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Information Management Improvement for Gnestok

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1 Executive Summary

a. Findings

Findings of this paper are that it is critical for Gnestok to have more managed and systematic way to serve the data and information, based on the analysis of its current practices and limiting ability to not only to maintain, but also expand operations.

b. Recommendations

The recommendations for the company is to begin the process of valuing data and information, its management. This means separating the data from the web interface. More specifically, it means idea to redesign the information infrastructure. Website has to reflect data in more understandable and correct fashion, therefore it is suggested, to firstly, remap taxonomy by eliminating duplications. Secondly, it makes sense to use topic map behind the new taxonomy as the organizing principle to

ameliorate even more data inconsistencies and improve search, navigation, semantic and linguistic coherence.

Finally, it is recommended that business integrates and serves data more holistically and would need to enable better ways to also serve contacts with its partners.

The paper showcases that hierarchical practice is outdated and why newer taxonomy and topic map for the company could bring both operational, financial benefits and strategic benefits.

2 Business Case

a. Introduction

Gnestok is a private company, established in Estonia, operating since 1996. Its main operations are to import alcohol, mainly with low alcohol content, including beers and ciders. Its main partners and providers are companies from EU countries. Being truly small company, as of 2025 having 2 employees, the lion's share of its operations are indeed to deal with relationships with different beer brands and Estonian retailers. Sales and logistic service is heavily organized with cooperation of its bigger partner, Goldberger. (Gnestok, n.d.)

Gnestok's mission is to introduce different beer and cider cultures around the globe together with selling various selection of drinks from this segment. Their main priority as a strategy is to create long-term, mutually beneficial relationships with both, its partners and clients. (Gnestok, n.d.)

The current online customer contact point is its website, where also its fundamental offerings data is shown. Their partnership with Goldberger, managing its relations and its marketing brings in a great deal, however it is clear that this dependency is not viable and desired. With new initiatives towards managing things more on its own, such as creating social media presence, cutting out from Goldberger and its website needing not only reshape due to old technologies, its website should be built together with its strategy to social media presence. This all creates opportunity to reshape its operations to actually bring about the desired change, offering a way to make sense of its business landscape in more systematic, orderly and targeted fashion.

This paper therefore aims to propose a way forward. This means it aims to offer a easy, sophisticated, yet small-scale solution, which does not require heavy investments and rather clear laid-out plan aligned with its business needs and aims. The needed data is gathered through close insight to the organization and its workings. The paper uses Bruno and Richmond's "The truth about taxonomies" and Garshol's paper "Metadata? Thesauri? Taxonomies? Topic Maps! Making Sense of it all" as a basis of coming up with a solution.

b. Analysis

In order to identify suitable solution, we ought to understand the shortcomings. Gnestok is faced with many small-scale problems. This means out-of-date website, taking on own customer management and building social media presence. Of course, these all can be though as needing temporary bandages on each of these problems. However, as already alluded, it makes much more sense to approach a problem in a more holistic manner.

More specifically, current system relies on unstructured metadata and menus. Data is intertwined and scattered on website structure, relationships between information are displayed on website front-end. Secondly, customers struggle to find relevant info. This not only means that information is not presented in complete understandable fashion, it is also broken in terms of language display, where English display shows wrong things. On top of that, search engine optimization is non-existant and discoverability is low.

There is also no single overview of critical master data. This means there exists lack of consistent knowledge base structure. This creates inconsistency between different systems: internal and external systems of Gnestok and between its partner Goldberg. This creates data duplicacy and data redundancy.

On top of that, it is therefore hard to manage the data, e.g. add new brand data, because essentially whole system should be then changed. In case of, for example, when product info needs an update, then these requires multiple points of change and this is clearly inefficient and can confuse customers in case of unnoticed mistakes and errors.

c. Proposed Improvement

i. What is to be changed?

Given the fact that its current practices are contradictory of idea of having long-term mutually beneficial relationships with partners and serving its partners with quality products, the current system should be changed. Therefore, in order to remain trustworthy and actually expand and offer new alcohol taste profiles to its customers, Gnestok must begin thinking of their data and information more clearly and have information management strategy as well to achieve beneficial change, which would have to align with business strategy.

