

SENS

End of Day Market Data Products Specifications

| | |
|---------------------|-------------------------------------|
| Version | 2.5 |
| Created By | JSE Information Technology Division |
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TABLE OF CONTENTS

1. VERSION CONTROL..... 5

2. REFERENCES..... 5

3. INTRODUCTION 5

3.1 Document Purpose 6

3.2 Pre-requisites 6

3.3 Disclaimer 6

3.4 Copyright 6

3.5 Provision of User ID and Password 6

3.6 Scope 7

4. SENS OVERVIEW 7

5. CATEGORY OF ANNOUNCEMENTS..... 8

5.1 Dual-listed vs. Single-listed Announcements 8

5.2 Company Announcements vs. General Announcements..... 8

5.3 Regulatory vs. Non-regulatory Announcements 9

5.3.1 Non-Regulatory Announcements..... 9

5.3.2 Regulatory Announcements 9

6. JSE NEWSML OVERVIEW 10

6.1 NewsItem 11

6.2 PackageItem 21

7. NEWSITEM – REPRESENTING NEWS 25

7.1 XML Version and Encodings 29

| | | |
|------------|--|-----------|
| 7.2 | NewsItem attributes | 29 |
| 7.2.1 | Identification..... | 30 |
| 7.2.2 | NewsItem Versioning and Corrections..... | 30 |
| 7.2.3 | Indication of Compliance with a Standard and Conformance Level..... | 31 |
| 7.2.4 | XML Language Attribute | 31 |
| 7.3 | Catalogs | 32 |
| 7.3.1 | JSE Controlled Vocabularies Published in SENS knowledgeItem | 32 |
| 7.3.2 | JSE Controlled Vocabularies NOT Published in SENS KnowledgeItem..... | 33 |
| 7.3.3 | Schemes from other issuing authorities in other formats | 35 |
| 7.4 | Rights Information | 37 |
| 7.5 | Item Management Metadata | 37 |
| 7.5.1 | Management Metadata | 37 |
| 7.6 | News Content Metadata | 40 |
| 7.6.1 | Administrative Metadata | 40 |
| 7.6.2 | Descriptive Metadata..... | 42 |
| 7.6.3 | Provider-specific Content Metadata | 48 |
| 7.7 | NewsItem Content for End-of-Day News Products | 49 |
| 7.7.1 | End-of-day SENS (ETNI)..... | 49 |
| 7.7.2 | End-of-day SENS Plus (EPNI)..... | 50 |
| 7.8 | NewsItem Corrections | 51 |
| 7.8.1 | Normal Announcement: | 51 |
| 7.8.1 | Cancellation Announcement: | 51 |
| 7.8.2 | Replacement Announcement: | 52 |
| 8. | PACKAGING NEWSITEMS – PACKAGEITEM | 53 |
| 8.1.1 | Identification..... | 55 |
| 8.2 | PackageItem: Management Metadata | 56 |
| 8.2.1 | Differences between packageItems from newsItems | 57 |
| 8.3 | PackageItem: Content Metadata..... | 57 |
| 8.3.1 | Differences between packageItems from newsItems | 58 |
| 8.3.2 | Differences between PackageItems from NewsItems..... | 59 |
| 8.4 | Grouping of Announcements in the Package..... | 59 |

| | | |
|------------|---|-----------|
| 8.5 | PackageItem Corrections | 61 |
| 8.5.1 | Normal PackageItem | 61 |
| 8.5.2 | Replacement PackageItem | 62 |
| | | |
| 9. | KNOWLEDGEITEM – MANAGING CONTROLLED VOCABULARIES | 62 |
| | | |
| 9.1 | KnowledgeItem: Item Management Metadata | 64 |
| 9.2 | KnowledgeItem: Content Metadata | 65 |
| 9.3 | KnowledgeItem Content | 66 |
| 9.4 | Versioning of Concepts | 66 |
| 9.5 | Creation and Maintenance of SENS KnowledgeItem | 67 |

1. Version Control

| Version | Author | Date | Reason for Changes |
|------------|------------------------|--------------------|--|
| 1.0 | JSE IT Division | 3 Jan 2012 | Final working release |
| 2.0 | JSE IT Division | 02 July 2012 | Final Version |
| 2.1 | JSE IT Division | 17 May 2012 | Updated table of Announcement Group Codes to include Competition Tribunal. Added note on optionality of TIDMs for certain instrument types. Added note on how to handle blanks (spaces) in company and instrument alpha codes. |
| 2.2 | JSE IT Division | 30 June 2012 | Updated Section 7.7.1 with guidance on how to processing announcement text. Updated Section 9.4 with URL for SENS taxonomy on JSE website. |
| 2.3 | JSE IT Division | 06 Feb 2019 | Additional remoteContent attribute for Financial Results announcements provided in PDF only. |
| 2.4 | JSE IT Division | 8 July 2020 | Minor corrections and formatting |
| <u>2.5</u> | <u>JSE IT Division</u> | <u>14 Dec 2020</u> | <u>Updates to include the scheduled Industry Classification Benchmark (ICB) structure changes that come into effect in production on 23 March 2021. The ICB Sub-Sector field will increase in length from 4 characters to 8 Characters.</u> |

2. References

| Document | Author | Version | Issue Date |
|--------------------------------|--------|---------|------------|
| IPTC NewsML-G2_2.9_spec_PCL | IPTC | 2.9 | 2011-11-07 |
| IPTC-G2-Implementation-Guide-4 | IPTC | 4.0 | 2011-11-09 |

3. Introduction

Listed companies are obliged to publish certain company information and price-sensitive information to the market. This information is provided to the JSE, who verifies the information, and ensures that the information is published in the form of market announcements, at the agreed time. The announcements are published during the trading day via the Stock Exchange News Service (SENS), the JSE's electronic news publication service.

All the market announcements that are published during the trading day are also made available at the end of the trading day, for the benefit of parties that are interested in the SENS End of Day products.

3.1 Document Purpose

This document provides the specifications for parties developing applications to access and process the End of Day SENS announcements which are provided in News Mark-up Language (NewsML) format.

NewsML is an XML-based format for news type items; it contains metadata to describe the news information. A subset of NewsML-G2 is used for SENS news.

3.2 Pre-requisites

This document assumes the reader is familiar with the NewsML-G2 standard version 2.9 (referenced herein as 'NewsML'). Please refer to the IPTC online documentation (www.iptc.org) and the *IPTC-G2-Implementation-Guide_4.0* and *NewsML-G2-2.9-PCL-1* documents for more details on the standard.

3.3 Disclaimer

Although the JSE will endeavour to ensure that the relevant company information is published via SENS in the form submitted, the JSE does not, whether expressly, tacitly or implicitly, represent, warrant or in any way guarantee the truth, accuracy, or completeness of the information published on SENS.

The JSE, their officers, employees and agents accept no liability for (or in respect of) any direct, indirect, incidental or consequential loss or damage of any kind of nature, howsoever arising, from the use of SENS or the use of, or reliance on, information disseminated through SENS.

3.4 Copyright

© JSE Limited

All intellectual property rights in the documentation, the trademark, the logo are and shall remain vested in JSE Limited and are protected by the applicable relevant legislation. Consequently, this documentation, trademark and logo shall not:

1. be copied or represented in whole or in part by any medium, by any means of any kind, except for the user's personal use;
2. be altered or modified under any form of any kind, by any manner of any kind;
3. Any infringement to these provisions shall be punished in accordance with the relevant legislation and JSE Limited reserves the right to claim all related damages.

3.5 Provision of User ID and Password

1. A representative from the Customer Services and Support Department will provide you with your Sign-on and Dataset name before 11am on the day you go live.
2. For security purposes, a representative from the IT Open System Department will provide you with your Password.
3. An Account Manager/Officer, from the Information Products Sales division will contact you to confirm receipt of the Dataset, UserId and Password.
4. The onus is on you to test as soon as you have received the above-mentioned information to ensure that you can access to the Information Delivery Portal (IDP), the JSE's primary FTP Server.

Should you experience any problems relating to the information communicated to you or the actual testing of this information, please contact the under-mentioned persons for assistance:

| | |
|--|--|
| Customer Support Contact Details: | CustomerSupport@jse.co.za |
| Telephone numbers: | (011) 520-7777 |
| After hours: | (011) 520-7900 (this number is routed to the standby staff member) |

3.6 Scope

The following is included in this document:

1. Overview of the Stock Exchange News Service;
2. Explanation of Announcements Categories; and
3. Detailed of the NewsML implementation in SENS end-of-day;

The following is *not* included in the scope of this document:

The in-depth coverage of the NewsML standard – please refer to the documentation provided by IPTC (www.iptc.org) or the implementation guides as provided in the Section 2 - References.

4. SENS Overview

SENS is a regulatory news service provided by the JSE for its listed companies to publish news to the market as required by the listing requirements of the JSE. SENS is also used by regulatory institutions to publish announcements to the market.

The Namibian Stock Exchange (NSX) is a user of the JSE's SENS system, so the JSE also publishes market announcements for the NSX. For simplicity, this document will henceforth refer to SENS but the brand system name NENS for the NSX service applies equally unless otherwise indicated.

The news announcements are submitted by authorised JSE submitters to the JSE in PDF file format via the JSE SENS website. Authorised JSE submitters can submit announcements in a plain-text format or in PDF file format only. The PDF file may contain a mixture of text, graphics and pictures. The received PDF file is converted by the JSE SENS application using a PDF-to-Text converter into text (Windows-1252) news announcement format.

The NewsML news messages are created by SENS from the PDF/plain-text content as well as the information provided by the news submitter on the SENS website.

The JSE End-of-day (EOD) Service provides two EOD SENS products:

1. End of Day SENS

- a. All market announcements published during the trading day;
- b. Announcements are provided in standard text, in a XML (NewsML) format; and
- c. Subscriber has the right to build up own historical database, and to provide search, print and download facilities.

2. End of Day SENS Plus

- a. All market announcements published during the trading day;
- b. Announcements are provided in PDF format, over and above standard text, in a XML (NewsML) format; and
- c. Subscriber has the right to build up own historical database, and to provide search, print and download facilities.

Note: Unless it is explicitly stated otherwise, all the NewsML technical detail that follows, applies to both EOD SENS and EOD SENS Plus data products.

5. Category of Announcements

The categories of announcements influence how NewsML messages are populated. This section describes the various categories of announcements and their impact on the news messages.

5.1 Dual-listed vs. Single-listed Announcements

In situations where an announcement is submitted for a company that is listed on both the JSE and NSX, two separate news announcements will be created - each announcement will only contain those company and instrument details for the respective Exchange.

Please note that this only applies to dual listed companies for the JSE and the NSX, and for no other exchange.

5.2 Company Announcements vs. General Announcements

When an announcement is made by a company which is authorised to list instruments (i.e. it has a role of Equity Issuer, Warrant Issuer, etc.) it is considered a Company Announcement. If the announcement is made by a company or organisation with a role other than an Issuer Role then it is considered a General Announcement.

If an Issuer has listed instruments and is submitting the announcement under its Issuer Role then it must select at least one instrument to be linked to the announcement. Note that a Company Announcement can be made by an Issuer that does not have any listed instruments on the Exchange.

A General announcement will have no linked instruments to the announcement.

The embedded NewsML metadata for companies and instruments will reflect whether any instruments are linked to the announcement or not.

5.3 Regulatory vs. Non-regulatory Announcements

5.3.1 Non-Regulatory Announcements

When a company announcement is issued, it can pertain to one or more companies. The first company entered by the submitter is known as the *primary company* (or *issuer*); if there are other companies, they are known as *related companies* (or *issuers*).

If the primary company does list a share the announcement is considered *non-regulatory*; this applies even if one or more related companies (if applicable) do not list any shares.

The Announcement Group Code field used to categorise regulatory announcements will not be present in the NewsML message.

The Announcement Regulatory Code in the NewsML message will have the value 'N' (*non-regulatory*).

The company and instrument metadata will be populated for all the companies and instruments linked to the announcement.

5.3.2 Regulatory Announcements

Regulatory announcements do not have listed instruments linked to the announcement. The following are the sub-categories of Regulatory Announcements:

5.3.2.1 Exchange Announcements

Exchange announcements are announcements issued by the JSE and NSX. No instruments are linked to the announcement. Related companies are not allowed under Exchange Announcements.

Note: if the JSE makes an announcement about its listed shares it would do so under its Equity Issuer role and therefore the announcement would not be considered an Exchange Announcement (regulatory) but a normal Company Announcement (non-regulatory).

5.3.2.2 Regulatory Institution Announcements

Announcements by Regulatory Institutions (e.g. Financial Services Board (FSB), Company Commission (CCO) and Takeover Regulation Panel (TRP) may relate to a particular Issuer Company but generally apply to the Market as a whole. No instruments are linked to the announcement. Related companies are not allowed for Regulatory Institution Announcements.

5.3.2.3 Company Announcements (Issuer without listed instruments)

When a company announcement is issued, it can pertain to one or more companies. The first company entered by the submitter is known as the *primary company* (or *issuer*); if there are other companies, they are known as *related companies* (or *issuers*). If the primary company of the announcement does not list any shares (there are no instruments to select from), then the announcement is deemed *regulatory*. If the announcement has other companies and they have listed instruments, the announcement is still *regulatory* as the categorisation applies to the Primary Company.

The type of regulatory announcement is identified by the Announcement Group Code as shown in Table 1 below:

Table 1 – Announcement Group Codes

| Announcement Group Code | Announcement Category | Description |
|-------------------------|---|---------------------------|
| CCO | Regulatory Institution | Competition Commission |
| CTR | Regulatory Institution | Competition Tribunal |
| TRP | Regulatory Institution | Takeover Regulation Panel |
| FSB | Regulatory Institution | Financial Services Board |
| EXCH | Exchange Announcement (JSE & NSX) | Exchange |
| JSEO | JSE Primary Company (without instruments) | Other JSE |
| NSXO | NSX Primary Company (without instruments) | Other NSX |

The Announcement Regulatory Code in the NewsML message will have the value 'R' (*regulatory*).

The metadata for the primary company or organisation (Regulatory Institution, Exchange or Company) will be populated in the NewsML. The instrument metadata will not be populated as they do not apply to regulatory announcements.

Please see Section 6 and Section 7 for additional information on the NewsML message layout and how the Announcement Group Code and Announcement Regulatory Code are used.

6. JSE NewsML Overview

Note: Unless it is explicitly stated otherwise, all the NewsML technical detail that follows applies to both EOD SENS and EOD SENS Plus data products.

