# "Clinical Decision Support Standards and Systems - Local Implementations"

**Martin Entwistle**
**Chief Executive Officer**

ENIGMA

Architects of Online Health Knowledge
for
Clinical Decision Support

## Creating Effective Decision Support Knowledge

- New Zealand has an increasing number of government driven clinical knowledge management projects
  - NZGG
  - ACC Treatment Profiles
  - Elective Services Primary Management / Referral Guides
  - Condition specific projects; Diabetes, KidzLink
  - DHB Initiatives; Disease Management, Physician Order Entry
  - IPA Initiatives; Disease Management
- The goal is to ensure quality content generation which is widely available, delivered locally and effects improvements in clinical outcomes



## Integrated Clinical Decision Support – Key Issues

- Centralised or Distributed Knowledge Management
  - Centralised creation of a definitive guideline or protocol – adapted from international guidelines or created de novo from evidence
  - Allow localisation of defined aspects, eg implementation
  - Distributed editing can share workload – but standards must be maintained; version control, authorised editing
- Centralised or Distributed Knowledge Delivery
  - Distribution of clinical rules / knowledge is not sustainable
  - Hard to ensure consistent standard
  - Knowledge is dynamic so could require update at any time
  - Centralised 'server' which allows widescale access
  - Required continuous online access by PMS



## Case Study – Elective Services Referrals Project

- Content Generation and Clinical Governance
  - 29 national guideline working groups, Referral, Prioritization
  - 80+ local clinical working groups care pathways design
  - Joint MoH/IPAC guideline implementation project; 16 DHB's supported by facilitator
- Centralized Guideline Server
  - Manages and delivers content
  - Handles common core guideline
  - Localizable for 21 hospital groups, 29 service and ~500 conditions
- Pilot fully integrated decision support / electronic referral in 2 localities
  - 8 OBGYN conditions



## Case Study – CVD Project

- Implementation of multiple guidelines for CVD
  - Dyslipidaemia
  - Hypertension
  - Diabetes
- Decision making at the point of care
- National guideline existed
- "Governance group" created a scenario-based set of cases
  - GP, Specialists, MoH, NZGG, NHF
  - Translated into Predict system for execution
  - Integrated with MedTech32 (Prompt)
  - Integrated with Counties Manukau integrated care server (ICS)
- Cases available for localisation



## PREDICT™ Decision Support System – Scenario-based Guideline Execution

- Innovative decision support platform applicable to a wide range of diseases and conditions
  - Scenario-based model
  - Clinically focussed solution – empowers practitioners
  - Delivers patient-specific clinical management recommendations for patient-centered decision support
  - Adds value to existing investment in guidelines and information systems
  - Tools to enables management of local guideline content
- Fully integrates with third party EMR information systems to maximise reuse of existing data
- Uses open standards; HL7 for guideline structuring / messaging and eg ICD9, CPT coding etc
- Generates powerful outcomes data for population health planning, audit and epidemiology
- Targets organizations delivering care for defined populations
  - EMR based systems, investing in EB care and guideline content focus on advanced disease management

## PREDICT™ Delivers

- Knowledge Management
  - Clinical best practice pathways adapted for local conditions
  - Delivered advice at the point of care
  - Simplify ongoing updates and maintenance
  - Doing the Right Job & Doing the Job Right
- Systems Integration
  - Maximise use of clinical data
  - Right knowledge, right place, right time
- Integration of Care
  - Co-ordinating Effort, Optimising Resources
  - Drives clinical behaviour change
- Reproducibility
  - System can handle varied conditions and clinical situations

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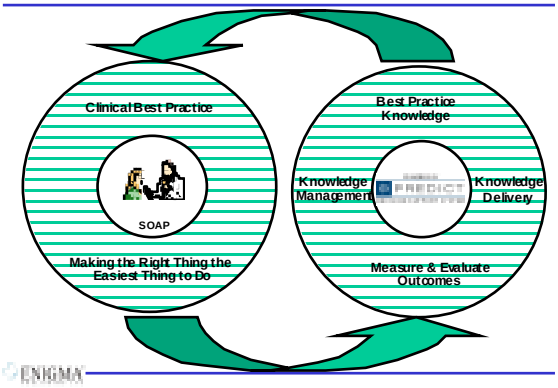
## PREDICT™ - Getting Knowledge into Practice

