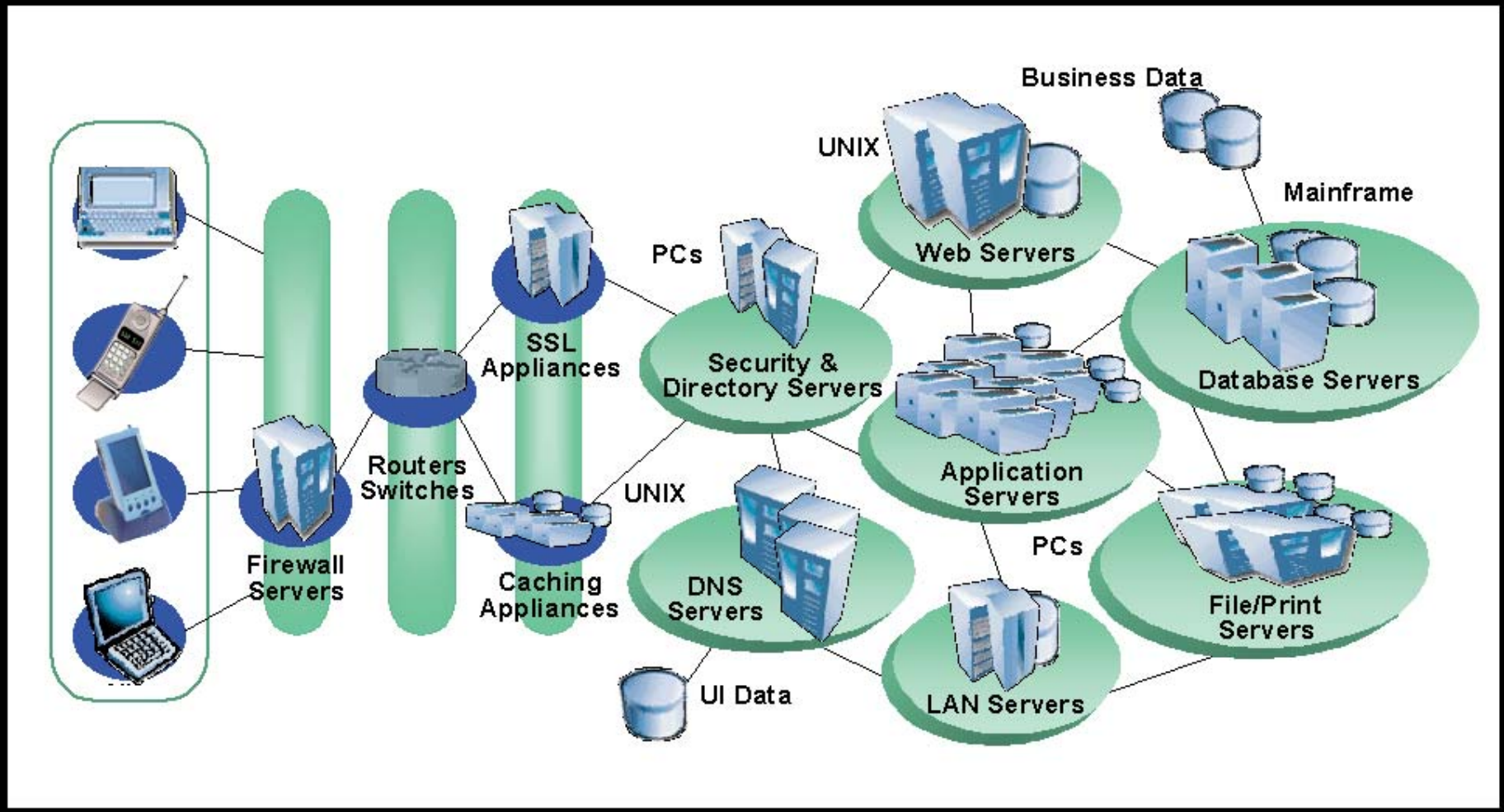
Autonomic Computing: an overview January 2005

