# Federated Insurance Database Deconstruction IS 384 Ben Jerdee Michael Klotz Rich Cable

#### **Overview:**

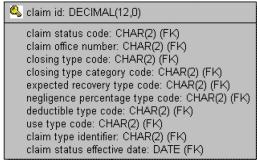
The Federated Entity Relationship Diagram (ERD) for claims is a logical model. A logical model is used to gather business requirements. By developing a logical model, Federated Insurance was making an attempt to capture all business requirements to begin constructing useful diagrams and reports. A logical model is not designed to be implemented as is into a physical database, it is conceptual overview of the system. However, it is used as a resource to construct a physical database. A logical model is typically created in the requirements gathering stage of the systems development life cycle. This leads us to believe that Federated created this ERD to logically understand their different business processes.

The Federate Insurance ERD is driven by three major sections. The three major sections are as follows:

- 1) Claim Section
- 2) Communication Section
- 3) Documentation Section

#### **Tables of the Claim Section:**

#### Claim



#### **Description:**

The Claim Table is a logical table (it doesn't actually exist in the physical database). It is needed to describe how a claim is related to (and identified by) several other fields in the database.

#### **Key Relationships:**

Each Claim may have 0 or many Claim Documents

## **Claim Activity**

claim id: DECIMAL(12,0)
claim activity category code: CHAR(2) (FK)
claim activity type code: CHAR(3) (FK)
claim activity date: DATE
claim activity timestamp: TIMESTAMP
federated employee identifier: CHAR(6) (FK)
send method type code: CHAR(2)

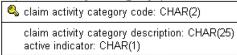
#### **Description:**

Uniquely identifies and creates a record that is used to document which Federated employee chose which type of process to send the claim documentation.

#### **Key Relationships:**

Each Claim Activity has one of many Claim Activity Contacts.

## **Claim Activity Category**



# **Description:**

Uniquely identifies and creates types of claim categories along with a description.

# **Key Relationships:**

Each Claim Activity Category may have 0 or many Claim Activity Types

#### **Claim Activity Contact**

```
claim id: DECIMAL(12,0) (FK) (AK1)
claim activity category code: CHAR(2) (FK)
claim activity type code: CHAR(3) (FK)
claim activity type code: CHAR(3) (FK)
claim activity timestamp: TIMESTAMP (FK)
claim activity timestamp: TIMESTAMP (FK)
claim contact id: CHAR(14)
claim contact effective timestamp: TIMESTAMP
activity contact relationship type code: CHAR(2) (FK)

phone fax id: CHAR(14) (FK)
contact phone fax effective timestamp: TIMESTAMP (FK)
address id: CHAR(14) (FK)
contact address effective timestamp: TIMESTAMP (FK)
electronic communication id: CHAR(14) (FK)
contact electronic communication effective timestamp: TIMESTAMP (FK)
```

#### **Description:**

Stores information that identifies all contacts for all the separate parts of the claims process.

#### **Key Relationships:**

Each Claim Activity Contact relates to one Activity Contact Relationship Type
Each Claim Activity Contact can have a Contact Address
Each Claim Activity Contact can have a Contact Electronic Communication
Each Claim Activity Contact must have a Claim Activity
Each Claim Activity Contact may have a Contact Phone Fax

#### **Claim Activity Related Document**

Claim id: DECIMAL(12,0) (FK) (IE1,IE2)
Claim activity category code: CHAR(2) (FK)
Claim activity type code: CHAR(3) (FK)
Claim activity date: DATE (FK)
Claim activity timestamp: TIMESTAMP (FK)
Coccument id: DECIMAL(12,0) (FK)

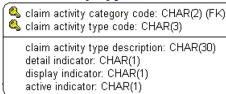
#### **Description:**

Uniquely identifies the claim. This table is used to identify the contact information as well as noting the time the claim has been administered to the person that submitted the claim.

#### **Key Relationships:**

Each Claim Activity Related Document is part of a Claim Activity

## **Claim Activity Type**



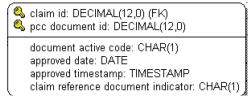
#### **Description:**

Uniquely identifies and creates types of claims along with claim activity type description.

#### **Key Relationships:**

Each Claim Activity Type may describe 0 or many Claim Activities

#### **Claim Document**



Uniquely identifies and creates records whether or not the claim document is currently being used.

