Welcome to SENG 480B / CSC 485B / CSC 586B Self-Adaptive and Self-Managing Systems

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http://courses.seng.uvic.ca/courses/2013/summer/seng/480b
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Announcements

- A3
  - Due Thu, July 11
- Midterm grading
  - Half way done ☺
  - Should be graded by Fri, July 12
- Group presentations of A3
  - Tue, July 16
  - Undergrads should present
- Grad student presentations
  - July 23 – July 31
- Review for final exam
  - Wed, Aug 7
- Last day of classes
  - Wed, Aug 7
- Final exam
  - Tue, Aug 13, 9:00-12:00 am in ECS 124
  - Closed books, closed notes
  - Materials: entire course
  - Format: like midterm

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Graduate Student Research Paper Presentations

- Garlan, D., Cheng, S.-W., Huang, A.-C., Schmerl, B., Steenkiste, P.: Rainbow: Architecture-Based Self-Adaptation with Reusable Infrastructure. *IEEE Computer* 37(10):46-54 (2004) **— Angela Rook, July 23**
- Kramer, J., Magee, J.: Self-Managed Systems: An Architectural Challenge. In: *ACM /IEEE International Conference on Software Engineering 2007 Future of Software Engineering (ICSE),* pp. 259-268 (2007) **— Pratik Jain, July 23**
- Oreizy, P., Medvidovic, N., Taylor, R.N.: Runtime Software Adaptation: Framework, Approaches, and Styles. In: *ACM/IEEE International Conference on Software Engineering (ICSE 2008),* pp. 899-910 (2008) **—Alessia Knauss, July 24**
- Brun, Y., Di Marzo Serugendo, G., Gacek, C. Giese, H. Kienle, H.M., Litoiu, M., Müller, H.M., Pezzè, M., Shaw, M.: *Engineering Self-Adaptive Systems through Feedback Loops.* SE for Self-Adaptive Systems, pp. 48-70 (2009) **— Samra Ramandeep, July 24**
- Kaushik, R.T., Cherkasova, L., Campbell, R.H., Nahrstedt, K.: Lightning: self-adaptive, energy-conserving, multi-zoned, commodity green cloud storage system, *ACM International Symposium on High Performance Distributed Computing (HPDC 2010),* 332-335 (2010) **— Andi Bergen, July 26**

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Graduate Student Research Paper Presentations

- Villegas, N.M., Müller, H.A., Tamura, G., Duchien, L., Casallas, R.: A framework for evaluating quality-driven self-adaptive software systems. In: *Proc. 6th Int. Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS 2011),* pp. 80-89 (2011) **— Lorena Castaneda, July 30**
- Ebrahimi, S., Villegas, N.M., Müller, H.A., Thomo, A.: SmarterDeals: a context-aware deal recommendation system based on the SmarterContext engine. *CASCON 2012:* 116-130 (2012) **— Nina Taherimakhsousi, July 30**
- McKinley, P.K., Sadjadi, M., Kasten, E.P., Cheng, B.H.C.: Composing Adaptive Software. *IEEE Computer* 37(7):56-64 (2004) **— Carlos Gomez, July 31**
- Tewari, V., Milenkovic, M.: Standards for Autonomic Computing, *Intel Technology Journal,* 10(4):275-284 (2006) **— Nitin Goyal, July 31**

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Guidelines for Grad Presentations

- Format of presentation
  - Presentation 15-20 mins
  - Q&A 5 mins
  - Practice talk (!)
- Slides
  - High quality
  - Submit slides 2 days before presentation to instructor for approval
  - Submit final slides 1 day after presentation for posting on website
- Talk outline
  - Motivation
  - Problem
  - Approach
  - Relation to what we heard in the course so far
  - Contributions of the paper

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Assignment 3 Part I — Utility Functions

- In Part I you are to write a tutorial for software engineering or computer science undergraduate students on the role of utility functions and how they are used in autonomic computing policies and SLA agreements.
- To get started by reading the technical report by John Wilkes of HP Labs entitled “Utility functions, prices, and negotiation,” 2008.
- The answers for this question should fit into approximately 3-4 typeset pages.

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Assignment 3
Part II — PID Controllers

- In Part II you are to design and simulate a simple PID controller. Moreover, you are to document your experience in the form of a tutorial.
  - Study the PID controllers as discussed in class.
  - Watch the videos posted in the resource section on PID controllers.
  - Define a simple resource control problem.
  - Design a simple PID controller for this resource control problem.
  - Simulate your PID controller using Matlab.
  - Write a tutorial or SE or CS undergrad students on how to build a simple PID controller using Matlab.
- The answers for this question should fit into approximately 3-4 typeset pages.

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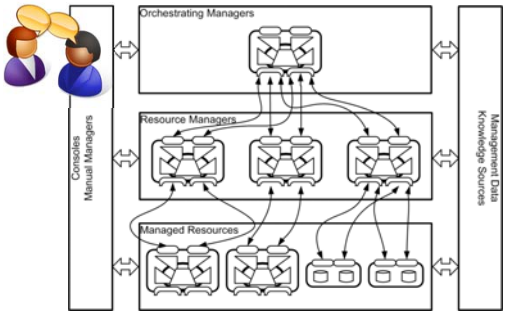
ACRA
AC Reference Architecture



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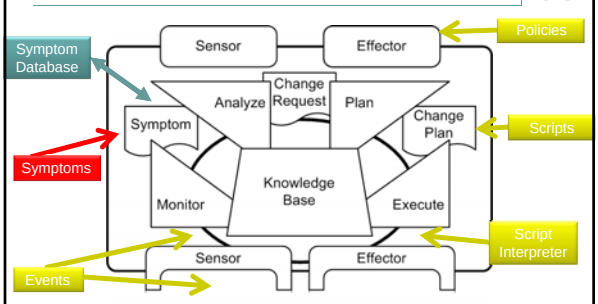
MAPE-K Loop
Standards & Interfaces



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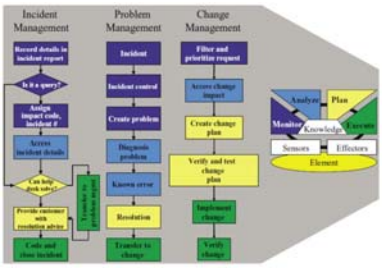
How Autonomic Computing
Affects IT Processes



IBM: An Architecture Blueprint for Autonomic Computing, 4th Ed. 2006

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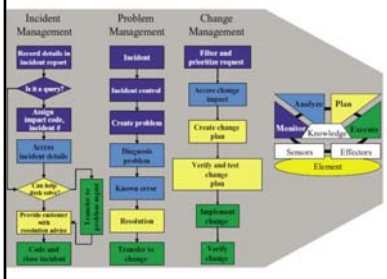
How Autonomic Computing
Affects IT Processes



- Discuss the challenges involved in automating these management processes *incrementally* using autonomic computing technology
- Sketch the four MAPE phases including K

IBM: An Architecture Blueprint for Autonomic Computing, 4th Ed. 2006

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