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Premium report

Technology & Suppliers

In-depth review: Trisotech Digital Enterprise Suite

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Trisotech is making great strides in the emerging arena of Decision Management. It has a long pedigree in the standards management space – especially around BPMN and CMMN – both in pushing the boundary of what's possible with the standard itself, and also in creating easy to use software to support that standard. It's newest addition to the portfolio is a DMN modeller that's now tightly integrated with the BPMN and CMMN modelling canvases. Integration with the Red Hat open source environment makes for a very interesting combination.

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Summary

The Trisotech Digital Enterprise Suite sets out to provide tooling that spans the entire modelling spectrum, helping organisations improve and transform their operations. The vision is that, rather than embedding software code in business operations, firms can use models to drive the way in which they conceive and handle work. Decision Modelling sets out to represent decisions in a precise, standardised and transparent way.

The Digital Enterprise Suite delivers:

- A comprehensive set of tools and canvases that provide support to a broad range of users, enabling them to capture reusable models of how the business operates.

- A new DMN modelling component that provides an end-user accessible environment within which business people model how the organisation makes operational decisions. These models are then reusable across BPM/workflow environments and RPA implementations.

We see a powerful relationship developing between standards compliant DMN tooling and the process execution vendors. Both RPA and BPM vendors should pay close attention to the DMN standard and products such as the DMN modeller from Trisotech. Transportable and executable Decision Models will – proverbially – put the cat amongst the pigeons in a very wide range of industries including banking, financial services, insurance, telecoms, healthcare and infrastructure.

The product set supports the 'citizen developer' and 'citizen integrator', providing a clear separation between the needs of the business end-user and the ability to embed and hide technology integration. However, Trisotech is a relatively small vendor, which may not suit all customers. Its go-to-market model is to use a direct sales force in North American cities, and to work through partners in selected international markets. Having said that, we struggle to think of scenarios where organisations with significant operational decision-making requirements would not want to look seriously at the product.

The role of Decision Management

The new DMN Modeller is a central component of the Trisotech Digital Enterprise Suite. The DMN modelling component is just another part of that multi-disciplined set of views and tools – albeit a very important part. DMN models can be directly (and visually) linked to other components such as BPMN, CMMN, Capability and Discovery models, as well as strategic tools such as Balanced Score Cards, SWOT, Customer Journey Maps, Business Motivation Models, Value Proposition Canvas diagrams, amongst others. Moreover, the underlying structure of linked DMN models is directly accessible from within those BPMN/CMMN models. Alongside that is the DMN execution service – developed models can be exported and executed directly in RedHat's Drools (or another compliant engine); and there's also an execution service from Trisotech.

Strengths

The standout feature of the Trisotech Digital Enterprise Suite is its almost religious adherence to the formal standards. As a result, the Trisotech DMN modelling component can easily interoperate with other tools that conform to the standard – exemplified by the relationship with RedHat for execution, and Bruce Silver's methodology compliance component. Developed models are transportable to other products and executed directly. Indeed, the DMN standard is the only *lingua franca* between the players.

Opportunities

We expect to see leading RPA and BPM vendors licensing and bundling the Trisotech technology. It's here that Trisotech will need to step up its game.

Business impact

Given that technology intimately wraps and sustains today's business models, Trisotech's objective is to provide a suite of cloud-based tools that help customers "visualise, innovate, transform and improve the way they do business." The overarching value proposition is to support organisations as they transform their businesses – from both an efficiency and effectiveness perspective, but also improving enterprise agility and customer experience. That's a very broad scope.

Supported by a complementary set of modelling tools and canvases underpinned by a powerful multi-dimensional repository, the Trisotech Digital Enterprise Suite provides the ability to link both:

- **The creative/strategic outside-in view (customer value focus)** … The creative and strategic canvases of the outside-in world include support for the Golden Circle (Why/How/What), Alex Osterwalder's Business Model Canvas (BMC) and related Value Proposition Canvas (VPC), Customer Journey Mapping (CJM), SWOT, Business Motivation Model (BMM) and Balanced Score Card (BSC). In these environments, business users compose and arrange virtual sticky notes (meaningfully for their business context). The properties of these notes enable the capture of additional information and linking with others aspects of the business.

