Conversions with GalenETL

Empowering Extraordinary Patient Care

GALEN HEALTHCARE SOLUTIONS

Introduction

Michael Tamlyn, Technical Architect

- **Professional and enthusiast software developer**
- **7+ years of working in health care IT**
- **Integrations, conversions, and tool development**
- **If you are an Allscripts client, you may have used some of my software.**
  - Enterprise Interface Tools

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Agenda

- **A quick poll**
- **Scope**
- **Introduction**
- **Implications to your project plan**
- **Enforcing best practices**
  - Consciously decide on scale and purpose
  - Develop iteratively and stay flexible
  - Create a queryable audit trail
  - Manage customizations carefully
- **An opportunity to ask your questions**

Poll Question

- **What vendor's EHR are you currently using, or plan to migrate to in the near future?**

Scope

- **Focus on healthcare IT information system conversions**
- **Introduce the tool Galen leverages to complete conversions**
- **Show how GalenETL matters to *you*, despite being an internal Galen tool.**

Introduction – What is a conversion?

- **Extraction of clinical data from a data source**
- **Transformation of the clinical data**
  - Filtering
  - Translating
  - Scrubbing
- **Loading of the clinical data into a data store or application**
- **Not real-time or triggered**
- **Executed only once or a small number of times**

Poll Question

- **Are you planning on performing a conversion?**

Introduction to GalenETL

- **Tool used by Galen internally to provide conversion services**
- **Reused as for other Galen products**
  - Galen Warehouse [in development]
  - Galen Referrals [in development]
- **Appropriate for conversions of all sizes.**
  - Functions just as well with hundred clinical items as with millions.
- **The culmination of all of Galen's conversion experience**
  - Once a problem is solved once, it's automatically solved for all projects going forward.

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Introduction to GalenETL

- **Architecture**
  - Database
    - Configuration
    - **Standardized staging area**
  - Windows Service
    - Execution of transformations and load
    - **Robust plugin support**

Introduction to GalenETL

- **Clinical Data Model**
  - Logic is written to the model or from the model.
  - Standardization allows for everything in GalenETL to be modularized.
  - Overtime the model has proven stable.

Introduction to GalenETL

The following clinical data types have been thoroughly modelled to handle all known fields support by all the major vendors.

- Allergy
- Appointment
- Chart Summary
- Document
- Form
- Immunization
- Insurance Carrier
- Medication
- Patient Registration
- Problem
- Provider
- Referral
- Referring Provider
- Result
- Vitals

