

Digital Transformation & Solvency II Simulations for L&G: Optimizing, Accelerating and Migrating to the Cloud



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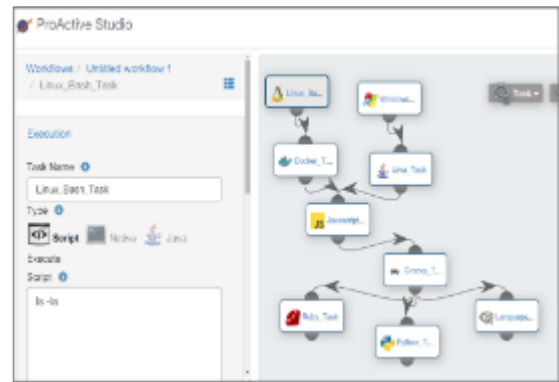


ActiveEon Introduction

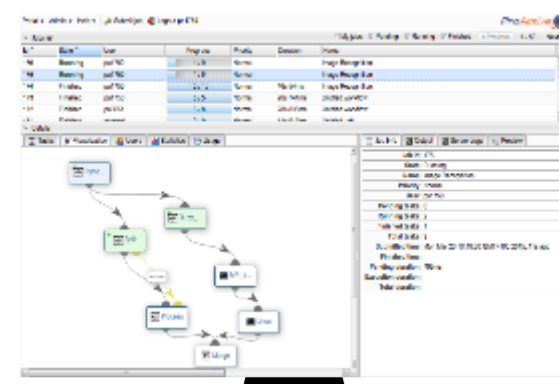


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Products: *ProActive* Parallel Suite




Workflows & Parallelization




Scheduling & Orchestration




Resource Management



Locations



Some Customers

IT Engineering BioTech, Health Finance, Media, IoT...

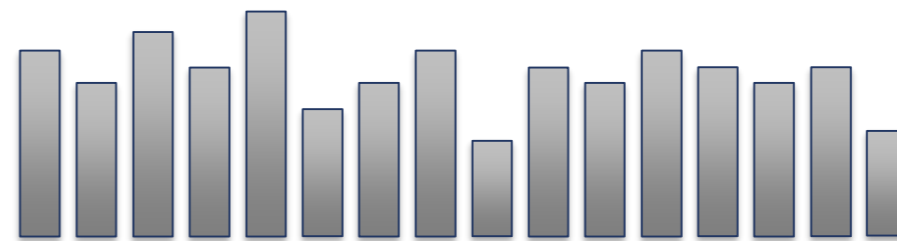


ProActive Workflows & Scheduling

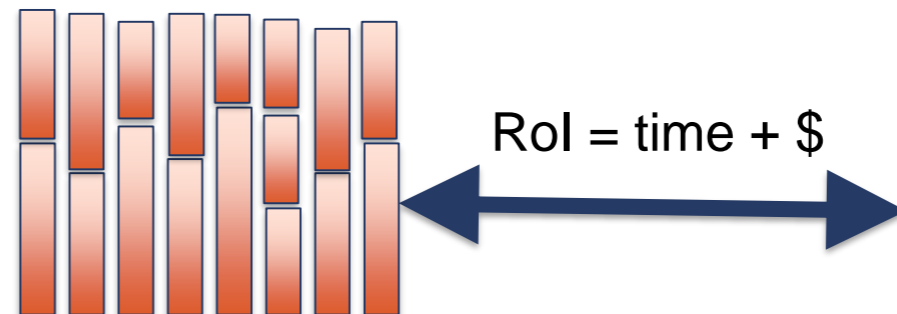
Why Powerful Scheduling?
Do more with less
resources!



Without ProActive



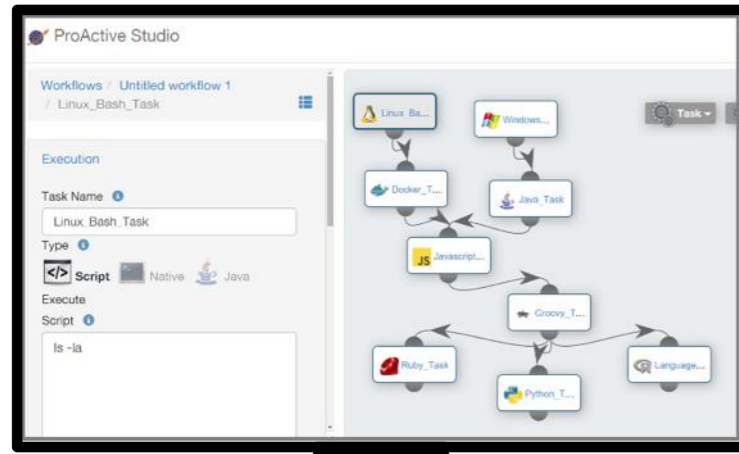
With ProActive



From Workflows to Scheduling to Hybrid Cloud Resources



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Processing & Automation Workflows