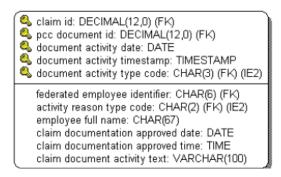
#### **Key Relationships:**

Each Claim Document may belong to zero or many Claim Activity Related Documents Each Claim Document is for one Claim

Each Claim Document may have zero or many Claim Documentation Internal Contact Each Claim Document may have 0 or many Claim Reference Documents

- This is a recursive relationship

## **Claim Document Activity**



#### **Description:**

Uniquely identifies and creates a federated employee responsible for processing the claim as a certain along with date and time approved.

#### **Key Relationships:**

Each Claim Document Activity must have a Claim Document Each Claim Document Activity belongs to a Document Activity Type

#### **Claim Documentation Contact**

```
Sclaim id: DECIMAL(12,0) (FK)
Control of the process of the proces
```

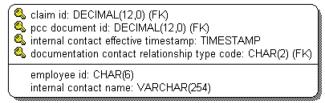
#### **Description:**

The Claim Documentation Contact table identifies the contact that corresponds with each piece of claim documentation.

#### **Key Relationships:**

Each Claim Documentation Contact must have a Documentation Contact Relationship Type Each Claim Documentation Contact is for one Claim Document

#### **Claim Documentation Internal Contact**



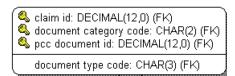
## **Description:**

Claim documentation internal contact table allows the table Claim Document and Documentation Contact Relationship Type to have a unique many to many relationship.

## **Key Relationships:**

Claim Documentation Internal Contact can be a part of many Claim Documentation Contacts. Claim Documentation Internal Contact is part of one Claim Document.

#### **Claim Document Category Type**



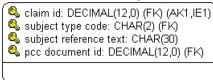
#### **Description:**

Allows different claims and document categories to be able to have multiple entries but providing a unique identifier with the combination of both.

#### **Key Relationships:**

Each Claim Document Category Type belongs to a Document Category Each Claim Document Category Type belongs to a Document Type

#### **Claim Document Subject**

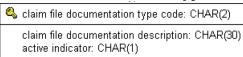


The Claim Document Subject table links (and identifies the relationships) between the Subject Type table and the Claim Document table.

## **Key Relationships:**

Each Claim Document Subject is belongs to one Subject Type Each Claim Document Subject belongs to a Claim Document

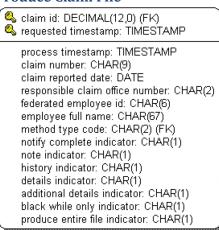
## **Claim File Documentation Type**



#### **Description:**

Uniquely identifies the type, or category, of claim documentation.

#### **Produce Claim File**



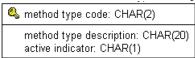
# **Description:**

Identifies information from the creation of a claim by a certain contact. Identifies the people that are involved in the process and houses information on when the claim was produced (date and time) and how the claim was produced (Method type code).

#### **Key Relationships:**

Produce claim file is part of one Claim Activity Contact
Produce Claim file is part of one Produce Claim File Method Type
Produce Claim file can be a part of many Documents

## **Produce Claim File Method Type**



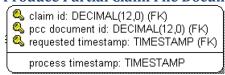
#### **Description:**

Uniquely identifies and stores different types of claim files

#### **Key Attributes:**

Produce Claim File Method type can be a part of many Produce Claim Files

# **Produce Partial Claim File Documentation**



# **Description:**

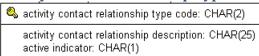
The Produce Partial Claim File Documentation is used to identify any claim files that are not totally completed. This table is necessary to account for cases when the documentation is completed by several different people or is not finished at all.

## **Key Attributes:**

Each Partial Claim File Documentation corresponds to one Claim File Produced.

# **Tables of the Communication Section:**

## **Activity Contact Relationship Type**



#### **Description:**

Uniquely identifies the relationship that a claim contact can possess.

# **Key Relationships:**

An Activity Contact Relationship Type may be a part of many Claim Activity Contacts.

## **Authority Extend**

sproperty & casualty claims documentation id: DECIMAL(12,0) (FK)

previous property & casualty claims documentation id: DECIMAL(12,0) (FK)

#### **Description:**

Subtype of communication documentation – we cannot be certain what this means, but it is probably a request for a higher authority to look over a claim.

#### **Key Relationships:**

An Authority Extend may be part of one Authority Request. An Authority Extend is a subtype of Claim File Documentation.

## **Authority Request**



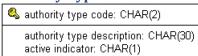
#### **Description:**

Subtype of communication documentation (cant be sure what this means... maybe a request to have a higher authority involved in the claim, maybe an approval from a higher authority

#### **Key Relationships:**

An Authority Request may be part of many Authority Extend. An Authority Request is a subtype of Claim File Documentation.

