Short Talk at the Middleware 2012 Doctoral Symposium

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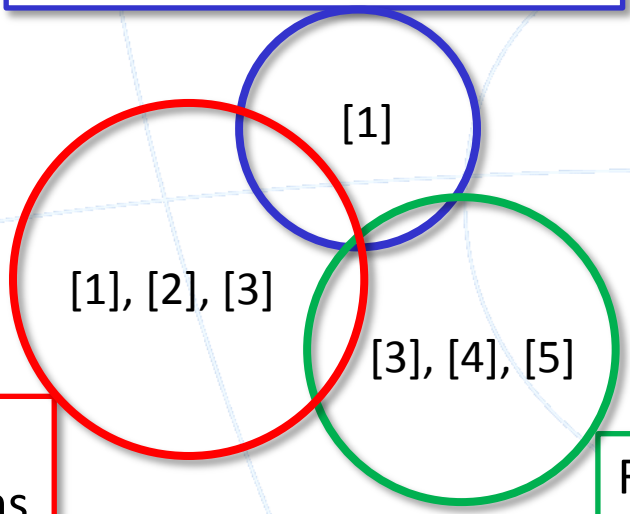
Adaptability in Runtimes Running on Shared Environments

Transparent scale-out of managed (Java) workloads

- Extensions to federation middleware using byte code instrumentation



Resource monitoring + management mechanisms

- Lightweight concurrent checkpoint/migration
- JSR-284 (RM API)
- Heap size control

Resource reallocation policies inspired by economic models

- Yield based model to govern savings and degradations
- Applied to heap size and CPU allocation

References

[1] José Simão and João Nuno Pessanha Alcoforado Sampaio de Lemos and Luís Veiga, **A2-VM: A Cooperative Java VM with Support for Resource-Awareness and Cluster-Wide Thread Scheduling**, *19th International Conference on Cooperative Information Systems (CoopIS 2011)*, Sep. 2011

[2] José Simão and Tiago Garrochinho and Luís Veiga, **A Checkpointing-enabled and Resource-Aware Java VM for Efficient and Robust e-Science Applications in Grid Environments**, *Concurrency and Computation: Practice and Experience*, 24(13), pp. 1421-1442, Dec. 2011

[3] José Simão and Luís Veiga, **A Progress and Profile-driven Cloud-VM for Improved Resource-Efficiency and Fairness in e-Science Environments**, *28th ACM Symposium On Applied Computing (SAC 2013)*, Nov. 2012 ACM

[4] José Simão and Luís Veiga, **VM Economics for Java Cloud Computing - An Adaptive and Resource-Aware Java Runtime with Quality-of-Execution**, *The 12th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2012) — Doctoral Symposium: Cloud Scheduling, Clusters and Data Centers*, May. 2012, IEEE.

[5] José Simão and Luís Veiga, **QoE-JVM: An Adaptive and Resource-Aware Java Runtime for Cloud Computing**, *2nd International Symposium on Secure Virtual Infrastructures (DOA-SVI 2012), OTM Conferences 2012*, Sep. 2012 , Springer, LNCS.