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Integrated Information System for Multi-criteria Management of Orthopedic Infections

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Publication date: 2012

Document Version
Publisher's PDF, also known as Version of record

Link to publication

Citation for pulished version (HARVARD): De Nizza, D, Ortiz Vega, JJ, Meurisse, H & Schobbens, P-Y 2012, 'Integrated Information System for Multicriteria Management of Orthopedic Infections'.

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Download date: 28. Oct. 2024



Integrated Information System for Multi-criteria Management of Orthopedic Infections



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Motivating Context

Orthopedic Infections Diagnosis

Complex

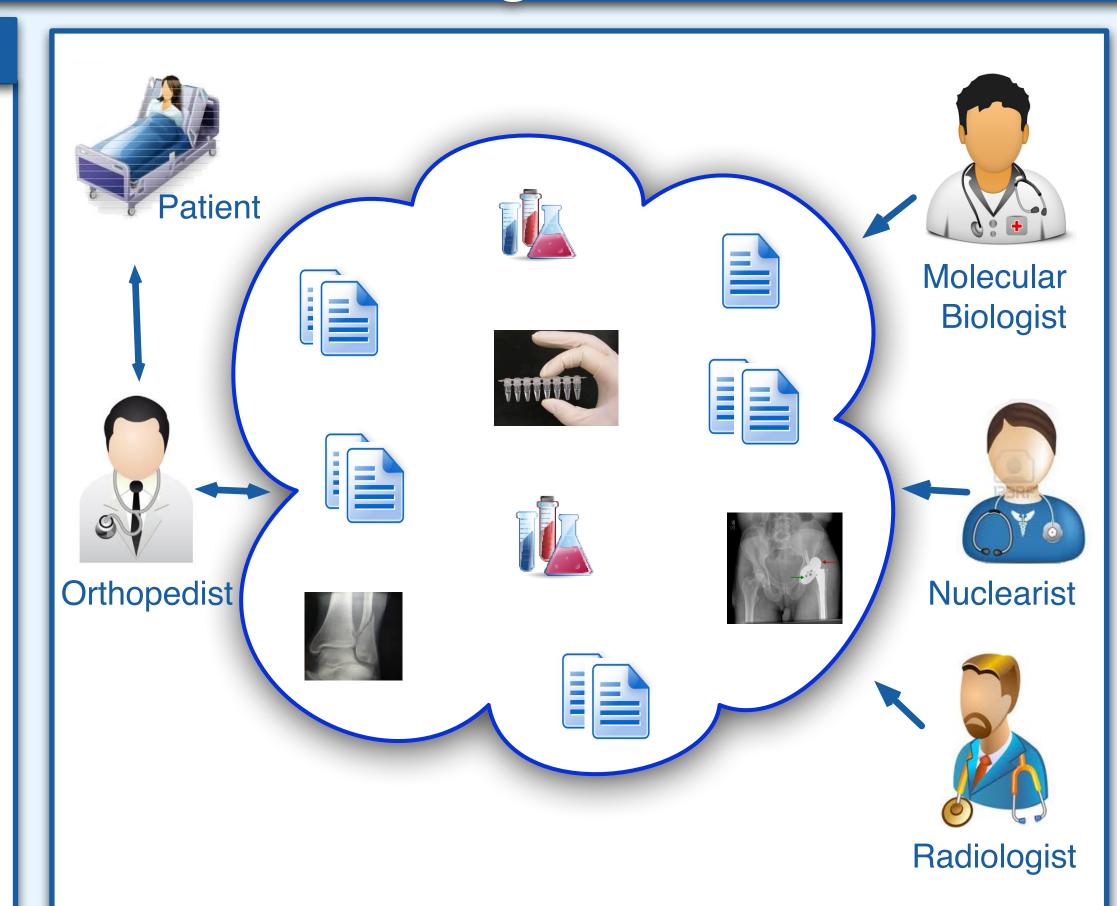
- Many infections lasting several months
- Unadapted Antibiotherapy : Multi-resistant Bacteria
- Septic vs Aseptic (chronic infections)
- => Pluridisciplinary approach
 - Imaging
 - Patient History
 - Aspirates/Biopsies
- Few/no integration - Local guidelines

Long and Tedious

- Bacteria Identification (conventional culture methods)
 - Slow growth: from two day to two weeks
 - Living bacteria create risks of contamination
 - Many False negatives
- Slow Evolution (several months)