- **… with the inside-out aspects (operational efficiency and risk reduction focus)**. The inside-out and operational perspectives of Processes (both BPMN and CMMN) and Decisions (DMN) models capture the Activities, Actors (Roles), Artefacts, Goals, Models and Systems. With an almost evangelical focus on the precise enactment of BPMN, CMMN and DMN standards, Trisotech has developed what many would agree are the best reference implementations of these important OMG standards.

The important thing to understand here is that the Trisotech approach provides a comprehensive way of managing the distinct lifecycles associated with processes, decision rules and related data models. Secondly, the environment enables BPMN and CMMN models to achieve runtime binding to the appropriate element of decision logic at the level of the sub-decisions within an overarching DMN model (as against only binding at the model level).
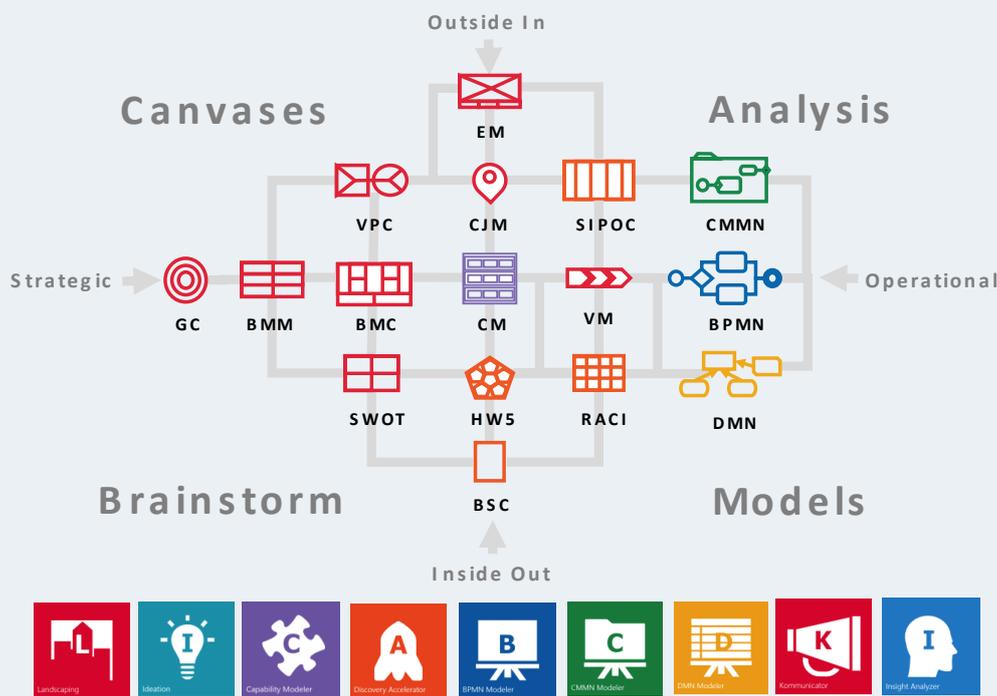
Tooling

All of the information gathered in these modelling tools and canvases is available in a powerful viewer environment – the Kommunicator tool – designed for publishing models within the enterprise, complete with role-based security, animation and links to attached artefacts and URLs. Each modelling tool also has access to a set of configurable 'accelerators' that enable reuse of common components from your own modelling efforts as well import from common enterprise tools such as SPARX, Casewise, SAP and TROUX, industry best practice frameworks (AQPC, eTOM, etc.), and ontologies such as FIBO. There's also a mobile access tool to allow remote participants to view and contribute/engage in model ideation and creation, as well as tools for analysis and capability mapping.

The Digital Enterprise Suite supports a variety of usage scenarios such as the:

- Capture of and shaping of strategic discussions on business direction and focus.

- Collaborative development of process and decision models.