To begin with this process, it is suggested a way forward of two components. One is to improve current display system as a hierarchy. The other and more serious improvement would make underlying use of topic map instead of hierarchy, with actually linking information and starting the information

management strategy journey. As improving current taxonomy would be surface-level and band-aid solution, topic map solution proposition addresses the actual need of some real back-end data infrastructure basis for it. Therefore, this is taken together into more serious examination.

ii. Why should it be changed?

As noted the current system links data into hierarchy. This interlinks different information points into one form in the face of a website. This is not necessarily bad, though it has its inefficiencies.

The current hierarchy is of general relationship of genus-species types (Bruno & Richmond, 2003, p. 46). This corresponds to Product/Service type of taxonomy, which of course offers good representation of information for product-centered organization, however as Bruno and Richmond note, it is rather stand-alone taxonomy (Bruno & Richmond, 2003, p. 48). This means to find out if certain drink for example is offered, you would have to know the hierarchy, which however creates difficulties for new customers.

After critical reflection of the current system, it is not necessarily true that brand also adheres to certain types of alcoholic drinks, such as Lindemans producing both beers and gins (Lindemans, n.d.). This has created data inconsistency, duplicacy, name errors, confusion among customers. Indeed, taxonomy is therefore not reasonably and correctly built. On top of that this taxonomy is actually duplicated in terms of two different languages hierarchies, one for Estonian version and the other for English version.

A clear example of these flaws appears with products like "Lindemans Apple". This is shown in figure 1. This has duplicates in the hierarchy for "Lindemans Apple", causing confusion between products. Classification should clearly signify the relationships such that confusion is minimized. On top of that language errors prevail and this requires clear fix.

iii. Design of the solution

As already identified, the paper proposes two different ways forward. One is a quick fix of broken hierarchy, the other is topic map system with more clearly addressing the lack of information management within the organization. These are thus presented as two separate solutions. However, this is not to say that the solutions could not be both adopted together, which is elaborated later after the separate design proposals.

Taxonomy

The taxonomy should be improved as identified. While the current hierarchy is genus-species type, whole-part type of taxonomy would make a lot more sense. The current taxonomy used on the Gnestok website reflects a genus-species logic, with high-level categories such as "Beers", "Ciders", or "Spirits & Wines" acting as parent categories and brands nested beneath. For example, Lindemans appears under both "Beer" and "Spirits & Wines" categories, depending on product type. This causes duplication, confusion, and reflects a product-centric rather than a business-centric logic. Moreover, it obscures how Gnestok's customers or partners typically think - usually starting from the brand or partnership, not the drink category.

In contrast, the proposed taxonomy uses a whole–part structure, in which brands are treated as wholes, and their products are grouped within them. For example, "Lindemans" as a brand contains its gins and beers. This aligns with the mental models of B2B partners and long-term customers. Furthermore, it ensures better scalability: adding a new drink from an existing brand or a new seasonal variant no longer requires structural reshuffling, but simply extending a node.

Namely, because it would then progress from general to more specific units. Whole-part classifications or taxonomies are also found in the organization of most Web sites (Bruno & Richmond, 2003, p. 46). As Bruno and Richmond note this classification not only incorporates ideas of identification and retrieval, it more importantly establishes retention, which requires looser classification rules compared to rule of inheritance (Bruno & Richmond, 2003, p. 46). This indeed reflects the idea of stabile, error-proof hierarchy and actually allows to expand it without violations. That is information change would not break hierarchy. Indeed, "[t]axonomy development is a process, not just a project. A taxonomy is never truly finished." (Bruno & Richmond, 2003, p. 50)

In designing a better hierarchy, it is clear that factuality is more important than user simplicity. This is indeed weighted consideration as it is more important to highlight that their partners can rely on factual information. This design option then rather establishes more clearly and straight-forwardly hierarchy and it does not have to be heavily tested and backed by its customers, especially since the traffic of the website are mostly its long-term partners or interested customers, who already have intention and clear knowledge of drinks and brands. The design of the taxonomy is in the figure 2.

Such creation ideally should though eventually be aligned by partners and business employees to ensure that final structure reflects actual realities. Maintenance should be tracked to prevent unexpected surprises of hierarchy not being functional as it was one issue before. Clear advantage of new hierarchy is that it is more robust and retains data in more structural fashion.