Any Language: Java, python, R, C#

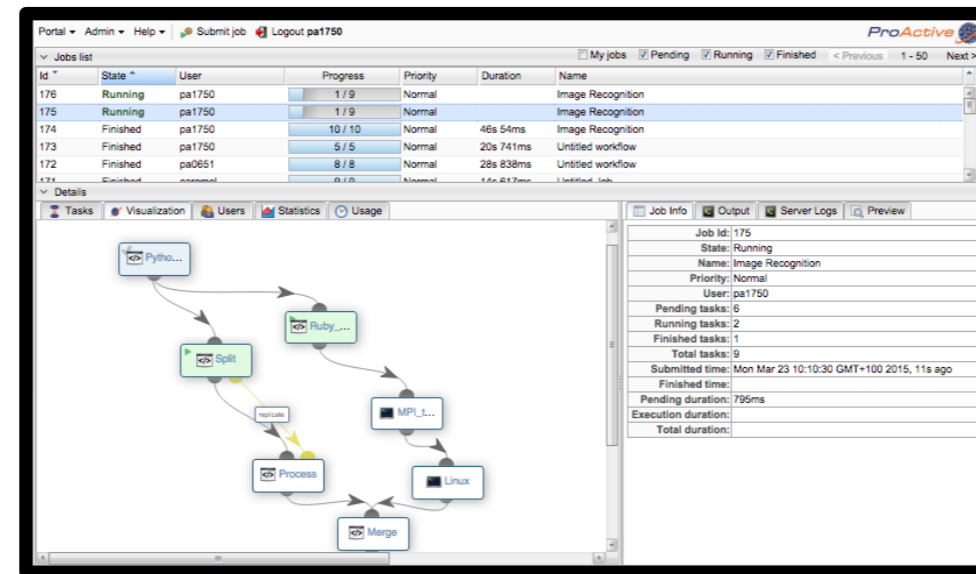
Secured Data Transfers: [Data Transfer Icon]

Third-part Schedulers: Control-M, AutoSys

Market ETL, ERP...: sas, SAP, talend

Services Chaining & Integration: [Flowchart Icon]

Translator: AutoSys, Control-M



Scheduler & Orchestration

Priority & Planning, Parallel Executions, Error Management, Multi Users

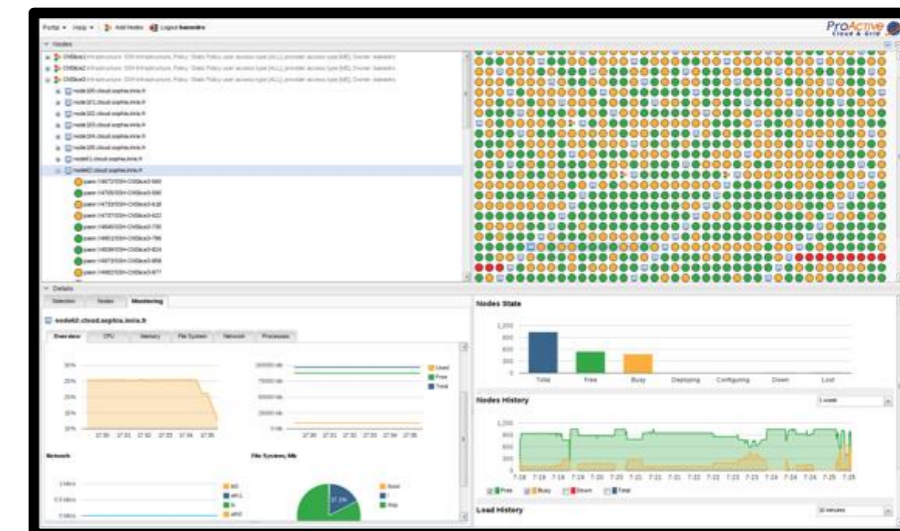
Resource Management & Monitoring

Multi Platforms: Windows, Linux, Mac OS

Local machine, Network Resources

Batch Schedulers: Slurm, PBS, SGE, LSF

Clouds: Amazon web services, VMware, Microsoft Azure, Google, IBM Bluemix, openstack, docker



Open REST API

Financial Services: Portfolio Risk Calculation

Solvency II Risk
Management



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Legal & General: Company, Project, Objectives