The NewsML-G2 (News Markup Language, 2nd Generation) is a messaging standard used by the news industry for news exchange and distribution; the standard is regulated by the International Press and Telecommunications Council (IPTC), and is part of the G2-Standards suite. Please refer to IPTC specifications online for more details on the standard.

A subset of the NewsML-G2 standard version 2.9 ("JSE NewsML" herein) is used in SENS with some extensions to cater for specific SENS requirements.

JSE NewsML uses the G2 **newsItem** container for the actual SENS announcements and its associated metadata.

The **packageItem** is used to group announcements as an end-of-day package for SENS products.

The **knowledgeItem** container is used to define the concepts used in the **newsItem** and **packageItem**.

The **catalog** defines the set of scheme declarations in use by a news provider for a given G2 Item.

JSE NewsML does *not* make use of the **conceptItem** container.

JSE NewsML does *not* make use of the **newsMessage** container.

The related EventsML-G2 and SportsML-G2 standards are *not* used in SENS.

6.1 NewsItem

The following is the layout and overview the NewsML *NewsItem* messages and how they are populated.

The NewsItem is used to convey the individual news announcements.

Please see section 7 for detailed information on how the NewsItem is used to represent news announcements and how to process it.

Table 2 – JSE NewsML NewsItem

| Field Name | Description |
|---|---|
| newsItem | |
| Guid | The NewsItem GUID |
| Xmlns | The XML namespace for ITPC NewsML |
| Xmlns:xsi | The XML namespace for W3C XML 1.0 |
| Xmlns:sens | The XML namespace for SENS extensions |
| Version | The newsItem version |
| Standard | The G2 standard of the Item |
| Standardversion | The version of the G2 standard used |
| Conformance | The level of conformance of the G2 |
| Xml:lang | The language tag of the Item |
| CatalogRef | Provides the URL to the NewsML catalogs from ITPC and JSE used in JSE NewsML. |
| rightsInfo | |
| usageTerms | Provides the standard SENS usage terms. |
| itemMeta | NewsML section which contains information about the news message. |
| itemClass qcode="ninat:value" | An indicator of the class of news message, e.g. Text or Composite. A value 'text' is used for <i>End of Day SENS</i> and 'composite' for the <i>End of Day SENS Plus</i> product., e.g.: 'text' |

| Field Name | | Description |
|------------|--|---|
| | provider | The provider of the news item message. A constant value of "JSE Ltd" is used, e.g.: 'JSE Ltd' |
| | versionCreated | The time the NewsML message was created in UTC is used e.g.: 2011-12-09T10:31:25.000Z <i>Note: All timestamps in NewsML use the format: CCYY-MM-DDTHH:MM:SS.sssZ</i> |
| | firstCreated | The time the NewsML message was first created in UTC, e.g.: 2011-12-09T10:31:25.000Z |
| | embargoed | The release datetime of the news message in UTC, e.g.: 2011-12-09T10:31:00.000Z |
| | pubStatus qcode="stat:value" | The publication status, e.g. usable or canceled (note U.S. spelling) |
| | fileName | The filename of the NewsML message, e.g.: SENS_20111209_S3_ETNI.XML |
| | generator | The <i>version</i> and <i>name</i> of the software used to generate the NewsML message. |
| | versioninfo | Version number of the software or assembly, e.g. 1.0.0.0 |
| | (Name) | The name of the software component or assembly, e.g.: JSE.IS.Sens.NewsML |
| | service qcode="SrvTyp:value" | The news service, e.g.: SENS or NENS |
| | signal qcode="CorTyp:value" | Present for Cancellation or Replacement correction announcements, e.g. Cncl or Repl |
| | link | Only present for announcement corrections ('cancellation' or 'replacement'). |
| | contenttype | Indicates the content type of the announcement being 'cancelled' or 'replaced', e.g.: application/vnd.iptc.g2.newsitom+xml |
| | rel | Indicates the relationship between the current announcement and the announcement being corrected. A constant 'previousVersion' value is used, e.g.: irel:previousVersion |
| | residref | The GUID of the announcement being corrected, e.g.: urn:newsml:jse.co.za:2011-12-09:SENS:S1:ETNI |

| Field Name | | Description |
|--------------------|---|---|
| | altId (type=AltIdTyp:AnnNo) | The Announcement Number of the announcement being corrected, e.g.: 201112090001A |
| | altId (type=AltIdTyp:AnnRefNo) | The Announcement Reference Number of the announcement being corrected, e.g. S1 |
| contentMeta | | NewsML section which provides information about the content of the announcement. |
| | urgency | Indicates the urgency of the announcement. A value of 1 or 4 is used. A price sensitive announcement has an urgency of 1 whilst a non-price sensitive announcement has a value of 4, e.g.: 1 |
| | contentCreated | The time the announcement content was created in UTC, e.g.: 2011-12-09T10:20:00.000Z |
| | located | The location where the content was created. A constant value of 'Johannesburg' is used , e.g.: Johannesburg |
| | infoSource qcode= "OrgId:value" | The ID of the primary company of the announcement, e.g.: 861 |
| | creator qcode= "OrgId:value" | The ID of the primary company of the announcement, e.g.: 861 |
| | audience "PrdCde:value" | The target audience for the product. The ETNI product code is used for End of Day SENS , e.g.: ETNI |
| | altId type="AltIdTyp:AnnNo" | An alternative identifier to the news message using format <i>CCYYMMDDNNNNNA</i> . The ID is valid for all time and is never recycled, e.g.: 201112090001A |
| | altId type="AltIdTyp:AnnRefNo" | An alternative identifier to the news message. The ID is valid for all time and is never recycled, e.g.: S1 |
| | language | The language tag for the content, e.g.: 'en' <i>English</i> is used by default unless locally overridden. |
| | genre qcode="RelTyp:value" | Indicates the type of release, e.g. Format, Press Release, etc, e.g.: 110 |
| | headline | The headline of the announcement. Limited to 150 characters using windows-1252 character encoding, e.g.: Anglo American audited year-end financial results for 2011. |

| Field Name | Description |
|--|--|
| subject qcode=AnnTyp:value" | The Announcement Type code. At least one announcement type will be selected per announcement. Announcement types have optional subtype(s). Multiple announcement types can be selected for the same announcement, e.g.: 133 |
| narrower qcode="AnnSubTyp:value" | An optional subtype code to the Announcement Type. The <i>name</i> (in English) is also provided under the <name> element. Multiple Announcement Subtypes can be used for the same Announcement Type, e.g.: 138 |
| subject qcode="OrgId:value"/ | <p>The Customer Role ID of the company or companies (as per JSE master data) selected for the announcement.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a Share): e.g.: 861 Each company associated with the announcement will have its own <i>subject</i> entry with company ID.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): e.g.: 444 Each company associated with the announcement will have its own <i>subject</i> entry with company ID.</p> <p>How the SENS System will populate the message for Exchange Announcements: e.g. 2647 This field will be populated with the Exchange ID.</p> <p>How the SENS System will populate the message for Regulatory Institution Announcements: e.g. 350 This field will be populated with the ID of the Regulatory Institution.</p> |

| Field Name | Description |
|---|--|
| <p>subject qcode="InsNumCde:value"</p> | <p>The Instrument Numeric Code of the instrument (as per JSE master data) selected for the announcement.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a Share): e.g.: 119 This field will be populated with the Instrument ID. If multiple instruments are selected, then separate <i>subject</i> entries will be used for each instrument.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): <i>This XML element and an <assert> with the same QCode will NOT be present.</i></p> <p>How the SENS System will populate the message for Exchange Announcements: <i>This XML element and an <assert> with the same QCode will NOT be present.</i></p> <p>How the SENS System will populate the message for Regulatory Institution Announcements: <i>This XML element and an <assert> with the same QCode will NOT be present.</i></p> |
| <p>sens:AnnouncementRegulatory Code qcode= "AnnRegCde:value"</p> | <p>Indicates whether the announcement is Regulatory ("R") or Non-regulatory ("N").</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a share): e.g. N</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): e.g. R</p> <p>How the SENS System will populate the message for</p> |

| Field Name | Description |
|---|--|
| | <p>Exchange Announcements: e.g. R</p> <p>How the SENS System will populate the message for a Regulatory Institution Announcements: e.g. R</p> |
| <p>sens:PriceSensitivityIndicator qcode= "PrcSenInd:value"</p> | <p>Indicates if the announcement is price-sensitive, e.g. Y or N</p> |
| <p>sens:AnnouncementGroupCde qcode= "AnnGrpCde:value"</p> | <p>The rules for populating the Announcement Group Code are:</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a share): <i>The element will NOT be present in the NewsML.</i></p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): e.g. JSEO (JSE primary company) or NSXO (for NSX Primary Company).</p> <p>How the SENS System will populate the message for Exchange Announcements: e.g. EXCH (for both JSE and NSX)</p> <p>How the SENS System will populate the message for a Regulatory Institution Announcements: e.g. CCO</p> |

| Field Name | Description |
|--|--|
| <p>assert qcode=OrgId:value"</p> | <p>The Company ID as maintained in JSE master data.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a Share): e.g.: 861 This field will be populated with the Primary Company ID.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): e.g.: 861 This field will be populated with the Primary Company ID.</p> <p>How the SENS System will populate the message for Exchange Announcements: e.g. 2647 This field will be populated with the Exchange ID.</p> <p>How the SENS System will populate the message for Regulatory Institution Announcements: e.g. 350 This field will be populated with the ID of the Regulatory Institution.</p> |
| <p>related rel="RelNat:hasRelSeq"</p> | <p>Indicates the relationships sequence of the company. Primary company has value 1; the 1st Related company has value 2, etc, e.g.: 1</p> |
| <p>related rel="RelNat:hasRole"</p> | <p>Provides the company role code.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a Share): e.g.: ISSE This field will be populated with code for the company issuer role, e.g. Equity Issuer (ISSE).</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): e.g.: ISSE</p> |

| Field Name | Description |
|---|---|
| | <p>Any role except 'General'.</p> <p>How the SENS System will populate the message for Exchange Announcements: e.g. General When JSE or NSX make <i>Exchange</i> announcements their role must be 'General'.</p> <p>How the SENS System will populate the message for Regulatory Institution Announcements: e.g. General Regulatory Institutions have a 'General' role</p> |
| <p>related rel="RelNat:hasRoleOn"</p> | <p>Indicates the Market Identifier Code for the Exchange where the company has the role specified in "RelNat:hasRole", e.g. XJSE</p> |
| <p>related rel="RelNat:isRegisteredIn"</p> | <p>Indicates the country of registration of the company, e.g. GB, ZA</p> |
| <p>sameAs qcode="OrgAlphaCde:value"</p> | <p>The alpha code of the company, e.g.: ANAAL</p> |
| <p>name role="nrol:short"</p> | <p>The short name of the company, e.g.: ANGLO</p> |
| <p>name role="nrol:full"</p> | <p>The full/long name of the company, e.g.: ANGLO AMERICAN PLC</p> |
| <p>assert qcode="InsNumCde:value"</p> | <p>The Instrument Numeric Code as maintained in JSE master data system.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has a Share): e.g.: 119 This field will be populated with the Instrument ID.</p> <p>How the SENS System will populate the message for Company Announcements (Primary company has no share): <i>This XML element and its child elements below will NOT be present in NewsML message.</i></p> <p>How the SENS System will populate the message for Exchange Announcements:</p> |

| Field Name | Description | | | | | | |
|------------------------|---|------------------------------|----------------------------|----------------------|------------------------|---------------------------|------------------------------|
| | <p><i>This XML element and its child elements below will NOT be present in NewsML message.</i></p> <p>How the SENS System will populate the message for Regulatory Institution Announcements:</p> <p><i>This XML element and its child elements below will NOT be present in NewsML message.</i></p> | | | | | | |
| | <p>related rel="RelNat:hasRelSeq"</p> <p>Indicates the relationships sequence of the instrument. Primary instrument has value 1. The 1st related instrument has a value of 2, etc, e.g.: 1</p> | | | | | | |
| | <p>related rel="RelNat:isIssuedBy"</p> <p>Provides the ID of the company that issued the instrument, e.g.: 861</p> | | | | | | |
| | <p>related rel="RelNat:isIssuedIn"</p> <p>Provides the country code where the instrument was issued in, e.g. ZA, NA</p> | | | | | | |
| | <p>related rel="RelNat:hasListingType"</p> <p>Indicates the type of listing, e.g.: Primary or Secondary</p> | | | | | | |
| | <p>related rel="RelNat:isListedOn" qcode="MIC:value"</p> <p>The Market Identifier Code of the Exchange where the instrument is listed on, e.g.: XNAM or XJSE</p> | | | | | | |
| | <p>related rel="RelNat:isListedOn" qcode="MktTyp:value"</p> <p>The Market Type (such as Equity Market) where the instrument is listed on, e.g.: EM</p> | | | | | | |
| | <p>related rel="RelNat:isListedOn" qcode="BrdTyp:value"</p> <p>The Board type the instrument is listed on, e.g.: Main</p> | | | | | | |
| | <p>related rel="RelNat:hasSubSector"</p> <p>The instrument's ICB subsector industry classifications such "Gold Mining", "Aerospace", etc., e.g.: 1777</p> <p><u>NB: On 23 March 2021 the new FTSE ICB structure comes into effect and will be implemented into production. From this date, the ICB subsector field will increase from 4 characters to 8 characters. e.g "55103025"</u></p> <table border="1" data-bbox="687 1765 1452 1906"> <thead> <tr> <th data-bbox="687 1765 922 1854"><u>New ICB code</u></th> <th data-bbox="922 1765 1166 1854"><u>New ICB description</u></th> <th data-bbox="1166 1765 1452 1854"><u>New ICB level</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="687 1854 922 1906"><u>55103025</u></td> <td data-bbox="922 1854 1166 1906"><u>Gold Mining</u></td> <td data-bbox="1166 1854 1452 1906"><u>Sub-Sector (4)</u></td> </tr> </tbody> </table> <p><u>The current to new ICB mapping can be found here:</u></p> | <u>New ICB code</u> | <u>New ICB description</u> | <u>New ICB level</u> | <u>55103025</u> | <u>Gold Mining</u> | <u>Sub-Sector (4)</u> |
| <u>New ICB code</u> | <u>New ICB description</u> | <u>New ICB level</u> | | | | | |
| <u>55103025</u> | <u>Gold Mining</u> | <u>Sub-Sector (4)</u> | | | | | |

