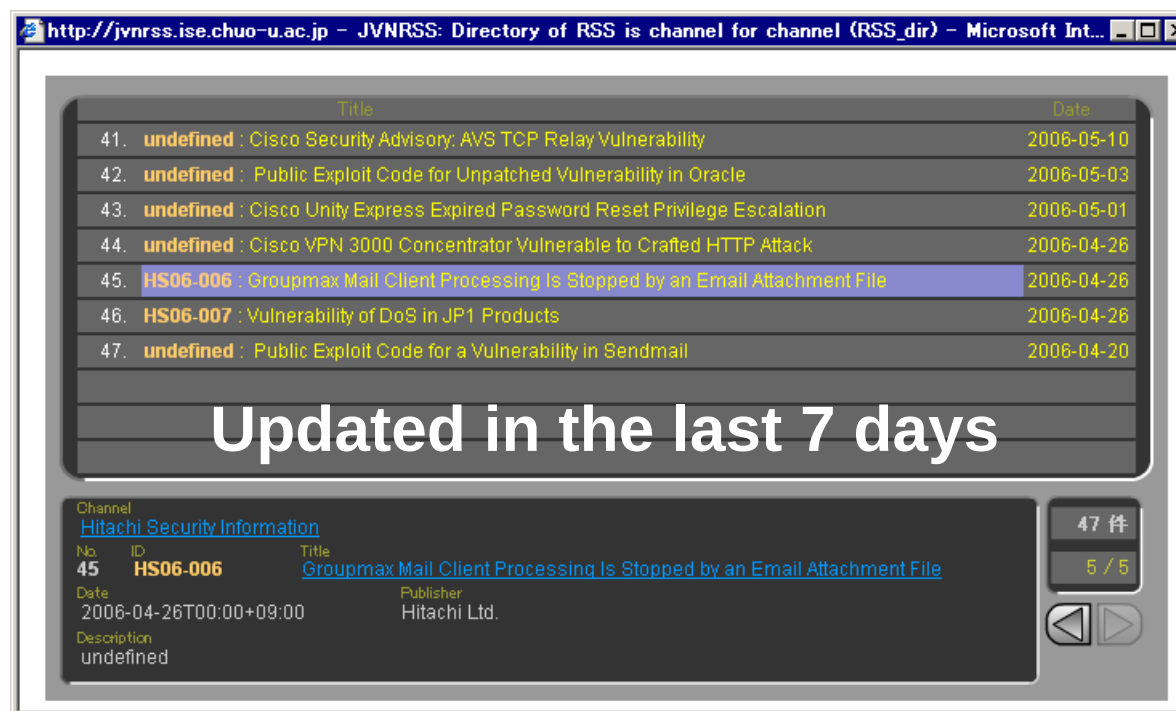
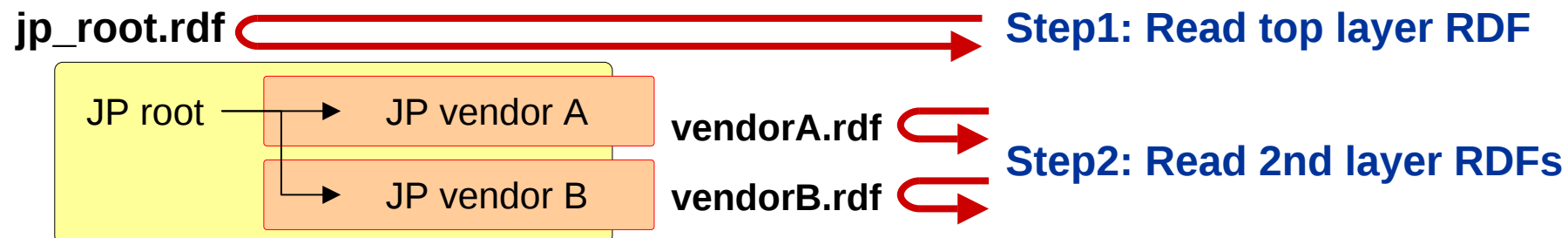


3.

JVNRSS practical activity

RSS_dir

- Use RSS_dir to selectively display the information collected/updated in the last 7 days



3.

Proposal RSS Extension

- ❑ JVN RSS is based RSS 1.0 and a proprietary format in Japan.
- ❑ Exchange security information in worldwide.
- ❑ The ability to use RSS holds the key to successfully implement a scheme for distributing security related information.
 - Qualified Security Advisory Reference (mod_sec)
RSS Extension definition of the tags for RSS 1.0, RSS 2.0 and Atom

- ❑ sec:references is an element for a best reference (CVE, CERT Advisory, CERT Vulnerability Note, US-CERT Technical Alert etc.) to related security information.
- ❑ Syntax

```
<sec:references sec:source="%name" sec:id="%id">  
%ResourceReference</sec:references>
```

- **%name**

An attribute is abbreviation name, which provides the best reference, such as CVE, JPCERT, CERT, CIAC, BID, CERT-VN, MS, OSVDB, XF etc.

- **%id**

An attribute is the unique identifier assigned by sec:source, such as VU#105259, MS01-044, CVE-2001-0525, CA-2001-14, TA05-111A etc.

- **%ResourceReference**

An entity value is a URI reference to a resource.

- ❑ sec:identifier is an element for the unique identifier assigned by vendor.
- ❑ Syntax

</sec:identifier>%id</sec:identifier>

- **%id**

An attribute is the unique identifier assigned by vendor, such as "Cisco Security Advisory ID#50960", HPSBMA01234 etc.

- ❑ **ID:** JVNTA06-109A
- ❑ **Title:** Oracle Products Contain Multiple Vulnerabilities
 - **Reference:** <http://www.us-cert.gov/cas/techalerts/TA06-109A.html>

```
<entry>
<title>Oracle Products Contain Multiple Vulnerabilities</title>
<link rel="alternate" type="text/html" href="http://jvn.jp/cert/JVNTA06-109A/" />
<id>http://jvn.jp/cert/JVNTA06-109A/</id>
<summary type="text">Oracle products and components are affected by multiple
vulnerabilities. </summary>
<published>2006-04-20T11:30+09:00</published>
<updated>2006-04-21T15:00+09:00</updated>
<author>
<name>JVN</name>
<email>jvn@jvn.jp</email>
<uri>http://jvn.jp/</uri>
</author>
<sec:identifier>JVNTA06-109A</sec:identifier>
<sec:references sec:source="CERT" sec:id="TA06-109A">
http://www.us-cert.gov/cas/techalerts/TA06-109A.html</sec:references>
</entry>
```

Reference

- **IPA (Information-technology Promotion Agency, Japan)**
 - <http://www.ipa.go.jp/english/about/index.html>
 - <http://www.ipa.go.jp/english/security/index.html>

- **JPCERT/CC**
 - <http://www.jpccert.or.jp/english/>

- **JVN (JP Vendor Status Notes)**
 - <http://jvn.jp/> (Japanese)
 - <http://www.ipa.go.jp/english/security/third.html>

- **JVNRSS (JP Vendor Status Notes RSS) Feasibility Study Site**
 - <http://jvnrss.ise.chuo-u.ac.jp/jtg/>

Ending

We propose "JVNRSS" to solve the problems and improve the security information exchange for security administrators. JVNRSS is based on RSS 1.0 and use the field <dc:relation> of Dublin Core as index of grouping security information. This presentation has discussed the specification of JVNRSS and the application, especially the gathering and grouping approach for the security information exchange. Furthermore, we introduce RSS extension of security information exchange.

Thank you

Proposal of RSS Extension for Security Information Exchange

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