



VALUE NETWORK BMI TOOL FOR SMART INDUSTRY

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Executive Summary

Problem: Making decisions on changes to how a business creates and captures value in the complex value network of smart industry is challenging. How can decision-makers in a company predict how changes to a business model will affect the company and value network partners in an organized way? How do you make decisions that lead to viable business model changes which the value network will support? Addressing this is one of the key challenges of business model innovation (BMI) in smart industry.

There are existing tools for disparate phases of BMI within a company, but the full process of developing novel changes to a business model from ideation to commercialization is often done incongruently by individual companies and the process can be unclear and inefficient [1]. Value network partners would benefit from a shared language that can be used for addressing BMI instantiated in tools which support collaborative development of BMI ideas.

Various tools support different phases of the BMI process. For this whitepaper, our primary focus is ontology-based modeling tools which provide formal value network representations. While numerous other BMI tools exist, such as game-based tools, BMC-based templates, financial modeling software, and strategy simulation platforms, our analysis concentrates on tools addressing value network complexity and stakeholder coordination challenges characteristic of smart industry innovation. Ontology-based tools map business model elements and interactions in an organized, machine-readable way [2]. In this whitepaper we define an appropriate ontology and tool for smart industries to develop viable business models with value network partners and a methodology for implementing this tool in their existing BMI process.

This whitepaper addresses an important phase of BMI for smart industries: which ontology-based business model innovation tool best supports development of business model changes in response to smart industry's collaborative value network challenges? We examine ontology-based approaches, demonstrate why e3 value modeling specifically addresses multi-stakeholder coordination, and provide practical guidance for implementation. Our comparison shows that while focal-actor tools like the Business Model Canvas serve internal planning, smart industry's network-dependent innovation requires explicit value network modeling capabilities.

Solution: We use ontologies in business research to define abstract business concepts in a consistent format which is machine readable and can be analyzed. These ontologies are operationalized through modeling techniques to describe the concepts in the ontology in an organized way. These modeling techniques are instantiated in specific modeling tools such as the Business Model Canvas for Osterwalder's business model ontology [3] and the e3 value software modeling tool for the e3 value ontology [4]. We posit that the structure of the e3 value ontology is uniquely positioned to describe the challenges faced by smart industries.

The e3 value ontology takes a value network approach to business modeling- visualize the value network and value exchanges between partners. This contrasts with the business model ontology underlying the business model canvas, which takes a focal actor perspective. This perspective details the anatomy of a business and points to the value network but does not address interactions with the value network at the level of fidelity necessary to see how changes to the company's business model would affect the broader value network.

The e3 value ontology introduces the e3 value modeling technique, which visualizes the interactions between value network partners and quantifies these interactions. Visualization allows for clarity on the existing business model and what changes to the model would mean for the value exchanges between partners. Quantifying the interactions allows for predictions of how changes to the business model will affect value interactions between value network partners. Discussing the business model with value network partners creates cohesion and alignment on what changes to the business model are viable not only for the company, but key partners as well.

Relevance: Innovation of the business model is a strategic imperative in smart industries. Companies in this domain face pressures from geopolitical disruptions of the supply chain requiring resilience, sustainability goals requiring transparency along the supply chain, new service models stemming from digital transformation, and the trend towards mass customization for complex customer needs. This complex and dynamic business environment necessitates business model redesign outside of the scope of a single company, requiring innovation at the level of the value network.

Furthermore, value network partnerships in smart industry are challenging due to a variety of concerns. If the value sharing mechanisms are unclear or partner incentives are misaligned, a proposed business model change may not be viable. If data ownership and process integration are not planned properly, communication can break down. If there is no clear governance framework for the partnership, it will be challenging to resolve potential conflicts or disputes. Addressing complex collaboration challenges earlier in the BMI process with value network partners streamlines the process and increases the likelihood of successful BMI.

