

## Using the Prism Convention to Present and Evaluate the Design of Currency Information Systems

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### ABSTRACT (\*\*DRAFT\*\*)

The Prism convention is presented as a new approach for classifying currency designs. It incorporates recent trends that have been missing from older currency typologies or taxonomies. Prism has a simple presentation convention of Problem Definition Styles, Information System Plan and Market Trial Package. By incorporating the product-oriented vernacular that is commonly encountered in online resources and discussions, it is hoped that the Prism convention will facilitate the useful cross-pollination of ideas among active currency design teams. After discussing Prism's potential for simplifying currency design presentation and evaluation, the concept of **style** is explained with regards to its implications to design novelty and the importance of tacit knowledge in the effectiveness of the overall currency design from research to engineering to marketing.

### Introduction

Two themes predominate in previous attempts at non-traditional currency typology or taxonomy. Firstly, typical classification conventions are based on economics and finance terminologies. For example, conventions that emphasize type of backing, units and issuance form are commonly encountered online. [alt currency, north] Secondly, implementation studies are usually done retrospectively from a social perspective. [north]

While previous conventions provided a much needed framework to discuss and study currency design and implementations, those conventions have yet to include substantial input from the Information Systems (IS) field. This paper attempts to provide a more integrated currency design taxonomy that includes evolving styles, plans and packages as presented and discussed in online forums that have strong information system emphases.

For ease of reference, the term **Prism** was loosely derived from the acronym of Problem Definition, Information System and Market Trial. Prism is not a strict taxonomy or classification scheme, but a proposed convention to aid the discussion and future study of non-traditional currency design.

One of the more challenging aspects of this classification attempt is that currency-related information systems are at differing lifecycle stages, with some design aspects existing only in conceptual stages while others have already been implemented as customized packages. By way of illustration, imagine a student that is assigned to classify residential architecture on a street where the houses are in varying stages of completion. On the one hand, the student could choose to exclude incomplete houses from the taxonomy, thereby simplifying the classification scheme. This is similar to the approach of currency taxonomies that exclude emerging designs.

On the other hand, the student could include the incomplete houses on the assumption that they will be built according to the recurring themes in the drawings and discussions of the builders. This is similar to the inclusive approach taken in this paper. It factors the importance of newer designs that are not motivated by the standard definition of the 'currency problem'. The only danger is that an IS package fails to meet the intended style and would have to be reclassified in the future.

