

eConstrainer

Interactive Constraint Propagation

Developed by IntelEngine, Inc.
Powered by ILOG



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Abstract

- INTELENGINE developed a Web-based framework to support real-time interactive constraint propagation
- Used together with ILOG Optimization Suite™ for dynamic workforce/workload scheduling. The same scheduling constraints control the execution of a powerful Scheduling Engine and manual overrides
- The similar dynamic scheduling capabilities could be applied to different constraint-based systems

Constraint-based Scheduling

- A typical scheduling system allocates WorkForce to WorkLoad satisfying real-world Constraints and business Objectives
- Scheduling Engines - the software tools that allow a human scheduler to build an optimal schedule

Change is the Name of the Game

- When it comes to managing jobs and resources, ***change*** is the name of the game.
- Users want to update and fine-tune schedule in a flash, allowing a scheduling engine to react to the constant changes, inform them about possible consequences of manual overrides, and/or automatically adjust the schedule.

Dynamic Scheduling Capability

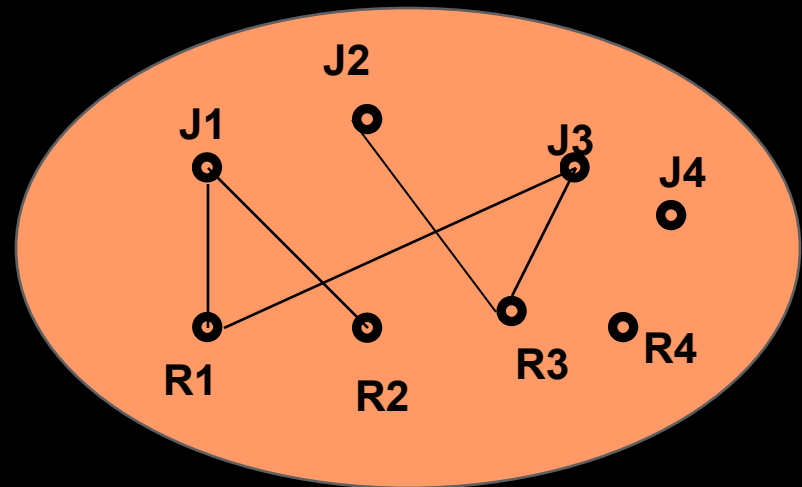


- These problems are common whether you are trying to connect plants to the supply chain or to minimize travel time for different field service crews.
- Dynamic scheduling capability becomes a must functionality of any practical constraint-based system. It assumes the ability to add and/or remove constraints on the fly to redefine the problem and find the appropriate solution.

Examples of Scheduling Objects

Jobs (J), Resources (R)
and Assignments (lines)
are Constrained Objects.

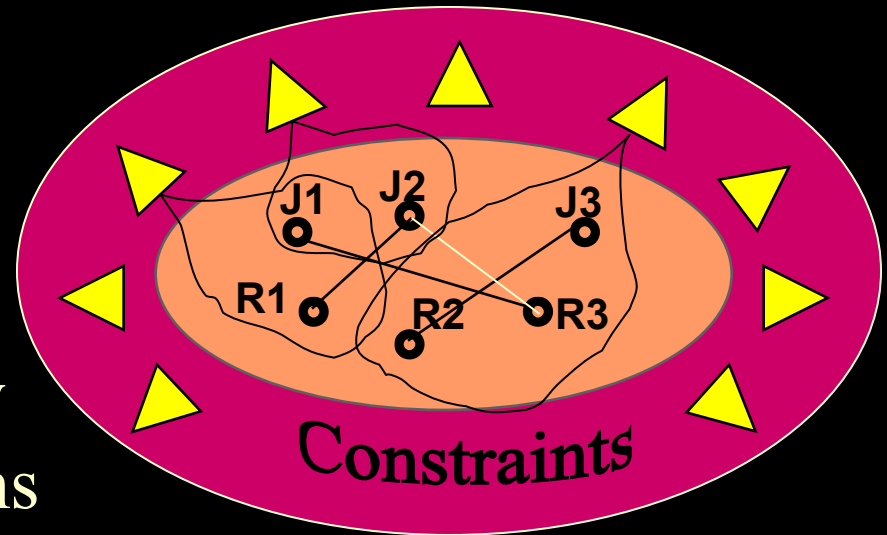
Where are Constraints?



