|  |  |
| --- | --- |
| **HL7 Version 2.10 Chapters 13 and 2C** | |
| *Change Request ID:* |  |
| *File Name:* | *OO-CRxxx-INV-EQU-and-tables.doc* |
| *Description:* | *Changes in segments INV and EQU, some messages, and some tables* |
| *Status:* | *New proposal* |
| *Sponsoring Person* |  |
| *Sponsoring Business Unit* |  |
| *Date Originated:* | *17 March 2015* |
| *Date HL7 approved:* |  |
| *Backward Compatible:* | *Yes* |
| *Forward Compatible:* | *No* |
| *HL7 Status & Date* |  |

# Justification Detail:

1. Because of backward compatibility guidelines, a new trigger event and a new message structure INR^U14^INR\_U14 shall be created instead of redefining INR^U06^INR\_U06.
2. The Inventory Detail Segment INV shall be usable not only for physical substances, but also for other types of inventory items like e.g. processing capacities and availability of tests. For that:
   1. new codes shall be introduced in table 0384 “Substance Type”,
   2. all tables and fields which are called “Substance […]” shall be renamed to “Inventory Item […]”.
3. In messages INR^U14 “Automated Equipment Inventory Request”, fields of the INV segment serve as filtering criteria. From the logical point of view, when no filtering on inventory item ID and/or inventory item status is desired, the corresponding fields INV‑1 and INV‑2 do not need to be populated. But currently they are required in HL7. It is proposed to make them conditional C(O/R), with the condition that MSH-9‑1 equals to “INR” and MSH‑9‑2 equals to “U14”.
4. ~~As decided in the January 2015 WGM, the user-defined table 0451 “Substance ID” (used in INV-1) shall be reviewed. Its only pre-defined element “ALL” is to be used in queries when no filtering on substance ID is required — but if INV‑1 will be made conditional (see above), this element will be not necessary any more. It is proposed to deprecate the whole table.~~
5. Segment INV in INR^U14^INR\_U14 shall be optional in order to enable queries without filtering on particular inventory item attributes.
6. Some new equipment state codes shall be introduced for EQU‑3 (HL7 table 0365).
7. A new field in EQU is required for the predicted date/time of the next equipment status change (e.g. from “maintenance” back to “normal operation”).

# Open Issues:

None known.

# Change Request Impact:

None known.

# Documentation Changes:

|  |
| --- |
| Chapter 13, Section 13.3:   * add sub-section 13.3.14 |

**13.3.14 INR/ACK – Automated Equipment Inventory Request (Event U14)**

This message is used to request information about inventory items from one application to another (e.g., Laboratory Automation System to automated equipment). The equipment specified in the EQU segment should respond with the information about inventory item requested in the INV segment (or all items).

Compared to INR^U06, it declares INV as optional and does not require fields INV-1 and INV-2 there. In that way, it supports queries for all inventory items without filtering on any attributes.

INR^U14^INR\_U14: Inventory Request Message

| **Segments** | **Description** | **Status** | **Chapter** |
| --- | --- | --- | --- |
| MSH | Message Header |  | 2 |
| [{SFT}] | Software Segment |  | 2 |
| [UAC] | User Authentication Credential |  | 2 |
| [EQU](#EQU) | Equipment Detail |  | 13 |
| [{ [INV](#INV) }] | Inventory Detail |  | 13 |

ACK^U14^ACK: General Acknowledgment

| **Segments** | **Description** | **Status** | **Chapter** |
| --- | --- | --- | --- |
| MSH | Message Header |  | 2 |
| [{SFT}] | Software Segment |  | 2 |
| [UAC] | User Authentication Credential |  | 2 |
| MSA | Message Acknowledgment |  | 2 |
| [{ ERR }] | Error |  | 2 |

|  |
| --- |
| Chapter 13, Section 13.4.4:   * change segment description |

The inventory detail segment is the data necessary to track the inventory of resources (e.g. substances, ~~(e.g.~~ reagent, tips, waste) on equipment.