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- A 181 years old Financial Services group
- Operations in UK, FR, DE, NL, Egypt, Gulf, India, USA
- £13.5bn market capitalisation
- £746bn assets under management
- Economic Capital and Solvency II simulation software based on IBM AlgoOne
- Migration from a private datacenter and Tibco DataSynapse to the Azure Cloud and ActiveEon ProActive

ProActive Workflows & Scheduling selected to:

- Modernize the application
- Accelerate execution
- Help the migration to the Cloud
- Save resources

Needs

- Run Solvency II analysis on 2.5 million Monte Carlo scenarios
- Dynamically define and prioritize workload
- Minimize time to delivery of results

Previous Legacy Software

- Tibco DataSynapse
- IBM AlgoBatch

Solution

- Fast dynamic Python workflows to run scenarios according to priorities
- Resource allocation according to the CPU and memory available
- A powerful parallelized and pipelined workflow to produce SII reports

New Modern Cloud Software

- Full integration with Python-based environment
- Private Cloud-hosted solution
- Azure Migration

Results

Optimized resource allocation to accelerate calculation and shorten scenario analysis duration

Overall Organization & Architecture



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AlgoOne data sets



Solvency II scenarios for data analysis & simulation

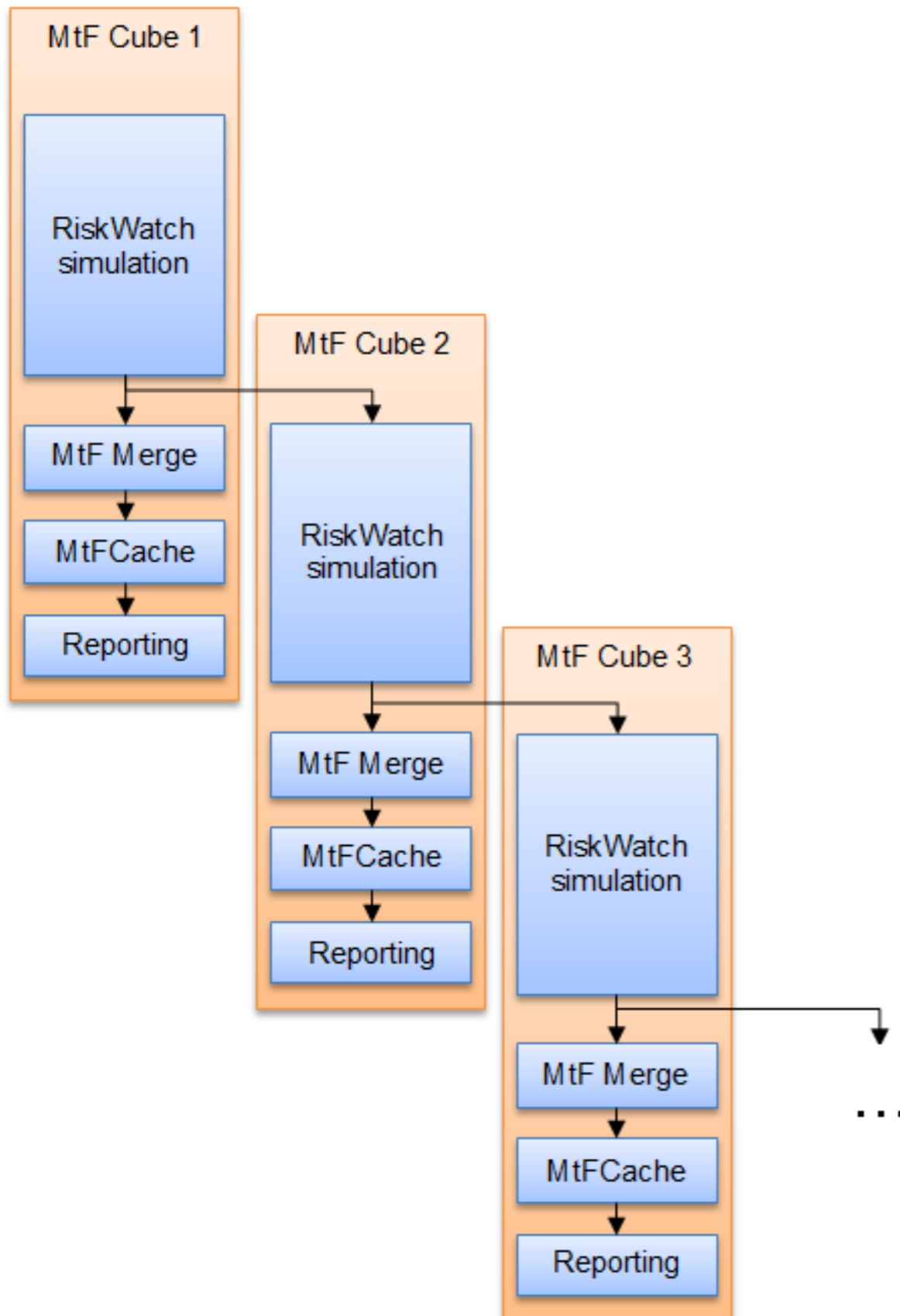
Schedule and prioritize scenarios to analyze data