While the e3 value ontology cannot resolve all potential challenges, it provides a framework for a high-level visualization of the value network and quantification of value interactions between value network partners. This creates an opportunity for decision makers within the value network to reach consensus on value structures and risk and see how the novel business model will function within the established value network.

Key Takeaways: E3 value's learning curve means it's most valuable for organizations facing complex value network challenges where competitive advantage depends on understanding the value network of your company. Short-term, internal business model challenges would not justify the investment in capability building of e3 value modeling as part of the company's BMI process.

- **Timing:** The e3 value modeling tool is especially relevant during development of a change to your business model in preparation for commercialization. Complementary tools built for collaboration with value network partners should be considered during ideation and screening when a need for change is identified but the direction is not yet clear.
- **Implementation Process:** e3 value is useful for resolving complex value network challenges. A company should be prepared to have this collaborative discussion with value network partners and be aware of the potential challenges that can arise.
- **Integration with complimentary tools:** For a business model innovation tool to be useful, it needs to be integrated into the existing business model innovation process of a company. Organizations will derive more value from this tool if integrated into a clear process from collaborative ideation through analytical validation of business model changes and full implementation in agreement with the value network.

1. Introduction

In the complex business environment of smart industry, companies need an organized implementation process for business model change. Furthermore, they need tools to support the process of business model innovation (BMI) in their company; in smart industry, this process often requires collaboration with value network partners for successful BMI. For this discussion it is important for partners to share a common language around value for addressing BMI and tools to support the collaborative development of BMI ideas with value network partners using that common language.

Business model innovation (BMI) is the process of making changes to a business model to improve a company's position in its business ecosystem. According to Salerno (2015), the traditional BMI process proceeds through 4 main phases:

1. Ideation and framing, where novel ideas are generated
2. Screening and portfolio management, when ideas are filtered for what is realizable in the business
3. Development of the chosen ideas to integrate them into an existing business model or forming a novel business model around a novel direction
4. Commercialization where a novel business model concept is implemented to customers working with value network partners.

This is the traditional innovation process. As described in Salerno (2015), this process is how BMI initiatives are often initiated in companies [5]. In the complex multistakeholder environment of smart industries, this process for business model changes is too simple. In smart industry, multistakeholder communication needs to happen much earlier in the process, as buy-in from value network partners is often needed for a proposed business model change to be viable.

With the current increasingly rapid pace of change, companies can no longer make decisions on business model changes alone. Market pull and technology push have substantial influence on the initiation of the BMI process in a company and the direction of innovation, and visibility on these forces and business environment is broader with a value network than from the point of view of a single company. The innovation process within smart industries therefore needs collaboration with value chain partners, in the form of a value network: information and value exchanges occurring between organizations and the customer based on complex needs in a rapidly changing environment.

2. Smart Industry context

We have identified challenges found in smart industries literature where a solution requires value network collaboration. The challenges below are collected from literature reviews and case studies within smart industries literature from 2018-2025 and align with those highlighted by industry partners within NXT GEN at project events and during workshops.

Challenge Categories	Specific Challenges
Multi-Stakeholder Alignment	Network Coordination & Integration [6] [7], [8], [9] Governance framework [10], [11], [12] Government Compliance [13] Trust [14], [15]
IoT & Digital Servitization	<i>Network Partners</i> Technology Infrastructure[11], [16], [17] Data Sharing [11], [12] [18], [19]
Value Sharing	<i>Customer</i> Co-Creation [20], [21], [22], [23] <i>Network Partners</i> Dividing Value & Risk [17], [24], [25], [26]
Sustainability	Suitable Partners[7], [27], [28], [29], [30] Circular Economy [7], [10], [27], [28], [30]

Categories and specific value network challenges in Smart Industries

These challenges fundamentally concern value distribution and risk allocation across value network partners. Smart industry business models require explicit agreements about how economic value is shared (e.g. revenue split, cost allocation, investment) and how risks are distributed (e.g. demand uncertainty, technology obsolescence, regulatory compliance). Traditional single-actor business modeling tools cannot adequately address these multi-party negotiations, creating the need for explicit value network modeling approaches.