|  |
| --- |
| Chapter 13, Section 13.4.4, HL7 attribute table of the INV segment:   * change names of INV-1/2/3 from “Substance…” to “Inventory item…” * ~~remove reference to the table 0451 in INV-1~~ * change optionality of INV-1 and INV-2 from “R” to “C” * adapt descriptions of those fields under the table |

HL7 Attribute Table – INV – Inventory Detail

| SEQ | LEN | C.LEN | DT | OPT | RP/# | TBL# | ITEM # | ELEMENT NAME |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  | CWE | ~~R~~ C |  | 0451 | 01372 | Inventory Item ~~Substance~~ Identifier |
| 2 |  |  | CWE | ~~R~~ C | Y | [0383](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70383) | 01373 | Inventory Item ~~Substance~~ Status |
| 3 |  |  | CWE | O |  | [0384](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70384) | 01374 | Inventory Item ~~Substance~~ Type |
| 4 |  |  | CWE | O |  | 9999 | 01532 | Inventory Container Identifier |
| 5 |  |  | CWE | O |  | 9999 | 01376 | Container Carrier Identifier |
| 6 |  |  | CWE | O |  | 9999 | 01377 | Position on Carrier |
| 7 |  | 10# | NM | O |  |  | 01378 | Initial Quantity |
| 8 |  | 10# | NM | O |  |  | 01379 | Current Quantity |
| 9 |  | 10# | NM | O |  |  | 01380 | Available Quantity |
| 10 |  | 10# | NM | O |  |  | 01381 | Consumption Quantity |
| 11 |  |  | CWE | O |  | 9999 | 01382 | Quantity Units |
| 12 |  |  | DTM | O |  |  | 01383 | Expiration Date/Time |
| 13 |  |  | DTM | O |  |  | 01384 | First Used Date/Time |
| 14 |  |  |  | W |  |  | 01385 | On Board Stability Duration |
| 15 |  |  | CWE | O | Y | 9999 | 01386 | Test/Fluid Identifier(s) |
| 16 |  | 200= | ST | O |  |  | 01387 | Manufacturer Lot Number |
| 17 |  |  | CWE | O |  | [0385](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70385) | 00286 | Manufacturer Identifier |
| 18 |  |  | CWE | O |  | [0386](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70386) | 01389 | Supplier Identifier |
| 19 |  |  | CQ | O |  |  | 01626 | On Board Stability Time |
| 20 |  |  | CQ | O |  |  | 01896 | Target Value |

13.4.4.0 INV Field Definitions

13.4.4.1 INV-1 Inventory Item ~~Substance~~ Identifier (CWE) 01372

Components: <Identifier (ST)> ^ <Text (ST)> ^ <Name of Coding System (ID)> ^ <Alternate Identifier (ST)> ^ <Alternate Text (ST)> ^ <Name of Alternate Coding System (ID)> ^ <Coding System Version ID (ST)> ^ <Alternate Coding System Version ID (ST)> ^ <Original Text (ST)> ^ <Second Alternate Identifier (ST)> ^ <Second Alternate Text (ST)> ^ <Name of Second Alternate Coding System (ID)> ^ <Second Alternate Coding System Version ID (ST)> ^ <Coding System OID (ST)> ^ <Value Set OID (ST)> ^ <Value Set Version ID (DTM)> ^ <Alternate Coding System OID (ST)> ^ <Alternate Value Set OID (ST)> ^ <Alternate Value Set Version ID (DTM)> ^ <Second Alternate Coding System OID (ST)> ^ <Second Alternate Value Set OID (ST)> ^ <Second Alternate Value Set Version ID (DTM)>

Definition: Unique identifier for the item ~~substance~~ that is in inventory. This is a manufacturer-specific identifier. Refer to [*User-defined Table 0451 – ~~Substance~~ Inventory Item Identifier*](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70451) in Chapter 2C, Code Tables, for suggested values.