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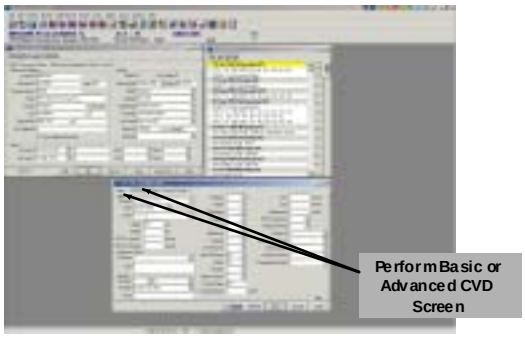
## PREDICT™ - Fully Integrated with MedTech32 EMR

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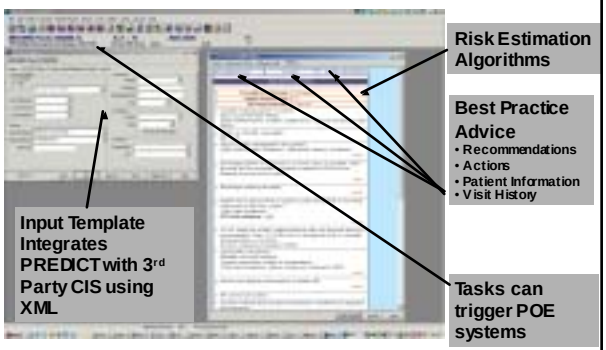
## PREDICT™ – Integration Features

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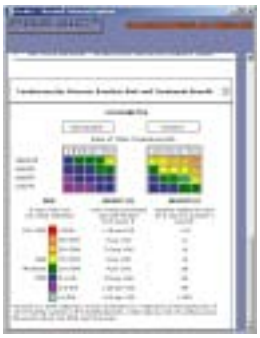
## More Detail: Patient Information



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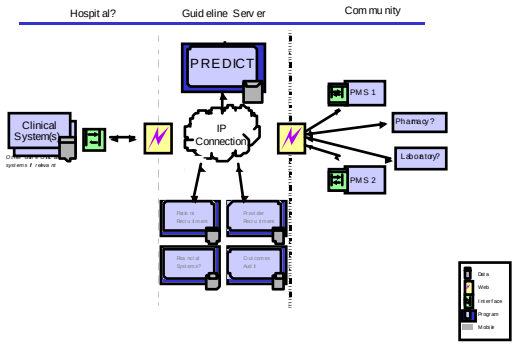
## PREDICT Integrated with Other CIS

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## PREDICT Technical Advantages - Summary

| Technical Requirement | Existing Solutions | PREDICT™ |
|---|---|---|
| Patient specific advice delivered in real time | Rules represented as algorithm or logic embedded in existing clinical information systems provides limited scope to handle clinical complexity or patient specificity | Scenario-based methodology delivered from a true clinical decisions support application |
| Scalable solution for multiple diseases / conditions | Not achievable with rules hard coded into application | Architecture designed to provides scalability and flexibility |
| Facilitates the translation of a clinical guideline into clinical rules supportable by clinical applications | Requires translation of clinical information into logic statements. Very few people have the skills to do this | Clinical scenarios written in natural language and provide a easily understood method for translation |
| Able to handle the wide range of clinical knowledge required for effective decision making | Not achievable | Key feature of the application |
| Single point of access for clinical knowledge management and real time updating | Not provided and updates need to be distributed in application updates | Key feature of the application. Updates available to all users as soon as editorial changes made |
| Empowers end-users to maintain content | Not provided | Achieved through user-friendly editorial tools |

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## PREDICT™ - End User Profile

- PREDICT is of interest to a variety of organisations responsible for the delivery of health care to defined populations: IDNs, HMOs, PPOs, IPAs, Hospital Groups, Government Agencies, etc.
  - In use with significant primary / secondary providers
  - It has been used to support the management of a number of important conditions including:
    - Cardiovascular disease screening
    - Diabetes disease screening
    - Cardiac surgery risk management tools
    - Injury rehabilitation claims management
    - Primary – secondary referral management
- US Status
  - Signed deal with Medical Society of the County of San Diego – diabetes disease management
  - Signed evaluation agreement with Massachusetts General Hospital, LCS
  - Pilot discussions with Kaiser Permanente
  - Co-development agreement with Micromedex
- Australian Status
  - Pilot program discussions with 2 divisions of General Practice
  - Application to Workcover

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## Issues for Content Creation and Management

- Support for Content Management / Information Systems
  - Redevelopment of primary care management guidelines into web enabled, database managed decision support tools Management / structuring of guideline content
- Support for Integration with CIS
  - Explicit "rules" for clinical management and referral
  - Centralized "guideline server" delivers full guideline or patient specific clinical recommendations
  - Facilitate messaging and workflow management
- Follow open system principles and comply with national standards
  - HL7, CPT, ICD 10 etc