| Field Name | | Description |
|------------|--|---|
| | | https://www.ftserussell.com/files/support-document/icb-structure-definitions |
| | sameAs qcode="isin:value" | The instrument's ISIN, e.g.: GB00B1XZS820 |
| | sameAs qcode="isin:value" validfrom="utcdatetime" | The instrument's future-dated ISIN, e.g.: GB00B1XZS823 <i>Note: This is an optional entry - present only when instrument has a future-dated ISIN.</i> |
| | sameAs qcode="TIDM:value" | The instrument's TIDM, e.g.: 100U NB: For instruments that do not have a TIDM (e.g. Debt Instruments) this element will not be used. |
| | sameAs qcode="InsAlphaCde:value" | The instrument's alpha code, e.g.: AGL |
| | name role="nrol:short" | The instrument's short name, e.g.: ANGLO |
| | name role="nrol:full" | The instrument's full/long name, e.g.: ANGLO AMERICAN PLC |
| | contentSet | The NewsML section which contains the actual announcement text or relative path to the PDF announcement contained in the end-of-day compressed file. |
| | remoteContent contenttype | The IANA/MIME application type code, e.g.: application/pdf NB: Only applicable to EOD SENS Plus product. |
| | remoteContent size | The size of PDF Announcement in bytes, e.g.: 8240207 <i>Note: The maximum PDF size is configurable in SENS and has a default value of 10MB. The PDF file size may exceed 10MB on exceptional cases.</i> NB: Only applicable to EOD SENS Plus product. |
| | remoteContent href | The relative path where the PDF version of the announcement can be found in the end-of-day compressed file, e.g.: S3\SENS-20111209-S3.pdf The relative path where the PDF version of the financial results document. , e.g.: S3\SupportingDocument.pdf |

| Field Name | | Description |
|------------|-------------------------------|--|
| | | <i>Note: The two paths will be separated with a (;) semicolon should additional document exists for the announcement.</i> |
| | remoteContent residref | The provider's identifier of the target resource. NB: Only applicable to EOD SENS Plus product. |
| | inlineData contenttype | The type of inline content. e.g.: text/plain NB: Only applicable to EOD SENS product. |
| | inlineData xml:space | Indicates how white space in the <i>inlineData</i> element should be handled by the NewsML processor, e.g.: preserve NB: Only applicable to EOD SENS product. |
| | inlineData (value) | The actual windows-1252 character encoded plain-text announcement. The text size is limited to 4MB. NB: Only applicable to EOD SENS product. |

6.2 PackageItem

Table 3 provides the layout and an overview the NewsML *PackageItem* messages and how they are populated. The PackageItem is used to group the individual NewsItems (and PDF files for the End-of-Day SENS Plus product) into a single container.

Please see **Section 8** for the additional information on how the PackageItem is created and how to process it.

Table 3 – JSE NewsML PackageItem Layout

| Field Name | | Description |
|--------------------|------------------------|---------------------------------------|
| packageItem | | |
| | Guid | The packageItem GUID |
| | Xmlns | The XML namespace for ITPC NewsML |
| | Xmlns:xsi | The XML namespace for W3C XML 1.0 |
| | Xmlns:sens | The XML namespace for SENS extensions |
| | Version | The newsItem version |
| | Standard | The G2 standard of the Item |
| | Standardversion | The version of the G2 standard used |
| | Conformance | The level of conformance of the G2 |

| Field Name | | Description |
|-------------------|---|---|
| | Xml:lang | The language tag of the Item |
| CatalogRef | | Provides the URL to the G2 catalogs from IPTC and JSE used in JSE NewsML. |
| rightsInfo | | |
| | usageTerms | Provides the standard SENS usage terms. |
| itemMeta | | NewsML section which contains information about the news message. |
| | itemClass qcode="ninat:value" | An indicator of the class of news message, e.g. Text or Composite. A value 'text' is used for <i>End of Day SENS</i> and 'composite' for the <i>End of Day SENS Plus</i> product., e.g.: 'composite' |
| | provider | The provider of the news item message. A constant value of "JSE Ltd" is used, e.g.: 'JSE Ltd' |
| | versionCreated | The time the NewsML message was created in UTC, is used e.g.: 2011-12-09T18:05:04.000Z <i>Note: All timestamps in NewsML use the format: CCYY-MM-DDTHH:MM:SS.sssZ</i> |
| | firstCreated | The time the NewsML message was first created in UTC, e.g.: 2011-12-09T18:05:04.000Z |
| | pubStatus qcode="stat:value" | The publication status, e.g. usable NB: The PackageItem in JSE NewsML can only be corrected via replacements. The pubStatus will therefore always be 'usable'. |
| | fileName | The filename of the NewsML message, e.g.: SENS_20111209_R2_EPPI.XML |
| | generator | The <i>version</i> and <i>name</i> of the software used to generate the NewsML message. |
| | versioninfo | Version number of the software or assembly, e.g. 1.0.0.0 |
| | (name) | The name of the software component or assembly, e.g.: JSE.IS.Sens.NewsML |
| | service qcode="SrvTyp:value" | The news service, e.g.: SENS or NENS NB: For the PackageItem the service will always be equal to 'SENS'. |

| Field Name | | Description |
|--------------------|--|---|
| | signal qcode="CorTyp:value" | Present for Replacements Packageltems only, e.g. Repl |
| | link | Included when a Packageltem is replacing a previous Packageltem. |
| | contenttype | Indicates the content type of the announcement being 'cancelled' or 'replaced', e.g.: application/vnd.iptc.g2.packageitem+xml |
| | rel | Indicates the relationship between the current Packageltem and the Packageltem being corrected. A constant 'previousVersion' value is used, e.g.: irel:previousVersion |
| | residref | The GUID of the Packageltem being replaced, e.g.: urn:newsml:jse.co.za:2011-12-09:SENS:R1:EPPI |
| contentMeta | | NewsML section which provides information about the content of the announcement. |
| | urgency | Indicates the urgency of the content. A constant value of 4 is used for Packageltems, e.g.: 4 |
| | contentCreated | The time the announcement content was created in UTC, e.g.: 2011-12-09T18:05:04.000Z |
| | located | The location where the content was created. A constant value of 'Johannesburg' is used, e.g.: Johannesburg |
| | infoSource qcode="OrgId:value" | The <i>provider</i> of the Packageltem message. A constant value of "JSE Ltd" is used, e.g.: 'JSE Ltd' |
| | creator qcode="OrgId:value" | The <i>creator</i> of the Packageltem message. A constant value of "JSE Ltd" is used, e.g.: 'JSE Ltd' |
| | audience qcode="PrdCde:value" | The target <i>audience</i> for the product. The ETPI code is used for End of Day SENS and EPPI is used for End of Day SENS Plus , e.g.: ETPI |
| | language | The <i>language</i> tag for the content, e.g.: 'en' <i>English</i> is used by default unless locally overridden. |
| | genre qcode="genre:value" | Indicates the <i>genre</i> of the Packageltem. For End-of-Day Package Items a constant value of 'Wrapup' from the IPTC Genre scheme is used, e.g. Wrapup |
| | headline | The <i>headline</i> will have a standard format of "End of Day SENS Announcements – CCYY-MM-DD", e.g.: End of Day SENS Announcements – 2011-12-09 |

| Field Name | | Description |
|------------|--|---|
| | subject literal="value" | The <i>subject</i> will have a constant value of 'Announcements' for End-of-day PackageItems, e.g.: Announcements |
| | groupSet root="root" | A <i>groupSet</i> represents a tree of Items. All Items of a package are included by reference, as physical inclusion would break the capability to manage inner Items independently of the outer Package Item. |
| | group Id="root" GrpRol:root Mode="pgrmod:seq" | The <i>group</i> with a GrpRol:root will list all the announcements contained in the PackageItem using the one or more GroupRefs. |
| | groupRef idref=value | The <i>groupRef</i> provides a reference to a group local to the package using the Announcement Reference Number. A group will consist of all the items for a specific announcement such as NewsItems and PDF Announcement files, e.g.: S1 |
| | group Id="value" GrpRol:value | Each announcement will have a <i>group</i> identified by the <i>id</i> using the Announcement Reference Number. The role="GrpRol:value" identifies which product the group belongs to: the GrpRol will be ETPI for <i>End-of-Day SENS</i> and EPPI for <i>End-of-Day SENS Plus</i> , e.g.: <group id="S1" role="GrpRol:EPPI"> |
| | itemRef contenttype="value" | The <i>contenttype</i> attribute indicates the type of Item referenced in the itemRef. The value will be "application/vnd.iptc.g2.newsitem+xml" for NewsItems. The End-of-Day SENS Plus product will include a second ItemRef with contenttype="application/pdf" |
| | itemRef residref="value" | The <i>residref</i> will provide the NewsItem GUID for the NewsItem references. The End-of-Day SENS Plus will contain an additional itemRef for the PDF file with the <i>residref</i> providing the PDF file name, e.g.: <u>For NewsItems:</u> residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:EPNI" <u>For PDF Files (End-of-Day SENS Plus only):</u> residref="SENS_20111209_S1.pdf" <u>For additional PDF Files:</u> residref="SupportingDocumentName.pdf" |

| Field Name | | Description |
|------------|--|--|
| | itemRef href="value" | The <i>href</i> will provide the relative file path where the NewsItems are stored in the end-of-day compressed file downloaded from IDP. For the End-of-Day SENS Plus product, the <i>href</i> will provide the relative path to the PDF Announcement file stored in the compressed file, e.g.: <u>For NewsItems:</u> href="\S1\SENS_20111209_S1_EPNI.xml" <u>For additional PDF Files in announcement:</u> href="\S1\SupportingDocumentName.pdf" <u>For PDF Files (End-of-Day SENS Plus only):</u> href="\S1\SENS_20111209_S1.pdf" |
| | service qcode="SrvTyp:value" | The <i>service</i> element is used to indicate whether the items in the group were published by SENS or NENS. This is only used to NewsItems. |

7. NewsItem – Representing News

The **newsItem** is the top-level element of a JSE NewsML document which conveys an announcement and contains the following sub-elements:

- **itemMeta** to provide Management Metadata information about the newsItem document;
- **contentMeta** to provide Content Metadata information about the news content contained in the document; and
- **contentSet** to provide a Content Payload to contain the actual news content

The NewsML in Listing 1 below is a sample SENS newsItem for the **End-of-Day SENS product (Product Code = ETNI)**. The newsItem is an announcement issued by Investec Limited.

NB: The information shown in all code listings in this document are for explanatory purposes and may not reflect actual news announcements. The Usage Terms, Headline and Announcement Text have been abbreviated to simplify the code listing.

Listing 1 – Sample SENS newsItem: ETNI – End-of-day Text NewsItem (End-of-Day SENS product)

```

<?xml version="1.0" encoding="Windows-1252"?>
<newsItem guid="urn:newsml:jse.co.za:2011-12-09:SENS:S3:ETNI"
  xmlns="http://iptc.org/std/nar/2006-10-01/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:sens="http://JSE/Schemas/SENS/NewsML/Extensions/"
  version="1"
  standard="NewsML-G2"

```

```

        standardversion="2.9"
        conformance="power"
        xml:lang="en">
<catalogRef href="http://www.iptc.org/std/catalog/catalog.IPTC-G2-Standards_17.xml" />
<catalogRef href="http://www.jse.co.za/is/sens/newsml/catalog/JSE_NewsML_Catalog_1.xml" />
<rightsInfo>
  <usageTerms>SENS Usage Terms</usageTerms>
</rightsInfo>
<itemMeta>
  <itemClass qcode="ninat:text"/>
  <provider literal="JSE Ltd"/>
  <versionCreated>2011-12-09T10:31:25.000Z</versionCreated>
  <firstCreated>2011-12-09T10:31:25.000Z</firstCreated>
  <embargoed>2011-12-09T10:31:00.000Z</embargoed>
  <pubStatus qcode="stat:usable"/>
  <fileName>SENS_20111209_S3_ETNI.XML</fileName>
  <generator versioninfo="1.0.0.0">JSE.IS.Sens.NewsML</generator>
  <service qcode="SrvTyp:SENS"/>
  <signal qcode="CorTyp:Repl"/>
  <link contentType="application/vnd.iptc.g2.newsitem+xml"
    rel="irel:previousVersion"
    residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:ETNI">
    <altId type="AltIdTyp:AnnNo">20111209001A</altId>
    <altId type="AltIdTyp:AnnRefNo">S1</altId>
  </link>
</itemMeta>
<contentMeta>
  <urgency>1</urgency>
  <contentCreated>2011-12-09T10:20:00.000Z</contentCreated>
  <located literal="Johannesburg"/>
  <infoSource qcode="OrgId:1207"/>
  <creator qcode="OrgId:1207"/>
  <audience qcode="PrdCde:ETNI" />
  <altId type="AltIdTyp:AnnNo">201112090003A</altId>
  <altId type="AltIdTyp:AnnRefNo">S3</altId>
  <language tag="en"/>
  <genre qcode="RelTyp:100"/>
  <headline>Headline</headline>
  <subject qcode="AnnTyp:133">
    <name>Dividend</name>
    <narrower qcode="AnnSubTyp:138">
      <name>Special Dividend</name>
    </narrower>
  </subject>
  <subject qcode="OrgId:1207"/>
  <subject qcode="InsNumCde:193"/>
  <sens:AnnouncementRegulatoryCode qcode="AnnRegCde:N"/>
  <sens:PriceSensitivityIndicator qcode="PrcSenInd:Y"/>
</contentMeta>

```

```

<assert qcode="OrgId:1207">
  <related rel="RelNat:hasRelSeq" literal="1" />
  <related rel="RelNat:hasRole" qcode="AnnRol:ISSE" />
  <related rel="RelNat:hasRoleOn" qcode="MIC:XJSE" />
  <related rel="RelNat:isRegisteredIn" qcode="iso3166-1a2:ZA" />
  <sameAs qcode="OrgAlphaCde:INL" />
  <name role="nrol:short">INVLTD</name>
  <name role="nrol:full">INVESTEC LIMITED</name>
</assert>
<assert qcode="InsNumCde:193">
  <related rel="RelNat:hasRelSeq" literal="1" />
  <related rel="RelNat:isIssuedBy" qcode="OrgId:1207" />
  <related rel="RelNat:isIssuedIn" qcode="iso3166-1a2:ZA" />
  <related rel="RelNat:hasListingType" qcode="LstTyp:Primary" />
  <related rel="RelNat:isListedOn" qcode="MIC:XJSE" />
  <related rel="RelNat:isListedOn" qcode="MktTyp:EM" />
  <related rel="RelNat:isListedOn" qcode="BrdTyp:Main" />
  <related rel="RelNat:hasSubSector" qcode="ICBSubSec:8777" />
<!-- NB: On 23 March 2021 ICB SubSector increases in length from 4 to 8 characters-->
  <sameAs qcode="isin:ZAE000081949" />
  <sameAs qcode="TIDM:101G" />
  <sameAs qcode="InsAlphaCde:INL" />
  <name role="nrol:short">INVLTD</name>
  <name role="nrol:full">Investec Ltd</name>
</assert>
<contentSet>
  <inlineData contentType="text/plain" xml:space="preserve">
    Announcement text in Windows-1252
  </inlineData>
  <remoteContent contentType="application/pdf" size="10030" href="\S3\SupportingDocument.pdf" />
</contentSet>
</newsItem>

```

The Code Listing 2 below shows the **End-of-Day SENS Plus product (Product Code = EPNI)** version of the announcement in Listing 1. The key difference is in the **contentSet** section which replaces the plain-text content with a reference to the PDF included in the End-of-Day compressed file.