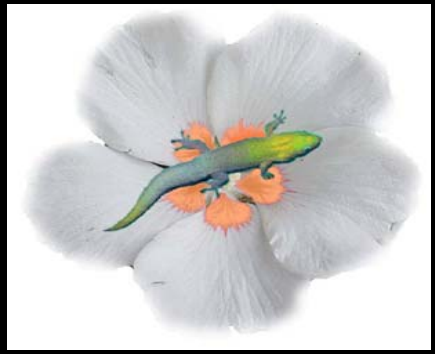
Nick Bowen
CTO IBM Systems Group Software

Today's Complex Infrastructure



The Beginnings – "Project eLiza"

Autonomic Computing is the embodiment of the principles and features that IBM designers have been building into our Systems for years.



- **Self-Configure**
  - Hot Swappable Disks, PCI
  - Wireless System Configuration - SNAP
  - Auto discovery and update of firmware
- **Self-Heal**
  - Virtual IP Takeover
  - LightPath Diagnostics
  - Chipkill ECC Memory, Dynamic bit steering
  - Automatic Deallocation
  - Call Home
  - Virtual Help Desk
- **Self-Optimize**
  - Clustering
  - Dynamic LPAR
  - Workload Management
  - Quality of Service
  - e-Business Mgt Service
- **Self-Protect**
  - Self-protecting kernel
  - Digital Certificates
  - Enhanced encryption
  - LDAP enhancements
  - Security & Privacy Service

Now – A coordinated, systematic approach
The Future – consistent, world-class systems
- instrumented for enterprise level AC

Autonomic Computing
Focus on business, not infrastructure

Intelligent open systems that:

- Adapt to unpredictable conditions
- Continuously tune themselves
- Prevent and recover from failures
- Provide a safe environment