Scheduling Objects with Constraints

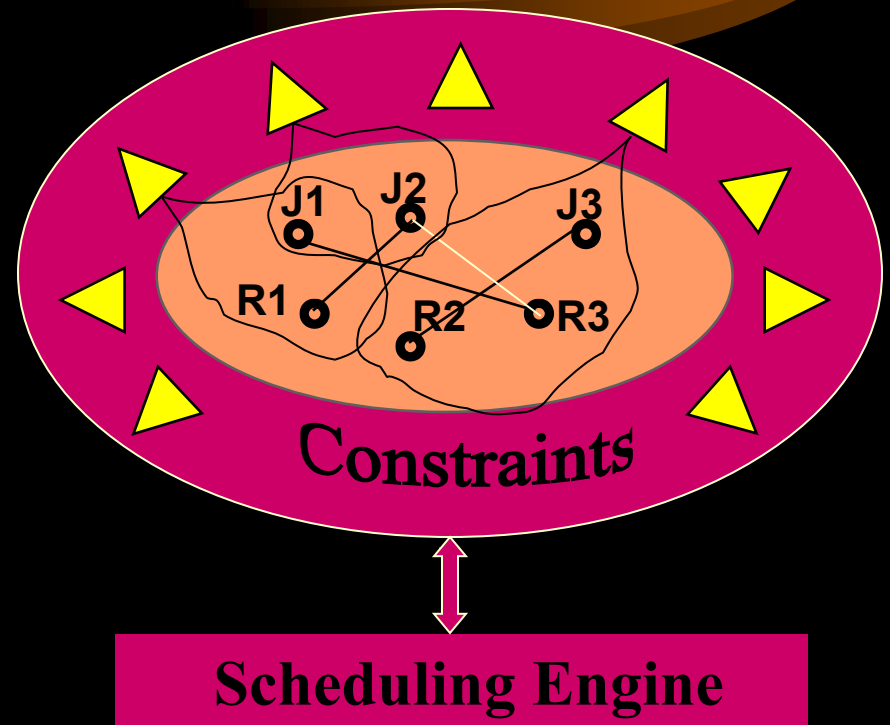
Constraints control relationships between the constrained objects.

Constraints are “sleeping” demons: each time when “somebody” modifies the state of the constrained objects, they wake up and provide the actions to support the consistency of the entire system



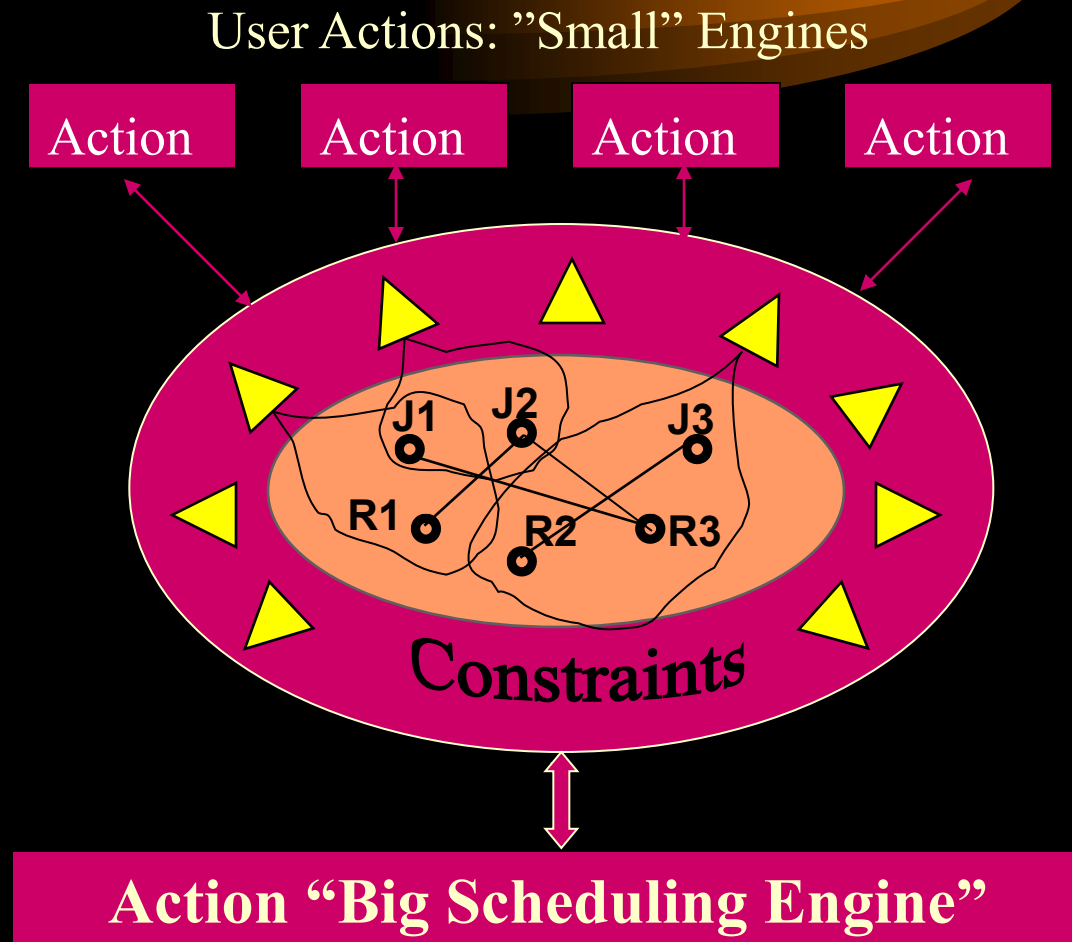
Scheduling Engine

Intelligent
Scheduling Engine
creates and
modifies the state
of the constrained
environment



Interactive Consistent Constrained Core

Manual and
automatic
Actions modify
the state of the
constrained
environment
under control of
the same
constraints



“Live” Demonstrations:

- 1) eConstrainer*
- 2) Utility Scheduler*