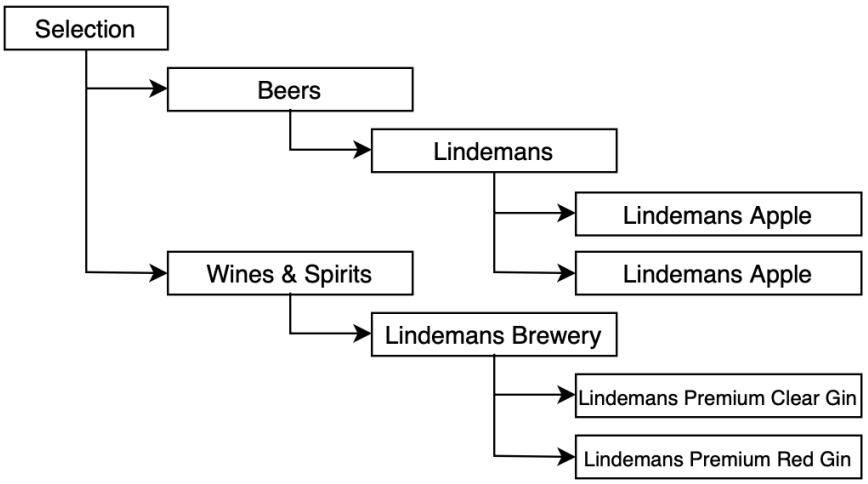

Figure 1: Fragment of old taxonomy

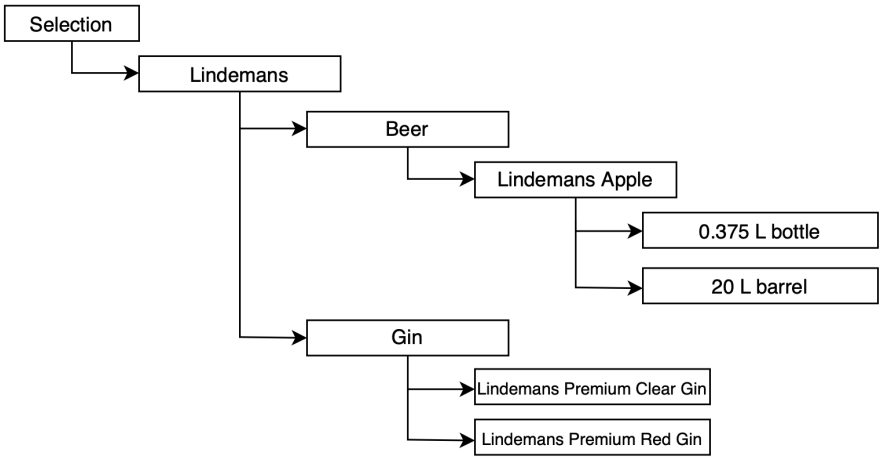

Figure 2: Fragment of proposed taxonomy

Topic Map

Topic maps go beyond traditional classification systems like taxonomies and thesauri by enabling a semantically rich and flexible way to model relationships between information. In fact, this information is split into all separate entities, which are called topics, representing real world things and having versatile ways to actually relate these topics together (Garshol, 2004, p. 385). In the context of Gnestok, this means being able to represent not just categories of drinks or brands, but also detailed connections between them - such as which brand originates from which country or what type of alcohol is used. These relationships are modeled through associations, and occurrences, allowing Gnestok to move from surface-level hierarchical navigation toward an deeper and actual information architecture

that reflects the business logic more broadly.

As Garshol argues, a key strength of topic maps lies in their ability to unify metadata and subject-based classification. In our case of hierarchy, metadata is stored separately from the system used to organize subjects (drink types, countries, alcohol content). Topic maps though unify these into one integrated model, making it easier to search, maintain, and expand the dataset over time (Garshol, 2004, p. 386–387). This means that Gnestok has all information about a product, its relationships to brand, alcohol type, taste profiles, documentation, contracts, all of which brought together under one umbrella and thus can be modeled and queried in a holistic fashion.

More importantly, the system is robust and extensible. Gnestok can later add new topics like "Sustainability certifications" or "Special edition releases" without reshaping the entire system hierarchical structure. For a small business as Gnestok is, this is crucial. As Garshol puts it, topic maps remove the rigid schema design by offering open vocabularies (Garshol, 2004). In particular, it allows to eliminate duplicated taxonomies for two language fronts, English and Estonian, and use topic maps for unified, open vocabulary. Associations between topics are typed, meaning that relationships are not just present but also actually meaningful, "is imported from" or "is offered during".