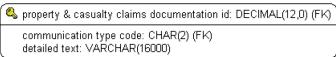
## **Authority Type**



#### **Description:**

Uniquely identifies and stores the different authority types including a description of the authority type.

#### **Communication Documentation**



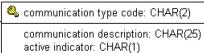
#### **Description:**

Uniquely identifies the type of document that was used to communicate the claim.

#### **Key Relationships:**

A Communication Documentation has one Type Of Communication.

# **Communication Type**



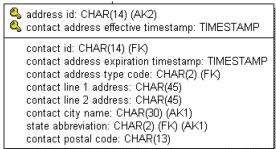
#### **Description:**

Uniquely identifies and stores the different types of communication that can be done within Federated Insurance.

#### **Key Relationships:**

A Type of Communication may be a part of one Communication Documentation.

#### **Contact Address**



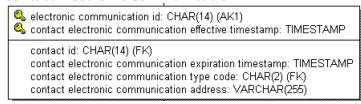
#### **Description:**

Identifies the contact information for the person that makes the insurance claim.

#### **Key Relationships:**

A Contact Address may be a part of many Claim Activity Contacts.

#### **Contact Electronic Communication**



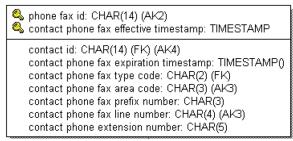
#### **Description:**

Identifies and keeps records of communication via electronic means (i.e. the internet) and stores the time and date information from when the communication happened.

#### **Key Relationships:**

An Electronic Communication Contact can go to zero or more Claim Activity Contacts.

#### **Contact Phone Fax**



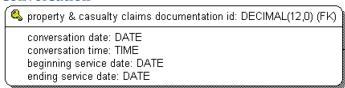
#### **Description:**

Provides information on how to reach contacts by phone and fax.

#### **Key Relationships:**

A Fax Contact may be a part of many Claim Activity Contacts.

#### **Conversation**



#### **Description:**

Subtype of communication documentation - Identifies that there has been a reason to process the claim and provides a referral to the person filing the claim.

#### **Key Relationships:**

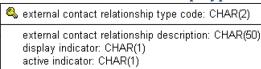
A Conversation is a subtype of Claim File Documentation.

# **Conversation Default Message Type**



Identifies and stores data on conversation default message type along with if the conversation is still active and description.

#### **External Contact Relationship Type**



## **Description:**

Describes the nature of the relationship between the subject and his/her external contact.

#### **Key Relationships:**

An External Contact Relationship type may be a part of many Subject Types.

#### **Instruction to Assistant**



#### **Description:**

The Introduction to Assistant table is a subtype of Communication Documentation. It represents whether or not a client has met with (and been introduced to) their designated assistant.

#### **Key Relationships:**

An Instruction To Assistant is a subtype of Claim File Documentation.

## **Internal Memo**



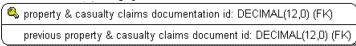
## **Description:**

Subtype of communication documentation - describes any memos that were passed as communication between Federated and the Client.

#### **Key Relationships:**

Each Internal Memo may have many Internal Memo Replies. An Internal Memo is a subtype of Claim File Documentation.

## **Internal Memo Reply**



## **Description:**

Subtype of communication documentation - describes any replies to memos sent

## **Key Relationships:**

Each Internal Memo Reply may be a response to an Internal Memo. An Internal Memo Reply is a subtype of Claim File Documentation.

#### **Note To File**



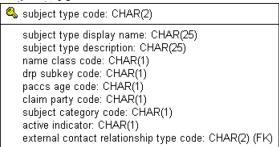
#### **Description:**

Note to File is a subtype of Communication Documentation. It represents data from any miscellaneous information (referred to as a note) that is filed along with the claim.

#### **Key Relationships:**

A Note To File is a subtype of Claim File Documentation.

# **Subject Type**



#### **Description:**

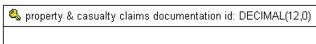
Uniquely identifies and the different document subject types that can be used for a claim.

## **Key Relationships:**

A Subject Type may be a part of many Claim Document Subjects.

# **Tables of the Documentation Section:**

#### **Claim File Documentation**



## **Description:**

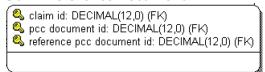
Claim File Documentation describes a piece of documentation in the database.

