





Synaptic Assimilator

Andreas F. Vermeulen 30 August 2015

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Research Question:

What happens when exascale computing executes data processing and computing solutions uses commodity building block and heterogeneous computing processes to convert data into information?



Exascale Computing:

Exascale computing is systems capable to support over one exaFLOPS of data processing.



Synaptic Assimilator

The solution is a one million processor ecosystem that processes data sets in the exabyte (10¹⁸) range and the system uses embedded heterogeneous computing that is assembled by an artificial control system from a range of pre-optimised processing building blocks.







Rapid Information Factory

The concept of a factory is well known to the world of mass production in manufacturing.

The RIF uses the same principals that is used in mass production in the commodity market to guide the processing of the data into information.







Rapid Information Factory

The factory consists of two halves:

Rapid Information Factory Framework

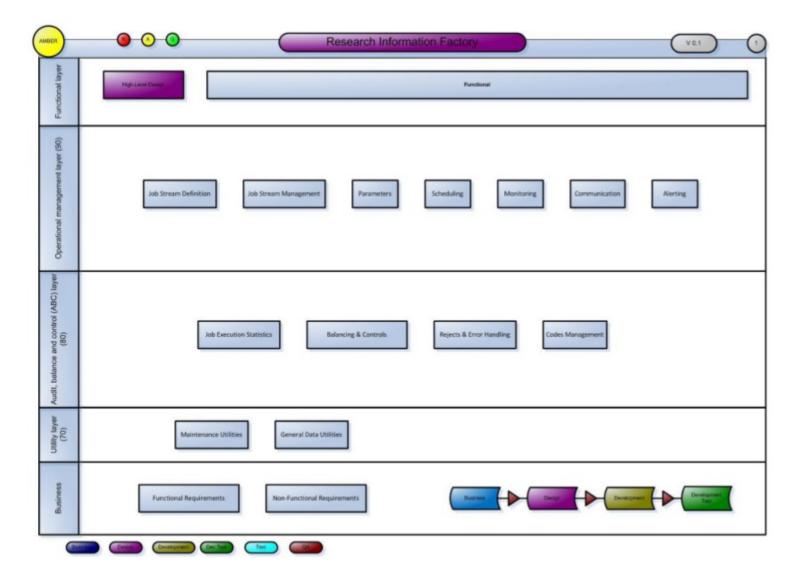
The framework guides the processing of data into information using pre-optimised processes.

Rapid Information Factory Cluster

The cluster is a pre-optimised processing solution that is processing the data into information.

