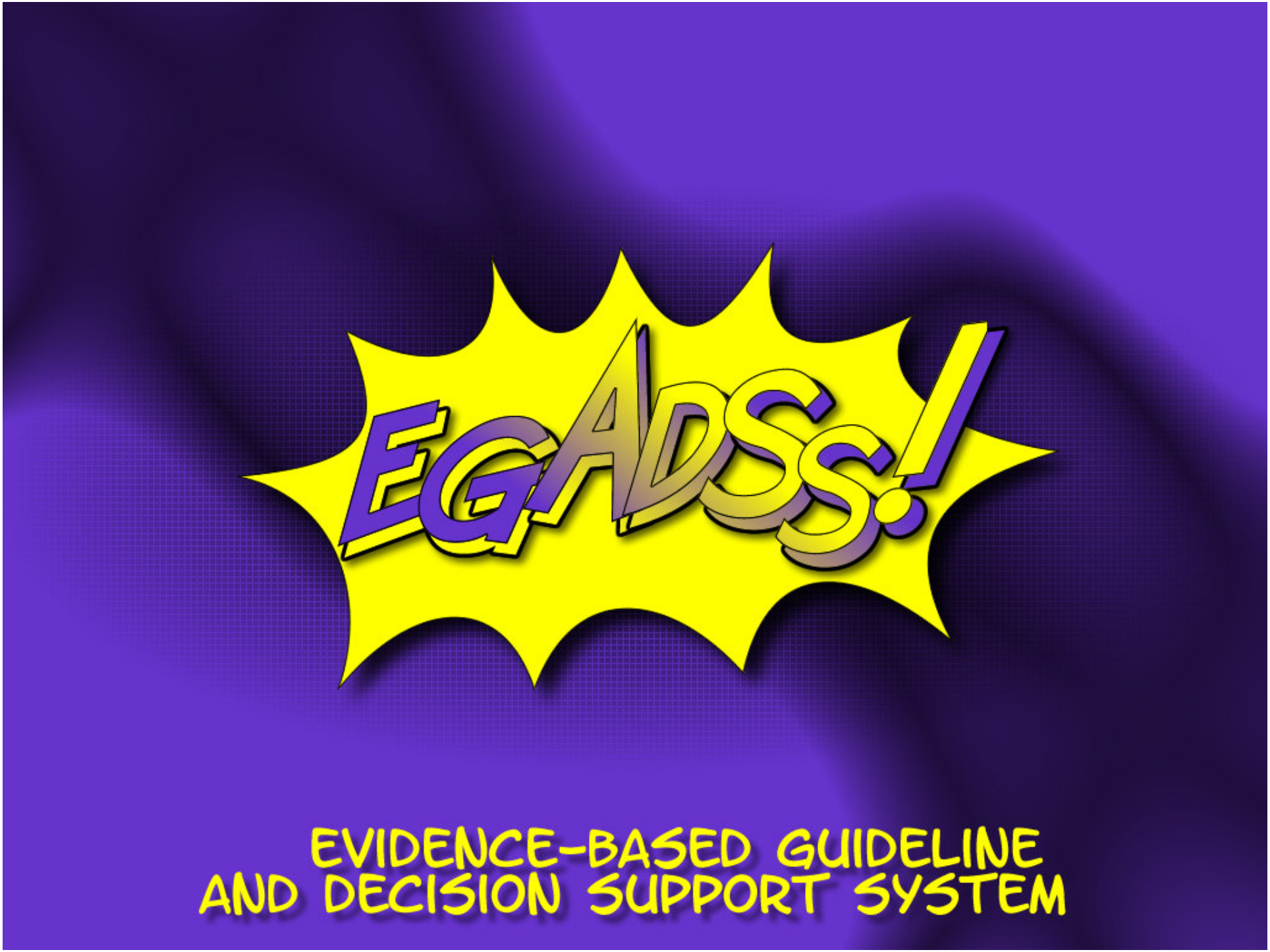

EGADSS!
EVIDENCE-BASED GUIDELINE
AND DECISION SUPPORT SYSTEM

EGADSS! It's THiNK

Morgan Price
Iryna Bilykh

UBC Family Practice and
Vancouver Coastal Health

Outline

- Introduction to EGADSS and the Team
- EGADSS Motivation
- Basic Overview
- Open Source – What is it? Why are we using it?
- A bit more on the architecture
- Challenges
- Questions

Background and Introduction

What the Heck is EGADSS?

