Using Wikis for Writing Discharge Summaries

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Objective

- To investigate how the collaborative concept of a wiki could open a new paradigm for clinical software applications
  - To propose a wiki platform for electronic discharge summaries (EDS)
    - How's that ***feel***?
    - What opportunities (and barriers) emerge?

Introduction

- Successful management of discharge from hospital requires :
  - a multi-professional collaboration and effective communication between care providers

- A Discharge Summary:
  - provides a snapshot of a specific patient and contains pertinent clinical, demographic, and administrative data
  - is written to provide smooth transition from one stage of care to the next (e.g., between hospital-based consultants and General Practitioners)
  - is expected to be generated by the clinician(s) involved in the care of the patient at discharge

References:

-Walraven, C. (1999). 'What Is Necessary for High-Quality Discharge Summaries?' American Journal of Medical Quality 14(4): 10.

-Barretto, S., Chu, S., et al. (2006). 'National Discharge Summary: Data Content Specifications Version 1.0', National E-Health Transition Authority Australia, retrieved from http://www.nehta.gov.au/index.php?option=com_docman&task=cat_view&gid=164&Itemid=139.

Current Approaches

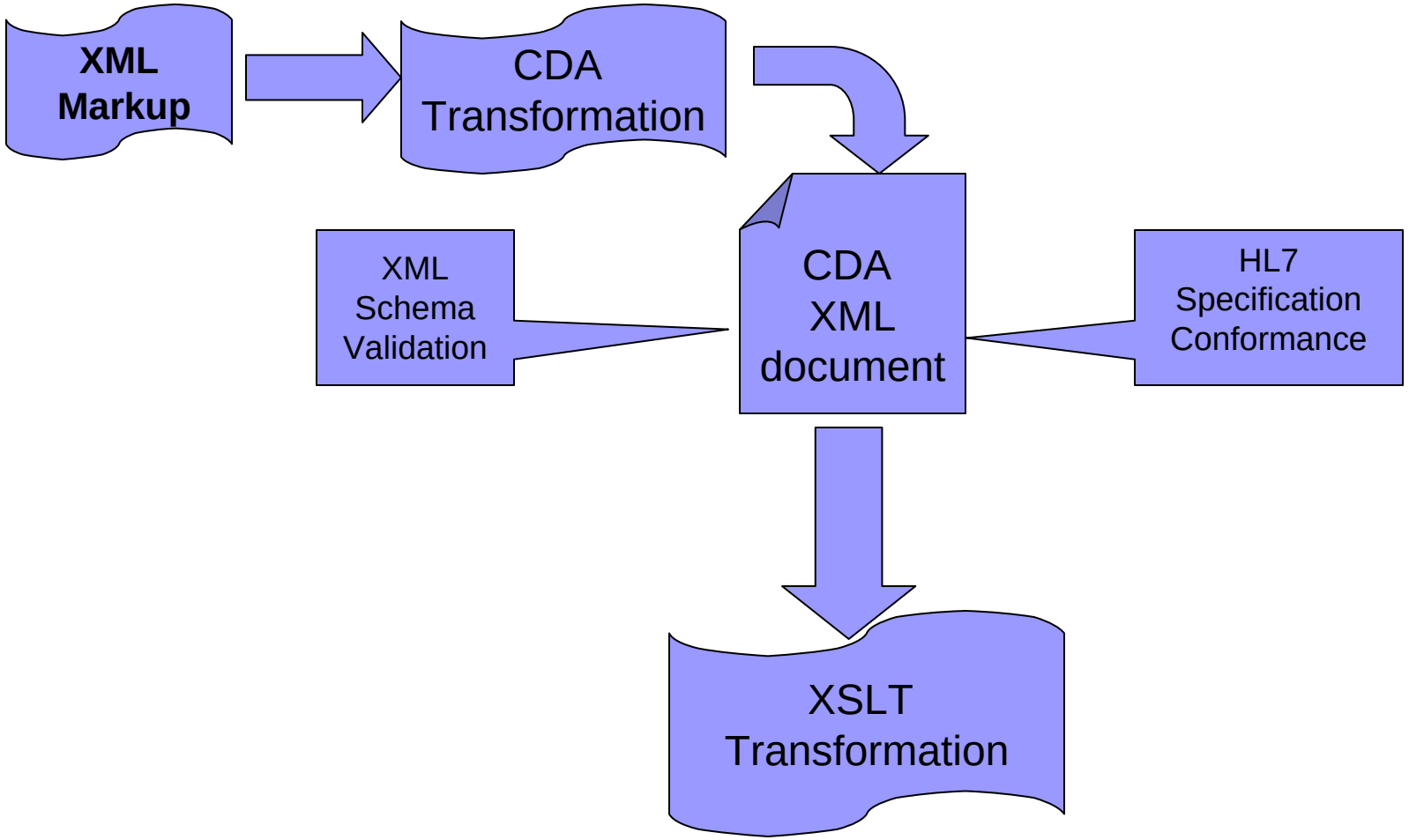
- HL7 messages – for delivering clinical information