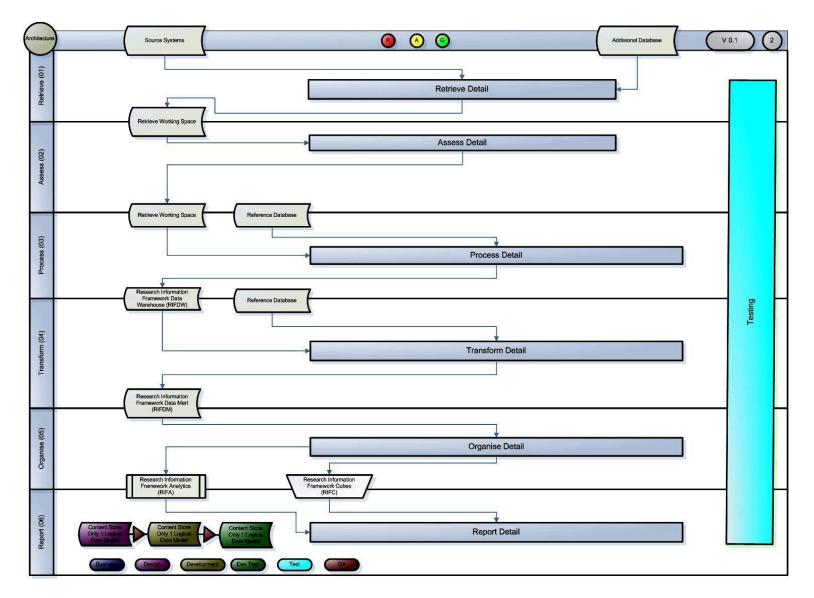


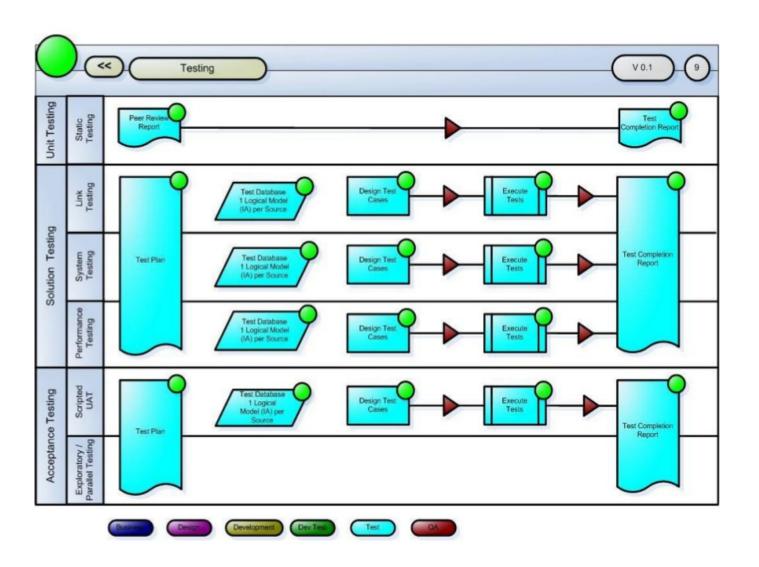
The framework guides the processing of data into information using pre-optimised processes.













5S is a workplace organization technique composed for five primary phases: Sort, Set In Order, Shine, Standardize, and Systematize.



SORT

Keep only necessary items in the workplace.



SET IN ORDER

Arrange items to promote efficient workflow.



SHINE

Clean the work area so it is neat and tidy.



STANDARDIZE

Set standards for a consistently organized workplace.



Maintain and review standards.



D	Defects
0	Overproduction
W	Waiting
N	Non-Utilized Talent
Т	Transportation
I	Inventory
М	Motion
E	Extra- Processing



Defects

Efforts caused by rework, scrap, and incorrect information.



Transportation

Unnecessary movements of products & materials.



Overproduction

Production that is more than needed or before it is needed.



Inventory

Excess products and materials not being processed.



Waiting

Wasted time waiting for the next step in a process.



Motion

Unnecessary movements by people (e.g., walking).



Non-Utilized Talent

Underutilizing people's talents, skills, & knowledge.



Extra-Processing

More work or higher quality than is required by the customer.



Persistent Recursive Information Schema Manipulator

Persistent Recursive Information Schema Manipulator The PRISM is the main process that drives a specific chain of processes that together forms the required work cells to convert the data into information by applying the RIFF rules of processing.



Remote Assessment Yoke

Remote Assessment Yoke

The RAY is a "Poka-yoke" from Lean manufacturing to avoid mistakes in the work cells while conversion of the data into information by applying the RIFF rules of processing.



Autonomous Node Transporter

Autonomous Node Transporter

The ANT is the software stack required to run any predefined hardware process and software combination from the RIFF library of processing configurations.



Persistent Uniform Protocol Agreement

Persistent Uniform Protocol Agreement

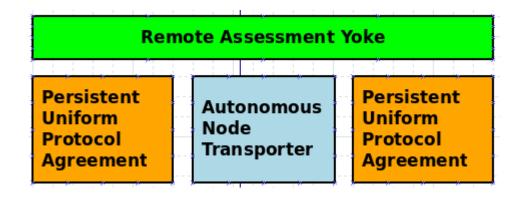
The PUPA is the software stack required to run any predefined Algorithms that is formed from self-contained step-by-step set of operations to be performed.

PUPA performs calculation, data processing, and automated reasoning using uniform processes from the RIFF library of processing configurations.

PUPA can consist of other PUPA to form processing chains.