- Insight and analysis of models to capture traceability and linkage to goals and objectives.

- Automated generation of comprehensive documentation for audit and compliance purposes.

- Import and export of standards compliant operational models for execution in process engines.

- Provision of a robust Decision Management service.

Figure 1   Trisotech tooling and canvases support many different methodologies
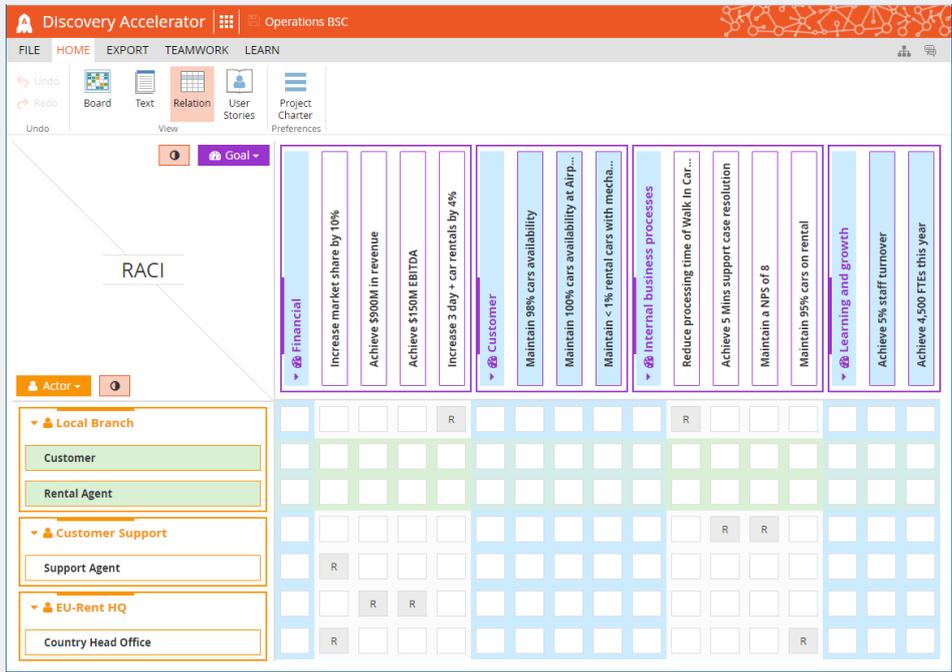

Source: Trisotech

There are a great many paths through the tooling and canvases shown in Figure 1. For example, during a facilitated strategy workshop, a team might capture a set of Strategic Objectives. Others might then work on developing a set of Business Model Canvas options, along with related value propositions and customer journey maps. A business architect might then use a Capability Model to capture the linkages between the Goals and the operational Processes/Decisions, identifying the responsible organisational entities. An executive might then want to focus on a particular Goal to see all related Processes and Decisions, examining a RACI chart to ensure effective coverage. A business unit manager and individual workers at the customer interface could then see how their local teams' actions might influence the attainment of that Strategic Objective.

From a usability point of view, rather than focusing on the IT modelling persona, Trisotech set out to build a slick and enticing tool set, oriented towards business people. Overall, it feels very much like a set of extensions to Microsoft Office 365, with a ribbon based user interface.

Each modelling canvas has a set of related tools embedded within it – for example, simulation and animation in the BPMN Modeller. There is a grid tool (Figure 2) in the Discovery Accelerator and the BPMN modeller canvases. These provide RACI style comparisons as well as I/O (Activity to Artefact, System to Artefact), Goal Achievement (Goals to Activities), System Utilization (System to Activity) and Trigger Results (Events to Activities).