Having established these smart industry challenges, we now examine which business model innovation tools can address them. For smart industry's value network challenges, we focus on ontology-based modeling tools that provide formal multi-actor representations.

3. Current Ontology-Based BMI Tool Landscape

An ontology in business research provides a formal specification of concepts and their relationships within a domain. The ontology defines what elements exist and how they relate, independent of any representation or implementation. For business model innovation, ontologies specify fundamental constructs such as actors, value objects, exchanges, and value propositions. This structure allows for modeling of complex interactions

The current most well-known ontology-based tool is the business model canvas (BMC) and its derivatives. This tool takes the focal actor approach, meaning the focus is the internal structure and organization of a business. The BMC provides a structured approach for outlining the major internal elements of a business and serves as a useful tool for discussing

internal changes to a business but is not designed for discussing the complex value networks found in smart industries as the focus is the internal structure of the company. Customers and suppliers are mentioned, but the nuance of how value interactions occur with these value network actors are lost.

In comparison, the e3 value modeling tool is used to visualize a value network in which the company is one actor. While the company is central in this visualization, e3 value focuses on the complex value interactions with the company's value network. As such, it is a fitting tool to address BMI for making changes to a company's value network and exploring novel business models in smart industry [31]. While the BMC is a useful tool for addressing focal actor challenges, it struggles when challenges involve a complex multistakeholder environment.

Specific Challenges	E3 value modeling tool	Business Model Canvas
Network Coordination & Integration	Y	N
Trust	Y	~
Governance framework	Y	N
Government Compliance	Y	~
Technology Infrastructure (<i>Network Partners</i>)	Y	~
Data Sharing (<i>Network Partners</i>)	Y	N
Customer Co-Creation	Y	N
Dividing Value & Risk	Y	N
Suitable Partners	Y	~
Circular Economy	Y	N

Whether the tool can model the specific challenge: Y for yes, ~ can be extended, N for no

3.1 What is the e3 value ontology?

The e3 value ontology defines **value interactions** between **actors** in a **value network**.

Actors are independent entities participating in the market: the company, customers, suppliers, and government organizations are examples. **Interactions** are **value exchanges** between actors for **value objects**: goods for cash is the simplest example of an exchange.

There are **value ports** for requesting or transferring value between actors through a **value interface**: the method for conducting an exchange, for example a purchase order to a supplier. This model has **boundary elements**, where the model explicitly marks the limits of the model within the value network. These elements of the ontology can be used to model complex value networks, such as those in smart industry.

Key Distinction: The *ontology* defines concepts (actors, value objects, exchanges). The *modeling technique* operationalizes these concepts into representational methods. The *modeling tool* (e.g., e3 value modeling software) instantiates the technique for practical application. Throughout this paper, "e3 value" refers to all three layers contextually. We specify when we refer to each layer within the whitepaper.

3.2 Why the e3 value ontology?

The e3 value ontology explicitly models all ecosystem participants and their relationships, not just the focal organization. This proves essential for smart industries where value propositions often require coordination among manufacturers, technology providers, data platforms, suppliers, and customers. By making all actors and their value exchanges visible, the e3 value ontology pushes value network partners to consider how the business model serves each participant's interests, surfacing potential misalignments before implementation.

3.3 What is the e3 value modeling technique?

Beyond visualizing value exchanges, e3 value modeling shows risk through dependency structures and modeling contingencies. Scenario analysis allows organizations to assess how disruptions propagate through value networks: for instance, modeling how supplier failure affects downstream partners or quantifying vulnerability to geopolitical supply chain disruption. By representing alternative value network configurations explicitly, e3 value modeling facilitates comparing risk profiles alongside economic viability, supporting informed decisions about trade-offs regarding supply chain resilience versus cost optimization. This modeling technique is then instantiated in the **e3 value modeling tool**, an interactive tool which visualizes the e3 value model.

