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Reusable Functionality Framework for Authoring Clinical guideline tool

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Outline

- Introduction on clinical guidelines
- Guideline development process
- How are guidelines being used?
- Challenges
- Main Goal

Clinical guidelines

"Systematically developed statements to assist practitioner and patient decisions about appropriate healthcare for specific circumstances" [1]

Recommendations:

- Policy makers
- Healthcare providers
- Patients

[1]: M. J. Field and K. N. Lohr, Clinical Practice Clinical guidelines:: Directions for a New Program vol. 90: National Academies Press, 1990.

SIGN guidelines

- Selection of topics
- Patient involvement
  (How to keep track of feedbacks?)
- Compose the development group
- Systematic literature review
  (tools to support this process?)
- Formulating recommendations
  (How about contradictory recommendation?)
- Peer review
- Presentation and dissemination (electronic publishing helps?)
- Implementation

SIGN guidelines

- Development:
  - Multidisciplinary, nationally representative groups

    SUPPORT COLLABORATION

  - Critically appraise the evidence

    TRACK OF CHANGES AND COMMENTS

  - Recommendations are explicitly linked to the supporting evidence.

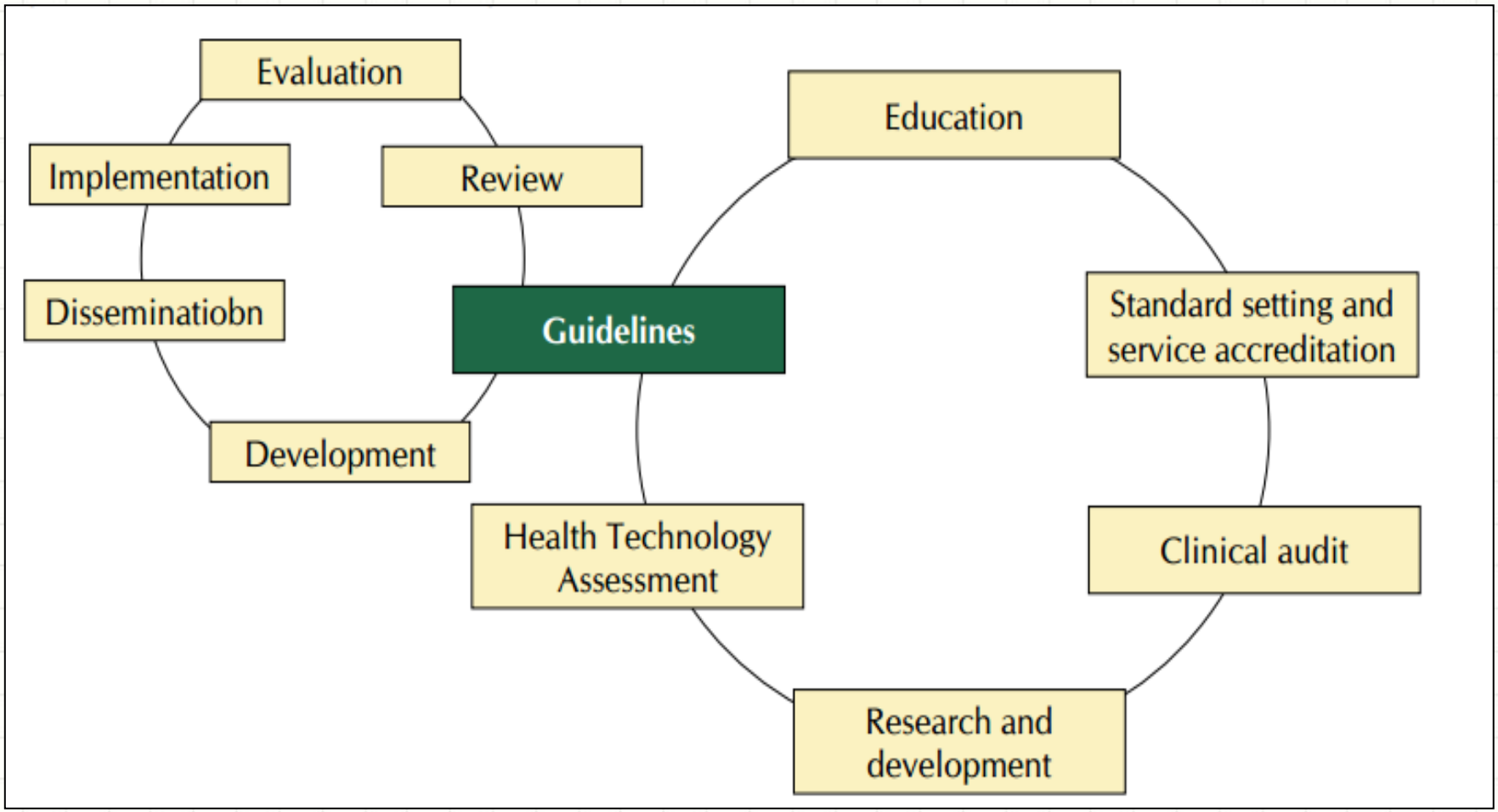
    REFERENCE TO EVIDENCE

SIGN guidelines

- Patient and populations:
  - Neonates <1 month
  - Infants up to 2 years
  - Pre-school children aged 3-5 years
  - Children aged 6-12
  - Adolescents 13-18 years
  - Adults 19-45 years
  - Middle aged 46-64
  - Aged 65-79 years
  - Elderly 80+years

What about patients with multiple comorbidities?

Guideline and audit cycle (SIGN)



Time table for Guideline development (SIGN)

- Prepare group and finalise remit: 3 months
- Literature search and appraisal: 10 months
- Draft guideline: 5 months
- Peer review: 10 months
- Final editing: 2 months

Total: 28 Months

What about update and maintenance process?

How do primary care physicians seek answers to clinical questions?

- 1992- 2005
- Average time spent to search on paper or consulting colleagues:

  less than 2 minutes

- Average time spent per search:

  12 minutes

  mainly 2 sources

  Less use of electronic sources and library facilities

How do primary care physicians seek answers to clinical questions? A literature review, Herma C. H. Coumou, MD, PhD and Frans J. Meijman, MD, PhD, J Med Libr Assoc. Jan 2006; 94(1): 55–60

What are the issues?

- Guidelines characteristic
  - Easy to understand
  - Require less specific resources

