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SYSTEM FOR RULE-BASED DEFINITION OF CLOUD AND/OR EDGE FUNCTIONS WITHIN A PRINT WORKFLOW

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System for rule-based definition of cloud and/or edge functions within a print workflow

A software systems implementation is disclosed which enables the definition and enforcement of edge and/or cloud-based functions within a print workflow and/or print service provider networks.

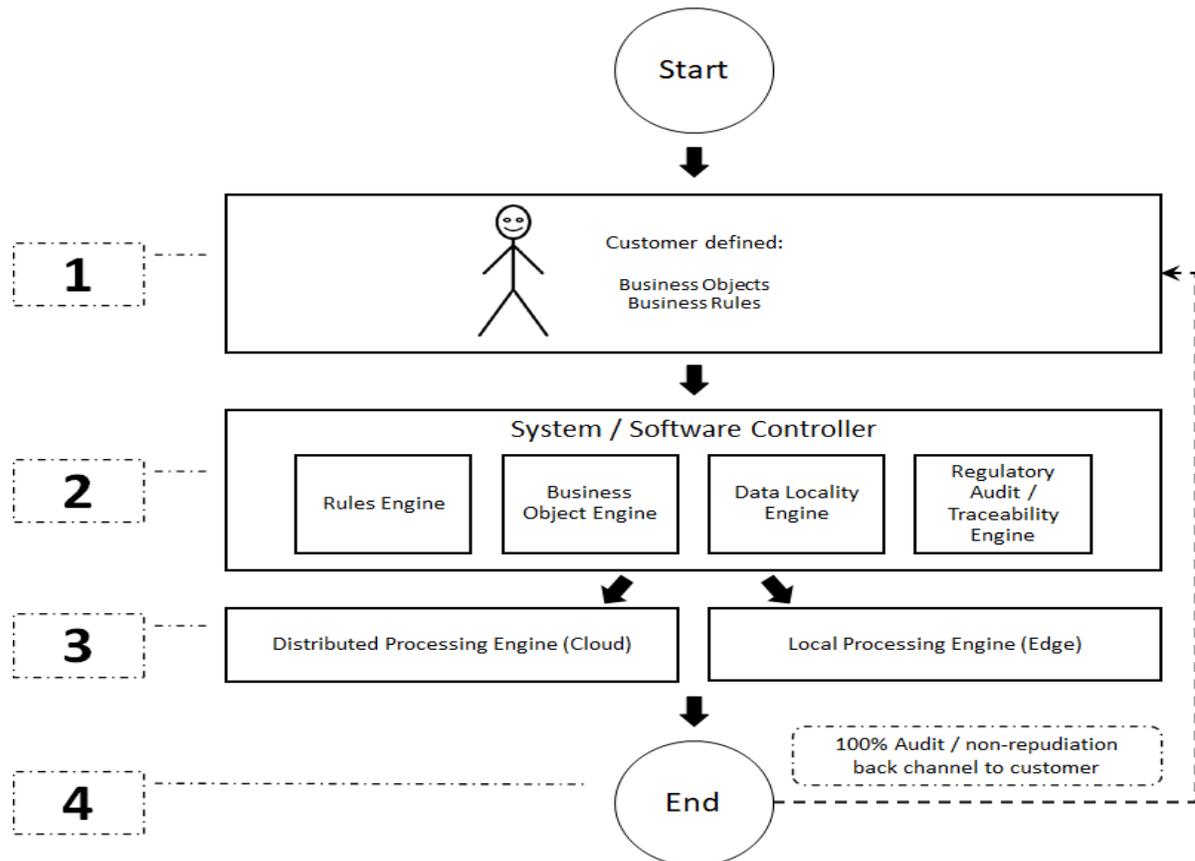
Today in print workflow, customers are functionally bound to specific cloud or edge technology implementations based on the technical and business choices of the providing vendor. These implementations of functional capability could include items such as, imposition, VDP (Variable Data Print) composition, PDF (Portable Data Format) normalization, RIP (Raster Image Processing), color management and many others.

There is the opportunity here for innovation in enabling customers within a print enterprise to define specific and collaborative business rules (rules engine) that could slice, direct, load balance and enforce each of these functions between cloud and edge (on premise), based on a defined but elastic set of rules. This implementation also gives the customer full and transparent control of their data and functional execution (data locality.)

A wide variety of potential rules and functions could exist, but a non-exhaustive list could include:

1. Impose easy jobs in the cloud, but complex jobs at the edge.
2. Compose VDP assets in the cloud if they contain no PI (Personal Information), but at the edge when PI exists.
3. Color manage assets in the cloud when file input/output sizes are small, but at the edge when file sizes pass a pre-determined rule/threshold.
4. Normalize a PDF in the cloud when content does not fall under a specific regulatory framework (i.e., HIPAA – Health Insurance Portability and Accountability Act), but at edge when PDF is part of a healthcare application.
5. RIP in cloud when copy count is > “n”, RIP at edge when copy count < “n”.

The Figure below shows a possible component implementation of this system/solution:



The previous figure contains four functional areas as annotated in the figure and detailed below:

1. The Customer controls and defines any business objects and rules as they need for their specific enterprise or use case. These business objects and rules are then persisted within the system software.

2. The heart of the implementation, the Software / System Controller is the operating environment (container) where the individual engines are implemented as defined below:

- The Rules Engine defines complex business rules, customized for the customer, that are then executed against relevant business objects.
- The Business Object engine defines all business objects as specified by the customer.
- The Data Locality Engine defines where objects, rules and data can be executed, which could include classification as cloud/local, or within regulatory, national, or geographical boundaries.
- The Regulatory Audit and Traceability Engine creates full audit and traceability for all operations within the system.
- Other Criteria Engine (extensible to meet expanding need)

3. The Distributed/Local Processing Engines are the container applications for the individual functional workers, be they in the cloud or on premise. These functional workers would execute specific application functions such as imposition, VDP composition, PDF normalization, RIP and color management. There can be a multitude of Distributed Processing Engines or Local Processing Engines.

4. The final terminus for the system process is the 100% audit/non-repudiation back-channel reporting to the customer. The customer has full visibility for how, when and where all activities in the system were executed.

Disclosed by Piet van Zee and Ron Tippetts, HP Inc.