4. E3 value modeling tool for smart industry

The e3 value ontology's ontological foundation provides machine-readable, formal specifications of value networks. Unlike informal business model representations, this formalization enables quantitative analysis and systematic scenario comparison. The e3 value modeling tool visualizes actors, value objects, value exchanges, and value interfaces explicitly: the model can represent both physical product flows and digital value streams characteristic of Industry 4.0.

Smart industry value networks exchange diverse value objects beyond traditional goods and payments. Data streams (sensor data, production metrics, quality parameters), digital services (predictive maintenance, optimization algorithms, platform access), intellectual property (design specifications, process knowledge), and various forms of expertise all flow through value exchanges. The e3 value modeling tool can represent these intangible value objects alongside physical products and financial flows, comprehensively visualizing the network.

The e3 value modeling tool has several key capabilities relevant to smart industry:

Scenario modeling: The e3 value tool's formal structure enables systematic comparison of alternative business model configurations. Should a manufacturer pursue global or regional supplier networks? Should it sell products or offer outcome-based services? Should it build proprietary platforms or participate in industry-standard ecosystems? Each alternative can be modeled explicitly as a distinct e3 value model configuration, quantified using consistent assumptions, and compared on economic viability, strategic risk, and alignment with organizational capabilities. This capability addresses a persistent challenge in business model innovation: organizations can evaluate alternatives through separate analyses which may have

inconsistent assumptions, different levels of detail, and incompatible frameworks, making rigorous comparison difficult.

Viability assessment: Because the e3 value tool specifies value objects and their economic characteristics, they can be quantified to assess whether proposed business models generate adequate returns for all participants. The ability to model alternative scenarios numerically and compare their financial implications reduces strategic risk. Critical questions become answerable: Does this platform model generate adequate revenue for the platform provider? Do participating manufacturers capture sufficient value to justify their data contributions and integration costs? Does the supplier receive adequate compensation for enhanced responsiveness and the investments required to deliver it? Will customers pay enough to sustain the service model? Quantification transforms business model innovation from creative speculation into rigorous strategic analysis. Furthermore, financial assumptions are easily visible in the model and can be discussed.

Multi-party value exchange: By making all actors and their value exchanges visible in a formal structure, the e3 value tool pushes designers to consider how the business model serves each participant's interests, surfacing potential misalignments before implementation. Each actor in the model maintains economic independence, pursuing their own objectives. This representation ensures business model designs account for the reality that value network partners will only participate if they receive adequate value in return for their contributions.

Supports complex configurations and dependencies: The e3 value tool's representation of value interfaces enables modeling complex value interactions and ecosystem dependencies. For example, data used for optimization and the cost of processing that data can be modelled. For dependencies, platform business models, servitization strategies, and supply chain reconfigurations all involve conditional relationships: "Partner A participates only if Partner B commits to minimum volumes" or "Customer pays premium pricing only if responsiveness improves demonstrably." These dependencies fundamentally affect business model viability, and e3 value's formal structure makes them explicit and analyzable rather than implicit assumptions.

We will now illustrate the application of the e3 value modeling tool in smart industry with an example of a complex value network challenge faced by smart industry based on discussions with an industry partner.