Listing 2 – Sample SENS newsItem: EPNI – End-of-day PDF NewsItem (End-of-day SENS Plus product)

```

<?xml version="1.0" encoding="Windows-1252"?>
<newsItem guid="urn:newsml:jse.co.za:2011-12-09:SENS:S3:EPNI"
  xmlns="http://iptc.org/std/nar/2006-10-01/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:sens="http://JSE/Schemas/SENS/NewsML/Extensions/"
  version="1"
  standard="NewsML-G2"
  standardversion="2.9"
  conformance="power"

```

```

    xml:lang="en">
<catalogRef href="http://www.iptc.org/std/catalog/catalog.IPTC-G2-Standards_17.xml" />
<catalogRef href="http://www.jse.co.za/is/sens/newsm/catalog/JSE_NewsML_Catalog_1.xml" />
<rightsInfo>
  <usageTerms>SENS Usage Terms</usageTerms>
</rightsInfo>
<itemMeta>
  <itemClass qcode="ninat:composite"/>
  <provider literal="JSE Ltd"/>
  <versionCreated>2011-12-09T10:31:25.000Z</versionCreated>
  <firstCreated>2011-12-09T10:31:25.000Z</firstCreated>
  <embargoed>2011-12-09T10:31:00.000Z</embargoed>
  <pubStatus qcode="stat:usable"/>
  <fileName>SENS_20111209_S3_EPNI.XML</fileName>
  <generator versioninfo="1.0.0.0">JSE.IS.Sens.NewsML</generator>
  <service qcode="SrvTyp:SENS"/>
  <signal qcode="CorTyp:Repl"/>
  <link contentType="application/vnd.iptc.g2.newsitem+xml"
    rel="irel:previousVersion"
    residref="urn:newsm:jse.co.za:2011-12-09:SENS:S1:EPNI">
  <altId type="AltIdTyp:AnnNo">201112090001A</altId>
  <altId type="AltIdTyp:AnnRefNo">S1</altId>
  </link>
</itemMeta>
<contentMeta>
  <urgency>1</urgency>
  <contentCreated>2011-12-09T10:20:00.000Z</contentCreated>
  <located literal="Johannesburg"/>
  <infoSource qcode="OrgId:1207"/>
  <creator qcode="OrgId:1207"/>
  <audience qcode="PrdCde:EPNI" />
  <altId type="AltIdTyp:AnnNo">201112090003A</altId>
  <altId type="AltIdTyp:AnnRefNo">S3</altId>
  <language tag="en"/>
  <genre qcode="RelTyp:100"/>
  <headline>Headline</headline>
  <subject qcode="AnnTyp:133">
    <name>Dividend</name>
    <narrower qcode="AnnSubTyp:138">
      <name>Special Dividend</name>
    </narrower>
  </subject>
  <subject qcode="OrgId:1207"/>
  <subject qcode="InsNumCde:193"/>
  <sens:AnnouncementRegulatoryCode qcode="AnnRegCde:N"/>
  <sens:PriceSensitivityIndicator qcode="PrcSenInd:Y"/>
</contentMeta>
<assert qcode="OrgId:1207">
  <related rel="RelNat:hasRelSeq" literal="1" />

```

```

<related rel="RelNat:hasRole" qcode="AnnRol:ISSE" />
<related rel="RelNat:hasRoleOn" qcode="MIC:XJSE" />
<related rel="RelNat:isRegisteredIn" qcode="iso3166-1a2:ZA" />
<sameAs qcode="OrgAlphaCde:INL" />
<name role="nrol:short">INVLTD</name>
<name role="nrol:full">INVESTEC LIMITED</name>
</assert>
<assert qcode="InsNumCde:193">
  <related rel="RelNat:hasRelSeq" literal="1" />
  <related rel="RelNat:isIssuedBy" qcode="OrgId:1207" />
  <related rel="RelNat:isIssuedIn" qcode="iso3166-1a2:ZA" />
  <related rel="RelNat:hasListingType" qcode="LstTyp:Primary" />
  <related rel="RelNat:isListedOn" qcode="MIC:XJSE" />
  <related rel="RelNat:isListedOn" qcode="MktTyp:EM" />
  <related rel="RelNat:isListedOn" qcode="BrdTyp:Main" />
  <related rel="RelNat:hasSubSector" qcode="ICBSubSec:8777" />
<!-- NB: On 23 March 2021 ICB SubSector increases in length from 4 to 8 characters-->
<sameAs qcode="isin:ZAE000081949" />
<sameAs qcode="TIDM:101G" />
<sameAs qcode="InsAlphaCde:INL" />
<name role="nrol:short">INVLTD</name>
<name role="nrol:full">Investec Ltd</name>
</assert>
<contentSet>
  <remoteContent contentType="application/pdf" size="10030" href="\S3\SENS-20111209-S3.pdf" />
  <remoteContent contentType="application/pdf" size="1030" href="\S3\SupportingDocument.pdf" />
</contentSet>
</newsItem>

```

7.1 XML Version and Encodings

The first line of the newsItem is standard XML. The newsItem uses version 1.0 of the W3C XML standard. The encoding Windows-1252 encoding is used in SENS; the first line of a JSE NewsML newsItem is:

```
<?xml version="1.0" encoding="Windows-1252"?>
```

The XML created by SENS removes any illegal XML characters by escaping them. In addition, all URLs and URIs used in SENS conform to the valid character sets as defined in RFC3986.

NB: SENS does not currently support Unicode UTF-8/16/32.

7.2 NewsItem attributes

The newsItem for JSE NewsML have the following attributes:

```

<newsItem xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:sens="http://JSE/Schemas/SENS/NewsML/Extensions/"
  xmlns="http://iptc.org/std/nar/2006-10-01/"

```

```

guid="urn:newsml:jse.co.za:2011-12-09:SENS:S300428:ETNI"
version="1"
standard="NewsML-G2"
standardversion="2.9"
conformance="power"
xml:lang="en">

```

7.2.1 Identification

JSE NewsML uses the URN namespace (*urn:newsml*) as the GUID for identification of NewsML-G2 items (RFC3085). The URN has the form:

```
urn:newsml:<provider>:<PublicationDate>:<unique-identifier-for-the-provider>
```

Example:

```

urn:newsml:jse.co.za:2011-12-21:SENS:S300428:ETNI
urn:newsml:jse.co.za:2011-12-21:SENS:S300428:EPNI

```

Where *<provider>* is set to the JSE domain address (for both SENS and NENS) and *PublicationDate(CCYY-MM-DD)* is set to the date the news was published.

The *<unique-identifier-for-the-provider>* is further defined by:

```
<ServiceID>:<AnnRefNo>:<ItemType>
```

For JSE announcements, *SystemID* is set to SENS, whilst for NSX announcements it is set to NENS.

The *AnnRefNo* field uniquely identifies a company announcement. The format of this field is an alphanumeric code starting with “S” and followed by a numeric value, e.g. S3. The *AnnRefNo* is valid for all time.

The *ItemType* is an indicator for the type of NewsItems, e.g. ETNI or EPNI are the values used for the End-of-Day SENS product (ETNI) and the End-of-day SENS Plus product (EPNI).

NB: The GUID strings above may be created deterministically but it is considered opaque – its ‘format’ is not guaranteed and consumers MUST NOT parse it. The metadata contained in the GUID is provided in its own right in the JSE NewsML. (Please see Appendix A for a list of the opaque strings used in JSE NewsML).

7.2.2 NewsItem Versioning and Corrections

The simplest NewsML-G2 mechanism for dealing with updated content is to re-issue an item using the same GUID with a new Version. However, some content systems do not provide a common identifier for updated content and previous versions of the same content. In these cases, it may not be possible to use the GUID to identify previous versions, and the provider would need to use [link](#) to refer to the GUID of a

previous version, using @residref. JSE NewsML uses the **link** element to link NewsItems to previous versions. The @version attribute is *not* used track versions of the same NewsItem.

The relationship between the current NewsItem and the NewsItem referenced by **link** is expressed using @rel. The appropriate code value from the IPTC Item Relation NewsCode is “previousVersion”.

A *cancellation or replacement* announcement is considered a new announcement in SENS and will therefore have a different GUID and have @version set to 1. The cancellation and replacement announcements will have a **link** to the NewsItem being replaced, e.g.:

`version="1"`

Please see section 7.8 for additional information on announcement corrections.

XML Namespaces

The IPTC namespace for NewsML (G2 v2.9) and W3C namespace for XML schema are as follows:

`xmlns="http://iptc.org/std/nar/2006-10-01/"`

`xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"`

The SENS extensions to the NewsML standard are indicated by the following namespace:

`xmlns:sens="http://JSE/Schemas/SENS/NewsML/Extensions/"`

Note: The schema for SENS extensions to NewsML can be downloaded from:

<https://www.jse.co.za/services/technologies/equity-market-trading-and-information-technology-change>

7.2.3 Indication of Compliance with a Standard and Conformance Level

The NewsML-G2 standard is used for JSE NewsML:

`standard="NewsML-G2"`

JSE NewsML is based on version 2.9 of NewsML-G2:

`standardversion="2.9"`

The Power Conformance Level (PCL) is used for JSE NewsML for additional capabilities:

`conformance="power"`

7.2.4 XML Language Attribute

Unless locally overridden, JSE NewsML specifies “English” as the default language for news using BCP47 tag ‘en’:

`xml:lang="en">`

7.3 Catalogs

The IPTC Catalog and JSE Catalog used in JSE NewsML lists all the Controlled Vocabularies (CVs) aliases and their URIs.

NB: Please Section 9 for information on to obtain the SENS Catalog file.

NB: It is strongly recommended that a G2 processor should cache any remote catalogs to avoid processing dependencies on external servers. Any changes to the catalogs used in SENS will be formally communicated by the JSE according to standard notification policies.

A new version of the JSE NewsML Catalog will issued for all changes, including adding, updating or deleting scheme aliases. A 'major' versioning number will be appended to the catalog name, e.g. JSE_NewsML_Catalog_1.xml, JSE_NewsML_Catalog_2.xml, etc. Minor versioning is NOT used. Old catalogs are maintained on the JSE website indefinitely.

Note: The SENS Catalog can be downloaded from the following address on the JSE website:

<https://www.jse.co.za/services/technologies/equity-market-trading-and-information-technology-change>

7.3.1 JSE Controlled Vocabularies Published in SENS knowledgeitem

The following table lists the CVs that are maintained by the JSE:

Table 2 – JSE Controlled Vocabularies published in the SENS Knowledge Item

| Controlled Vocabulary | Alias | Description |
|------------------------------|-----------|--|
| Release Type | RelTyp | Describes the Release Type, e.g. Formal, Press Release, etc. |
| Service Type | SrvTyp | Describes the type of service used to distribute the announcement, e.g. SENS, NENS. |
| Announcement Type | AnnTyp | Identifier for the type of announcement, e.g. Merger, Acquisition, etc. |
| Announcement Sub Type | AnnSubTyp | Identifier for the announcement subtype, e.g. Full Redemption, Partial Redemption (subtypes of <i>Redemption</i> Announcement Type). |
| Relationship Nature | RelNat | Describes the relationship nature between two concepts. |
| Announcement Role | AnnRol | Describes the type of role of an organisation in an announcement, e.g. Equity Issuer, Warrant Issuer. |
| Market Type | MktTyp | Describes the Market an instrument is listed on, e.g. Equity Market, Derivatives Market, etc. |

| Controlled Vocabulary | Alias | Description |
|-------------------------------------|-----------|--|
| Board Type | BrdTyp | Describes the Type of Board an instrument is listed on, e.g. Main Board, Alt-X, Africa Board, etc. |
| Correction Type | CorTyp | Describes the possible corrections to G2 Items, e.g. Cancellation and Replacement. |
| Alternative Identifier Type | AltIdTyp | Used to provide alternative identifiers for concepts, e.g. TIDM and ISIN for instruments. |
| Price Sensitivity Indicator | PrcSenInd | Describes the price sensitivity of an announcement, e.g. Y, N. The price sensitivity is determined by the announcement submitter. |
| Announcement Regulatory Code | AnnRegCde | Used to categorise announcements as either regulatory or non-regulatory. Regulatory announcements are those issued by the JSE/NSX, Regulatory Institutions or by Companies that can issues shares but have no listed instruments. |
| Announcement Group Code | AnnGrpCde | This grouping of codes is used to identify the type of regulatory announcement, e.g. EXCH, JSEO. |
| Listing Type | LstTyp | Identifies the type of listing on the Exchange, e.g. Primary or Secondary. |
| Product Code | PrdCde | The Product Code is used to identify the news product and audience that the content is destined for, e.g. ETNI=End-of-Day Text NewsItem (End-of-Day SENS product); EPNI=End-of-Day PDF NewsItem (End-of-Day SENS Plus product) |
| Group Role | GrpRol | The Group Role is used the packageItems to group itemRefs under a Product Code. |

7.3.2 JSE Controlled Vocabularies NOT Published in SENS KnowledgeItem

Table 3 lists the CVs which *are* owned by the JSE, but due to their high update volatility or size, are *not* published as a controlled vocabulary in KnowledgeItem format; instead, they are provided through the JSE's SENS¹ end-of-day data products service.

The SENS products below are *not* mandatory in order to be able to successfully process the NewsML messages but provide additional metadata on the announcements.

