

CPET 565/CPET 499 Mobile Computing Systems
Homework Assignment 4
Fall 2014

Assigned date: 10/29/2014

Assignment 4 Due Date: 11/10/2014, before 3:00 PM

Assignment 4 (Team Assignment) - Design of Mobile Applications and Information Architectures and Related Tradeoff Study. Use the guidelines as shown below to prepare a Design Report of Mobile Applications and Information Architecture for the Mobile App Pilot Project (continuation of Hw3).

- Executive Summary
- Mobile Computing/Information Service Environment
- Mobile Information Services
 - Information Service Types
 - Pull (on-demand)
 - Push (broadcast)
 - Synchronization
 - Disconnected operation
 - Other
 - Connection types
 - Weakly connected
 - Always connected
 - Disconnected
 - Responsibilities and Requirements: Client, Middleware, Server (**provide use case scenarios**)
 - Data collection/transformation
 - Business Logic
 - Data sharing
 - Database access
 - Services
 - Peer-to-Peer
 - Mobile Web Portal
 - Email
 - Reporting
 - Location
 - Context aware
 - Push-based Services
 - SMS Notification Message
 - Event Notification
 - Video/voice streaming
 - Localization
 - Considerations/Constraints
 - Resource usage
 - Scalability
 - Openness
 - Heterogeneity
 - Fault tolerance

- Resource sharing
 - Privacy/Security
 - User Interface
 - Application Restrictions: data aggregation
- System Design and Architecture (**diagrams are needed**)
 - Communication Interface
 - Security/Authentication Interface
 - Hardware Architecture
 - Hardware structure of the system server
 - Hardware structure for the mobile client (host)
 - Peer-to-Peer?
 - Software Architecture
 - Software structure and functions of the server
 - Software structure for the mobile client (host)
 - Peer-to-Peer?
 - Middleware
- Trade-off Analysis

Assignment 4 Due Date: 11/10/2014, before 3:30 PM

**** Team's PPP file and a Design Report should cover at minimum the ITEMS appear in suggested guidelines.**

References

1. T. Kunz and J. Black, "An Architecture for Adaptive Mobile Applications," 1999, http://reference.kfupm.edu.sa/content/a/r/an_architecture_for_adaptive_mobile_appl_466010.pdf
2. J. Jing, A. Helal, and A. Elmagarmid, "Client-Server Computing in Mobile Environments," 1999, <http://www.cs.unm.edu/~darnold/classes/papers/Jing99Client.pdf>
3. R. Jain, A. Umar, and A. Umar, "A Comparison of Mobile Agent and Client-Server Paradigms for Information Retrieval Tasks in Virtual Enterprises," Telcordia Technologies, Inc., 2001, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.16.8013.pdf>
4. B. P.S. Rocha, C. G. Rezende, and A. A. F. Loureiro, "Middleware for Multi-Client and Multi-Server Mobile Applications," <http://security1.win.tue.nl/~bpontes/pdf/mobmid.pdf>
5. H. Schneider, V. Lee, and R. Schell, "Ch. 3 Introduction to Mobile Application Architectures," **Mobile Applications: Architecture, Design, and Development**, Pearson Information IT, Oct. 15, 2004, <http://www.informit.com/articles/article.aspx?p=336262>
6. H. Schneider, V. Lee, and R. Schell, "Ch. 4 Mobile Application Architectures," **Mobile Applications: Architecture, Design, and Development**, Pearson Information IT, Extracted lecture note available from www.philadelphia.edu.jo/academics/mmaouch/uploads/MobileApplicationArchitectures.ppt
7. R. A. Bairat, "Client-Server Computing in Mobile Environment," ppt presentation, <http://sce.uhcl.edu/yang/teaching/csci5939wap/client-servercomputinginmobileenvironments.ppt>
8. E. Pop, M. Barbos, and R. Lupu, "Client Server System for e-Services Providing in Mobile Communications Networks," Proceedings of the World Congress on Engineering 2008, Vol. III, WEC 2008, July 2-4, 2008, London U.K., http://www.iaeng.org/publication/WCE2008/WCE2008_pp1808-1813.pdf
9. Feng Gui, Development of a New Client-Server Architecture for Context Aware Mobile Computing, Ph.D. Dissertation, Florida International University, <http://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1248>

10. Mobile Information Client, AGileDelta, http://www.agiledelta.com/product_mic.html , [accessed Oct. 9, 2012]
11. G. M. Weiss and J. W. Lockhart, "A Comparison of Alternative Client/Server Architectures for Ubiquitous Mobile Sensor-Based Applications, 2012, <http://www.denzilferreira.com/UbiMI/2012/UbiMI2012-weiss-paper.pdf>