Intelligent Integrated Engineering and Digital Asset Management and Their Implications for Security and Health

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Managing their assets properly and efficiently is fundamental to the success of enterprises that perform large-scale operations – both in engineering arena and in digital arena. Organisations must make optimum use of their assets and monitor them on a systematic and sustainable basis in order to ensure that they are operating correctly, and will continue to operate effectively in the future. To cope with the demand of managing large and diversified assets, a number of IT asset management solutions have been developed, or are under development. This tutorial analyzes the past and present asset management issues and practices and, investigates future development of IT solutions and their commercial, legal and research potentials.

The following issues will the elaborated in this tutorial in the context of both engineering and digital asset management:

A. Asset Management Technical Issues

- Data quality
- Workflow management
- Condition based management
- Visualization
- Metrics and Measures of Effectiveness (MoEs)
- Smart assets
- Mobile assets
- Decision support systems
- Asset Life-Cycle Management (ALCM) tools
- Management Maturity Models
- Domain Ontology design
- Security and composite data issues
- Issues in relation to Health sector data
- Issues in Smart and Mobile asset management

B. Asset Management Operational Issues

- ❖ Issues in Asset Data Life-Cycle Management (ADLCM) Tools Design
- ❖ Capability Maturity Model (CMM) Development for Asset Management and Governance

❖ Asset Management Certification (AMC) process for Industries

C. Asset Management Conceptual Issues

➢ Common Conceptual Object Model (C-COM) for the description of heterogeneous assets
➢ Issues relating to Warranty, Asset Reliability and Redundancy
➢ Asset Composition for Dynamic and Mission-Specific Operations
➢ Asset E-Commerce and Query Management issues
➢ Model Driven Architecture (MDA) for asset management software development

D. Modern Assets and Issues in Their Management

◆ Issues in digital asset management
◆ Software Asset Management
◆ Medical Asset Management and Monitoring
◆ Human Capital Asset Management

Example asset management projects drawn from the following industries will be outlined:

❖ Software Asset Management
❖ Geospatial (data) Asset Management
❖ Information Asset Management
❖ Multimodal and Multimedia Digital Asset Management, Exploitation and Fusion
❖ Asset/Object Security Management

Several industrial Standards have also been developed to meet the challenges involved in asset condition analysis, maintenance and the development of various types of tools for decision support systems. These include the MIMOSA OSA-EAI Standard, ISO-13374 (Part 1-4), OSA-CBM and related international Standards. In addition, the tutorial will extend these issues to identify the differences between engineering assets and digital assets and analyse the ways and manners in which Standards are evolving to meet the challenges involved in managing digital assets. The tutorial will address issues that relate management of asset in the security and health industries. It will also touch upon issues relating to costing, ethics and legal that affect asset management industries across a wide spectrum.

Keywords: Engineering and digital asset management, Asset condition analysis, Asset maintenance, Decision support systems design, Current and future Issues in IT Standards, Managing assets in security and Health sectors.

Audience: Medical professionals, Medical informatics Professionals, academics, researchers and students.

Duration: 3-6 hours (depending on the nature of conference and audience request)

Biography of the Speaker

Dr. Lakshmi narasimhan has Bachelor's degrees in Physics (BSc) and Electronics Engineering (BEng) from the University of Madras and the Indian Institute of Science respectively. He obtained his Master's degree from the Anna University of Technology and his PhD from the University of Queensland, Australia. He worked as a Postdoctoral fellow, lecturer and then as a senior lecturer at the University of Queensland. Later, he moved to the Defense Science and Technology Organization (DSTO) as a Principal Research Scientist. Narasimhan also worked as a full professor at the University of North Texas, USA. He also held a Chair in Software Engineering at the University of Newcastle, Australia. Presently Narasimhan is the Chair of the Computer Science Department at the Western Kentucky University, USA. He has supervised a number of graduate students and published over 170 papers in archival journals and international conferences. His current research interests are in: Software Engineering (testing, visualization, instrumentation, product line engineering & CBSE), Information Engineering (medical informatics, mobile systems, information management, information extraction & information fusion) and Computer Architecture (embedded system, reconfigurable computing & performance analysis). Narasimhan is a Senior Member of the IEEE and ACM, Fellow of ACS, IEAust and IEE (UK). He is a Technical Member (representing USA) on the Expert Panels of ISO (International Standards Organization), American National Standards Institute (ANSI) and MIMOSA (Machinery Information Management Open Standards Alliance, USA).