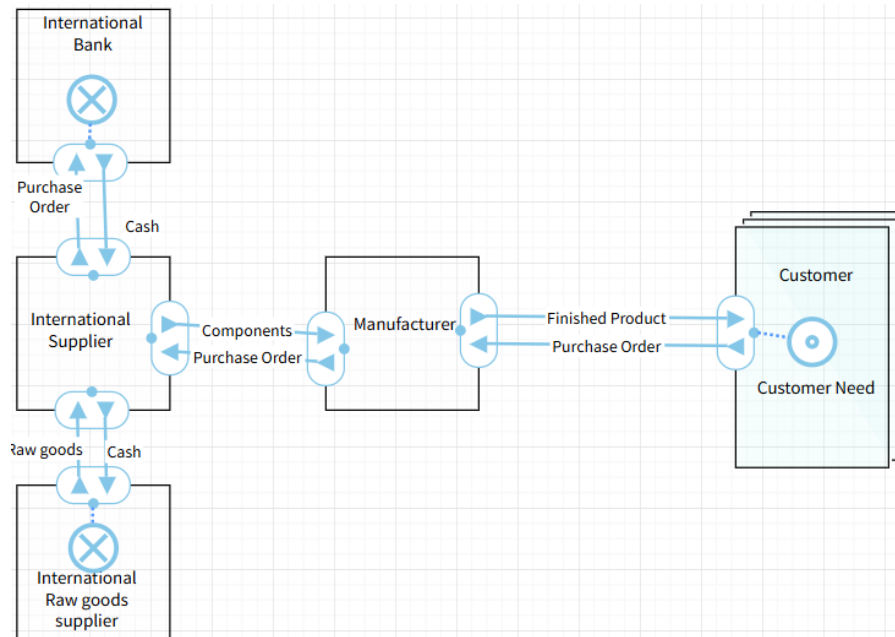
4.1 Example

Reshoring

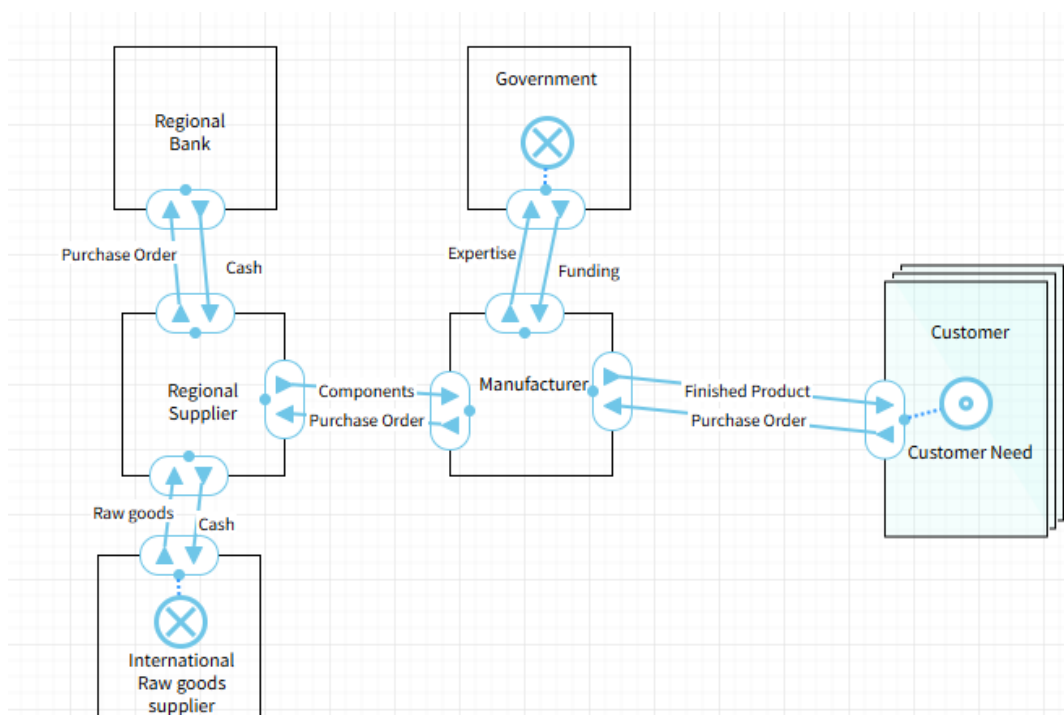
Organizations facing reshoring decisions can use e3 value to compare alternative scenarios systematically. The 'global supply chain' scenario models current-state actors with associated value exchanges. The 'regional supply chain' scenario models for alternative configuration with different actors and value exchanges. Both scenarios quantify costs, lead times, and risk exposures consistently. This enables apples-to-apples comparison: Does reshoring's reduced logistics cost and improved responsiveness offset higher labor costs? How does reduced

supply chain complexity affect quality costs and working capital? Formal modeling reveals which scenario better serves economic and strategic objectives of the company.