## **Key Relationships**

Claim File Documentation has two subtypes:

- Communication Documentation
- Document

#### **Claim Reference Document**



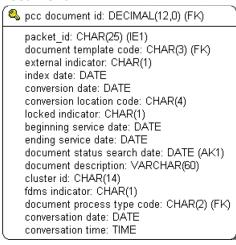
#### **Description:**

Claim Reference Document is a look up table that allows a user to get information on a claim.

#### **Key Relationships:**

A recursive relationship exists between Claim Reference Document and Claim Document. A Claim Reference Document must refer to a Claim Document.

#### **Document**

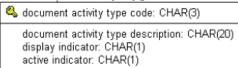


Contains information regarding all of the documents that are filed in association with particular claims. Describes the type of document and date information

#### **Key Relationships:**

Each Document may have a Document Process Type. Each Document may have a Document Template.

## **Document Activity Type**



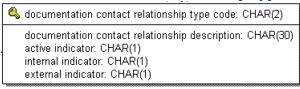
## **Description:**

Uniquely identifies and creates different document types as well as a description.

# **Key Relationships:**

Each Document Activity Type has zero or many Claim Document Activities.

## **Documentation Contact Relationship Type**



## **Description:**

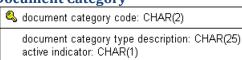
Defines the relationship between the Document Contact and the internal contact for the claim.

#### **Key Relationships:**

Each Documentation Contact Relationship Type may have zero or more Claim Documentation Contacts.

Each Documentation Contact Relationship Type may have zero or more Claim Documentation Internal Contacts.

#### **Document Category**

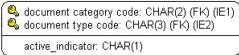


Uniquely stores and identifies the different types of documentation categories used for claims.

#### **Key Relationships:**

Each Document Category is described by a Claim Documentation Category Type. Each Document Category belongs to a Document Category Type.

## **Document Category Type**



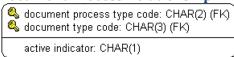
#### **Description:**

Defines what kind of document it is that is associated with the claim. It links the Document Category and Document Type tables.

## **Key Relationships:**

A Document Category Type belongs to one Document Category A Document Category Type belongs to one Document Type

#### **Document Process Relationship**



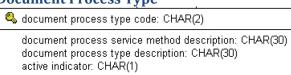
#### **Description:**

Explains how the document type is related to the business process the document is related to. This table further explains the Document Process Type.

#### **Key Relationships:**

Each Document Process Relationship must refer to a Document Type
Each Document Process Relationship must refer to Document Process Type

## **Document Process Type**

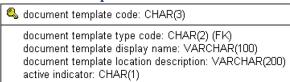


Identifies ways a document can be processed.

#### **Key Relationships:**

A document process type may be a part of many Claim Documents.

# **Document Template**



## **Description:**

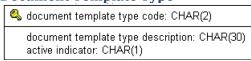
Identifies the base document, or template, that each official document (in the document table) may have come from.

# **Key Relationships:**

A document template is a part of one Document Template Type.

A document template can be a part of many Document Process Types.

## **Document Template Type**



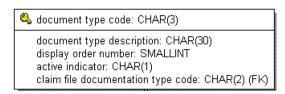
## **Description:**

Uniquely describes and identifies the kind, or category of the document template.

## **Key Relationship:**

A Document Template Type maybe be a part of many Documents.

## **Document Type**



Uniquely identifies and creates records for the different document types for claims.

# **Key Relationships:**

A Document Type may be a part of many Document Categories.

A Document Type is a part of one Claim File Documentation Type.

A Document Type may be a part of many Document Process Types.

# **Referral Report**



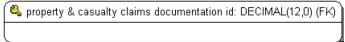
# **Description:**

Subtype of communication documentation - Provides a report that identifies the referrals that have been requested.

## **Key Relationships:**

A Referral Report is a subtype of Claim File Documentation.

# **Referral Request**



## **Description:**

Subtype of communication documentation - Provides a report that identifies the referrals that have been requested.

#### **Key Relationships:**

A Referral Request is a subtype of Claim File Documentation.

## **Scope and Limitations:**

## Scope:

## What is the big picture of this data model?

By developing a logical model, Federated Insurance was making an attempt to capture all business requirements to begin constructing useful diagrams and reports. This leads us to believe that Federated created this ERD to logically understand their different business processes. This model pertains to the flow of information with respect to an insurance claim. According to this model, the key parts of a claim are communication and documentation.

#### What do the three main parts of the model have to do with each other?

There cannot be a claim without documentation and communication. To start a claim, there must be communication between Federated and clients as well as the necessary documentation for a claim to exist within Federated.

#### What is Federated Insurance trying to accomplish with this model?

The two major things I think Federated is trying to accomplish are to keep track of all documents that are associated with their insurance claims and to keep track of any form of communication (oral or written) that occurs between their representatives and their clients.