- HL7 CDA – for assembling clinical information in a document
  - A document mark-up standard for the structure and semantics of an exchanged "clinical document“ using:
    - XML,
    - the HL7 Reference Information Model (RIM)
    - HL7 version 3 data types
    - and vocabulary (SNOMED, ICD, local,…)

    - Can then be slipped into a V2 or V3 message

Reference:
- Dolin, RH., Alschuler, L., et al. (2006). ‘ HL7 Clinical Document Architecture, Release 2’. J Am Med Inform Assoc.;13:30–39.retrieved from (http://www.jamia.org/cgi/reprint/13/1/30)

Markup Transformations in CDA



CDA for Clinical Summaries

- Care Record Summary (CRS): As defined in CRS implementation guide.

  "… *document contains a patient's relevant health history for some time period. It is intended for communication between healthcare providers."* (published in March 2005)

  - Constrained CDA document
  - Summary of Care Provided for a Patient
  - Summary of Episode
  - Discharge Summary
  - Transfer Summary

- Continuity of Care Document (CCD)
  - CCD = ASTM CCR* + HL7 CDA
  - implements the clinical requirements specified in the Continuity of Care Record (CCR) using the CDA architecture (published in April 2007)

References:
- Health Level Seven, March 2005, Implementation Guide for CDA Release 2 – Level 2 – Care Record Summary (US realm).
- Continuity of Care Document, Press release.http://www.hl7.org/documentcenter/public/pressreleases/20070212.pdf

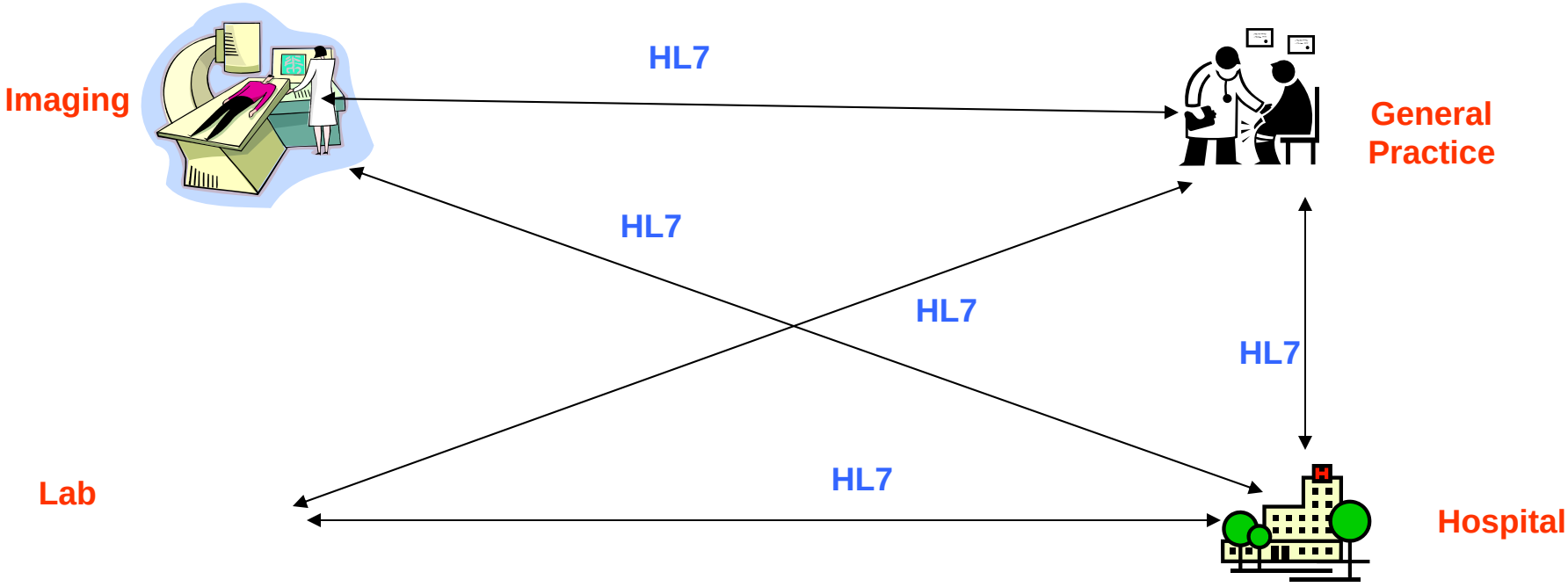
*ASTM's Continuity of Care Record (CCR)- a core data set of the most relevant administrative, demographic, and clinical information facts about a patient's healthcare, covering one or more healthcare encounters.

