Summary of Session 4
Concepts and Techniques for Autonomous and Vehicular Systems

What is Autonomous Decentralization Concept and its Escalation
Hirokazu Ihara, Emeritus Member

Protecting Real-time Applications against Memory Induced Slowdown on Small Multicore System
Gilles Muller, Inria

Jean Arlat
LAAS-CNRS

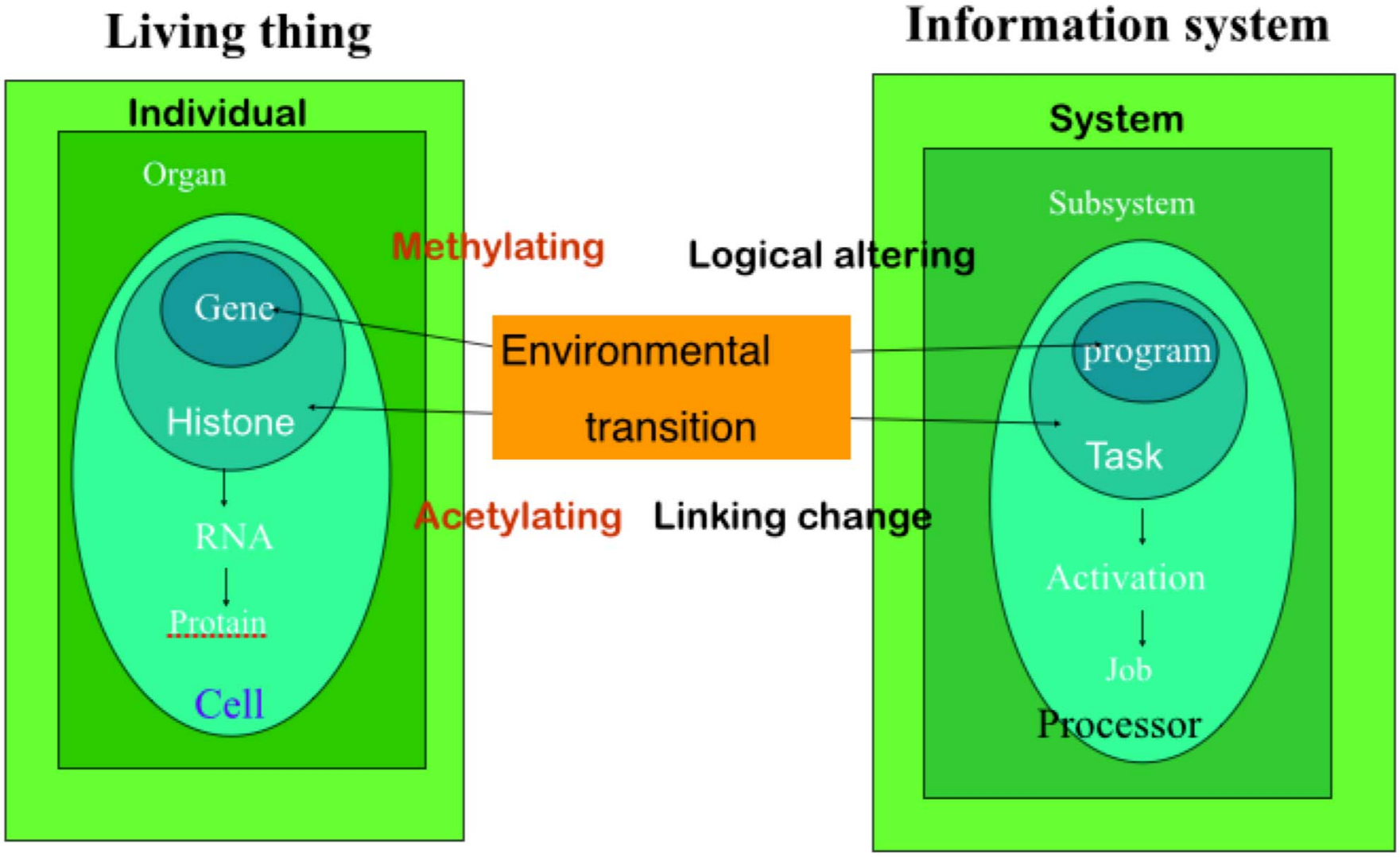
Just a Tentative Contribution
Mixing Real-Time (RT) & Best Effort (BE) Considerations … ☺

Hiro's

- Evolution of Computer Systems — Concept of ADS —> dispached (≈1980's)
- Experience of Computer Systems Development at Hitachi (Railway, Space, Car, Subway)
- Position of ADS within Dependability Means Termininology (FA and FT)
- Three dimensions for ADS: controlability, coordinability and observability
- Future system concepts:
  - Zen principle and doctrine « one is all and all is one »
  - Avatamsaka Universe for describing the Virtual Cloud
  - New Findings from Epigenetics
  - Match between Living things and Information systems
- Conclusion:

  Our individual concern for the future should go beyond one person life-time!