Expensive

- Repeated Hospitalizations
- Repeated Imaging

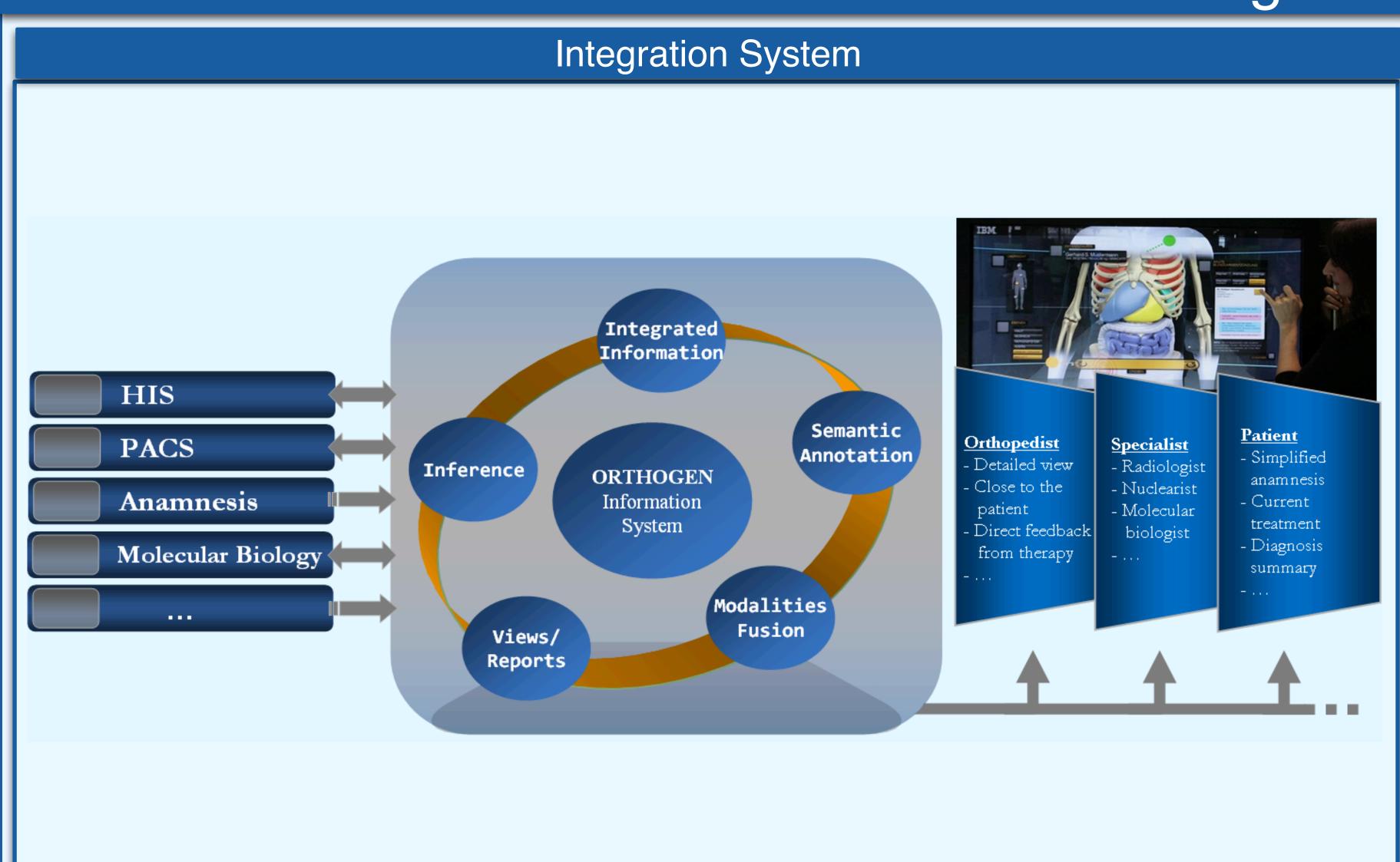


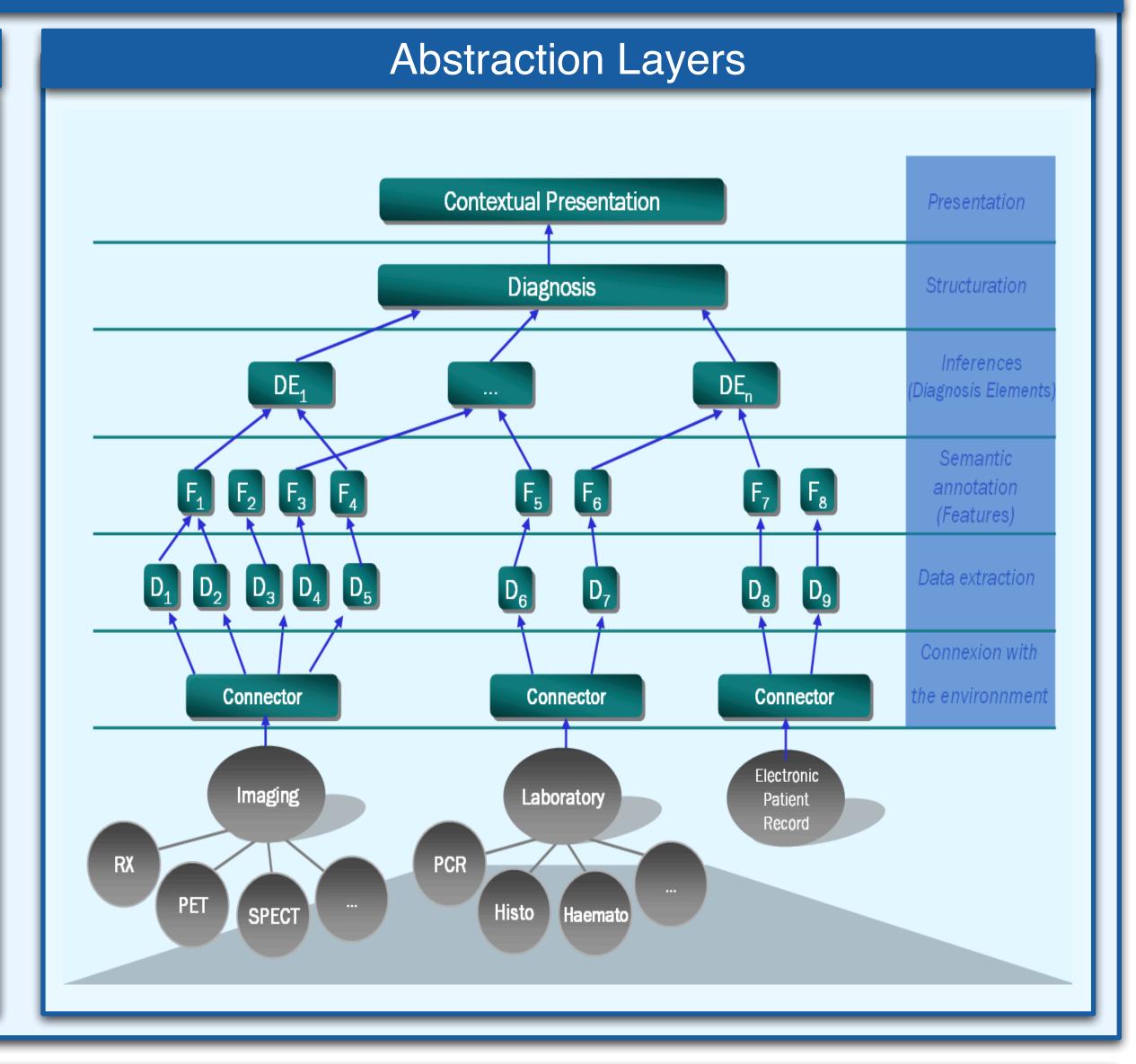
Problem Analysis

Decision Problem (DP)

- Making a diagnosis
- <=> DP (Pattern classification)
- Features pattern => Pathology
- Mathematical formalization
- Pathologies <=> Classes/models - Features (functional/descriptive properties)
- Structuring the Decision Process
- DP identification (Discriminative features)
- DP structuration (Business rules) - Solution selection (Reasoning)
- **Complex Diagnostic Environment**
- Heterogenous data
- Cooperation (different areas of expertise)
- Iterative process (prospecting, guidelines)
- Interaction with hospital entities (standards)
- **Constraints**
- Uncertainty
- Adaptability

Challenge





Orthogen Model