It is beyond the scope of this review to explore the many interesting aspects of the wider set of tooling – our focus is the Decision Management functionality and how it interplays with process models. Practically, that means the DMN modelling tool, its integration with BPMN and CMMN models, the resulting Decision Management service, and the export of DMN models for consumption in other environments such as RedHat.
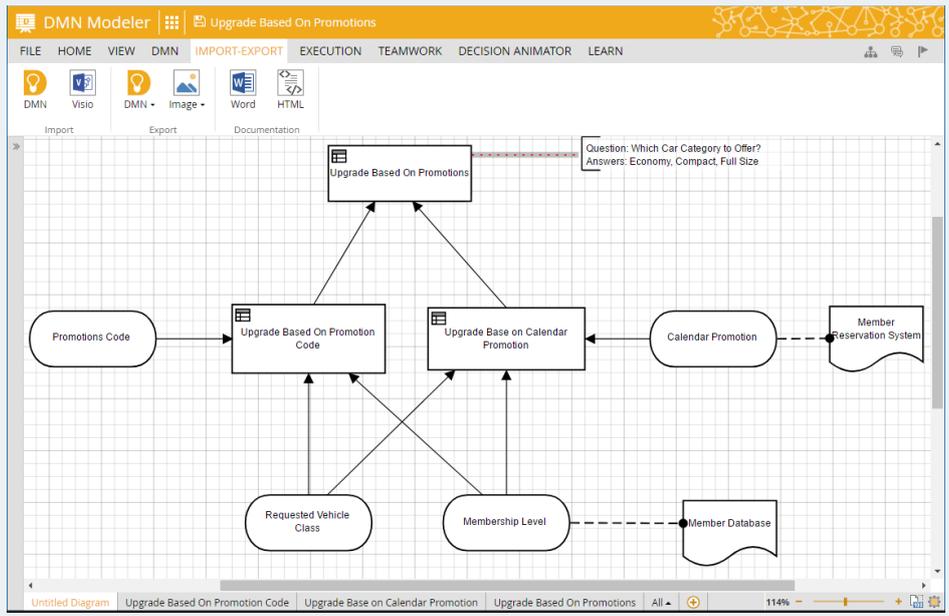
Figure 2   Grid comparison tool embedded in Discovery Accelerator for RACI
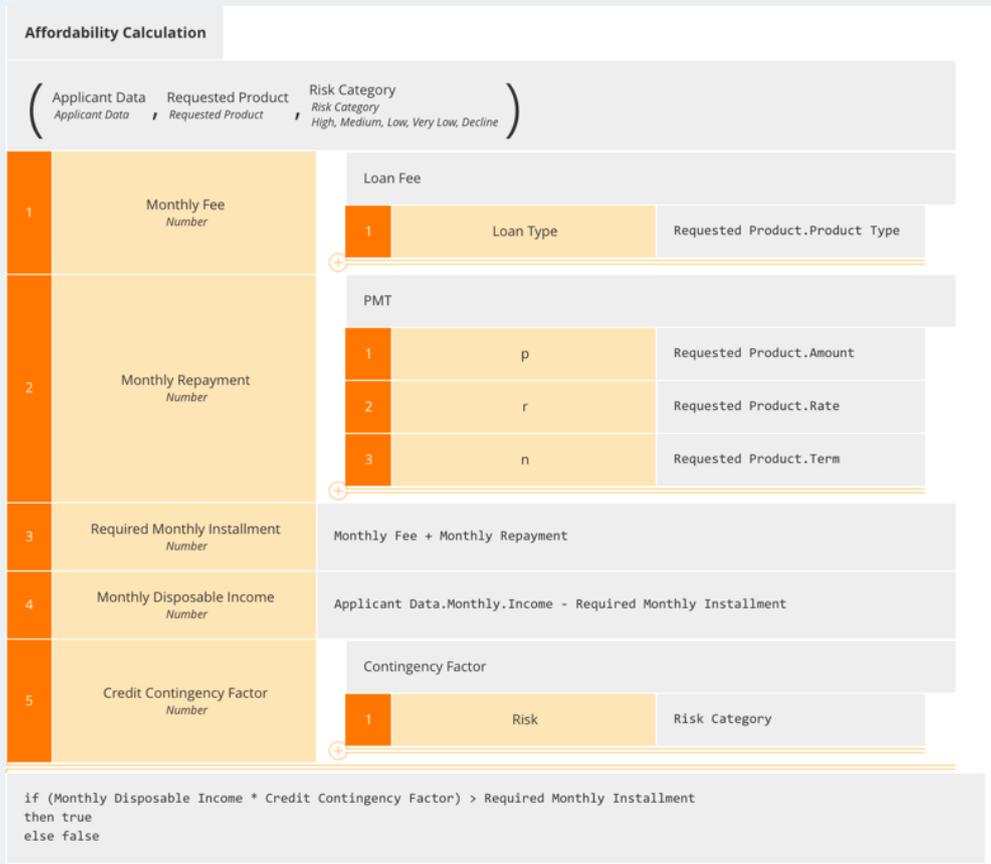