Message Based Network

Complexity in **integration**
Overwhelming **interoperability** issues
Fragmented **communication**
Lack of centralized **documentation**

Patient

(each arrow, in each direction, is a “project”)



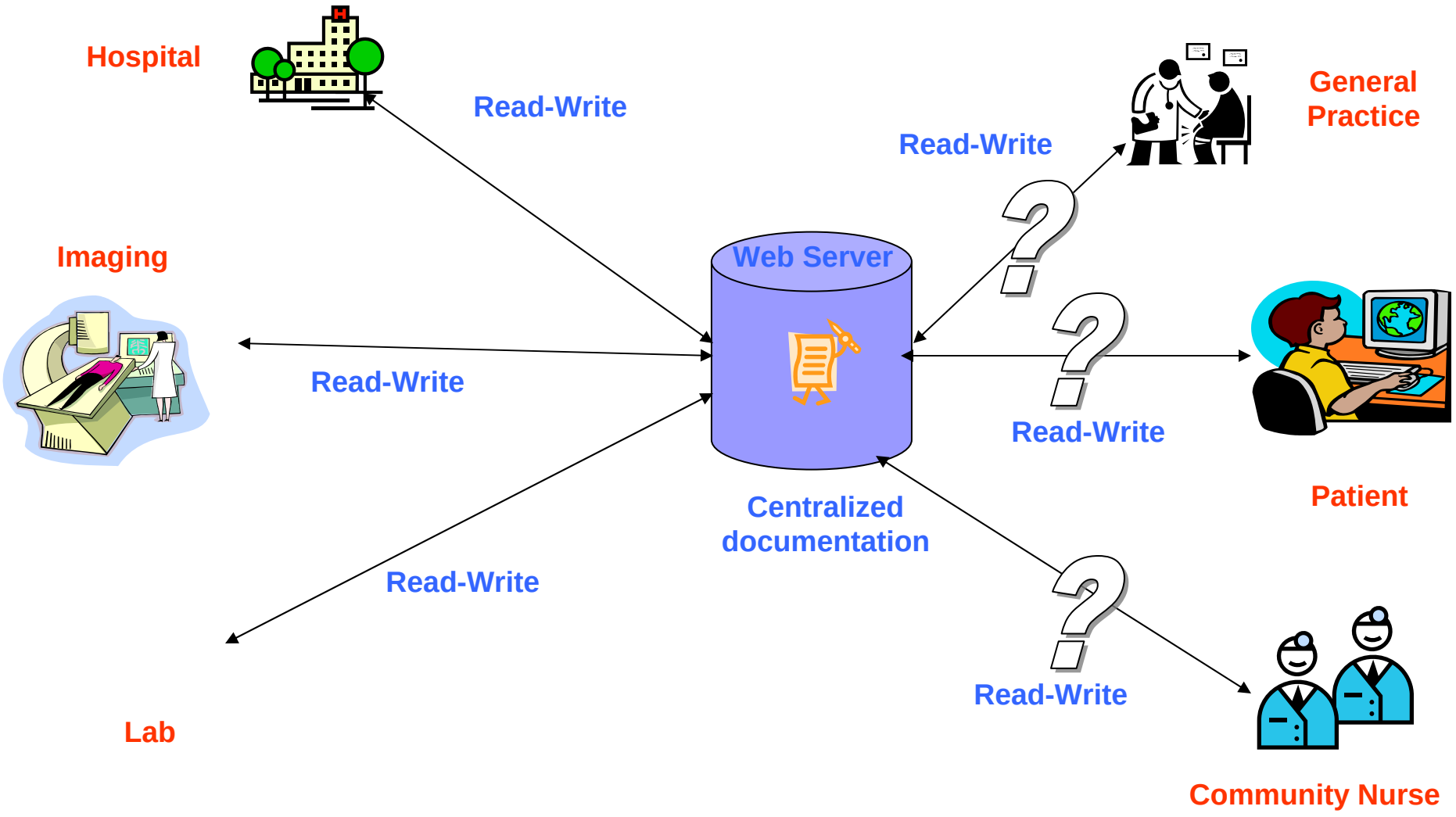
Our Approach

- To use Web 2.0 software (a wiki) for authoring and distribution of Discharge Summaries

What is Web 2.0?

- Web 1.0
  - mostly **read-only Web**
  - users follow links to content
- Web 2.0
  - the **read-write Web**
  - users can also rate, comment, annotate, edit, create, mix and share content while following links to contents

Web 2.0 Based Heath Information Network



What is a wiki?