Produce 1300+ reports on L&G capital requirement for Solvency II

Data Process burst on Hybrid Clouds



Architecture Details

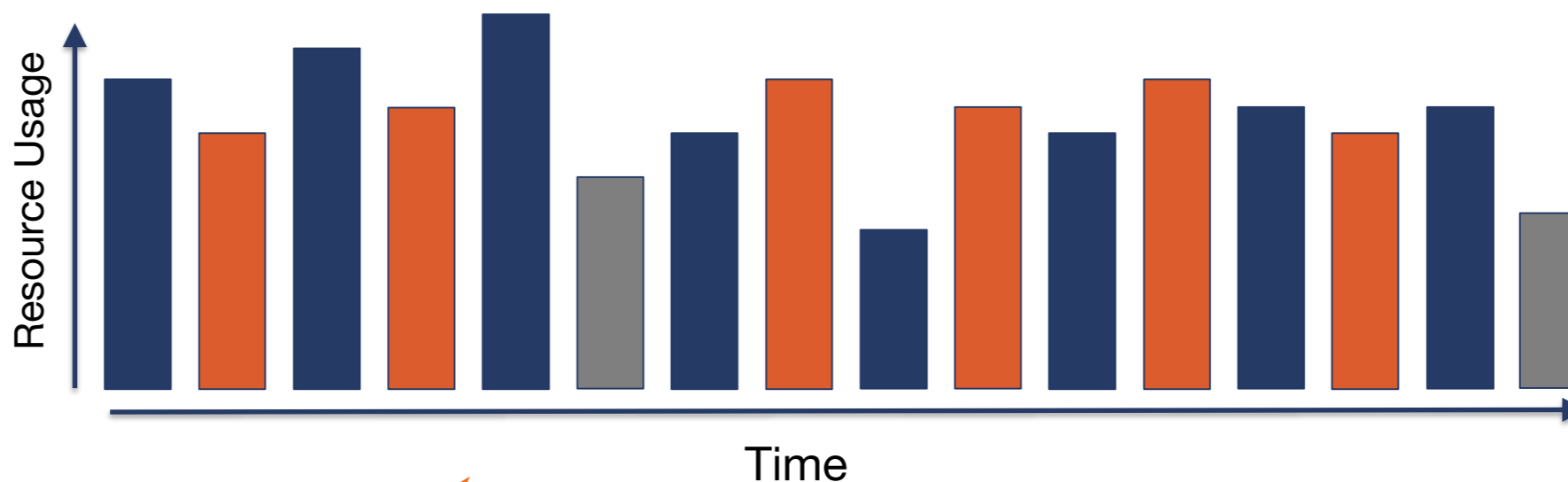


- RiskWatch simulation: 18,000 CPU hours, very little I/O
- Mark-to-Future aggregation and reporting: mild CPU requirements, I/O constrained
- Run in parallel on every host a CPU-intensive task and a I/O intensive one to maximise throughput
- 10-60GB RAM required for every task, must not exceed host capacity
- 14 hours end-to-end runtime, but the most important reports are available after 5 hours