Source: Trisotech

The DMN Modeller provides embedded tools including import and export of DMN models, and the automated generation of documentation. Subtly differently, the data structures embedded in the DMN models – i.e. the Business Knowledge Models (BKMs), are all accessible from within linked BPMN or CMMN models.

Figure 3   The DMN modelling tool provides for level 3 specification compliance

Source: Trisotech

Figure 4   Decision tables with full support for boxed expressions

Source: Trisotech

As shown in Figure 4, it is interesting to note that Trisotech provides support for the full set of boxed expressions and the FEEL language (Friendly Enough Expression Language).

Traction

It is still very much early days for the DMN tooling within the Trisotech Digital Enterprise Suite. At present, the main route to market for Trisotech is through a direct sales force. Trisotech's Quick Start programme involves three partners – Bruce Silver provides the syntactic analysis of models through his Method & Style extension, with Allegiance Advisory providing workshops and consulting support, and RedHat providing the DMN execution engine within the Drools 7.0 container. This focuses on helping organisations get up and running with a bundled set of DMN licenses for 5 people. A second option is designed to help organisations move quickly to a pilot initiative within 2 weeks. At present, the RedHat support is only available in their Community Edition product set, with Enterprise Edition support due for release Q4 17. Otherwise, partners tend to be consulting organisations that use the product in customer engagements.

Firms can buy each tool individually (DMN, BPMN, CMMN, etc.), or as a collected Suite (or pretty much anything in between). Typically, organisations will mix and match the number of tools to suit their needs, growing as usage and as projected consumption dictates. Minimum packages are in the $3.7-5k per annum range. A 30-day free trial is also available.

Cameo case studies

DMN used to integrate 26 different environmental regulations

One of the government ministries within a major European economy is in the process of integrating all the regulations related to the environment and water management. Think sewage, water treatment, canals and dikes, roads, construction, agriculture … and you start to get the breadth. The ministry is merging what was previously 26 distinct sets of regulations into one. A key goal is to provide citizens and businesses with a comprehensive set of guidance and a central portal to answer questions. That portal will also provide the infrastructure for all the water boards and municipalities to create their own implementations of the regulations to meet their customers' special needs.

By focusing on the decisions involved, the regulator has turned the traditional approach on its head. Rather than relying on the potentially confusing language of written documents, subject matter experts have had to rethink their approach. In turn, this is leading to a dramatic simplification of the regulations themselves. Indeed, the complexity was such that the project would never have been feasible without a guiding framework such as that provided by DMN. The objective is to provide citizens and businesses with clear and unambiguous guidance on considerations that affect the environment when planning construction or changes in critical infrastructure. Clearly, at this stage, the project is a work in progress.

The organisation selected the Trisotech solution to support the modelling associated with the initiative. Trisotech won the business due to its compliance to the DMN standard, which was an important aspect of the selection process. The biggest challenge was to educate the business SMEs in the methods associated with formal decision modelling; they were not used to the degree of rigour required. The next challenge is to create suitable templates and components for use by the large number of municipalities and water boards; educating this wider audience is clearly a daunting task.