¹ Please contact the JSE's Information Products Division for additional information on products available or visit website:

<http://www.jse.co.za/Products/Information-Products.aspx>

Table 3 – JSE Controlled Vocabularies NOT published in the SENS Knowledge Item

| Controlled Vocabulary | Description |
|---------------------------------------|--|
| Organisation Identification | <p>Alias: OrgId</p> <p>Description of this CV by the owner: Each company or organisation which is authorised to issue news is assigned a unique number in the JSE Reference Data System.</p> <p>Product: Record Type YC Sub Type 01</p> |
| Instrument Numeric Code | <p>Alias: InsNumCde</p> <p>Description of this CV by the owner: Each instrument listed on the JSE/NSX is issued a unique Instrument Numeric Code by the JSE.</p> <p>Product: Record Type DE/DEE Sub Type 05</p> |
| Organisation Alphanumeric Code | <p>Alias: OrgAlphaCde</p> <p>Description of this CV by the owner: Each company or organisation which can issue news announcements via SENS is assigned a unique alpha code identifier by the JSE Reference Data System.</p> <p>Product: Record Type YC Sub Type 01</p> |
| Instrument Alphanumeric Code | <p>Alias: InsAlphaCde</p> <p>Description of this CV by the owner: Each instrument is assigned a unique alpha code identifier by the JSE Reference Data System.</p> <p>Products:</p> <p>Record Type EQ/EQE Sub Type 01 Record Type EN/ENE Sub Type 01 Sequence 01-02 Record Type EN/ENE Sub Type 02 Sequence 01 and 02 Record Type EC/ECE Sub Type 01</p> |

| Controlled Vocabulary | Description |
|--|---|
| <p>ISIN – International Securities Identifying Number</p> <p><i>ISO 6166:2001</i></p> | <p>Alias: isin</p> <p>Body owning this CV: Not a single body, but the specifications of the ISIN the NSINs (National Securities Identifying Number) are assigned by a local national body for each country.</p> <p>Description of this CV by the owner: International Securities Identifying Number.</p> <p>Homepages for CV: http://www.isin.org/ http://www.iso.org (ISO/DIS 6166) http://cvx.iptc.org/isin/</p> <p>The ISINs for JSE/NSX listed instruments is available from the following JSE SENS products:</p> <p>Record Type DE/DEE Sub Type 07 Record Type DR/DRE Sub Type 01 Record Type EN/ENE Sub Type 01 Sequence 01-02 Record Type ES/ESE Sub Type 01</p> <p>Or from the following JSE web page: https://www.jse.co.za/services/market-data/isin-data</p> <p>NB: The ISIN scheme is already provided in the IPTC Catalog and is therefore not repeated in the JSE Catalog.</p> |

7.3.3 Schemes from other issuing authorities in other formats

In addition to the above JSE-managed CVs, JSE NewsML also uses the CVs in Table 4 maintained by other issuing authorities:

Table 4 – External Controlled Vocabularies in other formats

| Controlled Vocabulary | Description |
|--|--|
| ISO 2-letter Country Name Codes | <p>Alias: iso3166-1a2</p> <p>Body owning this CV: ISO - International Organisation for Standardisation - www.iso.ch</p> <p>Description of this CV by the owner: Codes for the representation of names of countries and their subdivisions</p> <p>Homepage for this CV: http://www.iso.org/iso/country_codes/iso_3166_code_lists.htm and http://cvx.iptc.org/iso3166-1a2/</p> |
| ICB Sector Codes | <p>Alias: ICBSubSec</p> <p>Body owning this CV: FTSE https://www.ftserussell.com/</p> <p>Description of this CV by the owner: Classification system called the Industry Classification Benchmark (ICB) covering securities worldwide from the Dow Jones and FTSE Universes. This classification system is used to classify JSE/NSX listed instruments.</p> <p>Homepage for this CV: https://www.ftserussell.com/data/industry-classification-benchmark-icb</p> <p>The Sector Information for JSE/NSX is also available from the following Products:</p> <p>Record type SN/SNE sub type 01 Record type SN/SNE sub type 02 Record Type EN/ENE Sub Type 01 Sequence 01-02</p> |
| Market Identification Codes (MIC) | <p>Alias: MIC</p> <p>Body owning this CV: ISO http://www.iso.org/</p> |

| Controlled Vocabulary | Description |
|-----------------------|--|
| | <p>Description of this CV by the owner: This International Standard (ISO 10383) specifies a universal method of identifying exchanges, trading platforms and regulated or non-regulated markets as sources of prices and related information in order to facilitate automated processing.</p> <p>Homepage for this CV: http://www.iso15022.org/MIC/homepageMIC.htm</p> |

7.4 Rights Information

A NewsML rights information include only the usageTerms:

```
<rightsInfo>
  <usageTerms>Usage Terms (...)</usageTerms>
</rightsInfo>
```

7.5 Item Management Metadata

7.5.1 Management Metadata

Table 5 below lists the elements under Management Metadata and indicates which elements are used in JSE NewsML NewsItems:

Table 5 – Item Management Group Elements

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|---------------------------|-----------------------|----------------|--------------------|
| Item Class | itemClass | (1) | YES |
| Content Provider | provider | (1) | YES |
| Date Item Version Created | versionCreated | (1) | YES |
| Date Item First Created | firstCreated | (0..1) | YES |
| Date Item Embargo Ends | embargoed | (0..1) | YES |
| Publish Status | pubStatus | (0..1) | YES |
| Role in the Workflow | role | (0..1) | NO |
| File Name | filename | (0..1) | YES |
| Generator Tool | generator | (0..1) | YES |
| Profile | profile | (0..1) | NO |
| Editorial Service | service | (0..unbounded) | YES |
| Item Title | Title | (0..unbounded) | NO |
| Editorial Note | edNote | (0..unbounded) | NO |

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|----------------------------|---------------|----------------|--------------------|
| Member Of | memberOf | (0..unbounded) | NO |
| Instance Of | instanceOf | (0..unbounded) | NO |
| Signal | signal | (0..unbounded) | YES |
| Alternative Representation | altRep | (0..unbounded) | NO |
| Deliverable Of | deliverableOf | (0..1) | NO |
| Hash Value | hash | (0..unbounded) | NO |

The **itemClass** element indicates the nature of the Item. This element gives a hint on the nature of the Item. IPTC values for NewsItems correspond to the media type of the original content component, i.e. “text”, “photo”, etc. This is a **mandatory** field. In JSE NewsML, ‘text’ is used for text-based news products and ‘composite’ for PDF-based news products, e.g.:

```
<itemClass qcode="ninat:text" />
<itemClass qcode="ninat:composite" />
```

The **provider** element is used to denote the party responsible for the management and the release of the Item. The JSE is deemed the provider of all announcements. The JSE company long name is used as a *literal* value to identify the provider, e.g.:

```
<provider literal="JSE Ltd"/>
```

The **versionCreated** element is used to indicate the date and time when the item was created. This is a **mandatory** field, e.g.:

```
<versionCreated>2011-12-09T15:12:38.763Z</versionCreated>
```

NB: All item and content timestamps use an ISO 8601 [36] [37] UTC [185] Zulu [186] timestamp of the format:

```
<YYYY>"-" <MM> "-" <DD> "T" <hh> ":" <mm> ":" <ss> [ "." <SSS> ] "Z"
```

The **firstCreated** element is used to indicate the date and time when the item was first created, e.g.:

```
<firstCreated>2011-12-09T15:12:38.763Z</firstCreated>
```

The **embargoed** element indicates the date and time (with the time zone) before which all versions of the Item are embargoed. An embargoed item relates to information that has been released to the JSE in advance so that it may complete any work needed to make it ready for dissemination to the market. The submitters can submit embargoed stories to SENS and therefore JSE NewsML uses this field to reflect the actual Announcement Release Date and Time, e.g.:

```
<embargoed>2011-12-09T15:12:00.000Z</embargoed>
```

The **pubStatus** element indicates the publishing status of the Item. If no value is provided, the default value is “usable”. The IPTC makes these values normative for the exchange of Items between a provider and its customers:

- **Usable:** The Item MAY be published without restriction.
- **Withheld:** Until further notice, the Item MUST NOT be published or used under any circumstances. If the Item has been published the publisher MUST take immediate action to withdraw or retract it.
- **Canceled:** The Item MUST NOT be published or used under any circumstances. If the Item has been published the publisher MUST take immediate action to withdraw or retract it.

SENS publishes NewsItems with a ‘Usable’ or ‘Canceled’ (note US spelling) status. The ‘Withheld’ status is not used, e.g.:

```
<pubStatus qcode="stat:usable"/>
```

The **filename** element gives the recommended file name for the Item. This element is used in JSE NewsML using the format:

{ServiceID}_{PublicationDate}_{AnnRefNo}_{ItemType}.xml

The ItemType has the value “ETNI” for End-of-Day SENS or “EPNI” for End-of-Day SENS Plus NewsItems; the AnnRefNo uniquely identify the announcement; the PublicationDate (CCYYMMDD) indicates when the NewsItem was published and ServiceID indicates whether the NewsItem was published via SENS or NENS, e.g.:

```
<fileName>SENS_20111221_S3_ETNI.XML</fileName>
```

```
<fileName>SENS_20111221_S3_EPNI.XML</fileName>
```

NB: The *filename* is considered opaque and consumers MUST NOT to parse it.

The **generator** element provides the name and version of the software tool used to generate the Item. In JSE NewsML, the DLL assembly name and version is used e.g.:

```
<generator versioninfo="1.0.0.0">JSE.IS.Sens.NewsML</generator>
```

The **service** element values are defined by each provider, and are often associated with the notion of a desk or a feed. This element is used in JSE NewsML to indicate whether the news is for a SENS or NENS, e.g.:

```
<service qcode="SrvTyp:SENS"/>
```

The **signal** element is used to provide an instruction to the processor of this item that the content requires special handling. This element is used in JSE NewsML to indicate corrections to announcements. Two types of corrections can be made: Cancellations and Replacements. In a NewsItem, a Replacement is always preceded by a Cancellation announcement. An Announcement Correction CV is used with this element to allow processors to handle corrections in the appropriate manner:

For a *cancellation* announcement:

```
<signal qcode="CorTyp:Repl"/>
```

For a *replacement* announcement:

```
<signal qcode="CorTyp:Cncl"/>
```

Please see section 7.8 for more information on how NewsItem corrections are handled in JSE NewsML.

7.6 News Content Metadata

The Content Metadata contains information directly associated with the content of the G2 item and is notionally divided into two groups:

- **Administrative Metadata** – information such as the source of the information and the urgency;
- **Descriptive Metadata** – information about the subject matter of the G2 item, such as category and headline.

7.6.1 Administrative Metadata

Table 6 below lists the elements under Administrative Metadata and indicates which elements are used in JSE NewsML NewsItems:

Table 6 – Administrative Metadata Group Element

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|-----------------------|-----------------------|----------------|--------------------|
| Urgency | urgency | (0..1) | YES |
| Date Content Created | contentCreated | (0..1) | YES |
| Date Content Modified | contentModified | (0..1) | NO |
| Located | located | (0..unbounded) | YES |
| Information Source | infoSource | (0..unbounded) | YES |
| Creator | creator | (0..unbounded) | YES |
| Contributor | contributor | (0..unbounded) | NO |

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|------------------------|-----------------|----------------|--------------------|
| Audience | audience | (0..unbounded) | YES |
| Excluded Audience | exclAudience | (0..unbounded) | NO |
| Alternative Identifier | altId | (0..unbounded) | YES |

The **urgency** element reflects the editorial urgency of the content. A value of “1” is used for all announcements which have been marked as “Price Sensitive” by the submitter. A value of “4” is used for “Non Price-sensitive” announcements, e.g.:

```
<urgency>1</urgency>
```

The **contentCreated** element refers to the date (and optionally the time with the time zone) at which the content was *first* created. This date (and time) may also be different from the date (and time) of the creation of an Item holding the content. For JSE NewsML, this time refers to the datetime stamp (in UTC) of the announcement submitted by the news provider, e.g.:

```
<contentCreated>2011-12-09T15:10:30.450Z</contentCreated>
```

The **located** element refers to the location from which the content originates. This information applies especially to news, and may also be expressed as free text in the *dateline* of a story, along with a date of content creation and the name of the content provider. The rules for determining the location are provider dependent. For SENS announcements, the location is always set to a literal value of “Johannesburg”. This applies to both JSE and NSX announcements, e.g.:

```
<located literal="Johannesburg"/>
```

The **infoSource** element describes a party (person or organisation) which originated some information used to create or enhance the content. In a NewsItem, the infoSource is the announcement’s Primary Company/ Organisation (RelNat:hasRelSeq literal=’1’) and not any intermediary such as Designated Advisors or Sponsors. The infoSource is identified through the Organisation Identifier scheme. Additional infoSource metadata is provided in an **assert** with the same QCode, e.g.:

```
<infoSource qcode="OrgId:1207" />
```

The **creator** element defines the party (person or organisation) which created the resource. In a NewsItem, the creator is the announcement’s Primary Company/ Organisation (RelNat:hasRelSeq literal=’1’) and not any intermediary such as Designated Advisors or Sponsors. The creator is

identified through the Organisation Identifier scheme. Additional creator metadata is provided in an **assert** with the same QCode, e.g.:

```
<creator qcode="OrgId:1207" />
```

The **audience** element is used to indicate the intended audience for the content. In JSE NewsML it is used to indicate which client base based on news Product Code the particular is intended for; the product code ETNI is used for EOD SENS and EPNI is used for EOD SENS PLUS, e.g.:

```
<audience qcode="PrdCde:ETNI" />
```

```
<audience qcode="PrdCde:EPNI" />
```

The **altId** element is an alternative identifier allocated to the content. If there is more than one alternative identifier, they SHOULD be qualified using the *type* qualifier to distinguish between different identification schemes. This element is used to represent the Announcement Number generated by SENS (e.g. 201112090003A) or the new Announcement Reference Number (e.g. S3). It is also used in announcement corrections to provide a Previous Announcement Number (e.g. 201112090001A). These Identifiers are alternatives to the NewsItem GUID. A scheme for the alternative identifiers is provided under the alias of *AltIdTyp*, e.g.:

```
<altId type="AltIdTyp:AnnNo">201112090003A</altId>
```

```
<altId type="AltIdTyp:AnnRefNo">S3</altId>
```

NB: The *altId* is considered opaque and consumers MUST NOT to parse it.