Web pages anyone can create or edit

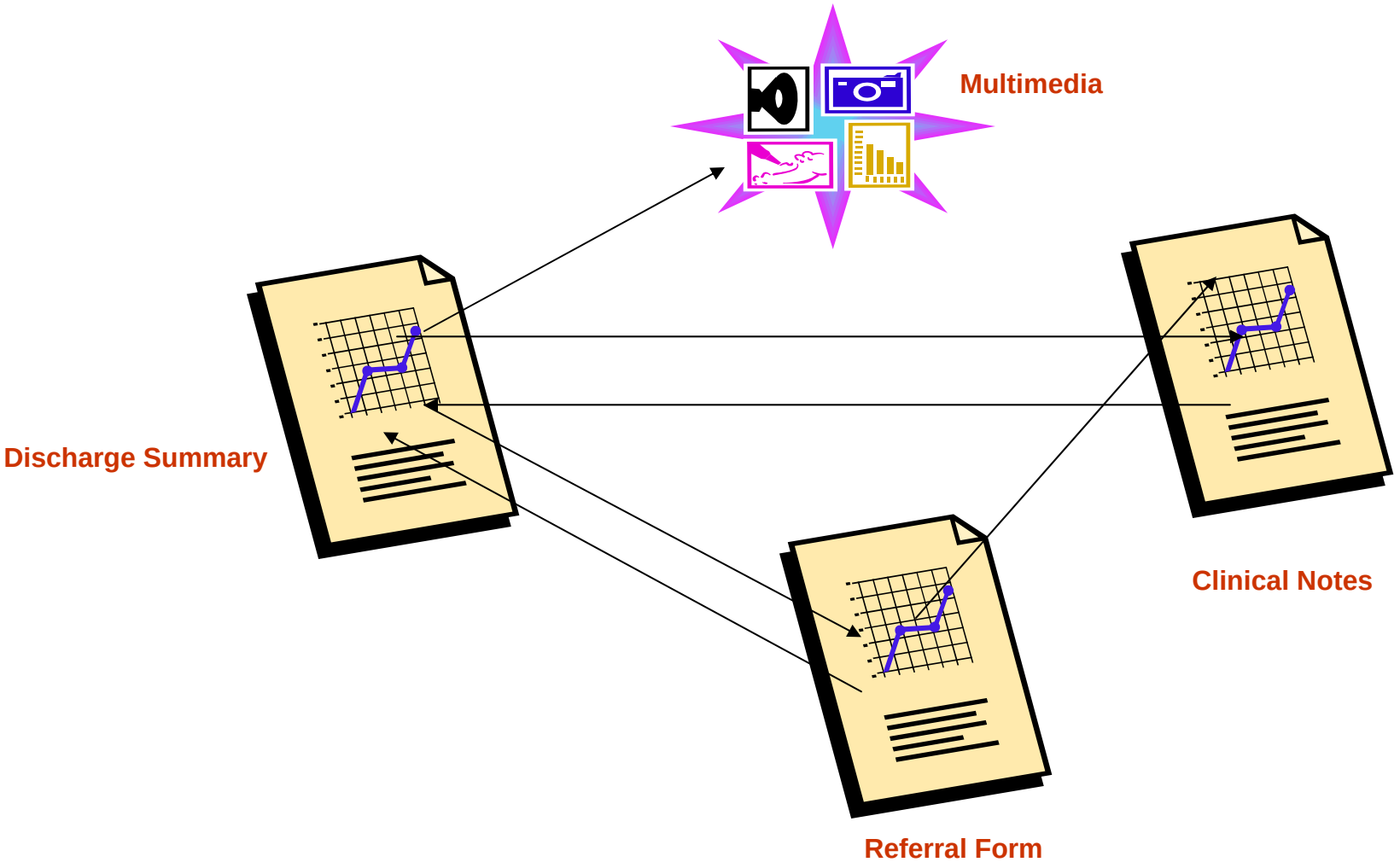
- Software that allows users to create and edit web page content using any web browser
- A Web 2.0 based collectively authored set of web pages
- Introduced by Bo Leuf and Ward Cunningham in 1995 to facilitate online collaboration about programming and design best practices
- Now being used in many fields to facilitate online collaboration and content management

References:
-Ward Cunningham - http://www.wiki.org/wiki.cgi?WhatIsWiki
-Leuf, Bo and Ward Cunningham. The Wiki Way: Quick Collaboration on the Web. N.J.: Pearson, 2001: 16.

What you can do with a Wiki

- Easily create and edit web pages, including styled text, hyperlinks, pictures, audio, video, etc.
- Popular features of most wikis
  - Centralized documentation
  - Hypermedia linking
  - Automatic cross linking between internal pages
  - Wiki markup language - provides tags as the most fundamental way of text formatting and linking external documents and contents
  - WYSIWYG (what you see is what you get) editor- available in some wiki software to generates automatic wiki markup to provide some features of a word processor
  - Quick page creation/editing
  - History function - keeps track of changes made to an article
  - Search function - provides keyword based search for a specific topic

Linked Wiki Pages



Wikis in Health

- Examples of wikis in the health domain:
  - AskDrWiki (http://askdrwiki.com)
  - WikiSurgery (http://wikisurgery.com)
  - Ganfyd (http://www.ganfyd.org - a free medical knowledge base that anyone can read but only registered medical practitioners may edit)
  - Wikicancer (http://www.wikicancer.org)
  - Clinfowiki (http://www.clinfowiki.org – An encyclopedia of medical informatics sponsored by Informatics review).