Finally, search and discovery improve significantly. Instead of relying on a keyword-based search currently accompanied with the hierarchy (which breaks easily due to inconsistent terminology or multilingual needs), topic maps support scoped names, synonyms, multilingual support, and contextual disambiguation (Garshol, 2004; Gnestok, n.d., p. 384). This is especially valuable for Gnestok, whose partners and customers have different knowledge about brands and products by different names (e.g. Estonian vs. German beer brand terminologies) or search in various languages. As the business grows its social media and online presence, a topic map system will allow integration of its external presence campaigns enabling richer navigation and building actual knowledge base.

To demonstrate this in practice, a topic map was modeled using real product data from Gnestok's website for three Budweiser Budvar products. Each beer is represented as a topic, with associations to its brand, product type, origin, alcohol percentage, packaging, and the web resource (occurrence). This graph structure enables dynamic queries - for example, finding all 500 ml beers in glass bottles from the Czechia - which a traditional taxonomy cannot support. This is visualized in the topic map model below, in the figure 3. It is important to note that the key data is exemplified and topic map is not so simplistic in a real application case. In a real application, products are also linked with occurrences and this allows to observe subjects linked to PDFs, websites and social media campaigns. It is also worth noting that this topic map addresses the need for multilingual support, which rigid hierarchy does not allow and requires duplications.

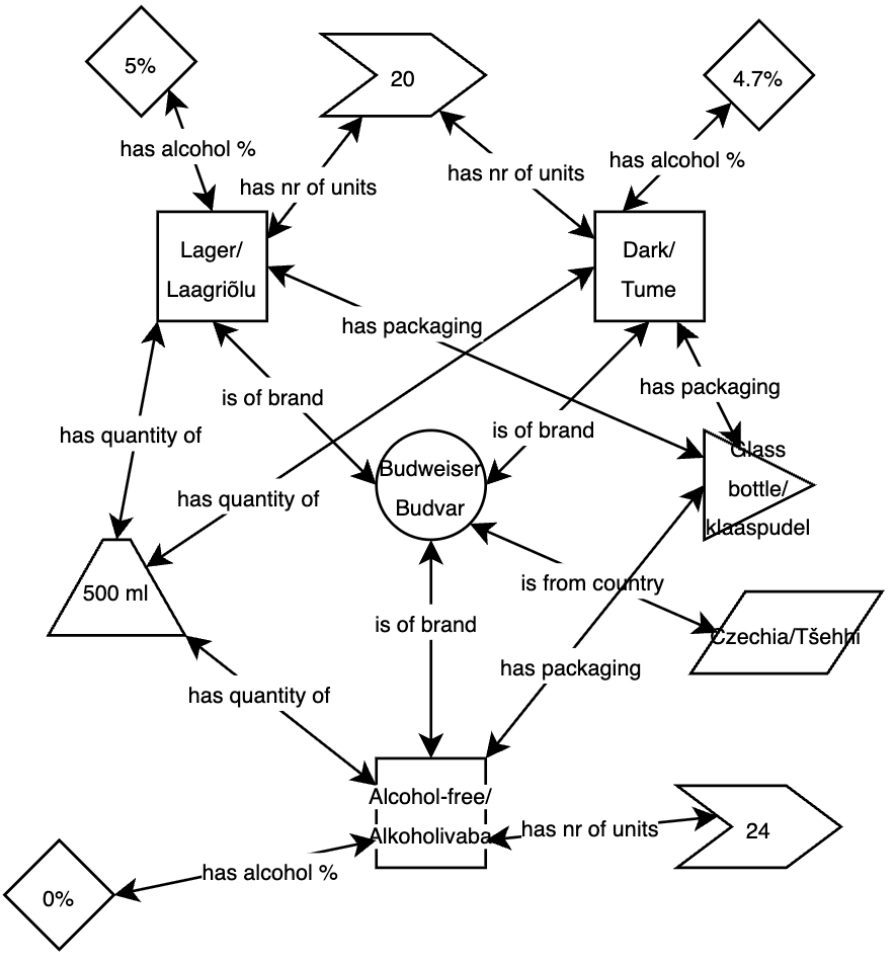

Figure 3: Fragment of Topic Map (result of query of "500 ml beers in glass bottles from Czechia")

iv. Why should the solutions be designed this way?