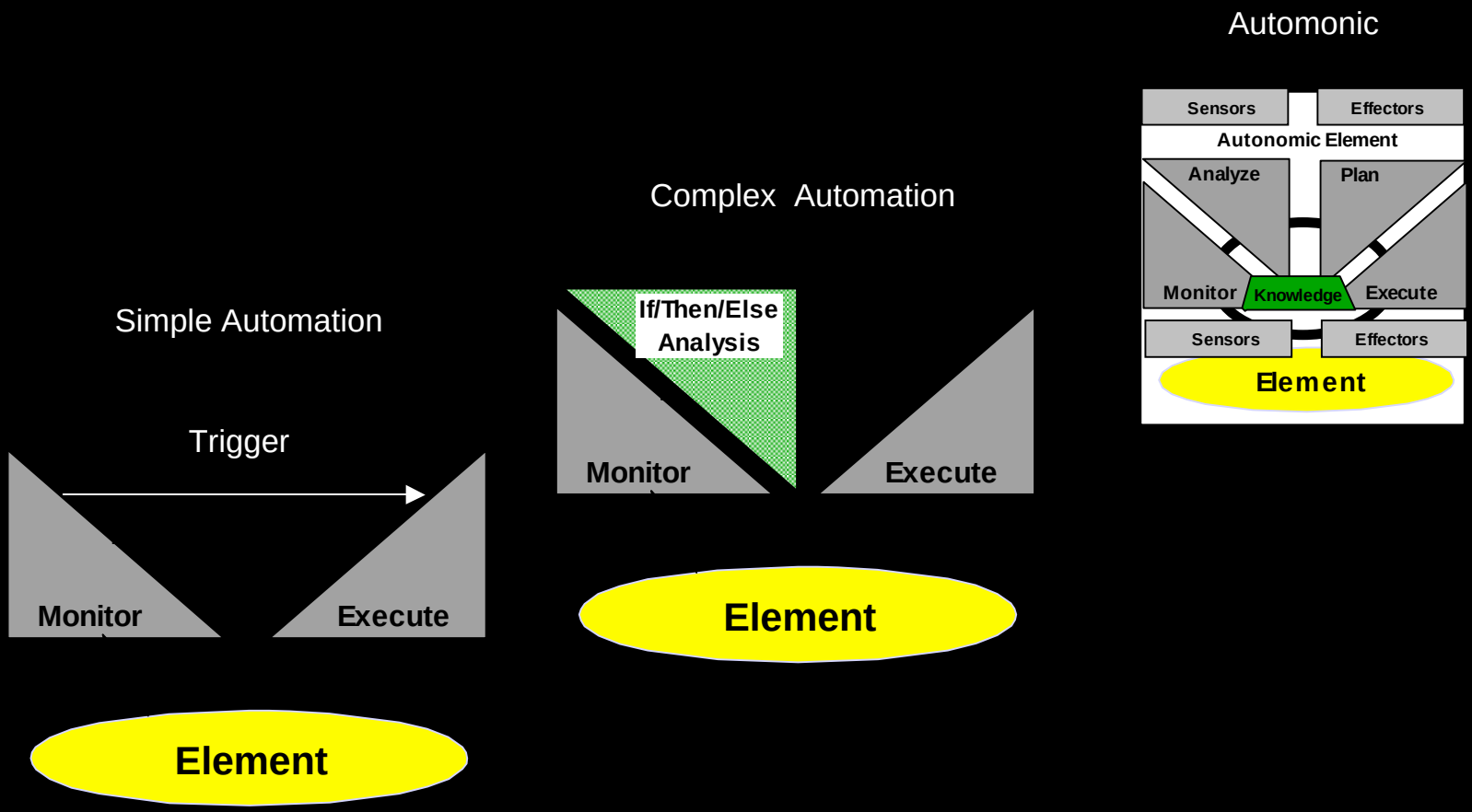
Providing customer value

- Increased return on IT investment
- Improved resiliency and quality of service
- Accelerated time to value

" IBM's autonomic computing initiative will become its most important cross-product initiative (as the foundation of On Demand Business)."