Methodology

- Analysis of the discharge summary data model and its content specification published by National E-Health Transition Authority (NEHTA), Australia was conducted
- Prototype wiki page created for the discharge summary sample published by NEHTA
- Discharge Summary created as a single wiki page using a wiki editor and markup language in TWiki – a free and open source package

Reference:

- Barretto, S., Chu, S., et al. (2006). 'National Discharge Summary: Data Content Specifications Version 1.0', National E-Health Transition Authority Australia, retrieved from http://www.nehta.gov.au/index.php?option=com_docman&task=cat_view&gid=164&Itemid=139.

NEHTA Discharge Summary Sample (Sectional View)

DISCHARGE SUMMARY – Admitted patient

Episode ID XXXXX**Date Sent**:26/02/2006 2:58 PM
Version Number: 1
Summary Status: Final

Facility Details:
NEHTA General Hospital
Department: Respiratory Medicine
162 Grenfell Street,
ADELAIDE SA 5000
Tel: (08) 8205 3500Fax: (08) 8205 2300
Email: nehta.general@somewhere.else
Specialist: Dr Nehta Specialist
Registrar: Dr Neville Registrar, Pager:
Summary Author/RMO: Dr Neil Rmo

Patient Details:
MRN: 0952657
SMITH, John Michael

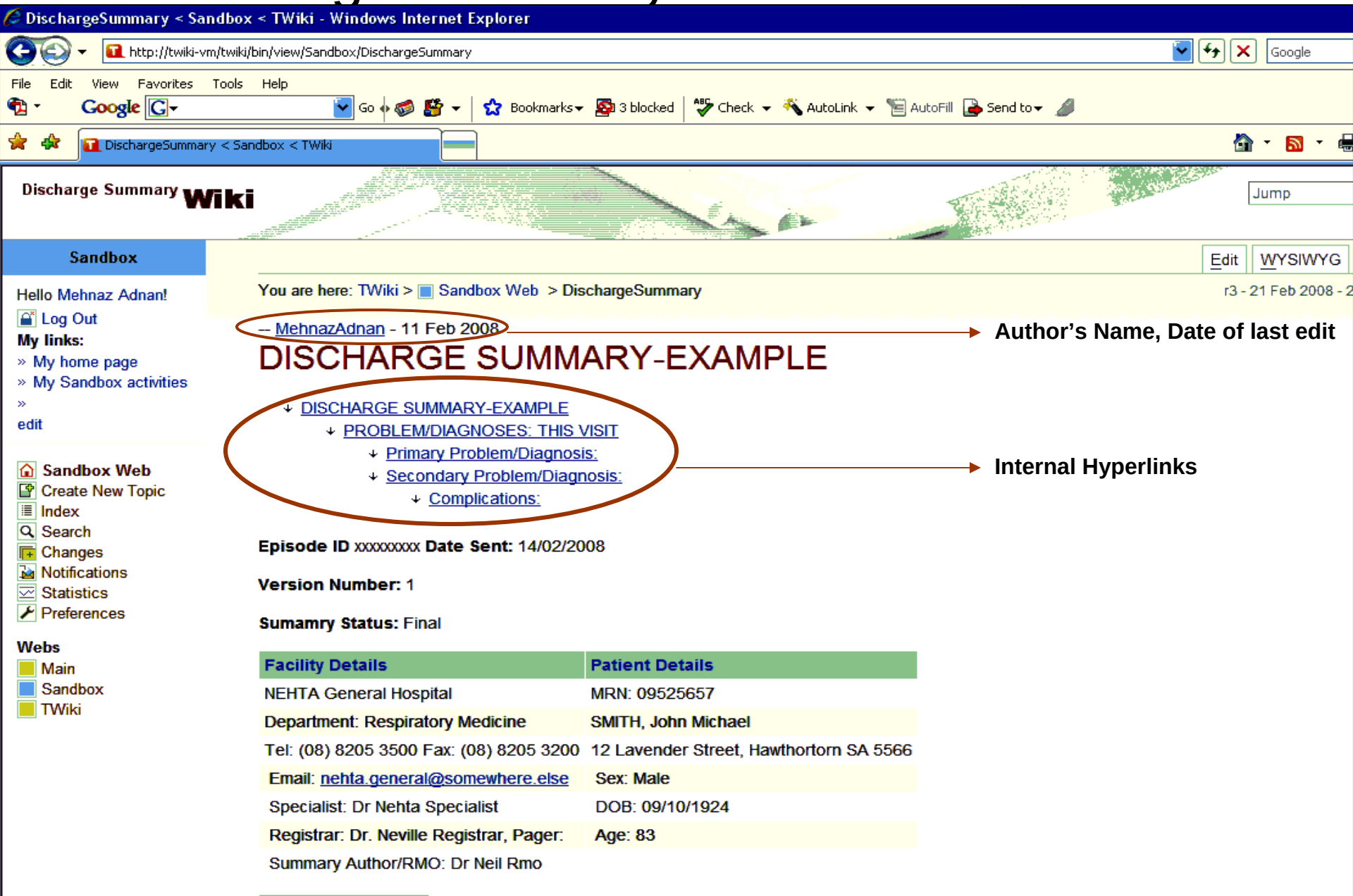
12 Lavender Street,
HAWTHORN SA 5566
Sex: MaleDOB: 9/10/1924Age: 81

