Virgil enhancements – Planned improvements for a distributed processing scheduling software system

Lance Holden, DST Group
Dr Antonio Giardina, Deakin University
Introduction

• Data generation
  – Black box functions
  – Collating resources

• Problems
  – Lack of experience
  – Limited resources

• Deakin University research collaboration
Identified Issues

• Scheduling
  – Job linking
  – Progress monitoring

• Resources
  – Worker configuration
  – Execution commands
```json
{
  title: "Job",
  properties: {
    container: "cxxi-exporter-1.0",
    arguments: [
      {
        configURL: "http://simr-server/export/config.json"
      },
      {
        monitor: "http://simr-server/monitor/jobA32B33"
      }
    ],
  },
  resources: {
    properties: {
      cpu: 2048,
      ram: 8192
    },
    required: ["cpu","ram"]
  },
  capturestdout: true,
  dependson: [
    {
      name: "JobA1",
      optional: false
    },
    {
      name: "JobA2",
      optional: true
    }
  ]
}
```
Containerisation

Container Repository

Virgil
Parameters
Task

Task A
Task B
Task C

Worker A
Task A x2
Task B

Worker B
Task B x3

1) Assign
2) Fetch
3) Install

1) Assign
2) Fetch
3) Install

Parameters
Task

Task A
Task B
Task C
Future

• Domain Language
  – Workflow description
  – Workflow monitoring
  – Persistence
  – Load calculation

• Containerisation
  – Implementation
Expected Virgil Outcomes

- Distributed processing
- Descriptive specification
- Self configuring execution environment
- Resource maximisation

https://dstil.github.io/virgil/