7.6.2 Descriptive Metadata

Table 7 below lists the elements under Descriptive Metadata and indicates which elements are used in JSE NewsML NewsItems:

Table 7 – Descriptive Metadata Group Element

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|---------------|-----------------|----------------|--------------------|
| Language | Language | (0..unbounded) | YES |
| Genre | Genre | (0..unbounded) | YES |
| Keyword | Keyword | (0..unbounded) | NO |
| Subject | Subject | (0..unbounded) | YES |
| Slugline | Slugline | (0..unbounded) | NO |
| Headline | Headline | (0..unbounded) | YES |

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|---------------|--------------------|----------------|--------------------|
| Dateline | Dateline | (0..unbounded) | NO |
| By | By | (0..unbounded) | NO |
| Credit Line | Creditline | (0..unbounded) | NO |
| Description | Description | (0..unbounded) | NO |

The **language** element describes the language associated with the content. The language is identified in the @tag attribute with values that must conform to the IETF's BCP47. For JSE NewsML the default language is English unless locally overridden:

```
<language tag="en"/>
```

The **genre** element indicates the nature, intellectual or journalistic form of the news content. This element is used to reflect the SENS concept of Release Type such as Formal Release or Press Release. A controlled vocabulary is used to define the release types:

```
<genre qcode="RelTyp:100" />
```

The **headline** element gives a brief introduction to the news content. In JSE NewsML, the announcement headline is limited to 150 characters. e.g.:

```
<headline>Headline(...)</headline>
```

The **subject** element indicates an important topic of the content - what the content is about. JSE NewsML NewsItems use the *subject* element to surface the following aspects of announcements as metadata selected by the news submitter:

- Announcement Types and Subtypes;
- Companies or organisations; and
- Companies' tradable instruments (if applicable).

Subject: Announcement Types and Subtypes

The announcement type and subtype provide important information about the nature of the announcement. An announcement must have at least one announcement type.

The Announcement Types and Subtypes are made available to subscribers as part of the SENS KnowledgeItem discussed in Section 9. The submitter can select **one or more** Announcement

Types per news message. Each announcement type can have **zero or many** announcement subtypes, e.g.:

```
<subject qcode="AnnTyp:133">
  <name>Dividend</name>
  <narrower qcode="AnnSubTyp:138">
    <name>Special Dividend</name>
  </narrower>
</subject>
```

If an Announcement Type has an associated Announcement Subtype, this is indicated by **narrower** relation. If more than one subtype is used, then narrower relations are included for each subtype. Both the subject and narrower relations include a **name** for the announcement type/subtype.

Subject: Companies

The subject has the additional function in JSE NewsML NewsItems of identifying the companies selected by the announcement submitter, e.g.:

```
<subject qcode="OrgId:1207" />
```

Please refer to table in Section 0 for details on resolving the Organisation Identifier scheme (alias=OrgId).

Additional metadata for the company or organisation is provided in an **assert** after the contentMeta section with the same QCode.

NB: The company or companies selected by the announcement submitter are always included as a subject of the announcement. However, the company or companies may or may not be the actual subject of the announcement but have an unspecified relationship to the announcement. The interpretation of the company relationships to the announcement is left to the news consumer based on the actual news content and related metadata such as announcement type.

Subject: Instruments

The subject is also used to provide the list of instruments (if applicable) selected by the announcement creator, e.g.:

```
<subject qcode="InsNumCde:193" />
```

Please refer to table in Section 0 for details on resolving the Instrument Numeric Code scheme (alias=InsNumCde).

Additional metadata for the instrument(s) is provided in an **assert** after the contentMeta section using the same QCode(s).

NB: If tradable instrument are selected by the announcement submitter, they are always included as a subject of the announcement. However, the instrument may or may not be the subject of the announcement but have an unspecified relationship to the announcement. The interpretation of the instrument(s) relationships to the announcement is left to the news reader based on the actual news content and related metadata such as announcement type.

Additional metadata provided via Assertions

A company or organisation is related to other concepts within JSE NewsML; these relationships are defined by the **related** element using a *Subject-Predicate-Object* triple to relate subjects to objects:

For example, a relationship such as: “*Investec Limited is registered in South Africa*” is mapped as follows:

Subject : Investec Limited
Predicate : is registered in
Object : South Africa

In JSE NewsML, the above triple would look as follows:

```
<assert qcode="OrgId: 1207">
  <related rel="RelNat:isRegisteredIn" qcode="iso3166-1a2:ZA"/>
</assert>
```

Where:

Subject : OrgId:1207
Predicate : RelNat:isRegisteredIn
Object : iso3166-1a2:ZA

The predicate rel="alias:value" is distinct from the linguistic notion of 'predicate' and is only a mnemonic placeholder for the predicate. The actual "name" in the RelNat scheme in the SENS KnowledgeItem provides the linguistic equivalent, e.g. "is registered in".

Assertions on Companies or Organisations

The following code snippet shows how the NewsML **assert** is used to provide additional information about the companies or organisations identified as a **subject** of the announcement or elsewhere in the NewsItem such **infoSource** and **creator**:

```
<assert qcode="OrgId:1207">
  <related rel="RelNat:hasRelSeq" literal="1" />
  <related rel="RelNat:hasRole" qcode="AnnRol:ISSE" />
  <related rel="RelNat:hasRoleOn" qcode="MIC:XJSE" />
  <related rel="RelNat:isRegisteredIn" qcode="iso3166-1a2:ZA" />
  <sameAs qcode="OrgAlphaCde:INL" />
  <name role="nrol:short">INVLTD</name>
  <name role="nrol:full">INVESTEC LIMITED</name>
</assert>
```

The company or organisation which is identified by the 'OrgID=value' is then associated with several other concepts via a *Predicate* using the **related** element as follows:

- The **RelNat:hasRelSeq** *predicate* indicates whether the company is the Primary Company (literal="1") or whether it is a Related Company. The Primary Company is deemed the submitter of the announcement. The Relationship sequence is provided by the literal value, e.g. Related Company 1 would have a literal="2". The scheme for announcement relationship sequences is not provided as the number related companies is theoretically unbounded.
- The **RelNat:hasRole** *predicate* indicates what role the company plays in the announcement, e.g. Equity Issuer, Warrant Issuer, etc.
- The **RelNat:hasRoleOn** *predicate* indicates the Exchange (XJSE or XNAM using MIC codes) where the company or organisation has the stated role described above.
- The **RelNat:isRegisteredIn** *predicate* indicates the country of registration of the company or organisation.

The company or organisation is alternatively identified via the Organisation Alpha Code ('OrgAlphaCode:value') using the **sameAs** element.

NB: The Company Alpha Code may contain white spaces (blanks). White spaces are not allowed in QCodes. Please see Section 13.8.2 of IPTC-G2-Implementation Guide 4 for additional information on handling white spaces in QCodes. The JSE uses “__” (double underscore - ASCII 242) as the escape character for white space in QCodes.

The company *short name* and *full name* are provided by the **name** element using the @role attribute.

Assertion of Listed Tradable Instruments

Finally, the **assert** element is used in JSE NewsML NewsItems to provide information about the instruments selected by the announcement submitter, e.g.:

```
<assert qcode="InsNumCde:193">
  <related rel="RelNat:hasRelSeq" literal="1" />
  <related rel="RelNat:isIssuedBy" qcode="OrgId:1207" />
  <related rel="RelNat:isIssuedIn" qcode="iso3166-1a2:ZA" />
  <related rel="RelNat:hasListingType" qcode="LstTyp:Primary" />
  <related rel="RelNat:isListedOn" qcode="MIC:XJSE" />
  <related rel="RelNat:isListedOn" qcode="MktTyp:EM" />
  <related rel="RelNat:isListedOn" qcode="BrdTyp:Main" />
  <related rel="RelNat:hasSubSector" qcode="ICBSubSec:8777" />
  <!-- NB: On 23 March 2021 ICB SubSector increases in length from 4 to 8 characters-->
  <sameAs qcode="isin:ZAE000081949" />
  <sameAs qcode="TIDM:101G" />
  <sameAs qcode="InsAlphaCde:INL" />
  <name role="nrol:short">INVLTD</name>
  <name role="nrol:full">Investec Ltd</name>
</assert>
```

The instrument is primarily identified by a QCode using the Instrument Numeric Code (InsNumCde:value) maintained in the JSE master data system but alternative identifiers such as ISIN, TIDM and Instrument Alphanumeric Code are provided via the **sameAs** element.

The Instrument Announcement Relationship Sequence Number, **rel="RelNat:hasRelSeq"** is used to identify the Primary Instrument (literal="1") and related instruments for the particular company (Issuer), e.g. Related Instrument 1 (literal="2").

The Company which has issued the instrument is given by the **related** element **rel="RelNat:isIssuedBy"** and QCode (OrgId:value).

The Country where the instrument was issued in is given by the **related** element **rel="RelNat:isIssuedIn"** and QCode (iso3166-1a2:value).

The Listing Type of the instrument (e.g. Primary or Secondary listing) is given by the **related** element `rel="RelNat:hasListingType"` and QCode (`LstType:value`)

The Exchange where the specific instrument is listed in is given by the **related** element `rel="RelNat:isListedOn"` and QCode (`MIC:value`).

The Market (e.g. equity market, derivatives market) where the instrument is listed on is given by the **related** element `rel="RelNat:isListedOn"` and QCode (`MktTyp:value`).

The Board where the instrument is listed on is given by the **related** element `rel="RelNat:isListedOn"` and QCode (`BrdTyp:value`)

The ICB (Industry Classification Benchmark) subsector under which the instrument is classified in is given by the **related** element `rel="RelNat:hasSubSector"` and QCode (`ICBSubSec:value`).

The **sameAs** element is used to provide the following alternative identifiers for an instrument using JSE reference data:

- International Securities Identification Number (ISIN);
- Future-date ISIN with date from which ISIN will come into effect (optional);
- Tradable Instrument Display Mnemonic (TIDM);
- Instrument Alpha Code;

ISINs can be future-dated and hence the *validfrom* attribute is used to indicate the effective 'from' date.

The TIDM is optional for some instrument types. For these instruments the *sameAs* for the TIMD is *not* used.

The Instrument Alpha Code may contain white spaces (blanks). White spaces are not allowed in QCodes. Please see Section 13.8.2 of *IPTC-G2-Implementation Guide 4* for additional information on handling white spaces in QCodes. The JSE uses “__” (double underscore – ASCII 242) as the escape character for white space in QCodes.

The instrument *short name* and *full/long name* are provided by the **name** element using the @role qualifier.

7.6.3 Provider-specific Content Metadata

Each news provider may add a set of metadata properties which have to be defined in a non-IPTC-G2 namespace. JSE NewsML has introduced a few metadata elements to deal with the unique requirements of SENS.

The SENS metadata additions are validated against a JSE-provided XSD Schema. This schema is identified by the following namespace:

`xmlns:sens=https://www.jse.co.za/content/JSETechnologyDocumentItems/JSE_NewsML_Extensions_1.zip`

NB: Please see Section Error! Reference source not found. for information on how to obtain the SENS Extensions XSD file.

The following extension properties for Content Metadata are added:

The **AnnouncementGroupCode** element is used for regulatory announcements.. If the announcement is non-regulatory this field will not be present in the NewsML, e.g.:

`<sens:AnnouncementGroupCode qcode="AnnGrpCde:EXCH"/>`

The **PriceSensitivityIndicator** element is used to provide an indication by the submitter as to whether the announcement may have an impact on the price of any listed instrument selected by the submitter, e.g.:

`<sens:PriceSensitivityIndicator qcode="PrcSenInd:Y"/>`

The **AnnouncementRegulatoryCode** element is used to indicate whether the announcement is of a regulatory or non-regulatory nature, e.g.:

`<sens:AnnouncementRegulatoryCode qcode="AnnRegCde:N"/>`

*Note: The SENS Extension Schema has re-used the **QCode** attribute for elements using the same specifications as standard NewsML-G2 **alias:value**.*

7.7 NewsItem Content for End-of-Day News Products

7.7.1 End-of-day SENS (ETNI)

The news content of this product is made up of Windows-1252 encoded plain-text. The text is included as an **inlineData** payload; whitespace is preserved. Any XML characters are XML-escaped,

The **remoteContent** element contains the relative location of additional announcement PDF not contained in the announcement text. This element will only be available when additional announcement information documents are submitted.

e.g.:

```
<contentSet>
  <inlineData contentType="text/plain" xml:space="preserve">
    Announcement text in Windows-1252
  </inlineData>
  <remoteContent contentType="application/pdf"
    size="10030"
    href="\S3\SupportingDocumentName.pdf" />
</contentSet>
```

Please note the following when processing the text payload above:

- 1) The inline text conforms to Windows 1252 character set;
- 2) Whitespace being is preserved;
- 3) Non-XML characters are XML-escaped;
- 4) XML processors may normalise carriage return and line feeds (CR + LF) to linefeeds (LF). Some text viewers or operating systems require both the CR and LF to display the text correctly. In this case, the CR may need to be added by processing systems to ensure the text is displayed correctly;
- 5) In some text viewers, keeping 'word wrap' ON may cause text format to be displayed incorrectly. It is recommended that 'word wrap' be turned OFF to ensure correct formatting;
- 6) It is recommended that monospaced fonts such as Courier be used to ensure correct formatting;
- 7) The text width is NOT fixed; display systems need to cater for horizontal scrolling;
- 8) Intermediate conversion or encodings outside of Windows-1252 *should not* be done as this may corrupt the text, e.g. converting text to UTF-8 and the back to Windows-1252 may not always yield the correct results.

7.7.2 End-of-day SENS Plus (EPNI)

For this product, the contentSet is made up of a remoteContent element with the relative location of the announcement PDF contained in the end-of-day compressed file contain all announcements for the day. The PDF file is contained in a subfolder with a name equal to the Announcement Reference Number (e.g. S3):

```
<contentSet>
  <remoteContent contentType="application/pdf"
    size="10030"
    href="\S3\SENS-20111209-S3.pdf" />
  <remoteContent contentType="application/pdf"
    size=""
```

```

href="\S3\SupportingDocumentName.pdf" />
</contentSet>

```

7.8 NewsItem Corrections

In SENS, a NewsItem is corrected by creating a 'Cancellation' and 'Replacement' announcement messages. A 'Cancellation' message always precedes a 'Replacement' message. Only one announcement can be corrected at a time. Corrections can be done against announcements made anytime in the past. The same announcement correction rules apply to the ETNI and EPNI messages.