A full design of this model would require significant time investment from a company and require proprietary information. Below is a simplified example of how an existing international value network could compare to one with regional partners.



Existing value network. Model made with e3 value modeling tool by The Value Engineers.



Reshoring with regional value network. Model made with e3 value modeling tool by The Value Engineers.

This model shows a simplified example with the first scenario as the current international value network, and the second scenario with regional partners and government support as the manufacturer provides regional expertise and jobs.

Even this simplified example provides a clear visual representation of the value network and how changes to the business model affects the value interactions and network of the company.

Next, we will highlight important process questions and address challenges to successful e3 value modeling in practice.

5. Practical Considerations

5.1 Starting point

Adoption of e3 value modeling foundational capabilities and realistic assessment of organizational starting points. Organizations need access to **business modeling expertise**, either internally or through consultants, to translate business concepts into formal ontological models. Practitioners must understand value network thinking, moving beyond focal-actor perspectives to value network ecosystem analysis.

The current e3 value software tool presents a significant learning curve, requiring investment in training and practice before practitioners achieve proficiency in modeling. This learning investment proves worthwhile for organizations facing complex value network challenges where competitive advantage depends on ecosystem orchestration. However, simpler business model challenges may not justify this capability-building investment.

e3 value modeling's learning curve means it's most valuable for organizations facing complex value network challenges where competitive advantage depends on collaboration. Simpler business model challenges may not justify the investment in capability building.

5.2 Implementation Process

Successful implementation of e3 value modeling requires deliberate process design and skilled facilitation.

Facilitation requirements: A skilled facilitator with both business modeling expertise and process facilitation experience. The facilitator must understand the e3 value modeling technique deeply enough to guide model development while managing group dynamics to ensure all stakeholders contribute effectively. Technical modeling skills matter less than the ability to translate business concepts into defined ontological structures and facilitate consensus among diverse participants.

Workshop structure: Effective implementation typically involves iterative workshops. Initial sessions model the current-state value network, building shared understanding of existing value exchanges before attempting innovative change. Subsequent sessions develop alternative future scenarios, quantify value flows, and compare options systematically.

Between workshops, the facilitator refines models based on participant input and gathers data needed for quantification.

Stakeholder engagement: Major actors who will participate in the proposed value network should be represented in modeling workshops, ideally through decision-makers with authority to commit resources. External partner engagement presents challenges, especially time constraints and competitive information concerns, but is essential for realistic modeling. e3 value workshops should be framed as serving partners' interests by clarifying the value they will receive, not just the needs of the focal organization.

Outputs and next steps: The process produces formal value network specifications that guide ecosystem coordination, contract negotiation, and implementation. These models serve as living documents requiring periodic updates as business models evolve and implementation learning occurs.

5.3 Challenges and Approaches

Organizations adopting e3 value for business model innovation can encounter several implementation challenges. Understanding the following challenges and what approach to use in addressing them will improve the outcomes of e3 value-based BMI development.

Steep learning curve. Practitioners underestimate the conceptual shift required to think in terms of multi-actor value networks rather than single-organization business models. What appears straightforward in principle proves cognitively demanding in practice, particularly for teams accustomed to focal-actor tools like the Business Model Canvas.

Approach: Start with simpler scenarios than you think necessary. Model your current-state value network before attempting future innovation scenarios to build ontological thinking skills in a familiar context. Invest in proper training rather than assuming practitioners can learn from documentation alone. External facilitation by trained professionals during initial application can accelerate adaptation. Multiple months of regular practice will be needed for modeling proficiency, and attempting complex scenarios too early can lead to frustration and abandonment of the tool. Consider pilot applications on lower-stakes business model challenges to build familiarity before tackling strategic initiatives.