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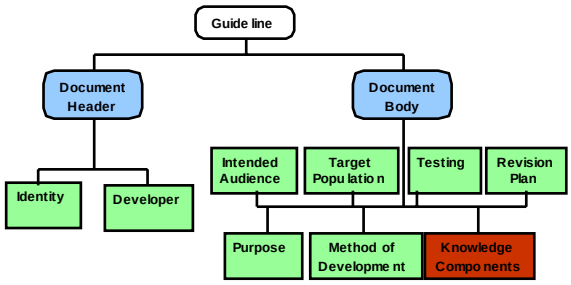
## Architecture Extensible to Handle Functional Requirements

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## Practical Example - Referrals Protocols


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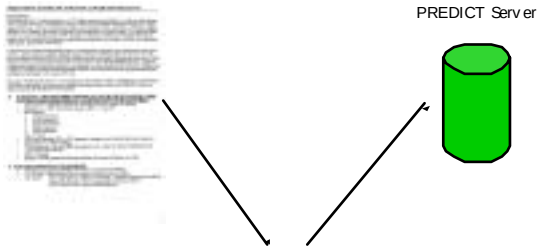
## Guideline Translation

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## PREDICT Architecture Facilitates Editorial Processes

- Ensures structure is an inherent part of the content creation process
  - Enables end-user to create scenarios and matching recommendations
  - Avoids writing logic strings
- User Friendly; little opportunity for error and low support needs
- Available Online to ensure version control, compliance with architecture and co-ordination of activity
  - Enable distributed editing to meet capacity and local variation need
  - Facilitates localization
  - Provides editorial authorization, version control, roll back

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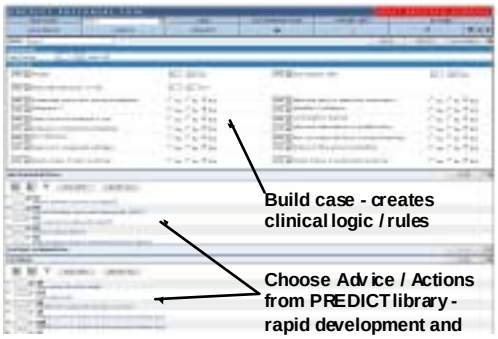
## PREDICT™ Editorial Tool – Rapid, Flexible Content Management

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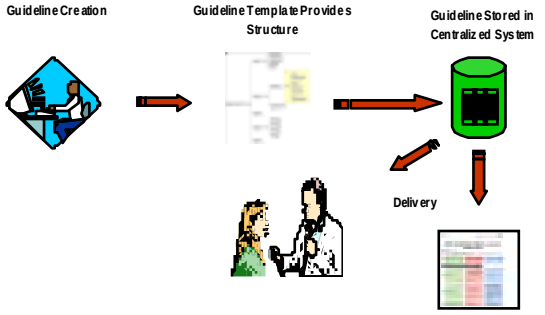
## Content Management - Translation

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## Issues - Management and Governance

- Guideline / Evidence Issues
  - Gaps and logic conflicts
- Guideline Translation
  - Technical – Critical Determinants and Knowledge Components
  - Efficiency / Workflow / Skills
- Governance / Management
  - Governance Group – oversight and direction
  - Clinical Quality – sign off on clinical knowledge, rules and guideline localisation
  - Clinical Project Management – co-ordination
  - Training
  - Content management and editorial
  - Technical implementation and ongoing support

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## Availability of Definitive Content

- Alternative processes appear necessary
- Definitive guideline(s) exist
  - Identification of the Critical Determinants from available content
- Definitive guideline(s) don't exist
  - Identification of the Critical Determinants from list of relevant actions
- Gaps and conflicts frequently exist
  - Early and ongoing identification
  - Scenario model is of significant assistance – think of real world cases

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## Use Cases – Implementation of the HDF

- Identified the importance of Use Cases
- Significant assistance in developing scenarios
- Significant assistance in training people to think in scenarios
- Critical to quality assurance
  - Assistance in identification of gaps and conflicts
  - Within the content management / delivery system
  - For third parties where "rules" may be exported and re-used
- Developed the concept of clinical vignettes – pictures of patients
- Developed a vignette construction / testing system
  - Centralised development, feedback and implementation

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## What We Have Learnt!

- Importance and value of standards
- Importance of process
- Importance of buy-in
- Constructs and importance of knowledge architecture is hard to grasp
- Even with standards there are major issues in guideline translation due to "gaps" in knowledge
- Ensuring a manageable process is critical but elusive
- Nonetheless the goal of knowledge at the point of care is demonstrated to be achievable today
- HDF has been of assistance in the development of the overall solution and its sub-elements, eg scenarios

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