The following NewsML (for an ETNI message) show how the relevant elements and attributes to corrections are used):

7.8.1 Normal Announcement:

```

<newsItem urn:newsml:jse.co.za:2011-12-09:SENS:S1:ETNI"
  version="1"
  ...
<itemMeta>
  ...
  <versionCreated>2011-12-09T15:02:41.140Z</versionCreated>
  <firstCreated>2011-12-09T15:02:41.140Z</firstCreated>
  <pubStatus qcode="stat:usable"/>
  ...
</itemMeta>
<contentMeta>
  ...
  <altId type="AltIdTyp:AnnNo">201112090001A</altId>
  <altId type="AltIdTyp:AnnRefNo">S1</altId>
  ...
</contentMeta>
  ...
</newsItem>

```

7.8.1 Cancellation Announcement:

```

<newsItem guid=" urn:newsml:jse.co.za:2011-12-09:SENS:S2:ETNI"
  version="1"
  ...
<itemMeta>
  ...
<versionCreated>2011-12-09T15:12:21.850Z</versionCreated>
  <firstCreated>2011-12-09T15:12:21.850Z</firstCreated>
  <pubStatus qcode="stat:canceled"/>

```

```

<signal qcode="CorTyp:Cncl"/>
<link contentType="application/vnd.iptc.g2.newsitem+xml"
  rel="irel:previousVersion"
  residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:ETNI ">
<altId type="AltIdTyp:AnnRefNo">S1</altId>
<altId type="AltIdTyp:AnnNo">201112090001A</altId>
</link>
</itemMeta>
<contentMeta>
  ...
  <altId type="AltIdTyp:AnnNo">201112090002A</altId>
  <altId type="AltIdTyp:AnnRefNo">S2</altId>
  ...
</contentMeta>
  ...
</newsItem>

```

A new GUID with version 1 is used for cancellations – this is using the design pattern to cater for content systems which not support duplicate GUIDs. The Publication Status is changed to ‘canceled’ (Note that this term from the IPTC CV uses the US spelling). The Announcement Correction Type is provided via the **signal** element with a value of ‘Cncl’ (Cancelled). Additional Alternative Identifiers, Announcement Number (201112090001A) and Announcement Reference Number (S1) for the original message are included in the **link**. The Alternative Identifiers in **contentMeta** reflect the New Message. The versionCreated and firstCreated reflect the timestamps for the cancellation message. The cancellation message is a new message and therefore it has new Announcement Numbers and Announcement Reference Numbers.

7.8.2 Replacement Announcement:

```

<newsItem guid="urn:newsml:jse.co.za:2011-12-09:SENS:S3:ETNI"
  version="1"
  ...
<itemMeta>
  ...
<versionCreated>2011-12-09T15:12:38.763Z</versionCreated>
  <firstCreated>2011-12-09T15:12:38.763Z</firstCreated>
  <pubStatus qcode="stat:usable"/>
<signal qcode="CorTyp:Repl"/>
<link contentType="application/vnd.iptc.g2.newsitem+xml"
  rel="irel:previousVersion"
  residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:ETNI">
<altId type="AltIdTyp:AnnRefNo">S1</altId>
<altId type="AltIdTyp:AnnNo">201112090001A</altId>
</link>

```

```

</itemMeta>
<contentMeta>
  ...
  <altId type="AltIdTyp:AnnNo">201112090003A</altId>
  <altId type="AltIdTyp:AnnRefNo">S3</altId>
  ...
</contentMeta>
...
</newsItem>

```

A new message is created with a new GUID and version 1. The Publication Status is 'usable'. A [link](#) points to the original message is included. The Alternative Identifiers in contentMeta reflect the new Announcement Number and Announcement Reference Numbers.

8. Packaging NewsItems – Packageltem

The **packageltem** is used in JSE NewsML to package the day's news announcements for subscribers to the End-of-day SENS News Products.

Two end-of-day Packageltems are created for the two SENS products, namely:

- End-of-Day SENS : ETPI (End-of-day Text Packageltem)
- End-of-Day SENS Plus : EPPI (End-of-day PDF Packageltem)

The EPPI Packageltem contains the references to the EPNI NewsItem and associated PDF files.

The ETPI packageltem contains the references to the ETNI newsItem files. It does NOT contain the references to the PDF announcement files.

The *End-of-day SENS News product* containing the ETPI packageltem and the set of ETNI newsItems are delivered in a compressed file called: DDAP.SPRD.SENS.ETPI.ZIP and made available for download on IDP FTP site.

The *End-of-day SENS Plus product* containing the EPPI packageltem and the set of EPNI NewsItems and the PDF announcement files are delivered in a compressed file called: DDAP.SPRD.SENS.EPPI.ZIP and made available for download on IDP.

NB: Both the EPPI and ETPI products contain the SENS and NENS announcements.

The following is a sample Packageltem for the End-of-day SENS Plus product (EPPI). Please note that for dual-listed announcements, the same PDF file is used

Listing 3 – Sample Packageltem for End-of-day SENS Plus product (EPPI)

```

<?xml version="1.0" encoding="Windows-1252"?>
<packageltem guid="urn:newsml:jse.co.za:2011-12-09:SENS:R2:EPPI"

```

```

xmlns="http://iptc.org/std/nar/2006-10-01/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:sens="http://JSE/Schemas/SENS/NewsML/Extensions/"
version="1"
standard="NewsML-G2"
standardversion="2.9"
conformance="power"
xml:lang="en">
<catalogRef href="http://www.iptc.org/std/catalog/catalog.IPTC-G2-Standards_17.xml" />
<catalogRef href="http://www.jse.co.za/is/sens/newsml/catalog/JSE_NewsML_Catalog_1.xml" />
<rightsInfo>
  <usageTerms>SENS Usage Terms</usageTerms>
</rightsInfo>
<itemMeta>
  <itemClass qcode="ninat:composite" />
  <provider literal="JSE Ltd"/>
  <versionCreated>2011-12-09T18:05:04.000Z</versionCreated>
  <firstCreated>2011-12-09T18:05:04.000Z</firstCreated>
  <pubStatus qcode="stat:usable"/>
  <fileName>SENS_20111209_R2_EPPI.XML</fileName>
  <generator versioninfo="1.0.0.0">JSE.IS.Sens.NewsML</generator>
  <service qcode="SrvTyp:SENS"/>
  <signal qcode="CorTyp:Repl"/>
  <link contentType="application/vnd.iptc.g2.packageitem+xml"
    rel="irel:previousVersion"
    residref="urn:newsml:jse.co.za:2011-12-09:SENS:R1:EPPI">
  </link>
</itemMeta>
<contentMeta>
  <urgency>4</urgency>
  <contentCreated>2011-12-09T18:05:04.000Z</contentCreated>
  <located literal="Johannesburg"/>
  <infoSource literal="JSE Ltd"/>
  <creator literal="JSE Ltd"/>
  <audience qcode="PrdCde:EPPI"/>
  <language tag="en"/>
  <genre qcode="genre:Wrapup"/>
  <headline>End of Day SENS Announcements – 2011-12-09</headline>
  <subject literal="Announcements"/>
</contentMeta>
<groupSet root="root">
  <group id="root" role="GrpRol:root" mode="pgrmod:seq">
    <groupRef idref="S1"/>
    <groupRef idref="S2"/>
    <groupRef idref="S3"/>
    <groupRef idref="S4"/>
  </group>
  <group id="S1" role="GrpRol:EPPI">
    <itemRef contentType="application/vnd.iptc.g2.newsitem+xml"

```

```

        residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:EPNI"
        href="\S1\SENS_20111209_S1_EPNI.xml">
    <service qcode="SrvTyp:SENS" />
</itemRef>
<itemRef contenttype="application/pdf"
        residref="SENS_20111209_S1.pdf"
        href="\S1\SENS_20111209_S1.pdf">
</itemRef>
</group>
<group id="S2" role="GrpRol:EPPI">
    <itemRef contenttype="application/vnd.iptc.g2.newsitem+xml"
        residref="urn:newsml:jse.co.za:2011-12-09:SENS:S2:EPNI"
        href="\S2\SENS_20111209_S2_EPNI.xml">
    <service qcode="SrvTyp:SENS" />
</itemRef>
    <itemRef contenttype="application/vnd.iptc.g2.newsitem+xml"
        residref="urn:newsml:jse.co.za:2011-12-09:NENS:S2:EPNI"
        href="\S2\NENS_20111209_S2_EPNI.xml">
    <service qcode="SrvTyp:NENS" />
</itemRef>
    <itemRef contenttype="application/pdf"
        residref="SENS_20111209_S2.pdf"
        href="\S2\SENS_20111209_S2.pdf">
</itemRef>
</group> </groupSet>
</packageltem>

```

NB: The ETPI version of the Packageltem will be the same except an `itemRef` to the PDF files will not be included as they are not part of the product.

The Packageltems and NewsItems are based on the same underlying metadata however there are some differences as per the following sections:

8.1.1 Identification

The URN has for the Packageltem GUID has the same form:

`urn:newsml:<provider>:<PublicationDate>:<unique-identifier-for-the-provider>`

but the `<unique-identifier-for-the-provider>` contains a RunID instead of an Announcement Reference Number, e.g.:

`urn:newsml:jse.co.za:2011-12-21:SENS:R1:ETPI`

where `<provider>` is set to the JSE domain address (for both SENS and NENS) and `PublicationDate (CCYY-MM-DD)` is set to the date the news was published.

The `<unique-identifier-for-the-provider>` is further defined by:

`<ServiceID>:<RunID>:<ItemType>`

For JSE announcements, *ServiceID* is set to SENS; the End-of-day product contains both the SENS and NENS announcements.

The *RunID* uniquely identifies the generation run used to create the PackageItem.

The *ItemType* is an indicator for the type of PackageItem, e.g. ETPI or EPPI are the values used for the End-of-Day SENS product (ETPI) and the End-of-day SENS Plus product (EPPI).

NB: Like NewsItems, the GUID strings for PackageItems are also considered opaque – their ‘format’ is not guaranteed and consumers MUST NOT parse it.

8.2 PackageItem: Management Metadata

The following table provides the packageitem management metadata elements and their usage in JSE NewsML:

Table 8 – PackageItem Management Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|----------------------------|--------------------------------|----------------|--------------------|
| Item Class | itemClass | (1) | YES |
| Content Provider | provider | (1) | YES |
| Date Item Version Created | versionCreated | (1) | YES |
| Date Item First Created | firstCreated | (0..1) | YES |
| Date Item Embargo Ends | embargoed | (0..1) | NO |
| Publish Status | pubStatus | (0..1) | YES |
| Role in the Workflow | role | (0..1) | NO |
| File Name | filename | (0..1) | YES |
| Generator Tool | generator | (0..1) | YES |
| Profile | profile | (0..1) | NO |
| Editorial Service | service | (0..unbounded) | YES |
| Item Title | title | (0..unbounded) | NO |
| Editorial Note | edNote | (0..unbounded) | NO |
| Member Of | memberOf | (0..unbounded) | NO |
| Instance Of | instanceOf | (0..unbounded) | NO |
| Signal | signal | (0..unbounded) | YES |
| Alternative Representation | altRep | (0..unbounded) | NO |
| Item Link | link | (0..unbounded) | YES |

8.2.1 Differences between packageItems from newsItems

The **itemClass** is set to *composite* for EPPI product as it contains references to the PDF announcement - the PDF announcement can contain pictures and graphics hence the use of composite value. It is retained as *text* for ETPI product as it contains references to the ETNI which only contains the plain-text version of the announcement and has no references to the PDF announcement files.

The **embargoed** is not used at PackageItem level.

The **pubStatus** will always have a value of 'usable' in packageItems as the only correction type allowed for PackageItems are 'Replacements'.

The **fileName** will include the RunID, e.g.:

```
<fileName>SENS_20111209_R2_EPPI.XML</fileName>
```

NB: The filename is considered opaque and consumers MUST NOT to parse it.

The **service** is indicated via the QCode as *SENS* or *NENS*, e.g.:

```
<service qcode="SrvTyp:SENS"/>
```

The **link** used when replacing a previous PackageItem on reference the PackageItem Guid (*residref*) – no Alternative Identifiers are used, e.g.:

```
<link contentType="application/vnd.iptc.g2.packageitem+xml"
  rel="irel:previousVersion"
  residref="urn:newsml:jse.co.za:2011-12-09:SENS:R1:EPPI">
</link>
```

8.3 PackageItem: Content Metadata

The following table lists the Administrative Metadata elements and their usage in JSE NewsML:

Table 9 – PackageItem Administrative Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|-----------------------|------------------------|----------------|--------------------|
| Urgency | urgency | (0..1) | YES |
| Date Content Created | contentCreated | (0..1) | YES |
| Date Content Modified | contentModified | (0..1) | NO |
| Located | located | (0..unbounded) | YES |

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|------------------------|---------------------|----------------|--------------------|
| Information Source | infoSource | (0..unbounded) | YES |
| Creator | creator | (0..unbounded) | YES |
| Contributor | contributor | (0..unbounded) | NO |
| Audience | audience | (0..unbounded) | YES |
| Excluded Audience | exclAudience | (0..unbounded) | NO |
| Alternative Identifier | altId | (0..unbounded) | NO |

8.3.1 Differences between packageItems from newsItems

The **urgency** level is always be set to 4 as this is an end-of-day product and the Price Sensitivity only applies at individual announcements (recall that urgency is set to 1 in newsItems if the announcement is price sensitive), e.g.:

```
<urgency>4</urgency>
```

The **infoSource** at the packageItem level is specified as “JSE Ltd” using @literal instead of the ‘OrgId:value’ for the individual Primary Companies used in the newsItems, e.g.:

```
<infoSource literal="JSE Ltd"/>
```

The **creator** at the packageItem level is specified as “JSE Ltd” using @literal instead ‘OrgId:value’ of the individual Primary Companies used in the newsItems, e.g.:

```
<creator literal="JSE Ltd"/>
```

The **audience** type indicates the type of product being packaged, e.g. using product classification codes used by JSE systems, e.g.:

```
<audience qcode="PrdCde:EPPI"/>
```

The **altId** is not used in PackageItems as the GUID is used as the only ID.

The following table lists Descriptive Metadata elements and how they are used in a JSE NewsML packageItem:

Table 10 – PackageItem Descriptive Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|---------------|--------------------|----------------|--------------------|
| Language | language | (0..unbounded) | YES |
| Genre | genre | (0..unbounded) | YES |
| Keyword | keyword | (0..unbounded) | NO |
| Headline | headline | (0..unbounded) | YES |
| Subject | subject | (0..unbounded) | YES |
| Slugline | slugline | (0..unbounded) | NO |
| Dateline | dateline | (0..unbounded) | NO |
| By | by | (0..unbounded) | NO |
| CreditLine | creditline | (0..unbounded) | NO |
| Description | description | (0..unbounded) | NO |

8.3.2 Differences between PackageItems from NewsItems

The **genre** is for a SENS packageItem is set to 'Wrapup' using the IPTC *genre* CV:

```
<genre qcode="genre:Wrapup"/>
```

The **headline** is used with a generic "End of Day SENS Announcements – CCYY-MM-DD"

```
<headline>End of Day SENS Announcements – 2011-12-09</headline>
```

The **subject** is used with a constant @literal value of 'Announcements'.