Data availability limits quantification. Companies may lack reliable data on costs, revenues, and value flows required for quantitative analysis. Attempting to quantify e3 value models can reveal uncomfortable gaps in financial and operational understanding. How much does data sharing cost per transaction? What is the true cost of enhanced supply chain responsiveness? What revenue can realistic demand scenarios support? These questions may lack clear answers, limiting the quantitative assessment that makes e3 value valuable.

Approach: Start with semi-quantitative analysis using ranges or estimates rather than precise figures. Even rough quantification (order-of-magnitude costs, estimated revenue ranges) provides more insight than purely conceptual analysis. Use the modeling process itself to identify critical data gaps, then invest systematically in collecting that data. Prioritize gathering data on value exchanges that most significantly affect business model viability. Recognize that initial models will have uncertainty but making assumptions explicit enables

sensitivity analysis showing which data uncertainties matter most for decisions. The process of attempting quantification often proves as valuable as the results, revealing where organizational understanding is weakest.

Stakeholder engagement proves difficult. External value network partners may resist participating in e3 value modeling workshops due to time constraints, concern about revealing commercially sensitive information, or skepticism about value of the approach. Internal stakeholders may view formal modeling as unnecessary complexity delaying decisions. The value network approach which makes e3 value powerful also makes it challenging to orchestrate, particularly when partners have competing interests or limited trust.

Approach: Begin with internal stakeholders to build confidence and refine models before engaging external partners. Frame e3 value modeling as serving partners' interests, helping them understand the value they'll receive and risks they face, rather than just focal organization needs. Use models to demonstrate win-win scenarios that address partners' concerns explicitly. Start with partners who have strategic interest in business model innovation and existing strong relationships. Consider phased engagement: initial modeling with limited partner input, followed by validation workshops once models demonstrate clear value. Accept that some partners will remain skeptical; focus efforts on those willing to engage constructively. Build trust through transparency about how modeling insights will be used.

E3 value models become outdated as business models evolve. e3 value models represent business model configurations at specific points in time. As implementations proceed and business models evolve based on market changes, models become outdated unless actively maintained. The effort required for model updates can lead organizations to abandon e3 value after initial development, losing the analytical benefits during commercialization and refinement.

Approach: Treat e3 value models as living documents requiring periodic updates, not one-time deliverables. Establish governance defining who maintains models (typically business model owners or innovation teams) and how often they're reviewed. The redesign processes should be lightweight, targeted refinements based on feedback from implementation. Models can be used as a foundation for performance monitoring by tracking actual value flows against modeled expectations. Build model maintenance into project management processes for business model implementations. Accept that models will simplify reality; perfection is not required, the goal is sufficient accuracy for decision support. If the model is operating as intended, an update may not be necessary.

These challenges are not reasons to avoid implementing e3 value but rather implementation realities which require deliberate management. Organizations that anticipate these challenges, implement an approach fitting organizational realities, and maintain realistic expectations about timelines and effort should achieve substantially better outcomes than those expecting seamless implementation. The key insight here is that e3 value's sophistication creates both its worth and its adoption challenges. An honest assessment of organizational readiness and a

plan for systematic implementation will affect successful application of the tool to the individual company's situation.

6. Industry insights and further validation

This work is based on existing smart industry literature. This field is rapidly changing, and the specific challenges faced by an individual company will evolve over time. Development of tools to support BMI is a collaborative process: a healthy dialogue between research and industry is critical for development of tools which can be integrated into the BMI processes of existing companies.

There are existing tools for individual phases of BMI, many for ideation and screening of BMI ideas. These tools are usually not built within a structured implementation framework: they do not have clear instructions for how the tool works within the existing BMI process of a company, nor suggest what implementation process a company should follow to use the tool effectively. Companies therefore need to have a clear understanding of their BMI process and KPIs for each phase of BMI so the implementation process is clear and pivots in strategy can be made when necessary. Further research, in collaboration with industry partners, is needed for a structured framework that can support the full BMI process in smart industry.