This field is conditional. It is optional in queries INR^U14 and required in all other messages. Absence of this field in a query means that the result shall be not filtered on inventory item ID.

13.4.4.2 INV-2 Inventory Item ~~Substance~~ Status (CWE) 01373

Components: <Identifier (ST)> ^ <Text (ST)> ^ <Name of Coding System (ID)> ^ <Alternate Identifier (ST)> ^ <Alternate Text (ST)> ^ <Name of Alternate Coding System (ID)> ^ <Coding System Version ID (ST)> ^ <Alternate Coding System Version ID (ST)> ^ <Original Text (ST)> ^ <Second Alternate Identifier (ST)> ^ <Second Alternate Text (ST)> ^ <Name of Second Alternate Coding System (ID)> ^ <Second Alternate Coding System Version ID (ST)> ^ <Coding System OID (ST)> ^ <Value Set OID (ST)> ^ <Value Set Version ID (DTM)> ^ <Alternate Coding System OID (ST)> ^ <Alternate Value Set OID (ST)> ^ <Alternate Value Set Version ID (DTM)> ^ <Second Alternate Coding System OID (ST)> ^ <Second Alternate Value Set OID (ST)> ^ <Second Alternate Value Set Version ID (DTM)>

Definition: The status of the inventoried item. The status indicates the current status of the substance. Refer to[*HL7 Table 0383 – Inventory Item ~~Substance~~ Status*](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70383) in Chapter 2C, Code Tables, for suggested values.

This field is conditional. It is optional in queries INR^U14 and required in all other messages. Absence of this field in a query means that the result shall be not filtered on inventory item status.

13.4.4.3 INV-3 Inventory Item ~~Substance~~ Type (CWE) 01374

Components: <Identifier (ST)> ^ <Text (ST)> ^ <Name of Coding System (ID)> ^ <Alternate Identifier (ST)> ^ <Alternate Text (ST)> ^ <Name of Alternate Coding System (ID)> ^ <Coding System Version ID (ST)> ^ <Alternate Coding System Version ID (ST)> ^ <Original Text (ST)> ^ <Second Alternate Identifier (ST)> ^ <Second Alternate Text (ST)> ^ <Name of Second Alternate Coding System (ID)> ^ <Second Alternate Coding System Version ID (ST)> ^ <Coding System OID (ST)> ^ <Value Set OID (ST)> ^ <Value Set Version ID (DTM)> ^ <Alternate Coding System OID (ST)> ^ <Alternate Value Set OID (ST)> ^ <Alternate Value Set Version ID (DTM)> ^ <Second Alternate Coding System OID (ST)> ^ <Second Alternate Value Set OID (ST)> ^ <Second Alternate Value Set Version ID (DTM)>

Definition: The type of inventory item ~~substance~~. Refer to [*HL7 Table 0384 – Inventory Item ~~Substance~~ Type*](file:///C:\Users\rudd\AppData\Local\Temp\Temp1_HL7%20Messaging%20Version%202.8.1.zip\HL7%20Messaging%20Version%202.8.1\Word\V281_CH02C_CodeTables.doc#HL70384) in chapter 2C for suggested values.

|  |
| --- |
| Chapter 2 C, table 0383:   * change title |

#### 2.C.2.308 0383 – ~~Substance~~ Inventory Item Status

Table Metadata

| Table | Steward | V3 Harmonization | V3 Equivalent | Where used | Status |
| --- | --- | --- | --- | --- | --- |
| 0383 | OO | TBD | TBD | INV-2 | Active |

HL7 Table 0383 – ~~Substance~~ Inventory Item Status

| Value | Description | Comment |
| --- | --- | --- |
| EW | Expired Warning |  |
| EE | Expired Error |  |
| CW | Calibration Warning |  |
| CE | Calibration Error |  |
| QW | QC Warning |  |
| QE | QC Error |  |
| NW | Not Available Warning |  |
| NE | Not Available Error |  |
| OW | Other Warning |  |
| OE | Other Error |  |
| OK | OK Status |  |

|  |
| --- |
| Chapter 2 C, table 0384:   * change title * add codes |

#### 2.C.2.309 0384 – ~~Substance~~ Inventory Item Type

Table Metadata

| Table | Steward | V3 Harmonization | V3 Equivalent | Where used | Status |
| --- | --- | --- | --- | --- | --- |
| 0384 | OO | TBD | TBD | INV-3 | Active |