EGADSS:

1. Evidence-based Guideline And Decision Support System
2. EGADSS is an **open source** Decision Support System that will work with **primary care EMRs**
3. EGADSS is being developed through a collaboration between **UBC Department of Family Practice** and **Vancouver Coastal Health**

Project Overview

- Supported by the Primary Care Transition Fund from May 20, 2004- Mar 31, 2006.
- Working to help EMR vendors embed point of care reminders to support improved patient care.
- Focusing, initially, on prevention.

The EGADSS Team

Core Team

- Iryna Bilykh
- Tim Cook
- Jens Jahnke
- Craig Kuziemsky
- Joel Legris
- Emma MacEntee
- Glen McCallum
- Morgan Price
- Jason Roth
- Amanda Sinclair

Collaborators

- Vancouver Coastal Health
- UBC Family Practice
- UVic Health Information Science
- UVic Computer Science
- CHIi
- NRC
- e-MS
- UNBC

A simple assumption

Is this too simple?

Perhaps it is too simple…

- Does not occur on its own very quickly
  - 17 years in some studies
- Application of knowledge is inconsistent between providers and between patients
  - Unnecessary Variety leads to poor quality

Error Rates in the US

- 44,000-98,000 deaths due to medical error each year in the U.S.
- 2.4 million prescription errors per year
  - In the state of Massachusetts
- $17 bill spent on preventable errors.

Error Rates in Canada

- CMAJ 2004 report:
  - 185,000 Adverse Events annually in hospital admissions (7.5%)
  - 70,000 of AEs were preventable
  - Over 38,000 deaths occurred