The proposed solutions, particularly the implementation of topic maps, are designed with Gnestok's size, business goals, and future scalability in mind. Unlike large corporations, Gnestok must balance simplicity and flexibility-solutions which deliver clear organizational value in low cost manner. Topic maps meet this requirement by firstly addressing the need to start information management thinking, replacing old system and enabling a modular, semantically rich, and robust structure that aligns directly with how the company operates and envisions growth.

The topic map supports decentralized knowledge management. As the paper by Garshol observes, traditional taxonomies often force businesses to fit into predefined subject hierarchies, which limit adaptability and make maintenance difficult (Garshol, 2004, p. 384). For Gnestok, this means that inconsistencies and inflexible hierarchies do not allow new product offerings and changes of partnerships, and this in total increases maintenance costs and creates fragility. Topic maps however allow

the company to model real complexity, such as a single brand offering both beer and gin, without duplicating data, language semantics or violating hierarchy logic.

On top of that, the design choice supports future integration with other systems - for example, if Gnestok sees it reasonable to eventually expose the topic map as an API for B2B partners like Goldberger, this would enable shared classification and better real-time updates of offerings. It also supports internal use - people have a better overview of its core data, link resources of its media campaigns and access structured content through a unified backend.

The design is chosen because it scales with Gnestok - not just in terms of information volume, but in language use, business logic, and robust integration.

d. Discussion

It is clear that solutions address the need of information retrieval, targeting more specifically efficiency, correctness and fail-safeness. This aligns with more syntax view solution than adaption view of information, viewing things in a continuum (McKinney & Yoos, 2010). Nevertheless, it is important to highlight that proposed solution are good initial stage solution to start value information and this perhaps can trigger perception of information valuing and therefore adaption and thus inform that information is valuable and things need to change and adapt, especially in the age of data and information.

While the solutions (whether separate or together) address the needs of the organization, it is by no means to say that they are actually their are as a whole feasible. Nevertheless, it offers a clear way forward as the issues need to be address. While it clearly addresses the business need and is not overkill solution, perhaps more comprehensive information audit or fundamental (master) data management system might be better point of departure to implement, on top of the proposed solution. However it is important to keep in mind the organization is small and huge information infrastructure might not make sense, especially since only few people operate around the organization and know things, which is why solutions more targeted to outside (partners and customers) such as topic maps might be the best way forward as financially, operationally feasible while addressing the need as well.

It could be argued that new and fixed hierarchy might seem redundant for such a small organization and even topic map might seem as overkill. These are some counter-arguments, however as the needs of the organization highlight, it would make sense to address these in a suitable manner, based on ultimately truly business-centric rationale, perspectives and considerations.

e. Conclusion

The solution proposed based on the insight and analysis of the organization is to clearly improve its information practices or rather begin its information management journey. This entails addressing the need of new system for website as they seek to break away under the influence of its partner and manage its own relations with social medias. This in particular can be addressed linking the data through topic maps and perhaps redesigning it through a new hierarchy as a outward presentation of products to its customers. These two ideas could indeed be implemented together, though only one for simplicity or for a start could also be implemented depending on more fundamental examination.

In particular, the newer taxonomy addresses the inconsistencies and redundancy in practice, while the topic map addresses the process of thinking more holistically and relationally to its data and information.

The dual-solution approach combines two compatible practices of information management. Firstly, the improved taxonomy uses a whole–part logic where brands are the central organizing entities, and their products are grouped by type and variant underneath. This reduces duplication and better reflects how Gnestok's partners and customers interact with the brand portfolio. Secondly, the topic map overlays this hierarchy with a semantic network of relationships - enabling multilingual naming, packaging details, and external references like product pages and PDFs. This allows the company to model business complexity without locking itself into rigid menus. Together, these solutions support long-term maintainability, multilingual presentation, and potential B2B integration, while staying accessible and scalable for a very small team.

It is not to say that these proposals are without any downsides. As noted, perhaps more fundamental data management should be examined or that suggested solutions seem as overkill. Of course the degree of actual application of solution depends on the will of the business to not only solve problems, but perhaps more importantly value its information.

The combined application of whole-part taxonomy and topic maps thus provides Gnestok a practical, yet future-oriented solution, with immediate gains in usability and long-term benefits in scalability and strategic alignment.

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