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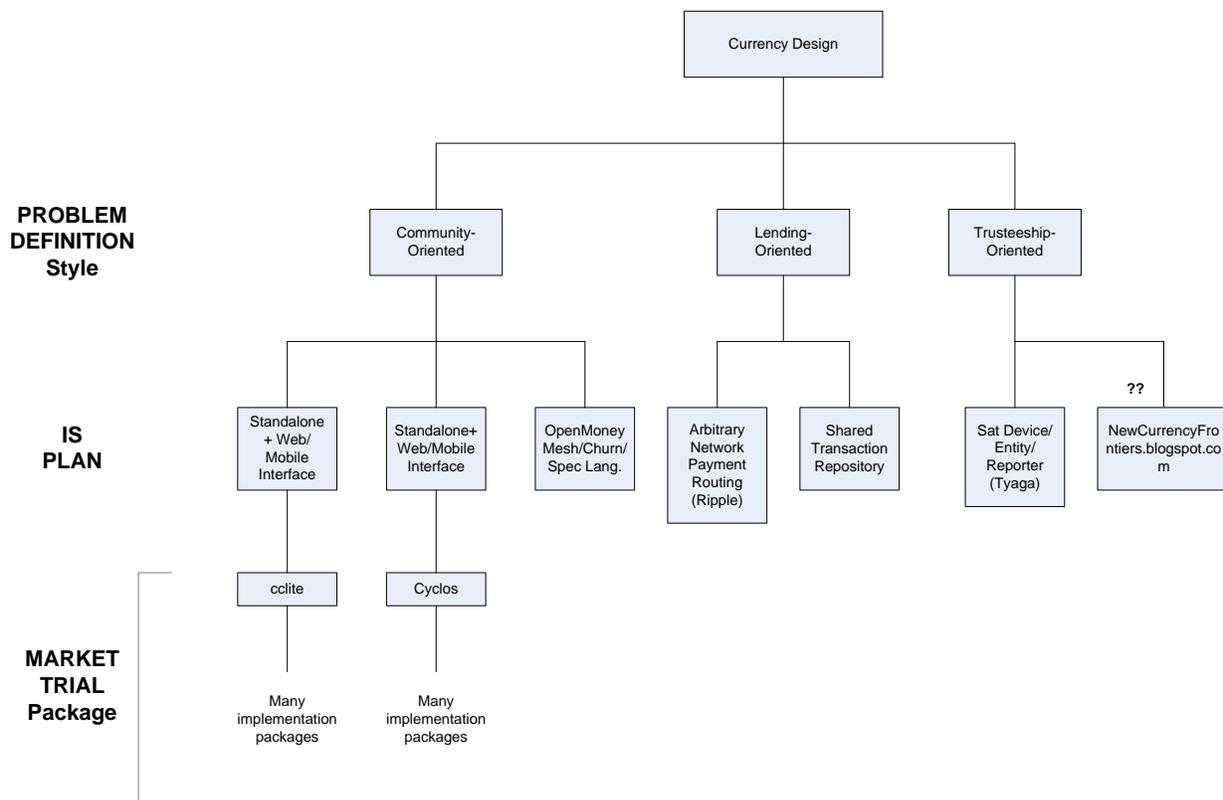
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## Prism as a Presentation Convention

In comparing previous taxonomies with current trends, important observations arise from an IS perspective:

- Most finance-based design *details* that are emphasized in previous taxonomies are not considered until much later in the design stages of more recent IS styles. The current trend is to have a flexible architecture that treats currency units and backing as abstract parameters that could be instantiated at the time of implementation or individual account set-up.
- More recent attempts to redefine or extend the 'currency problem' have resulted in new approaches to currency design. It would be a mistake to classify these styles within current taxonomies or to treat them as inconsequential within the larger landscape of non-traditional currency design.
- While there are analyses of implementations according to currency design characteristics and local conditions, there are currently no studies that highlight the correlation of IS design aspects to specific study results.

Figure 1: An Overview of the Prism Convention



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### **Problem Definition:**

The top-level in the Prism convention consists of architectural styles that are each directly related to how the currency problem is defined. For example, Table 1 lists the dominant themes that were found for community-oriented designs as observed in online discussions of LETS-derived currency designs. It is possible that there are other styles that been overlooked and that would have to be included in the future.

**Table 1: Architectural Styles of Currency Designs in the Prism Convention**

<b>Style</b>	<b>Community-Oriented</b>	<b>Lending-Oriented</b>	<b>Trusteeship-Oriented</b>
<b>Examples of Problem Definition</b>	LETS: Money comes and goes. It's scarce and hard to get. It's from them, not us.	Ripple: lack of adequate alternatives in payment intermediaries or difficulty in finding one	Satconomy: Money has limited traceability, practically non-refusable and difficult to evaluate acceptability.
<b>Prominent Themes</b>	"community", "commons", "membership", "wealth acknowledgement"	"property", "currency backing", "trusted intermediaries", "lending", "settlement"	"accountability", "specialization", "brands", "traceability", "auditability", "noncooperation"

It is worth noting that Cyclos and cclite web sites do not define specific currency design problems. The style and plan classification for these packages were based on online descriptions [x,x] that emphasize community and mutual-credit type implementations. In this connection, it must be remembered that architectural styles are primarily about the issue of *how to generate certain desired effects*, and *not* a simple matter of how closely one package resembles the details of another package.