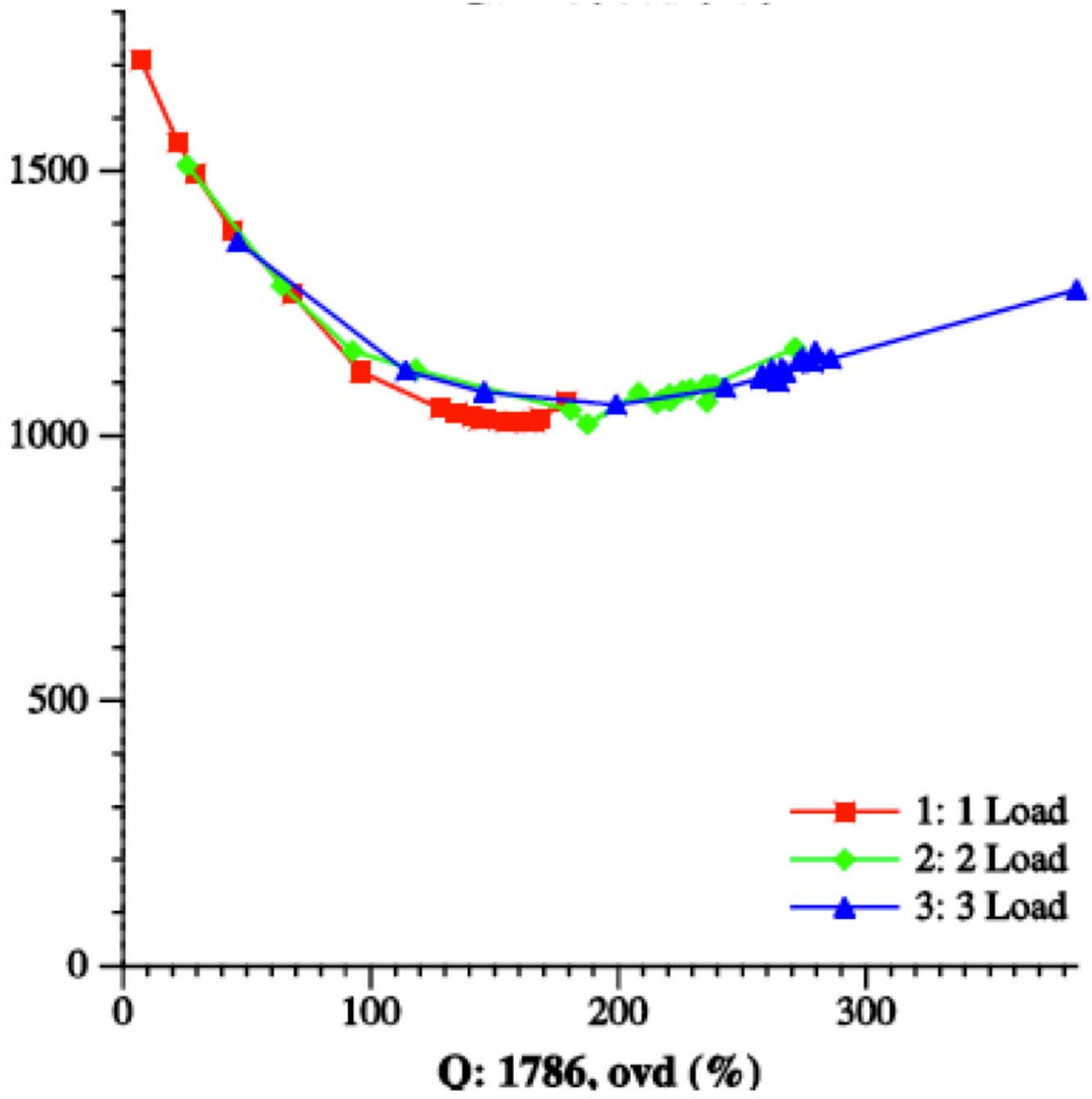
Epigenetic of Living things and information systems



Gilles'

- How to run a mix of applications (incl. RT & BE) on a multicore system?
- Keep on with legacy applications —> hypervisor technology which provides CPU isolation
- Issue Memory is shared by All cores and L2 cache as well!
- How to assess/measure the overheads incured under various partitioning options and loads in the BE applications
- Use of a benchmark suite for Embedded systems
  -> MiBench on one core (RT core), some other (memory demanding) loads
- Questions investigated :
  - impact of partioning the L2 cache — no matter much
  - Impact of partioning and contention — matters
- Objectives
  - Protection: Master the memory induced overhead
  - Parallelism: Avoid suspending best-effort (BE) applications

Some Singular Behaviors



Additional Comments
Questions ?