- We do not have information from outside of hospitals

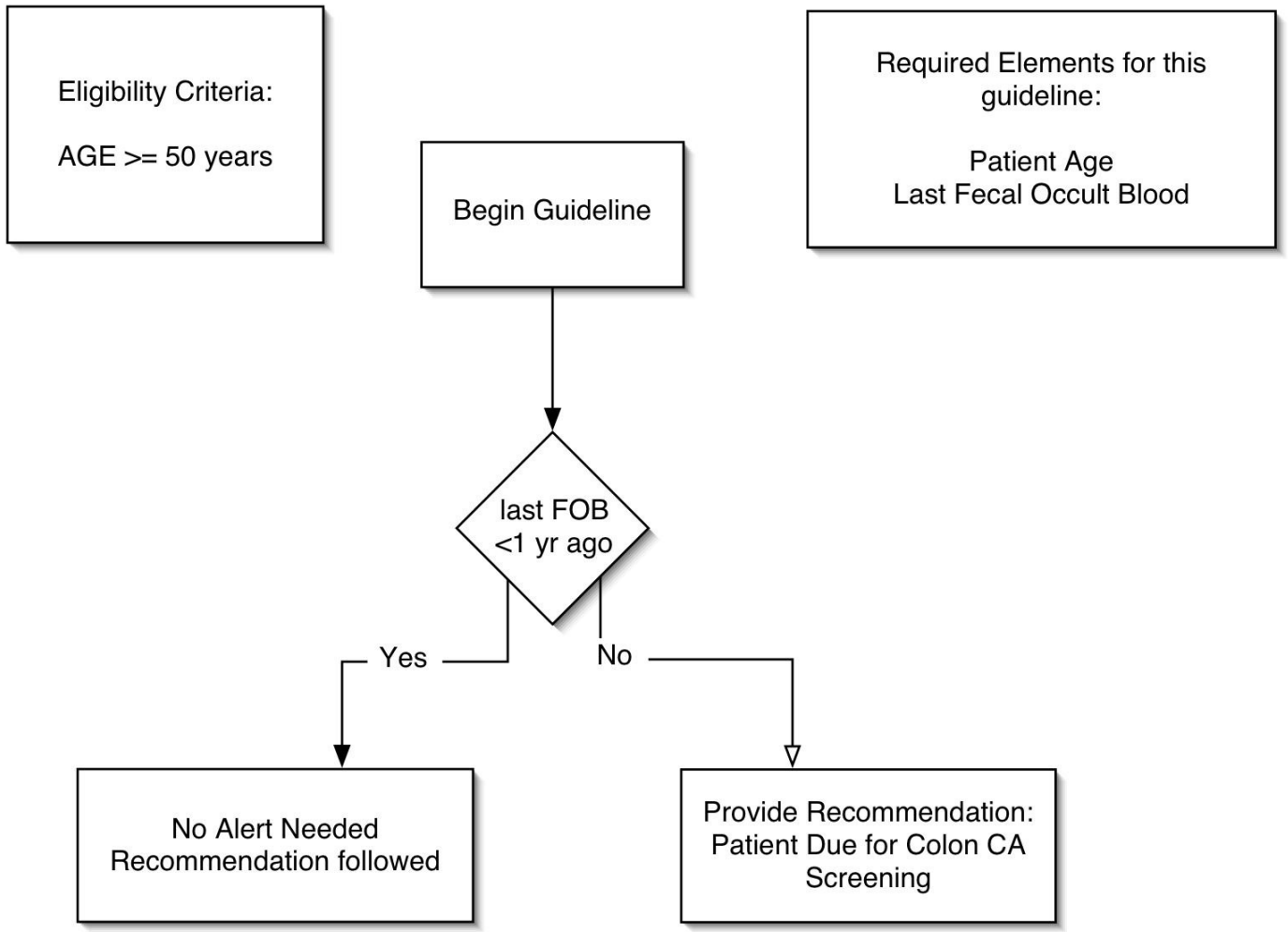
Guideline Adherence

- Studies show that adherence rates to EBM guidelines is low:
  - Preventive Guideline Adherence is around 50%
- Knowledge Translation to the rescue!
  - Studies show that patient outcomes are improved by getting the right information “to the coal face”