Clarifying cross-border commerce in financial services with DMN

Undertaking business across borders can be extremely complex, especially in the financial services industry. An ever-changing set of regulations place constraints on banks and financial services entities, restricting the sorts of trades that they can undertake in a given geography, and how they price and tax those trades.
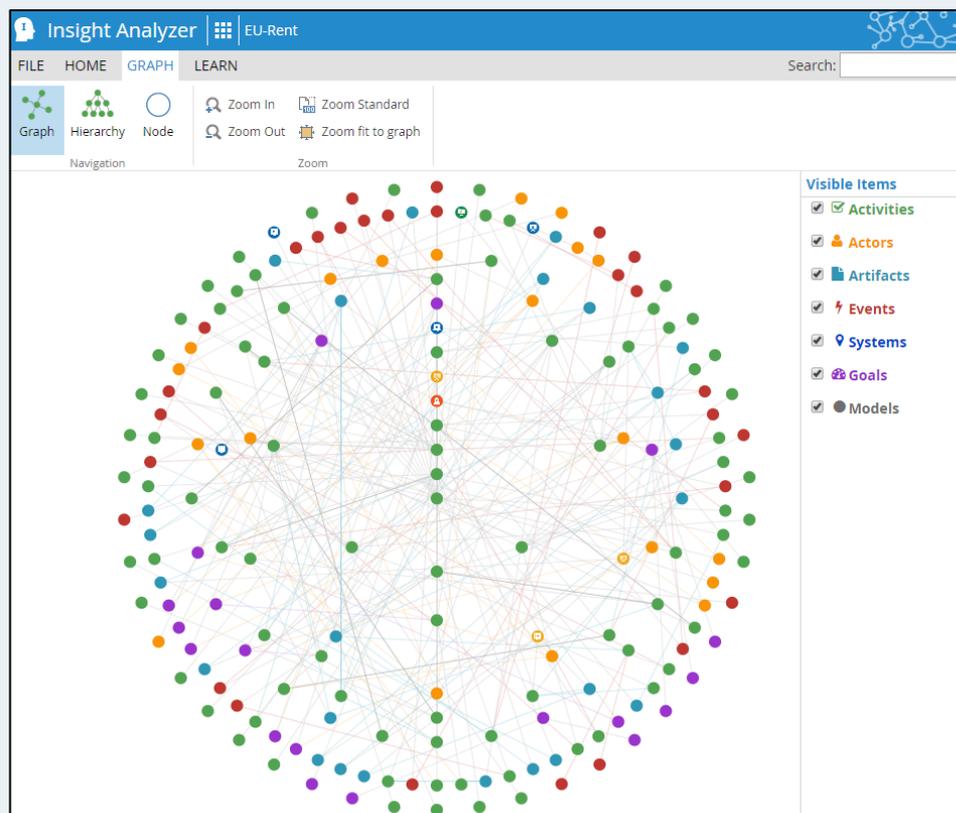
This specialist consultancy/advisory firm set out to model that complexity as a set of DMN models. Their objective is to create a set of 'business-governable' components to dovetail with a common core banking application used by 140 banks in Europe. For customer banks, it means the ability to flex their operations without having to invest heavily in custom software development, only to find the regulations have changed again. With context clarification via decision management, it becomes possible to apply consistent rules to, say, both an advisory system for proposals, an execution environment for trading, and the related tax reporting applications.

It's still relatively early days with the effort, but initial results look promising. Of course, there are challenges associated with rethinking traditional approaches – not least of which was the tendency to overload existing rule sets and decision tables with discordant business concepts. While DMN forces a separation of concerns to reflect the context of decisions and clarify the structure of decision models, it means that business SMEs often have to re-examine their underlying assumptions. Moreover, model developers need to develop meaningful methods to handle looping and iteration within decision models.

Overall architecture

At the core of the repository is a "Digital Enterprise Graph" that provides a semantic approach broadly based on HW5 – Why, Who, What, When, Where, and How – which is analogous to the Zachman Framework entities. All models leverage this underlying semantic infrastructure to link elements across the different canvases and modelling tools.

Figure 5   The Digital Enterprise Graph at the core of Trisotech shows the links between objects in the repository

Source: Trisotech

Every point on the graph in Figure 5 represents elements contained in the repository. By selecting one of those elements, the user can view all the related models and navigate to them if needed.