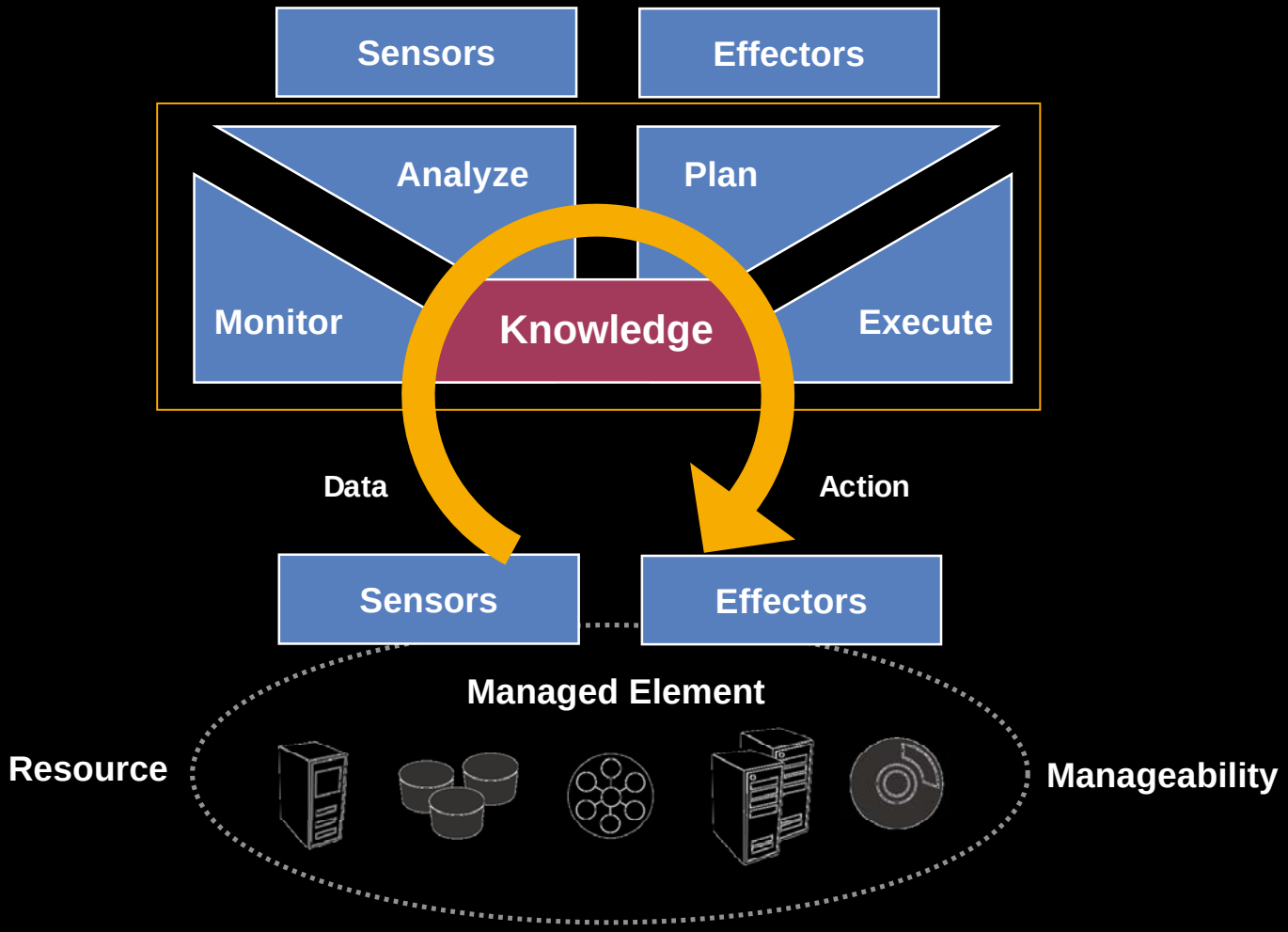
— Thomas Bittman, Gartner

Current automation practices typically represent only a portion of the autonomic computing architecture