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Other Features

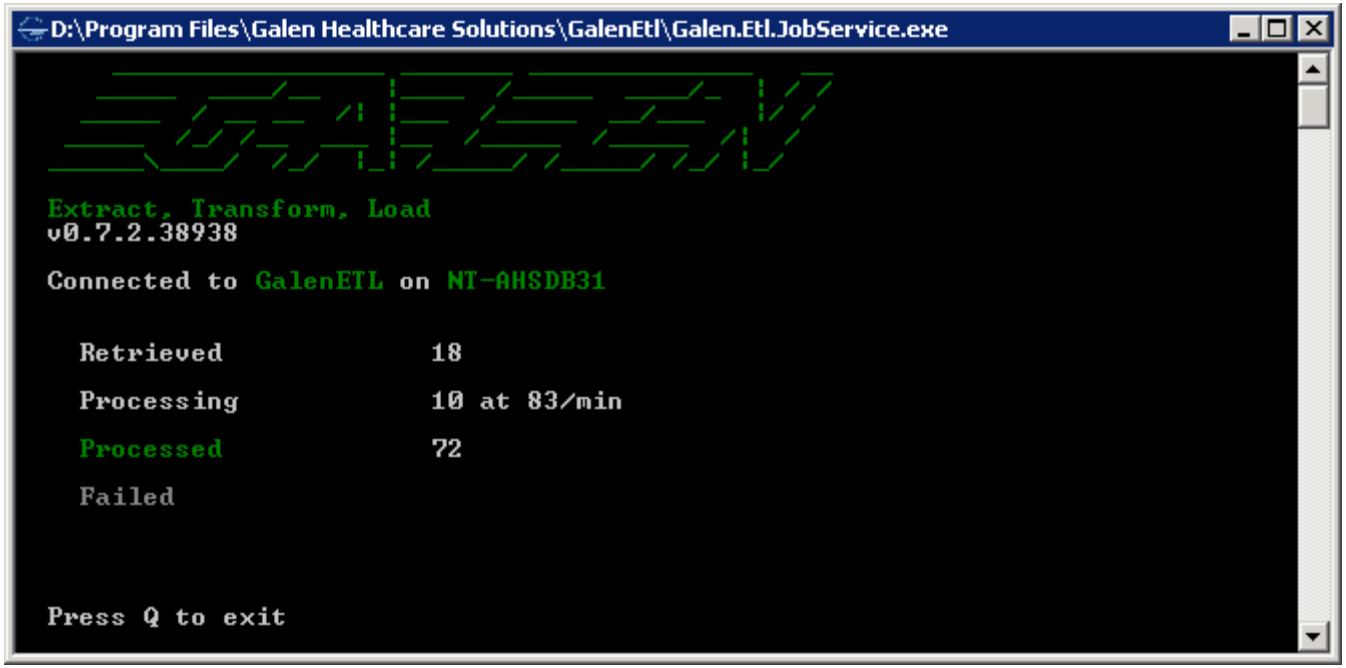
- **Transformations and Translations**
  - The T in ETL is a core aspect of the tool
- **Parallelism**
  - Can optionally saturate one or more servers' CPUs to maximize throughput.
- **Real-time queuing and processing**

Other Features

- **Imaging Services - Years of experience rolled into constantly evolving imaging services made available to all areas of GalenETL**
  - PDF generation
  - TIF manipulation
    - Bad formats
    - Rare compression schemes
  - Format conversions
    - Word
    - JPEG/Bitmap/PNG, etc
    - HTML

Introduction to GalenETL

GalenETL generating clinical summaries



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Your project plan &
Enforcing best practices

Conversion Process

- **GalenETL is a tool and does not enforce a particular process or project plan**
- **Quite the opposite, it fits into any project plan due to its flexibility**
- **Projects should follow best practices and GalenETL is a tool to help accomplish that**

Conversion Best Practices Webcast

- **Some of our points today reference best practices we shared during this webcast.**

- **If you missed it…**

Visit: http://wiki.galenhealthcare.com

Search: **Conversion Best Practices Webcast**

Alternatively:

wiki.galenhealthcare.com/Clinical_Data_Conversion_Best_Practices_Webcast

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Enforcing Best Practices

1. **Consciously decide on scale and purpose**
2. **Develop iteratively and stay flexible**
3. **Create a queryable audit trail**
4. **Manage customizations carefully**

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Best Practice #1

Consciously decide on scale and purpose.

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Consciously Decide on Scale and Purpose

- **Why?**

  Often projects are scoped without knowledge or consideration of all the available options

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Consciously Decide on Scale and Purpose

- **Define the real goals of the project**
  - Transition to new application
  - Improve Workflow
  - Clean-up legacy data
  - Remove duplicate charts
  - Legal compliance

Consciously Decide on Scale and Purpose

- **In addition to traditional discrete conversions, GalenETL also supports:**
  - Clinical Summaries
  - Data exports and archives

Consciously Decide on Scale and Purpose

- **Once you've made your choice on scale and purpose, GalenETL will support your goals without requiring customization.**

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Best Practice #2

Develop iteratively and stay flexible.