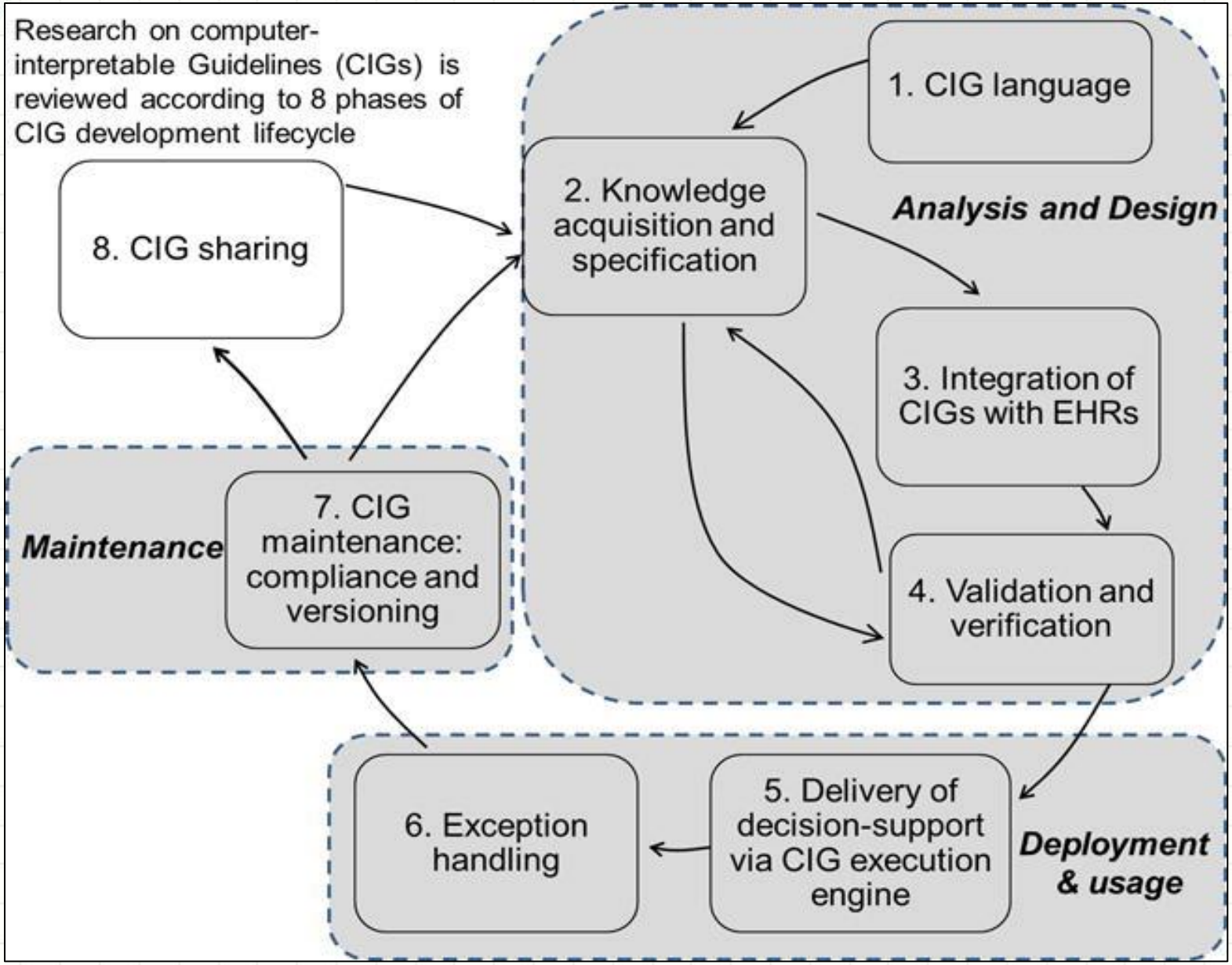
- Existence of the required information
- Patient characteristics
- Sufficient time

Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review
Anneke L Francke[*], **Marieke C Smit**, **Anke JE de Veer** and **Patriek Mistiaen**

Access to the relevant recommendation

- Where to find relevant information?
- How fast is the access to the relevant recommendation?
- How to combine the available recommendations with patient data (EHR)?
- How to combine recommendations for comorbid patients?
- What about contradicting recommendations?