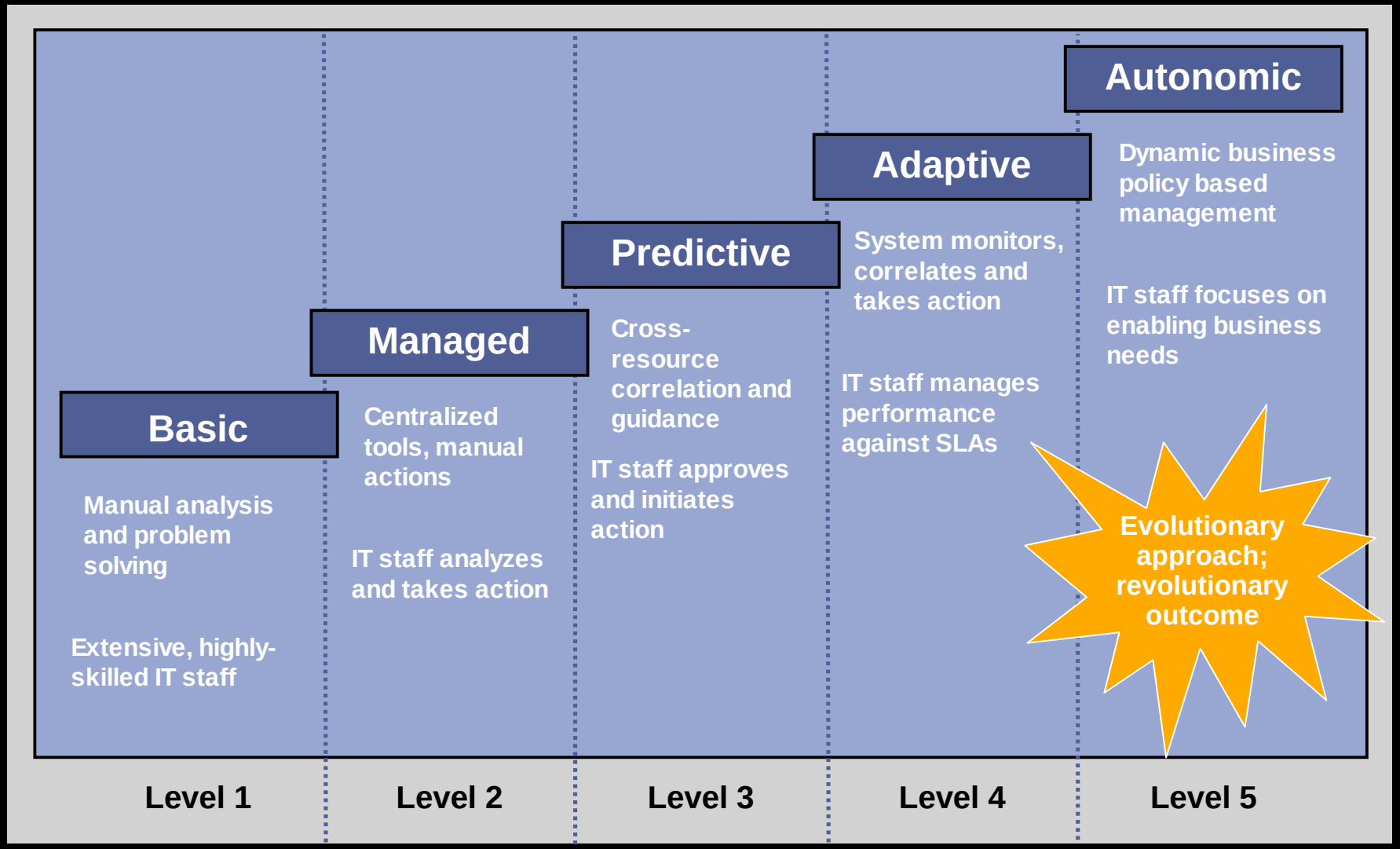


Autonomic Computing Architecture Concepts

Sense and respond



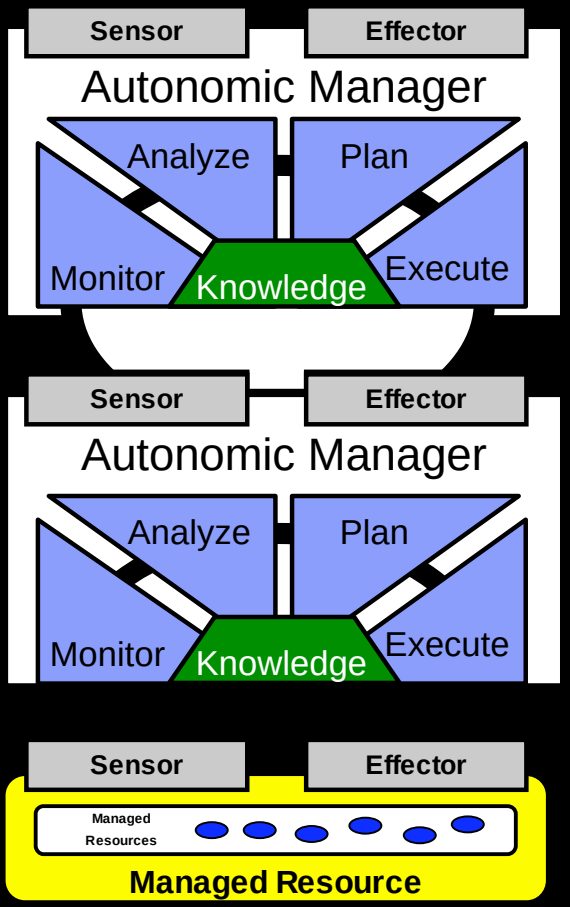
Levels of Autonomic Maturity



Autonomic Managers

Decisions flows from AM to AM

High level autonomic managers control lower level autonomic manager with policy.