Deployment options

Trisotech offers the entire Digital Enterprise Suite directly through the public cloud – via AWS, Azure and the Trisotech default, OVH Groupe SAS cloud servers. Trisotech also offers deployment to private and on premise clouds. There is no difference in the repository formats; therefore, it's simple to clone repositories using file copies. Users can also export and clone selected elements of a repository, making it available as an "accelerator." This enables reuse of common components such as the organisational structure, the systems environment or a modified process architecture.

The entire Digital Enterprise Suite, including DMN Modeller, is a cloud-based SaaS product that fully supports real-time changes including file change notifications when someone changes a model that you are currently viewing. The suite provides all necessary locking mechanisms to enable viewing and editing of models in real-time. No file synchronisation is required.

Developing models

Users develop their models with browser-based tools. The Digital Enterprise Suite facilitates modellers linking together all of the relevant elements, creating traceability and enabling reuse. Where relevant, existing repositories and reference models can support direct reuse through accelerators.

Domain modelling

Glossary/ontology functionality has no current definition in the DMN standard. Trisotech currently supports this through its Accelerators product extensions. Accelerators provide linkage to all existing Trisotech entities via the Digital Enterprise Graph for purposes of reuse and standardisation. Accelerators also link to enterprise EA systems such as Sparx, Casewise, Troux, etc., enterprise dictionaries and glossaries, industry and best practice frameworks such as APQC's PCFs, TM Forum eTOM, and ontologies such as the OMG's FIBO (Financial Industry Business Ontology) and Panorama 360 (an insurance industry ontology).

DMN models support data typing and user-defined data structures. Knowledge semantics are defined using DMN standard entities such as input and output data typing, user-defined composite data structures, Knowledge Sources (KSs), and Business Knowledge Models (BKMs). Knowledge Sources in DMN store Owner, Type and Location meta-data. The product also supports file attachment and retrieval, rich text descriptions, semantic links to architecture repositories, frameworks and ontologies, and comment streams at the DRD element level. URL designations are available for document anchor points and content management system interfaces (CMIS 1.1 and SharePoint).

All meta-data prescribed by the DMN 1.1 specification is captured on the face of the modeller through shape attributes (decision logic, questions and answers, decision makers/owners, etc.). The tool also captures and stores version and state information and comment streams at the model level. All meta-data is stored in the standard model XML file, with some in the vendor-specific section.

Decision modelling

DMN models are created, maintained and viewed using a modern web browser including: Edge, IE, Safari, Chrome and Firefox on desktops, laptops, tablets and smartphones. All creation and editing is done in the modeller visual interface using drag and drop functionality from palette to canvas. The visual boxed expression interface provides further enhancement to decision logic, with full syntax-checking and colour-coded text entry (to identify different types of model elements).

A Red Hat run-time validation function checks execution semantics. Bruce Silver's Method & Style rules are used for decision table checking, rule gaps and overlaps (incomplete/inconsistent), subsumption (uncontracted tables), masked rules, and normalisation violations (a la TDM).

Related modelling areas

Trisotech provides bespoke modelling tools for BPMN and CMMN models, which embed Decision Activities. There's direct linkage to other concepts such as Capabilities, and many strategic diagram formats (SWOT, Balanced Score Card, BMM, Vale Chains, etc.) through direct linking in properties dialogues of the relevant elements in these other models. The Kommunicator tool embeds animated navigation to the related DMN model when users explore a process model.

Decision Management interfaces

At the time of writing this review, Trisotech is the only modelling tool providing full support for all three levels of compliance to DMN 1.1 specification – i.e. DRDs, Decision Tables and FEEL Language support. Users can publish any DMN model as:

- RESTful Web Service on Trisotech servers.

- Red Hat KIE container packages, invoked via RESTful calls using JSON parameters.

- Automatically-created HTML input forms.

- DMN 1.0 or 1.1 standard-compliant XML files.