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Develop Iteratively and Stay Flexible

- **Data is not always available immediately or completely**
  - System availability
  - Scope variation
- **Conversions are prone to issues**
  - Even standard conversions
  - Varying system usage
  - Varying system versions

Develop Iteratively and Stay Flexible

- **GalenETL addresses this through three features:**
  - Item Sets – separation of a project on a per clinical item type and source system basis.
    - Labs vs. Documents
    - LabCorp Labs vs. Quest Labs.
  - Jobs – Collection of clinical items from an item set to be processed by one or more plugins.
  - Plugins – standardized or custom logic to handle any project requirement. [we'll discuss this later]

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Develop Iteratively and Stay Flexible

- **Work with what you have with item sets and small jobs**
  - Make continuous progress
  - Keep the team working in parallel

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Best Practice #3

Create a queryable audit trail.

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Create a Queryable Audit Trail

- **Tracks what you did and when you did it**
- **Records what the results were**
  - Actions, identifiers, errors
- **Can be analyzed quickly and reliably**
- **Not an application log**

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Create a Queryable Audit Trail

- **Standardized reports can be defined and reused**
  - Patient matching
  - Dictionary mismatches
- **Effort to create ad-hoc reports is minimized**
- **Reports can be tweaked and modified with little effort**
- **No data is skipped**
- **With SQL, queries can join with data in other databases**

Create a Queryable Audit Trail

- **Example questions GalenETL's audit trail can answer with 100% confidence:**
  - What clinical data was loaded successfully and what failed.
  - Where did "this" particular clinical data end up in the target system?
  - What data, across all types, was loaded for "this" patient?
  - Were any duplicates loaded into the system?
  - [For a data export project] What is the file path to the chart summary for "this" patient?
  - What errors occurred during the live conversion, and how many times did they occur?

Create a Queryable Audit Trail

- **Quickly understand what actions were taken, what their result was, and why**
- **Generate reports to spread understanding within the team and to stakeholders**
- **Improves your confidence with the results of your project**

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Best Practice #4

Manage customizations carefully.

Manage Customizations Carefully

- **Standards are created to provide stability and predictability.**
- **Customizations can undermine a standardized process, but provide critical benefits.**
- **GalenETL provides a plugin architecture that allows customizations to be *safely* introduced into a project.**

Manage Customizations Carefully

- **Normally…**
  - Avoid customizations late in the process
  - Perform thorough regression testing after every change.
  - Redeploy your conversion technology after each change.

Manage Customizations Carefully

- **A GalenETL customization is different:**
  - Does not affect the functionality of any other plugin.
  - Can be dropped in ad-hoc without re-installing or configuring GalenETL.
  - Individually small in scope and may be a slight tweak to an existing plugin.
  - Can perform any action required by the project.
    - Patient matching
    - Data transformation
    - File format conversions