7. Conclusion and Future Directions

E3 value's learning curve means it's most valuable for organizations facing complex value network challenges where competitive advantage depends on understanding the value network of a company.

The existing e3 value model tool's complexity in terms of input and implementation means that at this time companies should use their existing processes for BMI in the ideation and screening phases. Once there is clarity on the conceptual direction of business model change internally, the e3 value modeling tool can serve as a foundation for a collaborative discussion on the development of business model changes into practice and facilitate structured value network agreements.

E3 value modeling addresses smart industry's fundamental challenge: business model innovation requiring explicit coordination across autonomous value network partners. For organizations facing complex multi-stakeholder dependencies where competitive advantage requires value network orchestration, e3 value modeling provides essential capabilities for scenario modeling, viability assessment, and collaborative decision-making. While implementation requires investment in capability building, the structured approach to value network analysis justifies this investment for strategic business model changes. Combined with complementary tools for earlier ideation phases, e3 value modeling enables smart industry organizations to navigate the transition from business model concept development to successful commercialization with value network alignment.

There is a further need for tools to support the full BMI process from start to finish, so that ideated changes are screened by companies based on the most relevant criteria for success in further development and commercialization. The process needs standardized language and definitions which can be understood by all relevant stakeholders involved in the BMI process from ideation to final commercialization. This setup would allow the output from each phase to be used for the next, with assumptions and output visible throughout the BMI process. This could increase internal clarity on the decision-making process throughout a company's BMI cycle and improve collaborative decision making with value network partners.

Current business modeling research within the NXT GEN project has the goal of improving the business model innovation process in smart industries. Our chosen approach is the use of applied games as the tool for improving the BMI process. These tools can address major challenges with using the existing e3 value tool: the learning curve, complexity of practical implementation, lack of inherent collaboration mechanisms, and difficulty of making changes to the model in real time during a workshop. Currently, these challenges need to be resolved by companies individually during implementation in their existing BMI process.

Applied game-based tools can support the BMI process from ideation through to development so that stakeholders are aligned throughout the process and outputs from each phase can be implemented in the next. In development and commercialization of business model change, ontology-based simulation and analysis tools provide the necessary analytical rigor to understand the effects of BMI changes on the company itself and value network partners.

This is an exciting time for rapid innovation in smart industries, and we look forward to participating in the further development of collaborative value network tools for BMI. The development of new tools and methodologies for BMI, with continuous feedback from industry partners, is an important research area to support successful business model changes in smart industry. The identification of e3 value as the underlying ontology for collaborative value network focused business model design is an important step on that journey.

Glossary

E3 value ontology terms

Actor: An actor is an economically independent entity that can be held accountable for its behavior. Each actor pursues its own economic objectives and participates only when exchanges serve its interests.

Value Object: This represents goods, services, (including data streams, digital services, platform access, and expertise) or money that are of economic value to at least one of the actors.

Value Exchange: Value exchanges represent the actual transfer of value objects between actors, showing economic reciprocity. Each exchange connects an out-port of one actor to an in-port of another, with multiple exchanges coupled through value interfaces.

Value Port: A value port is used by an actor to provide or request value objects to or from other actors.

Value Interface: This encapsulates the value ports of an actor and shows a reciprocal value exchange between the actor and another member of the value network.

Boundary Element: A delineation of where the boundaries of the current value network model are.

Customer Need: A specific boundary element of the customer, when their need is fulfilled.

Market Segment: A market segment is a group of actors who assign economic value to things similarly.

Stakeholder: Stakeholders have an interest in the business model but do not necessarily participate in value exchanges.

Smart Industry Terms

Value sharing mechanisms: How value is distributed among value network partners.

Partner incentives: Understanding the goals and values of individual value network partners.

Data ownership: Control over data generated in value creation activities

Process integration: Planning of value generation activities across multiple actors in the value chain.

Governance framework: Agreed upon process and mechanisms for resolving disputes and risk between value network partners.

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