#### Why is Federated beginning to use this ERD now?

We think that Federated has created this ERD as a preliminary tool to better illustrate their business requirements and processes related to insurance claims which will later be used to create other diagrams and eventually help with physical database implementation.

#### Do you think they write reports off this?

We don't think database is used for writing reports. It seems geared towards record keeping and tracking the flow of communication and documentation of claims between Federated and their clients as well as the client's insurance company.

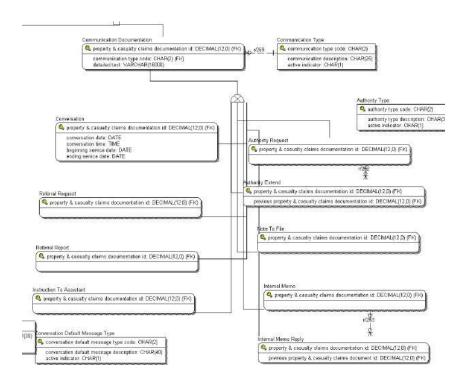
#### **Limitations:**

#### Are there any tables that don't seem to serve a functional purpose?

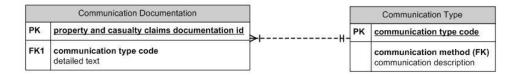
- Authority Type
  - It is hard to decipher what this table actually means within the model. Also, this is table
    is not connected to any other entities. If the entity truly belongs in the diagram, we feel
    that it should have a relationship with at least one or two other tables.
- Conversation Default Message Type
  - This is another table that does not have any relationships. It is floating in space on the diagram.
- Claim Activity Contact
  - Redundant data with Contact Address
- Contact Address
  - o Why can't contact phone fax and contact address be one table?

## What are two areas of the model that could use improvement?

- Middle area of model (subtypes of Claim File Documentation)
  - We think that all the subtype tables could be collapsed into the Communication Type table as attributes. Since most of the entities under Communication Documentation have the same primary key (property and casualty claims documentation id), and the primary key is the only attribute in the entities.
  - This problematic area could be improved by collapsing the following tables into a single attribute called Communication Method in the Communication Type table. It makes more sense to hold this information in the Communication Type table because the subtype tables represent types of communication.
    - Conversation
    - Referral Request
    - Referral Report
    - Instruction to Assistant
    - Authority Request
    - Authority Extend
    - Note to File
    - Internal Memo
    - Internal Memo Reply
  - The problematic area in the middle-bottom of the model currently looks like this:

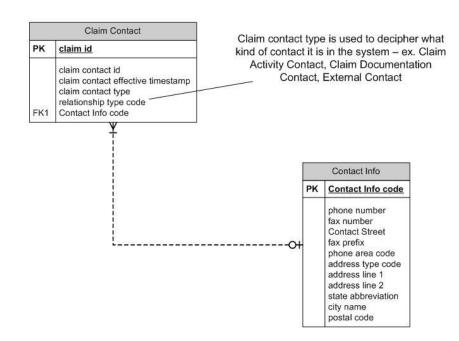


 We propose getting rid of the 9 subtypes of communication documentation, and representing that data with a single attribute in the Communication Type table called "Communication Method."



#### • Another issue with the diagram is how the various "contacts" are being represented

- We think that contact information could be placed into one entity instead of being spread out over many tables. Since all of the contact-based data is spread out into 5 entities, a lot of the data that is stored in it seems redundant. This model could be more efficient if these tables could somehow be combined to centralize all of the information related to contact.
- We propose to change the structure of the contact-related tables so they would fit into the following model. Each contact does not need a contact info record because some contacts are "internal contacts." It is unlikely that Federated would want to keep information on internal contacts.



# **ERD Diagram Symbols:**

## **Keys:**



Designates Primary Key

- (FK) Designates Foreign Key
- (AK) Designates Alternate Key

# **Relationships:**



Identifying "Many" Relationship



Non-identifying "Many" Relationship



Sub-type Icon

# **Cardinality:**

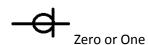


Zero, One or Many



One or Many





# **Dashed line: non-identifying**

If a relationship is non-identifying, it means no attributes are used as a foreign key in the table it is related to.

# **Solid Line: Identifying**

An identifying relationship is where an attribute is used as a foreign or primary key for the other table as well as its own.

# **Square Tables: Entity**

Indicates a 0 to 1 or 1 to 1 relationship.

# **Rounded Edge Tables: Associative Entity**

Indicates a many to many relationship, contains unique identifier for both tables in the relationship.