### **IS Plan:**

After the problem definition, each style is broken into IS Plans. This level is analogous to a rough blueprint to guide the achievement of desired effects. Although 'abstract platform' may be used interchangeably with 'plan', some confusion may arise from the more common use of the term 'platform' to describe software packages that underlie an application, such as LAMP. A similar concern arises from the use of the word 'pattern' or 'framework', which may be mistaken for certain programming approaches or reusable modules.

While there are no obvious similarities between the IS plans for open money and Cyclos, plans with different element orientations and relationships may still be expected to give the same desired effect but with varying effectiveness. Some custom plans make it simpler to achieve a certain style, while generalized plans would require more tinkering at the packaging level. IS Plans may group elements based on functional areas or broad constituencies. Table 2 summarizes a possible constituency-based representation of selected packaged IS plans.

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**Table 2: Illustration of Constituency-Based Currency IS Plans**

<b>IS Plan Constituent</b>	<b>Community-Oriented: LETS</b>	<b>Lending-Oriented: Ripple</b>	<b>Trusteeship-Oriented: Tyaga</b>
<i>Members:</i>	processing transactions <i>between</i> members of the <b>same currency</b> , record keeping, advertising	account setup with neighboring nodes, automated payment routes, lending and settlement	transaction processing between <b>different currency brands</b> , record keeping (device module)
<i>Admins:</i>	account set-up and general system maintenance on behalf of community	hosting of nodes and accounts (server), routing	entity budgets, auditability (accounting system and publisher)
<i>Public:</i>	information to help participants decide which communities to establish or join	information to find and evaluate potential lenders or borrowers	information to evaluate whether to support or blacklist a currency brand (reporter)

### **Market Trial:**

Each IS Plan is subdivided into Packages, which are tried in specific implementations. This is the currency information system as actually experienced by end users. For newer currency designs, this is also the level where parameters such as currency units, type of backing, applicability of interest rates and accounting rules are specified. A base package, such as Cyclos, offers a high degree of customizability similar to a completed house awaiting interior decoration. A market trial consists of a specific package implementation that is used within certain conditions. Each trial attempts to answer this question: did the *overall design* of a currency – from problem definition to implementation package and conditions - generate the desired effects?

### **Prism as an Evaluation Convention**

The importance of the Prism convention is immediately apparent from the ease of grouping and analyzing data from a market trial:

- What **market trial conditions** were observed to have a significant impact on the results? This question looks at demographics, currency settings such as units and interest rates, etc.
- How about the potential strengths or weaknesses in the implementation **package** of an IS plan?
- Was there something in the **IS Plan** itself that determined the market trial results?
- Finally, is there a need to **redefine the currency problem** in order to arrive at a new, more appropriate style?

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The final bullet point is very important when considering *why* there are no widescale sustainable alternatives to traditional currency designs, despite the well-known inefficiencies and problems with the latter. Are there core weaknesses in community-oriented currency designs that render futile all attempts in planning, packaging and implementing it as a self-sustaining currency model? This is not an attempt to discourage proponents of community currencies, but a suggestion to strengthen the design wherever possible and to rid it of non-essential constraints.

In addition to the evaluation of an isolated currency design, a side-by-side comparison of different designs is also facilitated through the use of the Prism convention. Table 3 shows an example assessment of three different currency designs. Since the author is directly involved in the Tyaga design, the assessment is presented mostly as questions that the reader is encouraged to personally examine and extend as necessary, in order to arrive at independent answers.