8.4 Grouping of Announcements in the Package

JSE NewsML uses the PackageItem as a container for the announcements successfully disseminated during a business day. The container is designed to group the items associated with each announcements such as NewsItems and PDF files.

The grouping is done via the *groupSet*. The *root* attribute identifies the main group whilst the *role* indicates the type of grouping, e.g. EPPI or ETPI.

Listing 4 – Sample groupSet of a PackageItem for End-of-day SENS Plus product (EPPI)

```
<groupSet root="root">
  <group id="root" role="GrpRol:root" mode="pgrmod:seq">
    <groupRef idref="S1"/>
    <groupRef idref="S2"/>
  </group>
  <group id="S1" role="GrpRol:EPPI">
```

```

<itemRef contentType="application/vnd.iptc.g2.newsitem+xml"
  residref="urn:newsml:jse.co.za:2011-12-09:SENS:S1:EPNI"
  href="\S1\SENS_20111209_S1_EPNI.xml">
  <service qcode="SrvTyp:SENS" />
</itemRef>
<itemRef contentType="application/pdf"
  residref="SENS_20111209_S1.pdf"
  href="\S1\SENS_20111209_S1.pdf">
</itemRef>
</group>
<group id="S2" role="GrpRol:EPPI">
  <itemRef contentType="application/vnd.iptc.g2.newsitem+xml"
    residref="urn:newsml:jse.co.za:2011-12-09:SENS:S2:EPNI"
    href="\S2\SENS_20111209_S2_EPNI.xml">
    <service qcode="SrvTyp:SENS" />
  </itemRef>
  <itemRef contentType="application/vnd.iptc.g2.newsitem+xml"
    residref="urn:newsml:jse.co.za:2011-12-09:NENS:S2:EPNI"
    href="\S2\NENS_20111209_S2_EPNI.xml">
    <service qcode="SrvTyp:NENS" />
  </itemRef>
  <itemRef contentType="application/pdf"
    residref="SENS_20111209_S2.pdf"
    href="\S2\SENS_20111209_S2.pdf">
  </itemRef>
</group>
</groupSet>

```

The **href** attribute contains the relative path where the content will be placed on user's local machine once the end-of-day file is decompressed. A folder bearing the announcement number (e.g. S1) is created containing all NewsML files for the announcement as well as any PDF files if applicable to the product. In future, any additional files associated with the same announcement (e.g. podcasts, webcasts, etc) will be included on the same folder.

The itemRef for NewsItems include the **service** element. This can be used to distinguish between NewsItems disseminated via SENS and NENS. Since the same PDF file is used for dual SENS/NENS announcements, only a single itemRef is used for the PDF and thus the **service** element is not required.

NB: Please note that **groupRef idref lists announcements ordered from *first* disseminated to *last* disseminated. The AnnRefNo (used in the idref) is created when the announcement is submitted and not when it is disseminated and therefore the AnnRefNo may appear in any order or with gaps in the list.**

8.5 PackageItem Corrections

In SENS, a PackageItem is corrected with a 'Replacement' PackageItem. PackageItems are not cancelled. The same announcement correction rules apply to the ETPI and EPPI messages.

The following NewsML (for an ETPI message) show how the relevant elements and attributes to corrections are used):

8.5.1 Normal PackageItem

```

<packageItem urn:newsml:jse.co.za:2011-12-09:SENS:R1:ETPI"
  version="1"
  ...
<itemMeta>
  ...
  <versionCreated>2011-12-09T18:02:41.140Z</versionCreated>
  <firstCreated>2011-12-09T18:02:41.140Z</firstCreated>
  <pubStatus qcode="stat:usable"/>
  ...
</itemMeta>
  ...
</packageItem>

```

8.5.2 Replacement PackageItem

```
<packageItem guid="urn:newsml:jse.co.za:2011-12-09:SENS:R2:ETPI"
  version="1"
  ...
  <itemMeta>
    ...
    <versionCreated>2011-12-09T19:12:38.763Z</versionCreated>
    <firstCreated>2011-12-09T19:12:38.763Z</firstCreated>
    <pubStatus qcode="stat:usable"/>
    <signal qcode="CorTyp:Repl"/>
    <link contentType="application/vnd.iptc.g2.packageitem+xml"
      rel="irel:previousVersion"
      residref="urn:newsml:jse.co.za:2011-12-09:SENS:R1:ETPI">
    </link>
  </itemMeta>
  ...
</packageItem>
```

A new message is created with a new GUID and version 1 but with an incremented RunID (R2). The Publication Status is 'usable'. A **link** pointing to the original message is included. Note that the *@contentType* is the **link** reflects that a PackageItem is being replaced. Alternative identifiers are NOT used in the PackageItems in JSE NewsML.

9. KnowledgeItem – Managing Controlled Vocabularies

A KnowledgeItem is used for collating a set of concept definitions to form the physical representation of a controlled vocabulary.

Listing 5 shows a sample of the SENS KnowledgeItem containing only two schemes.

NB: Please see Section 9 for a more information on how to obtain the full SENS KnowledgeItem.

Listing 5 – Sample KnowledgeItem

```
<?xml version="1.0" encoding="Windows-1252"?>
<knowledgeItem guid="urn:newsml:jse.co.za:20111209:SENS:KI"
  version="1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  conformance="power"
  standard="NewsML-G2"
  standardversion="2.9"
  xml:lang="en"
  xmlns="http://iptc.org/std/nar/2006-10-01/">
<catalogRef href="http://www.jse.co.za/is/sens/newsml/catalog/JSE_NewsML_Catalog_1.xml" />
<catalogRef href="http://www.iptc.org/std/catalog/catalog.IPTC-G2-Standards_17.xml" />
<rightsInfo>
  <usageTerms>SENS usage terms (...)</usageTerms>
```

```

</rightsInfo>
<itemMeta>
  <itemClass qcode="cinat:concept" />
  <provider literal="JSE Ltd" />
  <versionCreated>2011-12-09T14:54:47.841Z</versionCreated>
  <firstCreated>2011-12-09T14:54:47.841Z</firstCreated>
  <pubStatus qcode="stat:usable" />
  <fileName>ncdki-sens.xml</fileName>
  <title>Knowledge Item for SENS and NENS.</title>
</itemMeta>
<contentMeta>
  <contentCreated>2011-12-09T14:54:47.841Z</contentCreated>
  <infoSource literal="JSE Ltd" />
  <creator literal="JSE Ltd" />
  <language tag="en" />
</contentMeta>
<conceptSet>
  <!--Alternative Identifier-->
  <concept id="AltIdTypAnnRefNo">
    <conceptId qcode="AltIdTyp:AnnRefNo" created="2011-12-08T08:00:00.000Z"/>
    <type qcode="cpnat:abstract"/>
    <name validfrom="2011-12-08T08:00:00.000Z" validto="2011-12-09T08:00:00.000Z">
      Announcement Reference Number- OLD
    </name>
    <name validfrom="2011-12-09T08:00:00.000Z">
      Announcement Reference Number - NEW
    </name>
    <definition validfrom="2011-12-08T08:00:00.000Z" validto="2011-12-09T08:00:00.000Z">
      Announcement Reference Number Definition - OLD
    </definition>
    <definition validfrom="2011-12-09T08:00:00.000Z">
      Announcement Reference Number Definition - NEW
    </definition>
  </concept>
  <!--Announcement Type -> 100-->
  <concept id="AnnTyp100">
    <conceptId qcode="AnnTyp:100" created="2000-01-01T00:00:00.000Z" />
    <type qcode="cpnat:abstract" />
    <name validfrom="2000-01-01T00:00:00.000Z">Acquisition</name>
    <definition validfrom="2000-01-01T00:00:00.000Z">A acquisition of assets by an Issuer </definition>
    <narrower qcode="AnnSubTyp:218" validfrom="2000-01-01T00:00:00.000Z" />
    <narrower qcode="AnnSubTyp:223" validfrom="2000-01-01T00:00:00.000Z" />
    <narrower qcode="AnnSubTyp:225" validfrom="2000-01-01T00:00:00.000Z" />
    <narrower qcode="AnnSubTyp:224" validfrom="2000-01-01T00:00:00.000Z" />
  </concept>
  <!--Announcement Sub Type -> 218-->
  <concept id="AnnSubTyp218">
    <conceptId qcode="AnnSubTyp:218" created="2000-01-01T00:00:00.000Z" />
    <type qcode="cpnat:abstract" />

```

```
<name validfrom="2000-01-01T00:00:00.000Z">Category 1</name>
```

```
<definition validfrom="2000-01-01T00:00:00.000Z">
```

An acquisition or disposal of assets by an Issuer for a cash consideration which is twenty percent of the market capitalisation of the company or an issue of shares which forms twenty five percent of the issued share capital of the company

```
</definition>
```

```
<broader qcode="AnnTyp:100" validfrom="2000-01-01T00:00:00.000Z" />
```

```
</concept>
```

```
</conceptSet>
```

```
</knowledgeItem>
```

9.1 KnowledgeItem: Item Management Metadata

The set of Item Management metadata is the same across of G2 items. The following table lists the elements in a JSE NewsML knowledgeItem:

Table 11 – KnowledgeItem Management Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|----------------------------|-----------------------|----------------|--------------------|
| Item Class | itemClass | (1) | YES |
| Content Provider | provider | (1) | YES |
| Date Item Version Created | versionCreated | (1) | YES |
| Date Item First Created | firstCreated | (0..1) | YES |
| Date Item Embargo Ends | embargoed | (0..1) | NO |
| Publish Status | pubStatus | (0..1) | YES |
| Role in the Workflow | role | (0..1) | NO |
| File Name | filename | (0..1) | YES |
| Generator Tool | generator | (0..1) | NO |
| Profile | Profile | (0..1) | NO |
| Editorial Service | Service | (0..unbounded) | NO |
| Item Title | Title | (0..unbounded) | YES |
| Editorial Note | edNote | (0..unbounded) | NO |
| Member Of | memberOf | (0..unbounded) | NO |
| Instance Of | instanceOf | (0..unbounded) | NO |
| Signal | Signal | (0..unbounded) | NO |
| Alternative Representation | altRep | (0..unbounded) | NO |
| Item Link | Link | (0..unbounded) | NO |

The following items have different usage in the JSE NewsML knowledgeItem compared to a newsItem:

The **itemClass** element is set to “cinat:concept. The **provider** is always set to the JSE’s *long name* as maintained in JSE master data. The **firstCreated** element is included as JSE concepts are datetime versioned. A **title** is provided as well.

9.2 KnowledgeItem: Content Metadata

The set of administrative metadata is common to all classes of G2 Items. The following table lists the elements of a Knowledge Item Administrative Metadata and those that are used in JSE NewsML:

Table 12 – KnowledgeItem Administrative Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|------------------------|------------------------|----------------|--------------------|
| Urgency | Urgency | (0..1) | NO |
| Date Content Created | contentCreated | (0..1) | YES |
| Date Content Modified | contentModified | (0..1) | NO |
| Located | Located | (0..unbounded) | NO |
| Information Source | infoSource | (0..unbounded) | YES |
| Creator | Creator | (0..unbounded) | YES |
| Contributor | Contributor | (0..unbounded) | NO |
| Audience | Audience | (0..unbounded) | NO |
| Excluded Audience | exclAudience | (0..unbounded) | NO |
| Alternative Identifier | altId | (0..unbounded) | NO |

The following table lists the elements of a KnowledgeItem Descriptive Metadata and those that are used in JSE NewsML:

Table 13 – KnowledgeItem Descriptive Metadata

| Element Title | Element Name | Cardinality | Used in JSE NewsML |
|---------------|--------------------|-----------------|--------------------|
| Language | language | (0...unbounded) | YES |
| Keyword | keyword | (0...unbounded) | NO |
| Subject | subject | (0...unbounded) | NO |
| Description | description | (0...unbounded) | NO |

The **contentCreated** element indicates when the concepts were created in JSE master data systems. The **infoSource** is given a literal value of “JSE Ltd”. The **creator** is given a literal value of “JSE Ltd”.

The **language** has the @tag of 'en' as names and definitions are provided by default in English. SENS does not currently provide names and definitions for concepts in other languages.

9.3 KnowledgeItem Content

The schemes maintained by the JSE, as defined in Section 7.3.1, form the content of the SENS knowledgeItem.

A single KnowledgeItem is used for all JSE-owned schemes. This ensures ease of maintenance and distribution to clients. Consumers can determine how to cache the information when processing announcements – for instance, consumers can cache all information or only the subset or schemes of interest.

9.4 Versioning of Concepts

The SENS knowledgeItem concepts are datetime versioned by ensuring the **concept**, **name**, **definition** and concept relationships are time stamped with the **created**, **validfrom** and **validto** attributes.

The **name** and **definition** elements will use the **validfrom** and **validto** attributes to qualify the versions of the elements. When the version of a given concept changes, new entries for **name** and **definition** will be created under the same **conceptId**. If a concept itself is deprecated, then the **retired** attribute will be applied at the **conceptId** level; the concept itself will persist, in order to satisfy archive searches.

The **narrower** and **broader** elements are also used to express parent-child relationships between concepts if they exist. The parent-child relationships are themselves datetime versioned by using the **validfrom** and **validto** attributes.

Please note that only relationships between concepts defined in the SENS KnowledgeItem are shown – any potentially relationships between SENS concepts and other concepts from schemes maintained by other issuing authorities are not shown in the SENS KnowledgeItem. The Announcement Types and Subtypes is an example of concepts that use the narrow and broader elements to express parent-child relationships.

*Note: The current version of JSE NewsML does not support the use of **partMeta** with a **contentModified** timestamp to allow concepts to be updated individually as opposed to update the entire knowledgeItem.*

Each update to the KnowledgeItem will have a unique GUID and version number combination, e.g.:

```
<knowledgeItem guid="urn:newsml:jse.co.za:20111209:SENS:KI"
  version="1"
```

9.5 Creation and Maintenance of SENS KnowledgeItem

Each update to the knowledgeItem will have a unique GUID and version number combination, e.g.:

```
<knowledgeItem guid="urn:newsml:jse.co.za:20111220:SENS:KI"  
              version="27"
```

Subscribers will be notified of changes to the SENS knowledgeItem according to existing notification policies.

The SENS KnowledgeItem can be downloaded from the following JSE website link:

<https://www.jse.co.za/services/technologies/equity-market-trading-and-information-technology-change>