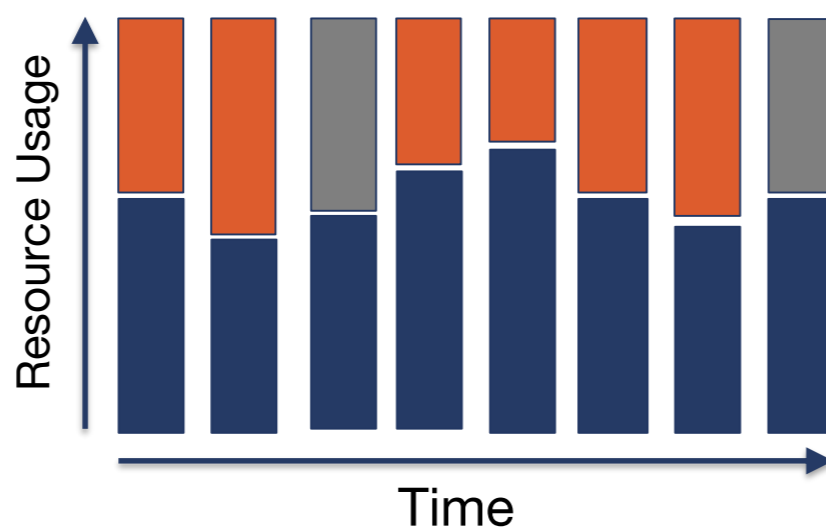
Compacting Execution



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ProActive
Workflows & Scheduling

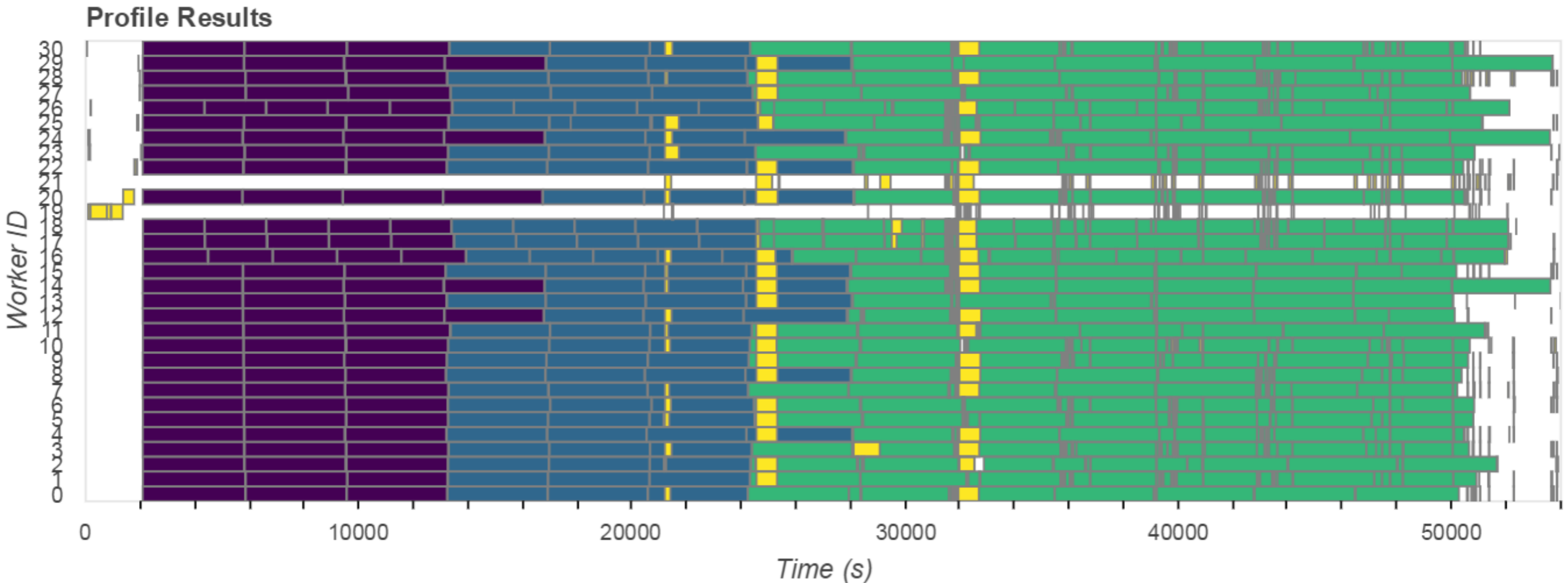


ProActive Workflows & Scheduling includes policies to distribute & accelerate jobs between CPU, RAM, I/O etc.

Solvency Optimal Execution



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- Purple: High priority CPU-intensive tasks
RiskWatch Simulation
- Blue: Medium priority CPU-intensive tasks
RiskWatch Simulation
- Green: Low priority CPU-intensive tasks
RiskWatch Simulation
- Yellow: I/O intensive tasks
Aggregation & Reporting

Batch optimization with ProActive:

- Enforce strong priorities
- Optimally compact execution
- Start tasks as early as possible
- Pipeline and co-allocate CPU-intensive with I/O intensive ones

End to end: from 16h to 14h

High priority reports: from 16h to 5h

Automate Accelerate & Scale IT for business

Activeeon SAS
Paris, Sophia Antipolis &
Worldwide on Azure Clouds,
IBM Bluemix,
and with all our Partners



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