**Table 3: Example Questions for Assessing the Business Aspects of Currency Designs using the Prism Convention**

<b>Prism</b>	<b>Community-Oriented: LETS</b>	<b>Lending-Oriented: Ripple</b>	<b>Trusteeship-Oriented: Tyaga</b>
<i>Problem Definition</i>	Are businesses really concerned about currency being from them, as long as they generate revenue?	When used as a payment intermediary, would a business be required to divert efforts towards non-core competencies in order to have satisfactory collateral? Wouldn't Ripple simply evolve into a replica of payment dominated by well-connected banks?	Would a private business really want to expose its books to the public, and how difficult would that be? Would an organization be willing to accept payment without any guarantee that it would increase the purchasing power of its own currency brand?
<i>IS Plan</i>	Would a business want to register and maintain accounts with different currency communities just to increase its market base?	If a business limits its ability to accept payment through the account limits that it has to set-up, what would be the consequence to its potential customer base?	Would a Reporter application be able to provide useful information that actually helps encourage each market entity to self-regulate?
<i>Market Trial</i>	What would happen if cash is not replenished back into the system?	N/A	N/A

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### More on Prism Styles and Its Relation to Currency Design

As mentioned earlier, styles pertain to the issue of *how to generate certain effects*. This has at least two very real implications:

- 1) Claims of **completely** new currency designs are only valid if it **redefines** the core problem and clearly generates a **new theme and set of core constraints**. From the early days of LETS and even today, there have been announcements of new currency designs that are simply newer IS Plans to address an existing problem definition, or a different implementation package for the same IS Plan. Those who have studied a subject extensively, such as architecture or software design, could readily reach consensus on whether a design is really novel from the core problem definition. For example, most everyone will agree that Git does not redefine the core problem definition of how to effectively decentralize SCMs, but Git was indeed a new IS Plan that borrowed ideas from earlier IS Plans, such as Mercurial's SHA1 hash approach. Similarly, it is also easily seen that GitHub is a new design only as far as the implementation package is concerned – like other Git packages, the core Git IS Plan remains the same and the core problem is not redefined. This is not a criticism of Git's innovative design aspects or the open sharing of ideas that led to a new decentralized SCM IS Plan, but merely an example that illustrates proper examination and acknowledgement of product styles that may be applied to the study of currency design.
- 2) To actually achieve a currency design's desired effects, the designers must have an **in-depth understanding** of all the nuances and subtleties that relate to style. It is not enough to copy some patterns and expect the same result, just like copying the iPhone's exterior design will not generate the same effects as embodying the whole design approach from product research to engineering to marketing. Design integrity may only be achieved with the aid of some tacit style knowledge that reveals itself throughout the lifecycle of a product.

### Conclusion

This draft-stage paper was published in advance in light of recent events that pertain to currency design. The references will be updated at the time of final draft publication, which is listed here in no particular order or format:

<http://www.gmlets.u-net.com/design/dm1%5E1.html>

<http://www.openmoney.org/top/omanifesto.html>

<http://ripple.sourceforge.net/paymentrouting.pdf>

[http://www.appropriate-economics.org/materials/cc\\_in\\_usa.pdf](http://www.appropriate-economics.org/materials/cc_in_usa.pdf)

[http://project.cyclos.org/index.php?option=com\\_content&task=view&id=216&Itemid=215](http://project.cyclos.org/index.php?option=com_content&task=view&id=216&Itemid=215)

<http://www.hughbarnard.org/content/alternative-currency-software>

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<http://books.google.com/books?id=9rfJSnZh->

[TOC&dq=alternative+currency+study&printsec=frontcover&source=bl&ots=izB9rumG71&sig=Q0zh9kNjtulfgMxZR8hdN7I20wU&hl=en&ei=WdC1SaXqCYKEsAPHg6HpCA&sa=X&oi=book\\_result&resnum=1&ct=result#PPA66,M1](http://books.google.com/books?id=9rfJSnZh-T0C&dq=alternative+currency+study&printsec=frontcover&source=bl&ots=izB9rumG71&sig=Q0zh9kNjtulfgMxZR8hdN7I20wU&hl=en&ei=WdC1SaXqCYKEsAPHg6HpCA&sa=X&oi=book_result&resnum=1&ct=result#PPA66,M1)

<http://www.complementarycurrency.org/materials.php>