Formalizing Guidelines



Issues related to formalization of GLs

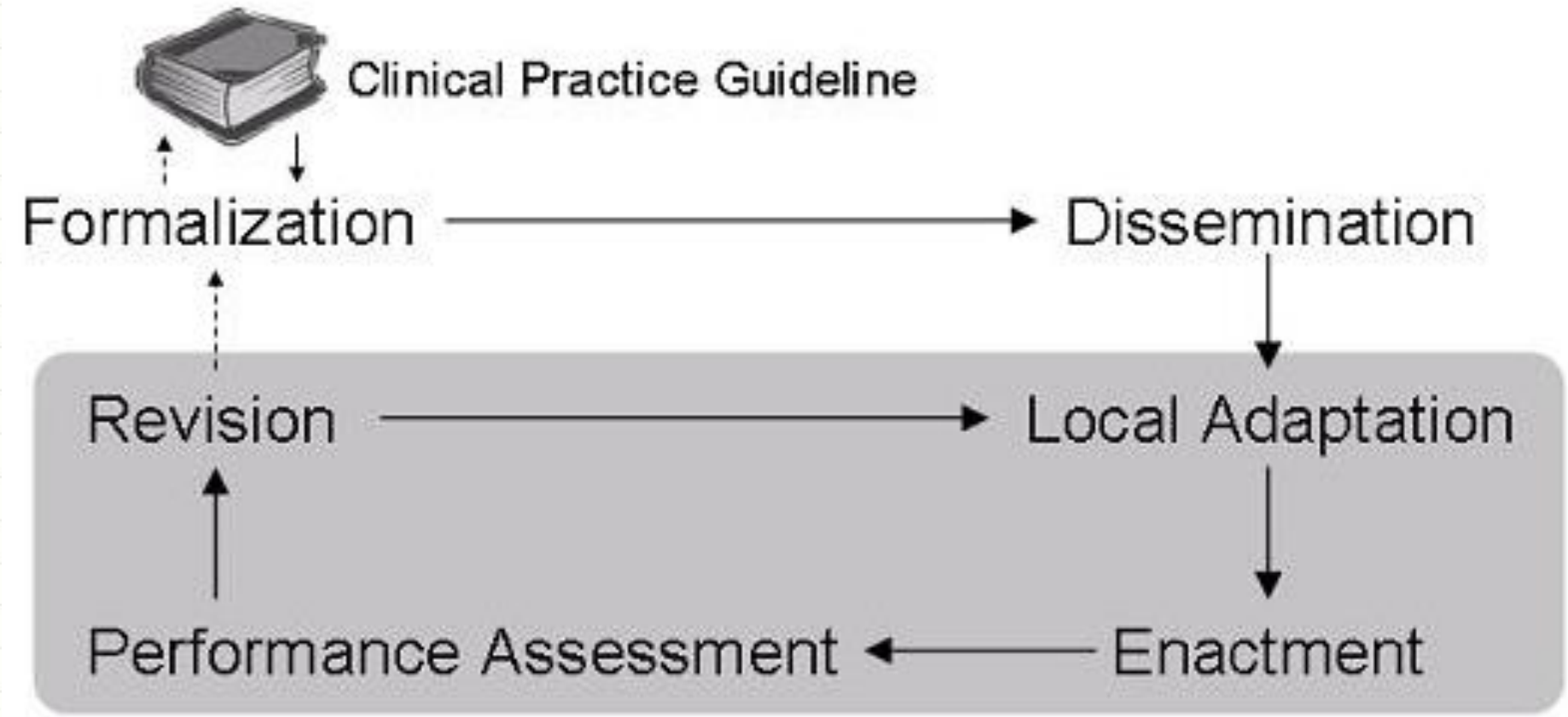
- Is not straight forward

  The knowledge in GLs

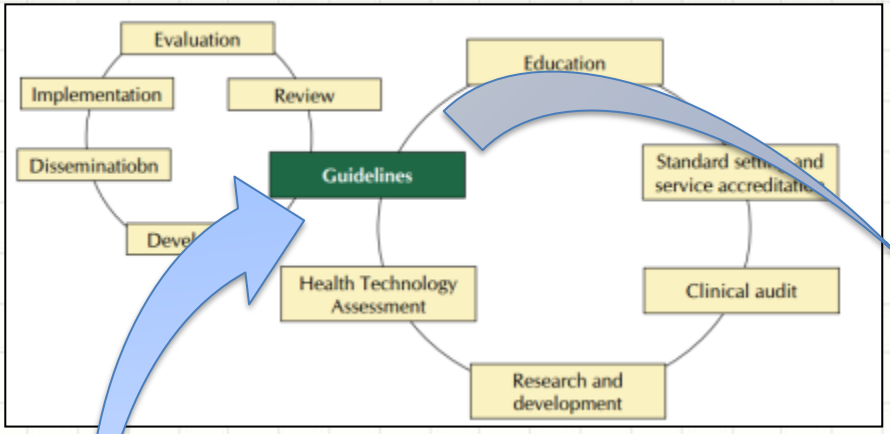
  - Is implicit
  - Is not formal

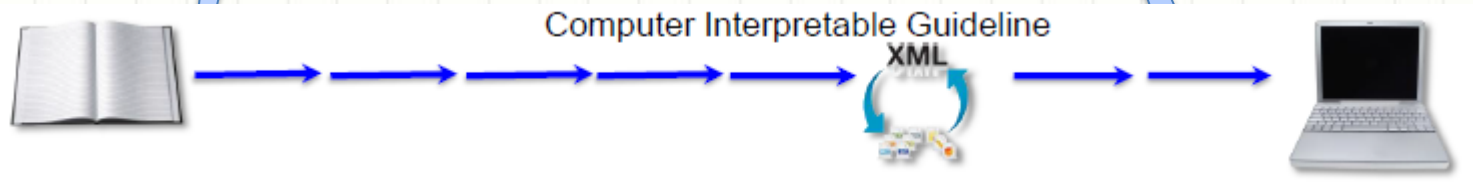
- Encoding process is
  - Labor intensive
  - Time consuming
  - Highly dependent on the encoder

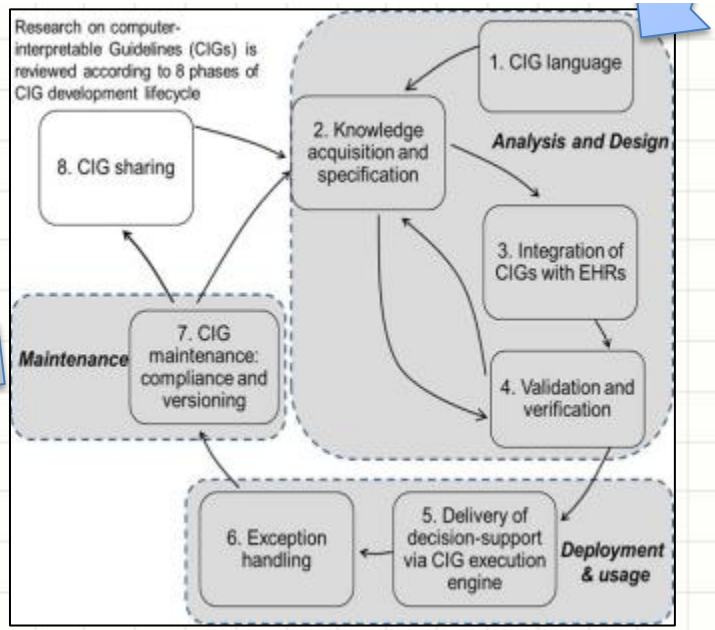
- No standard method or tool


Clinical Practice Guideline
Formalization
Dissemination
Revision
Local Adaptation
Performance Assessment
Enactment


Link to original GLs
Validation/ Verification
Consistency checking
Different level of abstraction
Link to GL source
GL repository
Document management
EHR
Standard terminology
Controlled terminology
Security issues
Clinical information system
Clinical workflow
Graphical editor


Evaluation
Implementation
Review
Education
Disseminatiobn
Guidelines
Standard setti and service accreditati
Devel
Health Technology Assessment
Clinical audit
Research and development


Computer Interpretable Guideline
XML


Research on computer-interpretable Guidelines (CIGs) is reviewed according to 8 phases of CIG development lifecycle
1. CIG language
2. Knowledge acquisition and specification
Analysis and Design
8. CIG sharing
3. Integration of CIGs with EHRs
Maintenance
7. CIG maintenance: compliance and versioning
4. Validation and verification
6. Exception handling
5. Delivery of decision-support via CIG execution engine
Deployment & usage

Encoding issues

- clinicians are not familiar with the guideline programming languages
- Encoding needs knowledge in medicine
- Semantic of guidelines need to be understood