Patient's Usual GP:
Dr Patrick GeneralPractice
Good Health General Practice
5 Good Health Street,
HAWTHORN SA 5566
Tel: (08)-8225 4579Fax: (08)-8225 4580
Email: patrick-GP@goodhealth.net.au

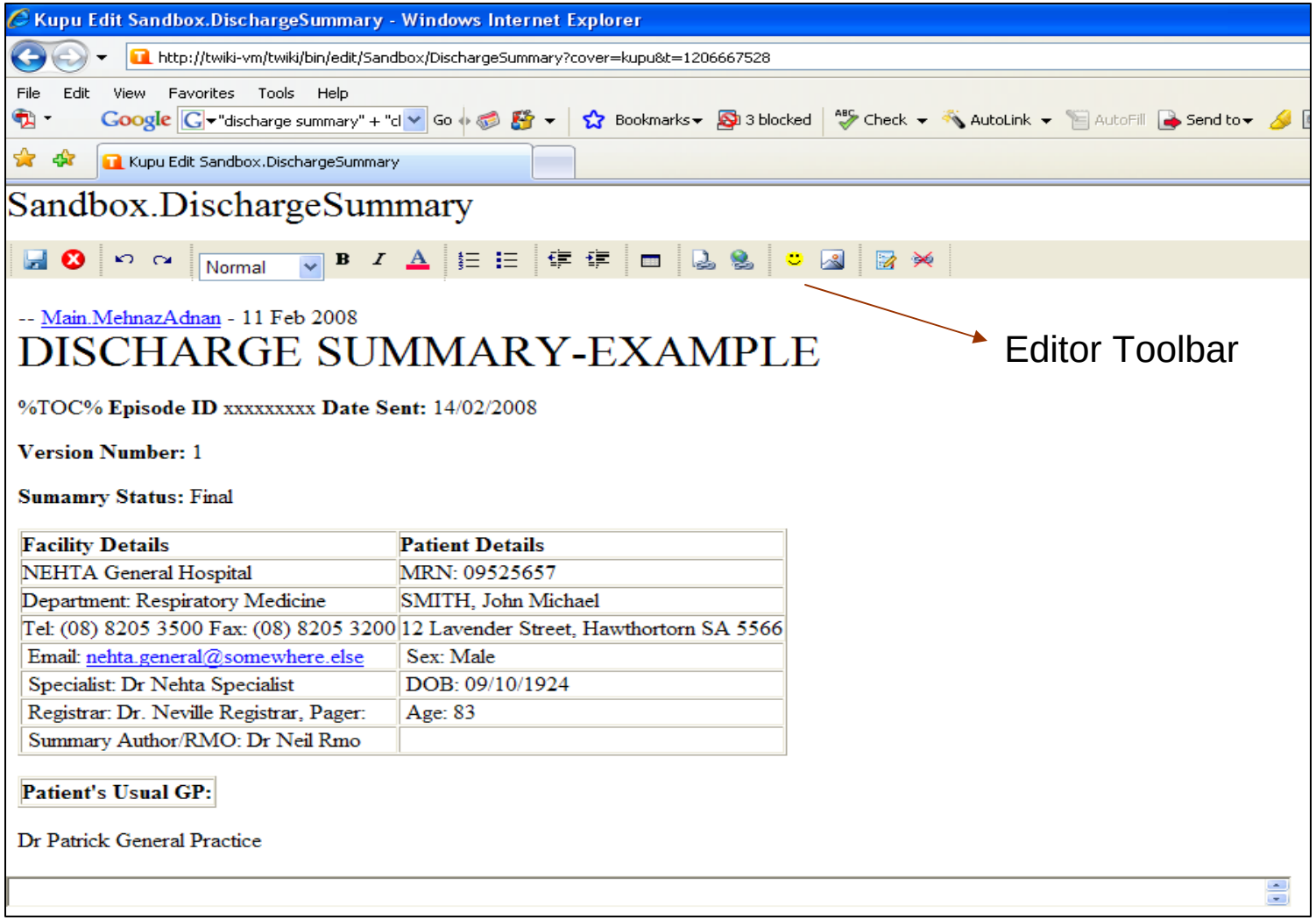
Referred by: Dr Patrick GeneralPractice, (08)-8225 4579
Referral Reason: Difficulty breathing and Haemoptysis
Service Requested: To rule out malignancy
Admission Date/ Time: 16/2/2006 17:47
Admission Reason: Dyspnoea and Haemoptysis
Discharge Date & Time: 26/2/2006 15:25
Discharge Reason: Routine discharge
Discharge Destination: Usual place of residence
Summary Recipient
Recipient Name:
Organisation Name:

PROBLEMS/DIAGNOSES: THIS VISIT
Primary Problem/Diagnosis:

Discharge Summary Wiki



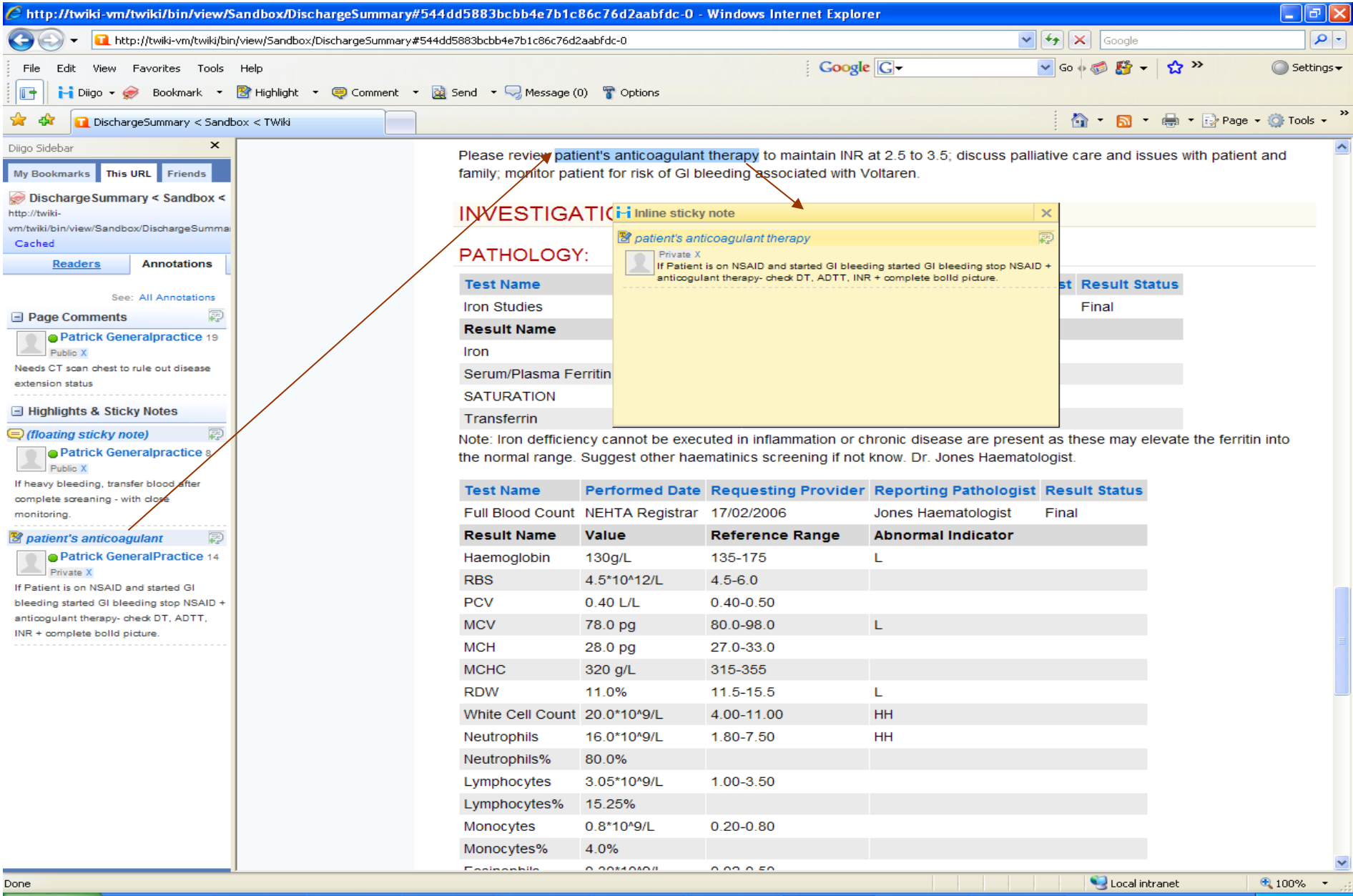
Discharge Summary View in WYSIWYG editor