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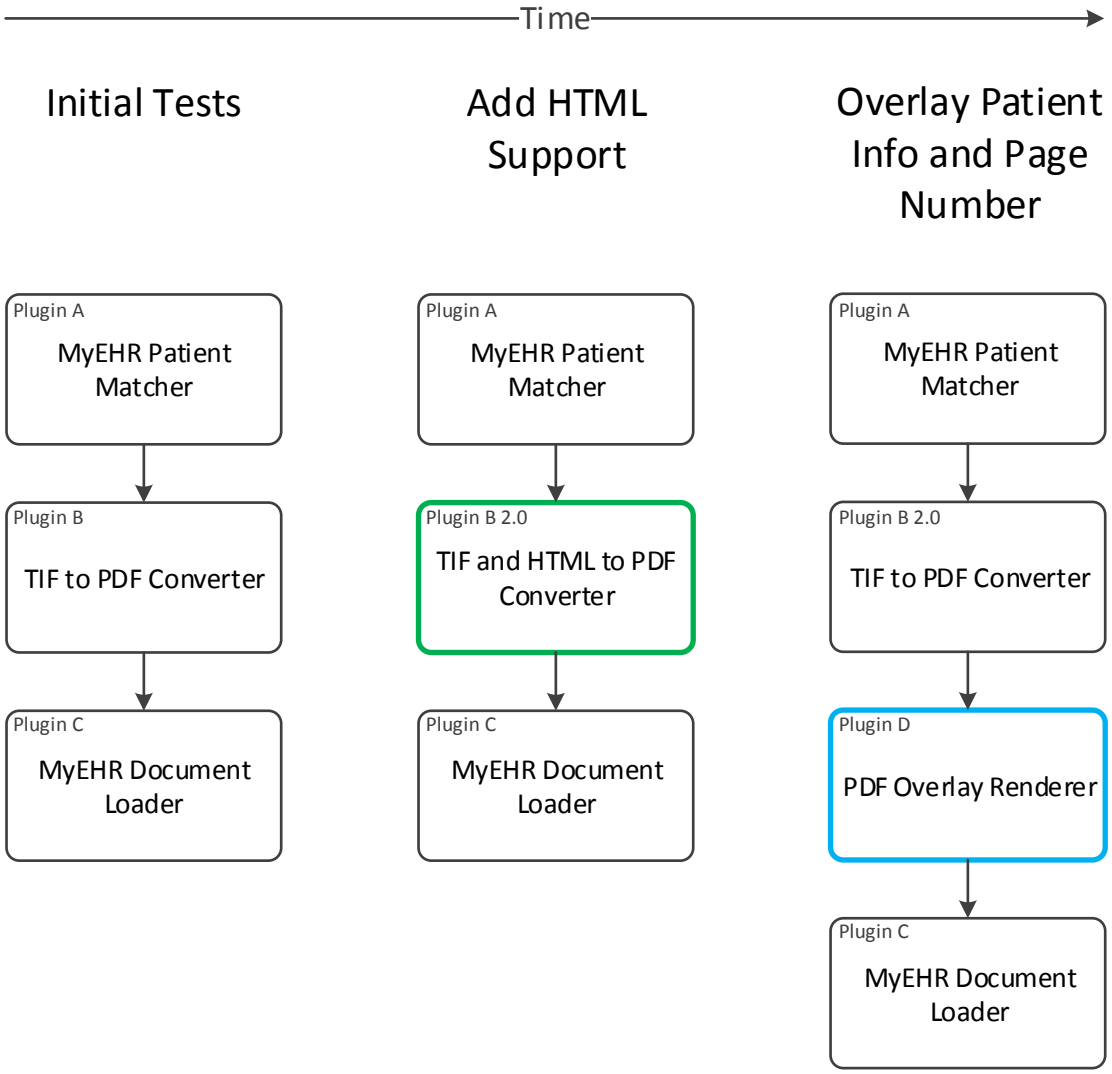
Original Scope

Load TIF documents into MyEHR

Changes

Week 3 Add support for HTML files.

Week 5 Add support for overlaying page numbers and patient demographics on top of PDFs.



Manage Customizations Carefully

- **With GalenETL, customizations…**
  - do not require regression testing.
  - can be introduced without disrupting existing conversion configuration.
  - can be safely introduced at any point in the project.

Conclusion

- **Galen provides consistent conversion services that follow best practices that promote safety, predictability and efficiency.**

- **GalenETL is key to making this possible.**

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Questions?

Introduction to GalenETL

- **Technical Overview**
  - Written on the .NET platform from Microsoft.
    - Easy access to 3rd party components if needed.
  - Sophisticated and reliable
  - Constantly improving

Other Capabilities

- **Agnostic plugin that produces data exports to disk with supporting index files**
  - Control over distribution of files
    - By Patient
    - By Exported Item Count
    - Custom logic
  - Completely flexible file naming
- **Any plugin can overlay data on top of PDFs**
  - Patient context
  - Conversion context
  - Page counts

Other Capabilities

- **Plugin for Exporting Enterprise EHR Forms to PDF**
  - Supports any type of form element, including:
    - Database fields, such as user name
    - Check boxes
    - Radio buttons
    - Grids
  - Improved readability over original forms in many cases
  - Many fixes to address less-than-ideal forms