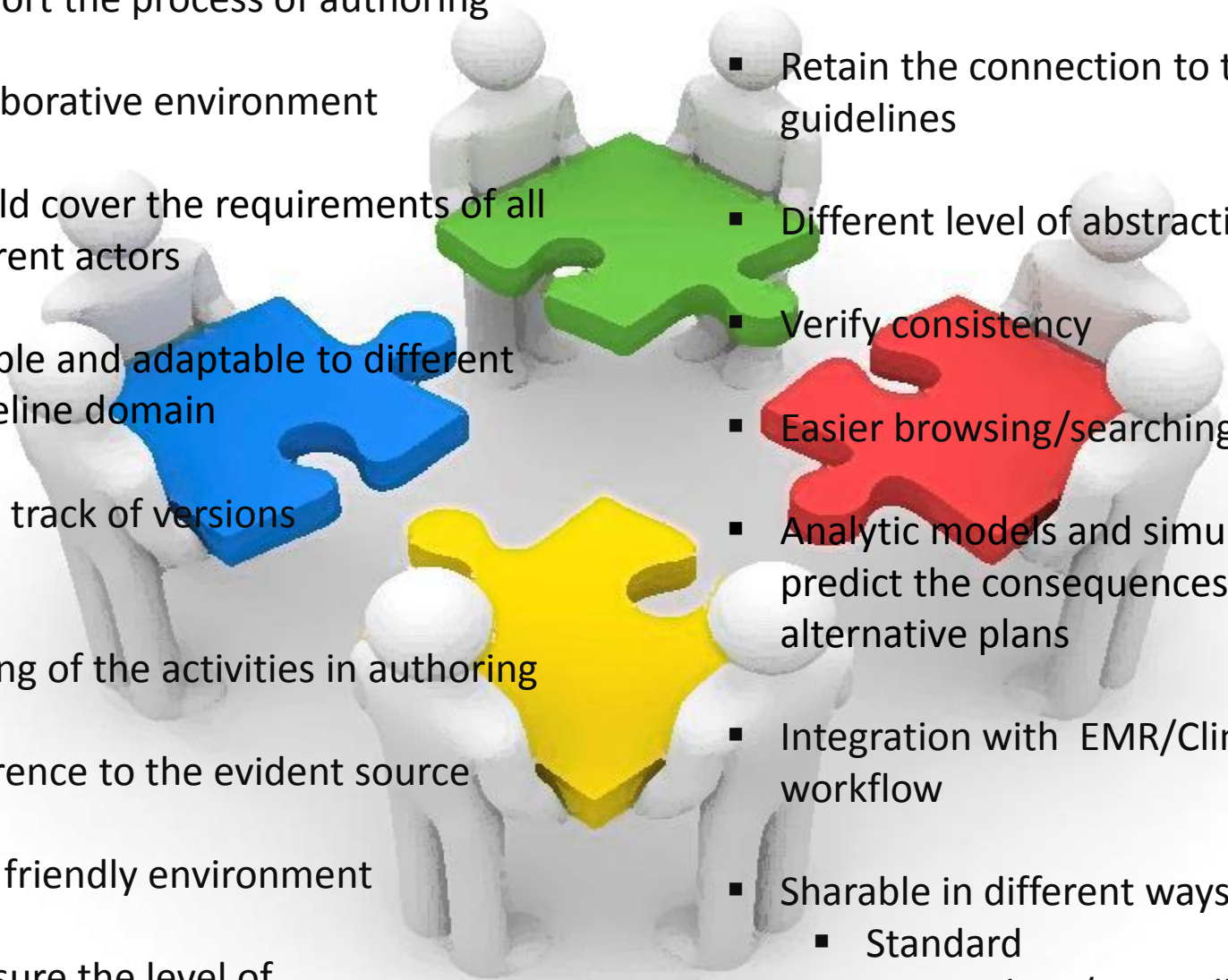
Research Objective

- Stakeholder's requirements
  in the authoring process
- with respect to formalization process of guidelines

To develop a reusable functionality framework

Author's perspective

- Support the process of authoring
- Collaborative environment
- should cover the requirements of all different actors
- Flexible and adaptable to different guideline domain
- Keep track of versions
- Tracing of the activities in authoring
- Reference to the evident source
- User friendly environment
- Measure the level of implementability



Computer scientist's perspective

- Retain the connection to the original guidelines
- Different level of abstractions
- Verify consistency
- Easier browsing/searching/indexing
- Analytic models and simulations to predict the consequences of alternative plans
- Integration with EMR/Clinical workflow
- Sharable in different ways
  - Standard terminology/Controlled vocabulary

Where are we?

"I conclude that though the individual physician is not perfectible, the system of care is, and that the computer will play a major part in the perfection of future care systems."

Clem McDonald, MD NEJM 1976