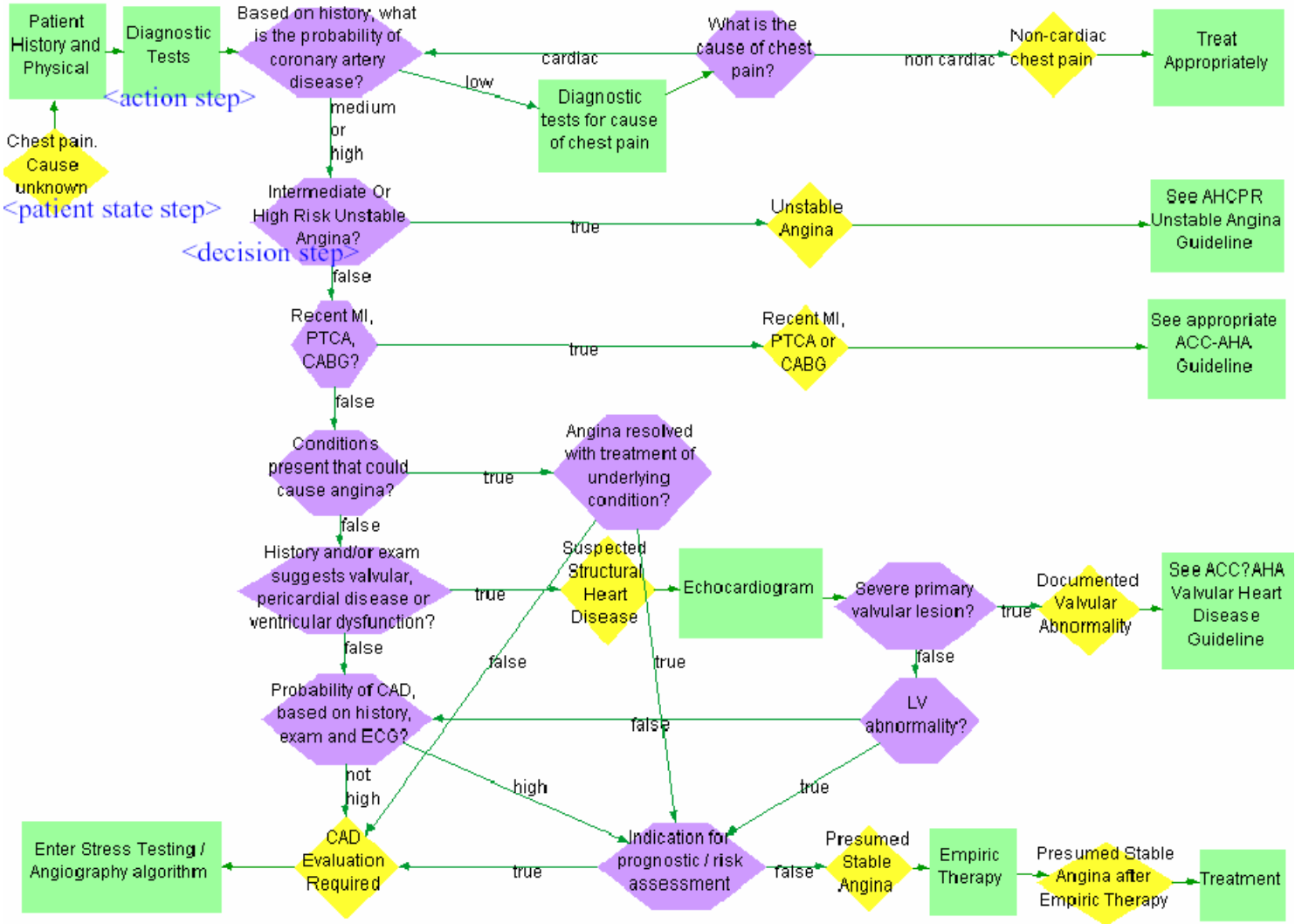
Strategies to improve EBP

- There are several strategies to improve evidence based practice.
  - Teaching vs applied practice change
- Clinical Decision Support helps providers make the most informed decisions
- EGADSS is focusing on:
  - Point of Care Tools / Reminders
  - Point of Reflection Tools / Recalls

A Very Simple Guideline



Very Complicated Guideline



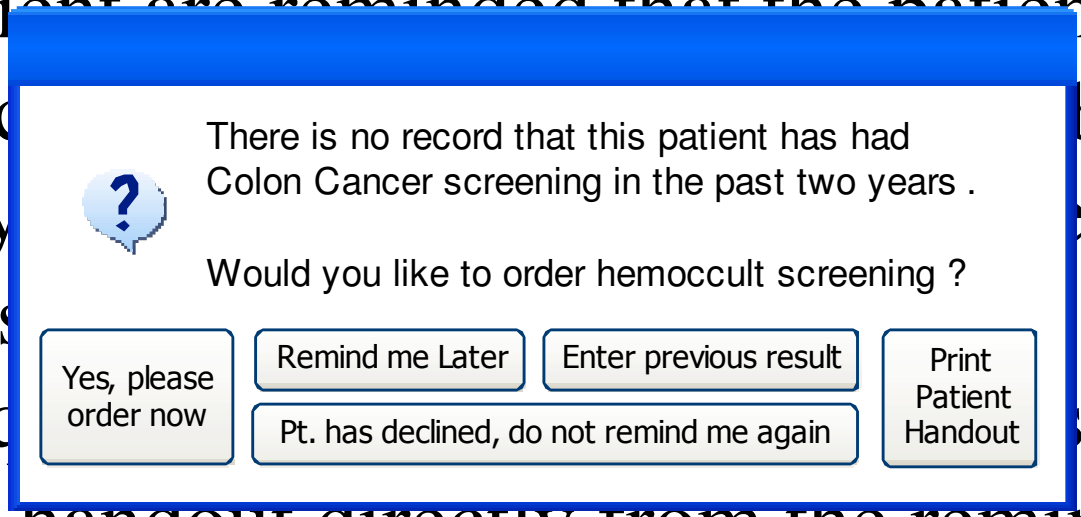
Clinical Reminders

- Reminders seem to be part of the answer to improving care, particularly if they are
  - Patient specific
  - At the point of care
  - Embedded into workflow
  - Provide the user some evidence and rationale

“Point of Care”

Point of Care

At the beginning of the encounter, the MD and patient are reminded that the patient should be sc been over 2 y patient asks answers the c a patient handout directly from the reminder.