HL7 Table 0384 – ~~Substance~~ Inventory Item Type

| Value | Description | Comment |
| --- | --- | --- |
| SR | Single Test Reagent |  |
| MR | Multiple Test Reagent | The consumption cannot be tied to orders for a single test |
| DI | Diluent |  |
| PT | Pretreatment |  |
| RC | Reagent Calibrator |  |
| CO | Control |  |
| PW | Purified Water |  |
| LW | Liquid Waste |  |
| SW | Solid Waste |  |
| SC | Countable Solid Item | E.g., Pipetting tip |
| LI | Measurable Liquid Item |  |
| IB | Capacity of a regular input specimen buffer |  |
| EB | Capacity of an emergency input specimen buffer |  |
| OB | Capacity of an output specimen buffer |  |
| IC | Instrument Capacity |  |
| TA | Test availability |  |
| OT | Other |  |

|  |
| --- |
| Chapter 13, Section 13.4.1   * add field EQU-6 in the HL7 attribute table of the segment EQU * add section 13.4.1.6 |

HL7 Attribute Table – EQU – Equipment Detail

| **SEQ** | **LEN** | **C.LEN** | **DT** | **OPT** | **RP/#** | **TBL#** | **ITEM #** | **ELEMENT NAME** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  | EI | R | Y |  | 01479 | Equipment Instance Identifier |
| 2 |  |  | DTM | R |  |  | 01322 | Event Date/Time |
| 3 |  |  | CWE | C |  | [0365](V281_CH02C_CodeTables.doc#HL70365) | 01323 | Equipment State |
| 4 |  |  | CWE | O |  | [0366](V281_CH02C_CodeTables.doc#HL70366) | 01324 | Local/Remote Control State |
| 5 |  |  | CWE | O |  | [0367](V281_CH02C_CodeTables.doc#HL70367) | 01325 | Alert Level |
| 6 |  |  | DTM | O |  |  | xxxxx | Expected date/time of the next status change |

……………

#### 13.4.1.6 EQU-6 Expected Date/Time of the Next Status Change (DTM) xxxxx

Definition: This field is the predicted date/time of the next equipment status change (e.g. from “maintenance” back to “normal operation”).

|  |
| --- |
| Chapter 2 C, table 0365:   * add codes * add comments |

#### 2.C.2.290 0365 – Equipment State

Table Metadata

| Table | Steward | V3 Harmonization | V3 Equivalent | Where used | Status |
| --- | --- | --- | --- | --- | --- |
| 0365 | OO | TBD | TBD | EQU-3 | Active |

HL7 Table 0365 – Equipment State

| Value | Description | Comment |
| --- | --- | --- |
| PU | Powered Up | Software and hardware are not yet ready |
| IN | Initializing | Software is ready, hardware not yet |
| ID | Idle | Successfully started, new orders can be accepted, currently no orders are present |
| CO | Configuring |  |
| OP | Normal Operation | Successfully started, new orders can be accepted |
| CL | Clearing |  |
| PA | Pausing |  |
| PD | Paused | User action is required to continue |
| ES | E-stopped | Error, remaining orders can be finished, new orders cannot be accepted |
| TS | Transport stopped |  |
| SS | Sampling stopped |  |
| SD | Shutting down |  |
| DI | Diagnose |  |
| MA | Maintenance |  |
| RS | Ready to start | Software and hardware are ready, but user action is required to start |
| FL | Failure | Failure, remaining orders are aborted, new orders cannot be accepted |
| UN | Unknown |  |
| LT | Limited test menu | For diagnostic instruments: some test types are unavailable |
|  | (null) No state change |  |