GOALS

DECISION

"Orchestrating" AUTONOMIC MANAGER

- Accepts higher level business goals
- Translates business policy into goals and objectives for the resource its managing
- Pushes Goals down onto its managed elements

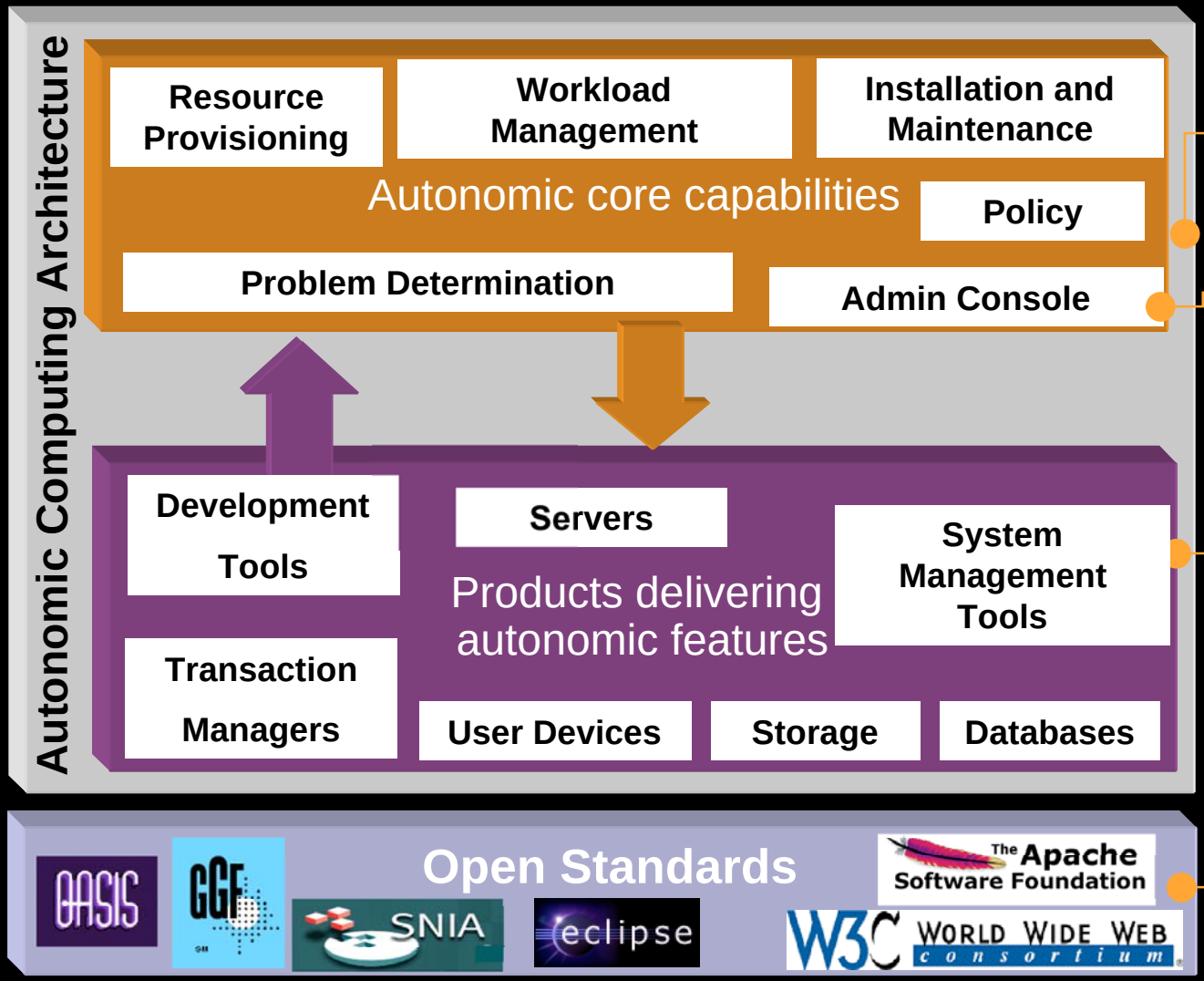
"Resource Specific" AUTONOMIC MANAGER

- Accepts goals
- Translates goals into effectors to be pressed
- Pushes down onto effectors and measures goals via sensors

Managed Resource

- Accepts decisions
- Manages resources accordingly

The Big Picture of Autonomic Computing Technology



- Define a **base reference architecture**
- Deliver **core infrastructure technologies**
- Deliver **products** with built-in autonomic capabilities
- Create and leverage open **standards**