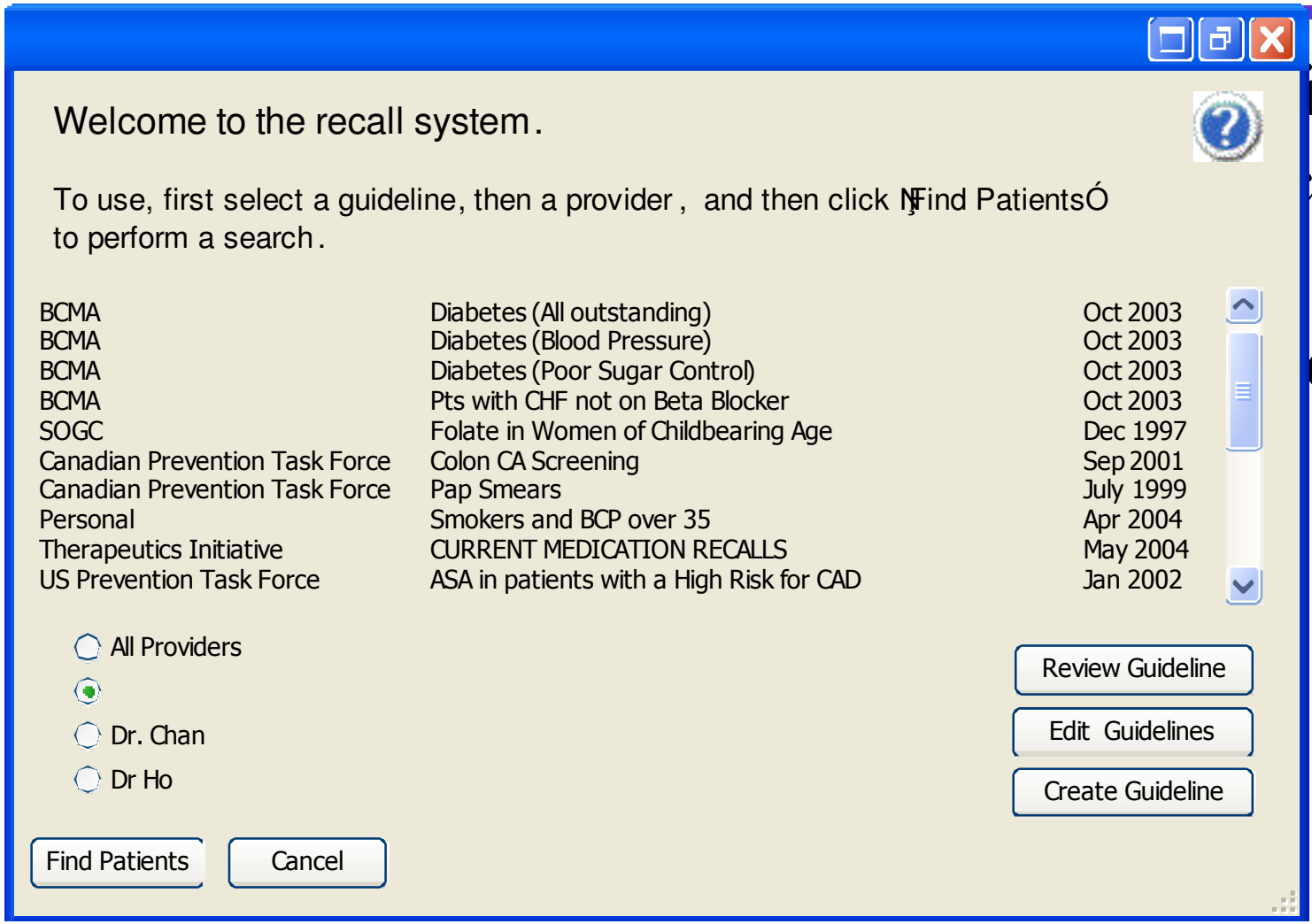


Reviewing Practice Population

- Providing tools to support active practice improves care further
- Proactive Practice includes the ability to assess your patient populations AND make actions based on that information
  - E.g. Recalls for follow up

“Point of Reflection”

