Abstract

Medical warehouses are architectural construct of an information system that provides users with current and historical decision support information. But medical warehouse projects suffer from overestimation of resources because of improper estimation approaches which do not suit well on poorly defined architecture of medical warehouses. In this paper, we have first proposed a framework for an integrated medical warehouse that covers the different aspects of health care management. Then we proposed an effort estimation approach based on this framework which is designed to be used at the very early stage of requirement analysis. The data from the three different set of data warehousing projects are studied and the linear regression approach is used to finalize the model. Final effort is estimated using the project size and the different adjustment factors. For analytical estimation of project size and its complexity, extended function point analysis is used and identified object are categorized and their complexity weight age is determined. The proposed approach is validated by studying three different set of projects having different level of complexity. First set contains eight business data warehousing projects completed in different domains. Second set contains medical OLAP projects and third set has clinical data marts. A set of questionnaire is used to
Effort Estimation Approach for Integrated Medical Warehouses

estimate the complexity of the project, which has to be filled by the developers after completing
the initial requirement analysis. The proposed effort estimation model shows a great
improvement as compared to the earlier models used in effort estimation of medical
warehousing projects.

References

  Analysis of Electronic Medical Records in Primary Care. " American Journal of Medicine
  114, no. 5 ,April 2003, pages: 397-403.
  Order Entry And A Team Intervention Or Prevention Of Serious Medication Errors. " JAMA,
- Ewen, E. F. , Medsker C. , Dusterhoft L. E. , Levan-Shultz K. , Smith J. L. , and
  Gottschall M. A. , "Data Warehousing In Integrated Health System: Building the Business
  Case. " International Workshop on data Warehousing and OLAP. New York: ACM Press,
- Jane R Schubart, Jonathan S Einbinder, "Evaluation of a data warehouse in an
  academic health sciences center", International Journal of Medical Informatics, Vol. 60,
  Issue 3, 2000 Pages 319-333.
- Mordechai Shani, "The impact of information on medical thinking and health care
- Pedersen, T. B. , and Jensen C. S. , "Research Issues in Clinical Data
  Warehousing. " International conference on Scientific and Statistical Database
- Szirbik, N. B. , Pelletier, C. and Chausselet, T. , "Integration of Data on Long Term
  Care from Heterogeneous Sources For Research Purposes. " Medicon&apos;04, Ischia,
- Cynthia A Brandt, Richard Morse, Keri Matthews, Kexin Sun, Aniruddha M Deshpande,
  Rohit Gadagkar, Dorothy B Cohen, Perry L Miller, Prakash M Nadkarni, "Metadata-driven
  creation of data marts from an EAV-modeled clinical research database", International
- Valentin Dinu, Prakash Nadkarni, "Guidelines for the effective use of
  entity–attribute–value modeling for biomedical databases", International Journal of
- Nguyen, T. B. , Tjoa A. M. , and Mangisengi O. , "Metacube XTM: A
  Multidimensional Metadata Approach For Semantic Web Warehousing Systems. "
  International conference of data warehousing and knowledge discovery. Berlin: Lecture Notes
  http://www. topicmaps. org/xtm/1. 0/xtml-20010806. html.
- Laxminarayan, P. , Ruiz C, Alvarez SA, and Moonis M. , "Mining Associations over
Effort Estimation Approach for Integrated Medical Warehouses

- Banek, Marko, A Min Tjoa, Nevena Stolba, "Integrating different grain levels in medical data warehouse federation", Lecture Notes in computer science, Springer, 2006, ISSN: 0302-9743, 185-194
- Song, I. Y., Rowen, W., Medseker, C. , and Ewen E. F. , "An analysis of many to many relationships between the fact and dimensions tables in dimensions modelling.
- Brown, P. J. , Bovey J. D. , and Chen X. , "Context-Aware Applications From Laboratory To Market Place.
- Szirbik, N. B. , Pelletier, C. and Chaussalet, T. , "Six Methodological Steps To Build Medical Warehouse For Research."
- Huff, S. M. , "Clinical Data Exchange Standards And Vocabularies For Messages.
- Brown, P. J. , Bovey J. D. , and Chen X. , "Context-Aware Applications From Laboratory To Market Place.
- Szirbik, N. B. , Pelletier, C. and Chaussalet, T. , "Six Methodological Steps To Build Medical Warehouse For Research.
- Huff, S. M. , "Clinical Data Exchange Standards And Vocabularies For Messages.
- Beverly Collins, Mary Wagner, "Early experiences in using computerized patient record data for monitoring charting compliance, supporting quality initiatives and assisting with accurate charging at Allina Hospitals & Clinics", International Journal of Medical


Index Terms
Computer Science Information Systems

Keywords
Medical Warehouses Effort Estimation Data Warehousing Medical Support Systems

Electronic Medical Records