Any model can be published to a web service and invoked via automatically-created HTML input forms (URL provided upon model publication) on any modern browser. On-screen, on-model step-by-step animation allows each decision (and sub-decisions) to be introspected for inputs required, and those input fields are provided for on-screen data entry during testing. Constrained inputs offer drop-down selections where appropriate. Decision rules (table rows) and FEEL expressions executed are visually highlighted on both DRD and in boxed expressions to simplify debugging.

All models are fully versioned and can contain status fields (draft, approved, etc.). To facilitate automated regression testing, Trisotech will very soon introduce features to support the selection of external data sources mapped to FEEL types and structures.

Automated execution

Currently, it's possible to publish Level-3 compliant DMN models files for consumption by third-party engines as RESTful Web Services on Trisotech's own servers, and as Red Hat KIE container packages. Level-2 models (decision tables & DRDs) can also be published as services on an IDIOM server or as Java or C# source modules.

Publishing

The Kommunicator tool supports interactive model animation, with direct visual linking and integration to/from other models (BPMN, CMMN, etc.). Subtly differently, step-by-step execution provides users with a lightweight model execution environment. Each Decision is introspected for required inputs, which users populate for data entry and/or testing. Where appropriate, constrained input fields offer drop-down selections. To simplify comprehension and debugging, the tool highlights the specific decision rule (table row), and FEEL expression during execution, on both the DRD and in boxed expressions.

The Digital Enterprise Suite also automatically generates fully configurable and hyperlinked Word and HTML reports. These include all diagrams, decision logic (decision tables and FEEL statements in Boxed Expressions), data types and structures, and DMN DRD attributes.

Import / Export

Import: DMN standards-compliant XML files and VISIO diagrams. Export: DMN standards-compliant XML files, JPEG, PNG, TIFF and PDF files. Models can be cloned between repositories. When using the Accelerator functionality, the platform reuses selected models and entities automatically. It's also possible to copy models between repositories. Full component reusability is available using the Accelerator tooling, which enables users to drag and drop elements within the current repository, and from other repositories. Versioning is at the DMN model level.

Governance

Security

Trisotech provides the typical SaaS security you would expect of a major software platform – see **http://www.trisotech.com/security**. Named users and associated passwords are used to control log-on. The Trisotech solutions rely on external User Authentication. The following authentication and Single Sign On (SSO) technologies are available: 1) Azure Active Directory (Cloud/On Premise); 2) SAML2 (Cloud/On Premise); 3) LDAP (On Premise); 4) Active Directory (On Premise).

Trisotech also provides an independent 'Trisotech Account' user authentication mechanism to guarantee email ownership and provide password management and resets. All Trisotech Accounts passwords are encrypted using secured 1-way hash encryption. All communication between customers and the Trisotech data centre is encrypted using SSL certificates.

Release management

DMN models are published to repositories (called 'Places'), with permissions (owner, read/write, view, etc.). Potentially, each DMN model can represent a different perspective of a problem. Models can reside in one or more repositories. Each repository has 'members' who can then collaborate on the model and the entities within using an on-going comment stream.

All models are fully versioned and can contain status fields (draft, approved, etc.). Validation checking – with data typing and table checking – occurs in the DMN modeller. Another tool, the Insight Analyzer, incorporates search and duplication detection capabilities. The vendor plans to support regression testing soon via defined input data sources mapped to DMN input types.

Federated support

The Trisotech Digital Enterprise Suite supports multiple repositories and the ability to move models between those Places. On top of that, the Accelerator functionality – available in all the modelling tools – enables the user to reuse, and then customise common elements locally.

Accelerators maintain semantic links from Decision Nodes, Inputs, Business Knowledge Models and Knowledge Sources to existing architectural repositories, industry and best practice frameworks, and ontologies. Semantic Linking allows local renaming in models while still supporting the link to the originally copied model element in the Accelerator. It's then possible to easily highlight variations.

Users can undertake impact assessment via the Insight Analyzer component of the Digital Enterprise Suite. The overall modeller user interface currently supports both English and French languages. All other user-supplied fields can use any language supported by the browser/OS environment.