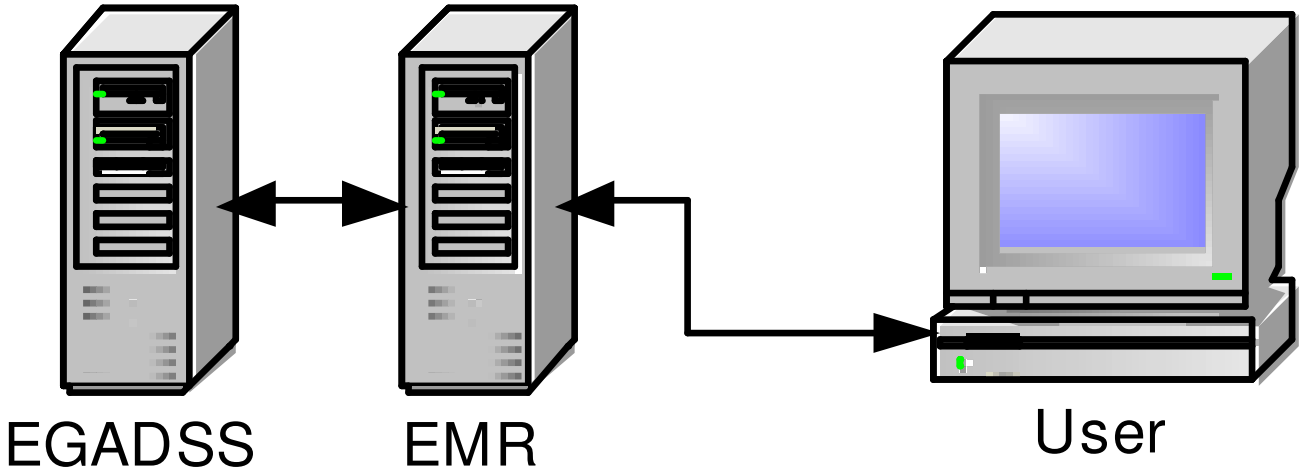
Point of Reflection



Initial Goals and Objectives

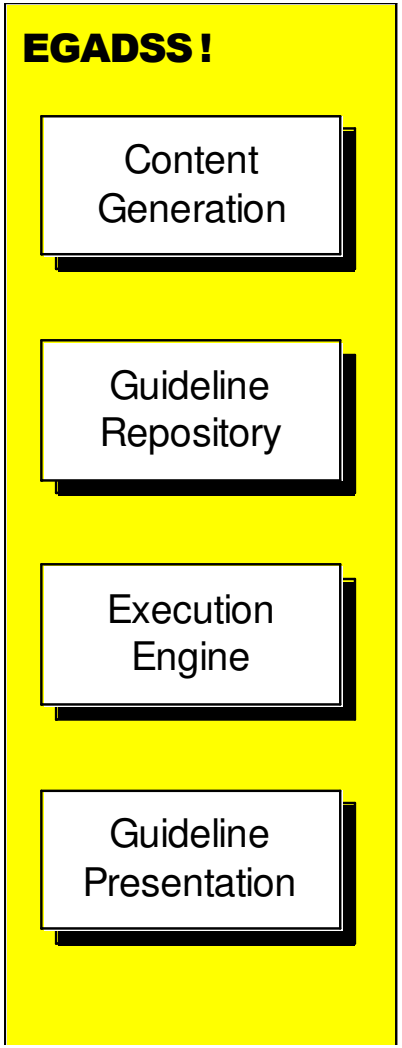
- To **pragmatically create an extensible framework** and usable **prototype** for clinical guideline alerts and recalls for primary care.
- To develop a tool for **decision support** that will **support the practitioners** in the VCH Practice Networks
- To develop a tool for decision support that can also **support research.**
- **Work with stakeholders** such as EMR vendors / health authorities / BC Ministry of Health and Infoway to ensure that this system will be used.
- Promote the adoption of **Clinical Data Standards** and **Quality Improvement**.
- **Evaluate** the impact of the system to care delivery.

The basic EGADSS design



- EGADSS would be a standalone system that interacts with EMR through messages.

Design Considerations



- Need an easy way for content contributors to add content
- Central location for guideline repository than can be self replicating to local servers
- Need to consider what types of guidelines and presentation there will be
- Keep the components highly modular and loosely coupled

Some Design Decisions

EGADSS! Is Open Source

What is Open Source?

- It is a License
  - GPL, APL, BSD and others
- It is an Approach
- It is a Community

Where has Open Source Succeeded?