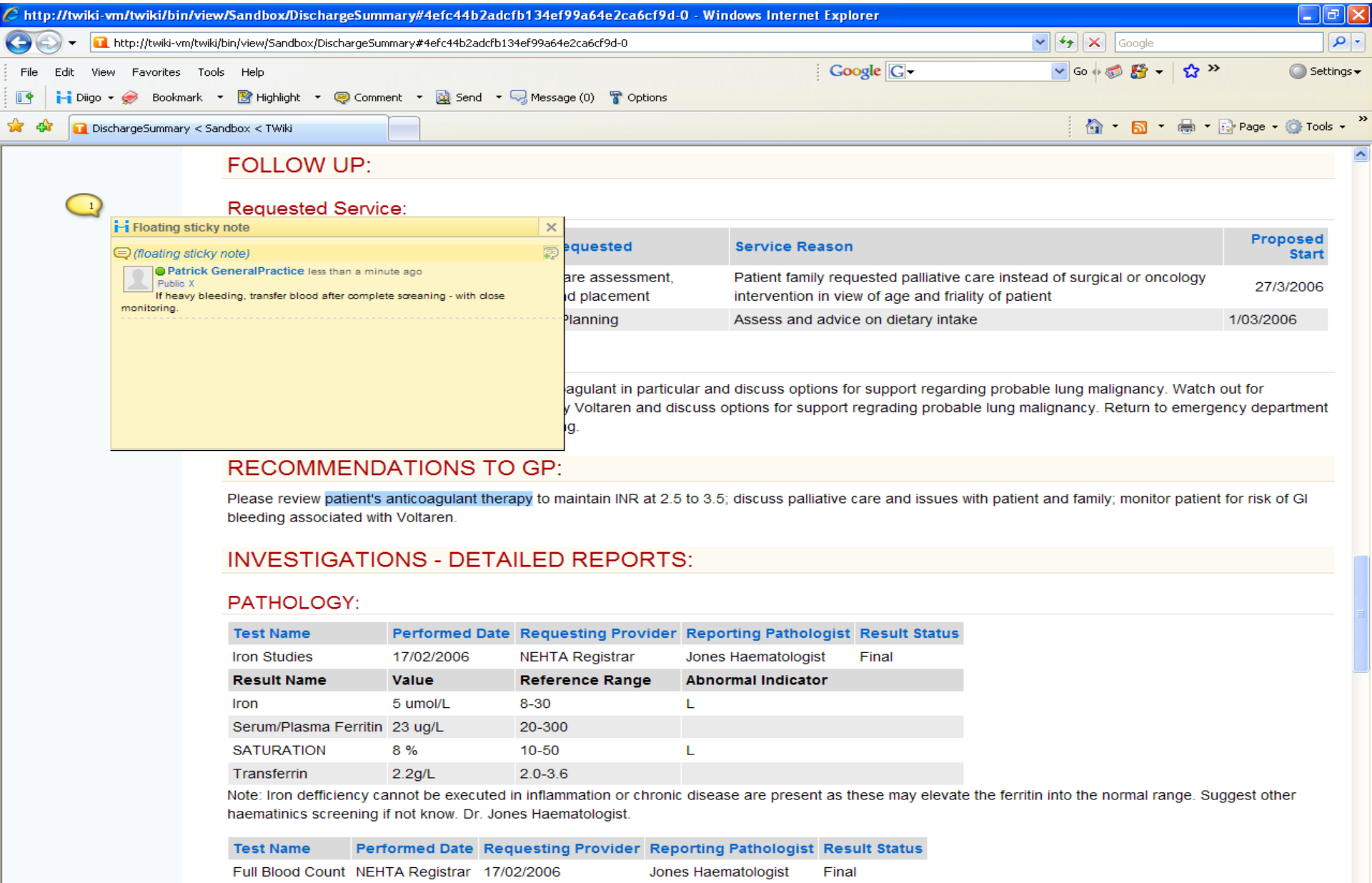
Better than a Passive Document!?

- **Web annotation**
  - online annotation associated with a Web resource (e.g. Web page)
  - a layer on top of the existing resource with a Web annotation system
  - provides private and public annotation types
  - can be used as a collaborative tool

“In-line” annotation in Wiki



“Floating” annotation in Wiki



Wiki Potential in Health Information Management

- Provides centralized **communication** and **documentation** in one location
- Can be used to provide **online/distributed collaboration**
  - Can provide **asynchronous communication** among health care providers through open editing with history
  - **Can also include *patient***
- Availability as open source software can be useful for **cost-effective development** of clinical applications

Conclusion

- Opens a new paradigm of **online asynchronous conversation rather than one-way message based communication**
- Straightforward approach for integration (easy to add “players” to the network)
  - Particular potential in NZ with established NHI and emerging HPI
  - Leaves open question of how to achieve semantic interoperability
- Can improve document with internal and external hyperlinks
  - And manage views of annotations

Ongoing Work

- Analysis of contents and layout of Electronic Discharge Summaries
- Have extracted 200 discharge summaries from North Shore Hospital, Auckland to investigate:
  - weaknesses of the current Discharge Summary documents (panel of GP, medical records and specialist)
  - improving the Electronic Discharge Summary (EDS) reading and writing process through a **hypertext** organisation
  - correspondence of EDS content to terminology in SNOMED Clinical Terms (for internal and explanatory linking)

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Te Whare Wānanga o Tāmaki Makaurau

Thank you!

Questions?

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