Remote Work Cell



The RWC is a group of processes that has a singular purpose of work in the same manner than a Lean Work Cell.

The cell consists of four parts:

- RAY
- PUPA (inbound)
- ANT
- PUPA (Outbound)



Node Extractor and Schema Transformer

Node Extractor and Schema Transformer The NEST is a specialised software stack required to enable a ANT to communicate with a specific type of data source.

NEST will be designed for data sources and published in as uniform processes in the RIFF library.



Autonomous Logical Agreement Transport Executor

Autonomous Logical Agreement Transport Executor

The ALATE is a specialised software stack required to enable a ANT to discover which PUPAs will be required to perform the R-A-P-T-O-R process for a new NEST.



Sequential Converter into Ontology for Uniform Transport

Sequential Converter into Ontology for Uniform Transport

The SCOUT is a specialised software stack required to enable a ANT to convert meta data from a NEST into HORUS PUPA for R-A-P-T-O-R process to use.



Rapid Artificial Intelegence Data Extract Routine



The RAIDER is a specialised software stack required to enable a ANT to mine data from a NEST into HORUS PUPA procedures for R-A-P-T-O-R process to use.



Rapid Information Factory Cluster

The cluster is a pre-optimised processing solution that is processing the data into information.



Rapid Information Factory Cluster

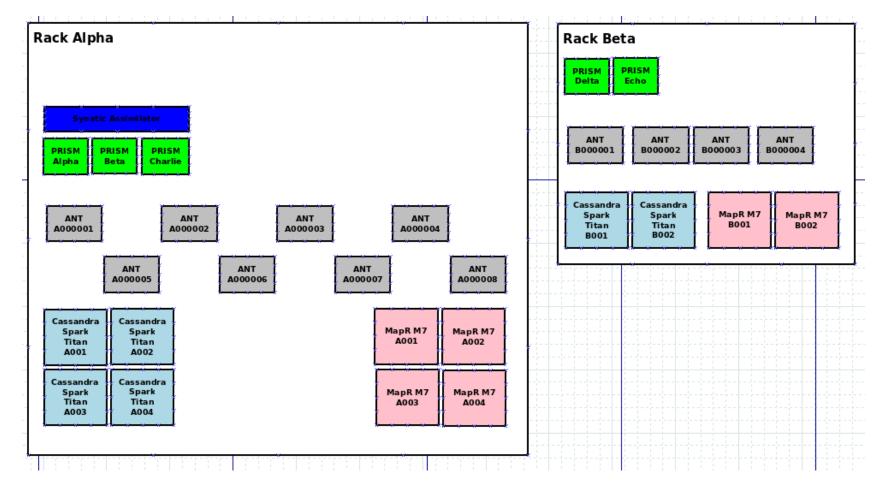








Rapid Information Factory Cluster

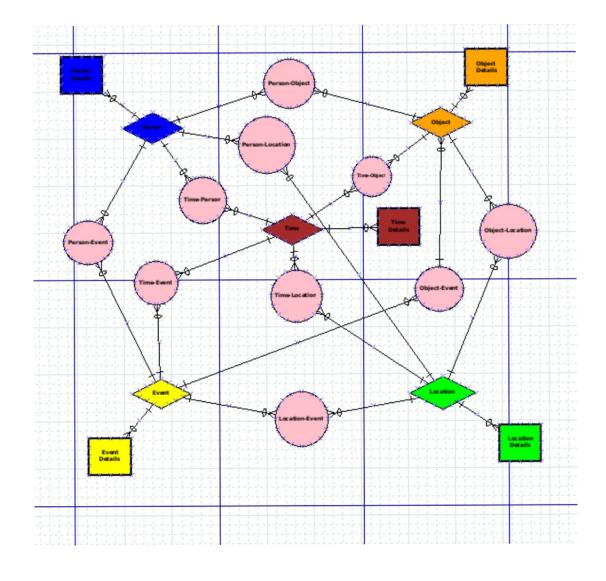








Time People Organisation Location Event









Thank you

Synaptic Assimilator

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