- Software development through the 60s-70s
- More recently, it succeeds with:
  - A technical user community
  - Service oriented business model
  - Sharing of resources benefits all (components)
- Examples:
  - Linux, Apache, Apple

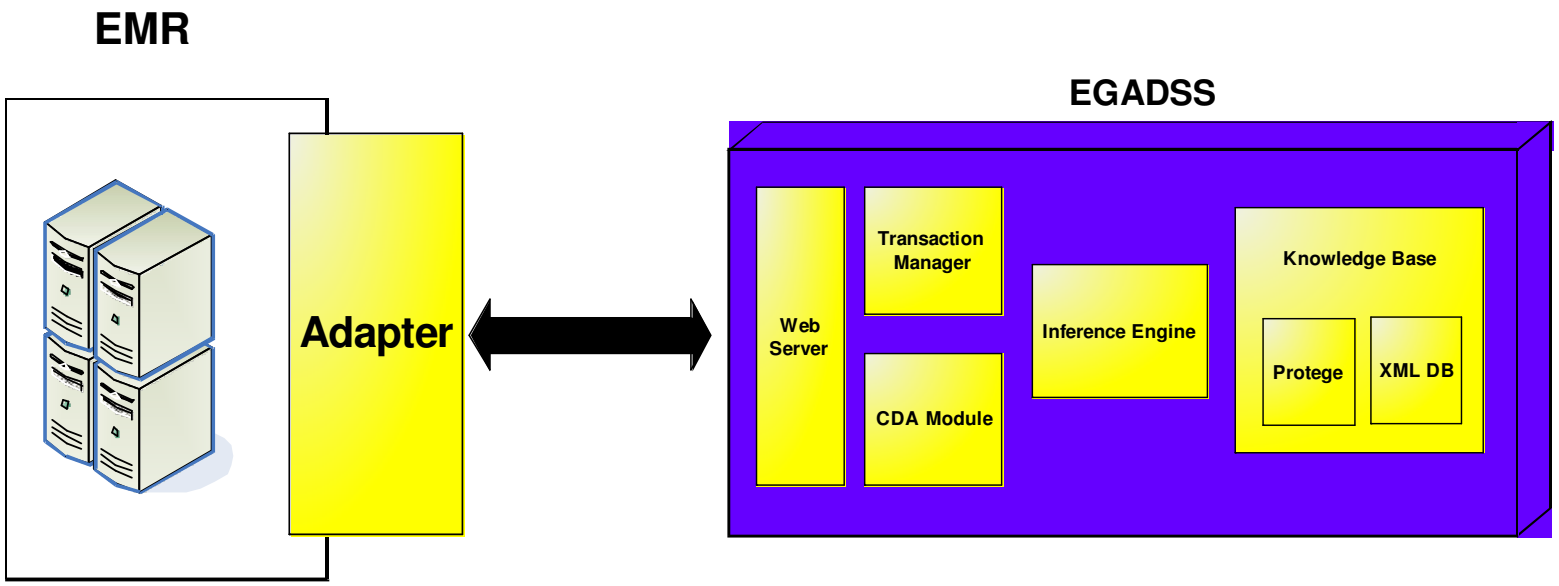
How does Open Source help EGADSS?

- Additional licensing cost to vendors / practitioners is not acceptable
- Sustainability
  - A community is able to sustain development
  - This applies to content as well as code
- Users can apply work into new areas such as
    - Research Networks
    - Personal Health Records

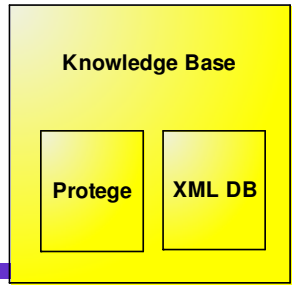
More Detailed Design

EGADSS Architecture

- Open (egadss.org)
- Stand-alone
- EMR agnostic and interoperable
- Standards-based
- Component-Based
- Service-Oriented


EMR
Adapter
EGADSS
Web Server
Transaction Manager
CDA Module
Inference Engine
Knowledge Base
Protege
XML DB

Knowledge Base



- Repository of Clinical Practice Guidelines
  - Guideline Interchange Format (GLIF)
- Protégé Knowledge Management Environment
  - Modeling
  - Testing
  - Validation
  - Versioning
- Persistent XML Database

Inference Engine

- Core EGADSS Component
- Guideline Execution Environment
  - decision algorithms
  - medical knowledge
  - specific patient data
- OpenClips Implementation
  - CLIPS-based
  - forward and backward chaining

Clinical Document Architecture (CDA) Module

CDA Module

- Document Creation
  - structuring clinical information as XML documents
- Document Validation
  - structural and semantic validation
- Document Conversion
  - data model conversion: CDA/Inference Engine and vise versa

Transaction Manager

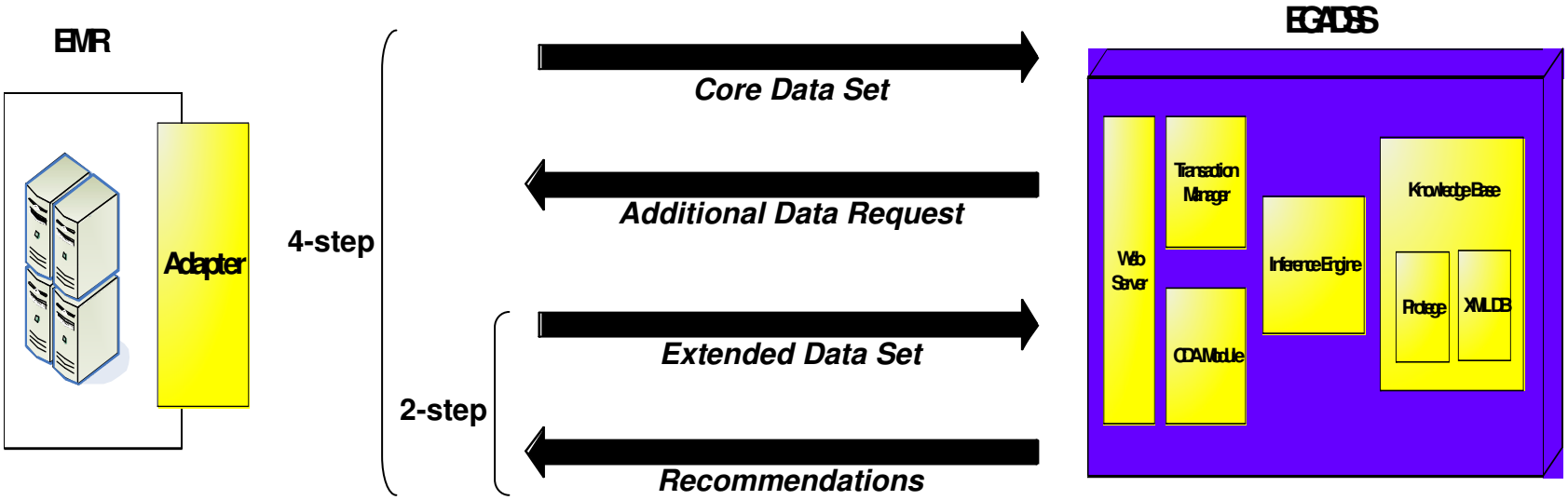
Transaction Manager

- Transaction Definition
  - allowed communication sequences
  - business process rules
- Transaction Validation
  - coordination of operations across Web Services
  - integrity of transaction

Web Server

- Communication Mechanism
  - abstraction layer (platform & language transparency)
  - vendor-agnostic communication interface
  - session management
  - security

Communication Pattern




EGADSS!
EVIDENCE-BASED
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SYSTEM

Challenges

Implementation Challenges

- Clinical Document Architecture
  - CDA Templates derivation
  - lack of related work
- Guideline Encoding
  - GLIF limitations
- Lack of Standard Medical Vocabularies in Canada
  - UMLS integration
  - SNOMED licensing

Guideline Challenges

- Encoding
  - Labor Intensive
  - Lack of Expertise
- Sharing
  - Localization
  - Organizational Issues
- Adoption
  - EMR Evolution
  - Clinical Change Management
- Maintenance
  - Versioning

Sustainability Challenges

- What happens when the grant ends?
- Will there be enough evaluation of the impact of DSS in care to support further development?

Approach to the Challenges

- Standard Encoding
- Sharing
  - Open Content with appropriate localization
- Develop a Community of Trust
  - For Content
  - For Development
- Evaluation
  - Impact of using the system

Summary

- EGADSS is a new open source project that is a tool to support improved delivery of high quality primary care through the development of point of care decision support.
- We have already begun to generate interest from Government, Academia, Vendors, and the open source community.
- Decision Support is a challenge with many unknowns and we are beginning to explore those.

Any Questions?

Slides, Documents, and source code available at

www.egadss.org

Please visit and get involved

Informatics Training Opportunity

- On your tables you will find a description of CHPSTP
- This is an opportunity for Practitioners to explore Informatics Training / Research in conjunction with the CIHR PhD/Post Doc training program.
- Limited number of spots, beginning in Jan 2005.