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Default Thinking: Why consumer products fail

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Introduction

Short Message Service (SMS), or texting, is a typical killer application. It is not only popular but profitable, bringing in significant revenue to network operators. There is even a strong after market selling RingTones, info alerts and crude interactive games. A great technological irony is that such a successful product is so under appreciated. For all of the frenzied SMS marketing discussion, the product has hardly changed over the last few years. Given its success, you would think the industry would put more effort into understanding the value SMS offers to consumers and then produce new services that extend this value.

Instead, the next services trotted out by the industry were WAP, Instant Messaging, and SyncML. These services, for all of their hype, are but a pale shadow of their original expectations. None of these services are building on the success of SMS. It's as if the industry turned its back on text messaging.

You may think I've forgotten about Multi Media Messaging or MMS. This is intended to be a substantial upgrade to SMS, allowing the sending of rich text, photos and even sound clips within the same message. However, MMS under appreciates SMS as well. It does this in two ways. First, its new application interaction is far more complex; it effectively ignores the powerful simplicity that made SMS so popular. The second is that MMS doesn't add any substantial value for consumers. I will explain both of these points in more detail later in the chapter.

However, MMS is just an example of a broader trend. The true culprit here is the approach to product design that sets up these products and considers them valuable. It seems all too easy to create products that misinterpret the true needs of the consumer and engender little enthusiasm. The marketing failures of both WAP and Instant Messaging should be an enormous cautionary tale to us all.

I call this shallow approach to product design "Default Thinking". I have seen this throughout my career in product discussions within many companies. By identifying the components of Default Thinking and showing how it affects product design, I'm attempting to create a better vocabulary: a starting point in how to discuss product design issues in more detail. I'll use MMS as an example, showing how it contains many instances of Default Thinking. This is not to prove that MMS is doomed but rather to show how this new vocabulary can be used as a communications tool. The goal is to encourage a more insightful discussion of mobile service issues.

The analysis of MMS will show many weak points of the product but it will also encourage a broader discussion of mobile services in general. A basic tenet of design is that it is very easy to criticize and much harder to create. In order to show how this process can be used creatively, I'll build on this analysis and finish the chapter by brainstorming a series of new mobile services.

Default Thinking

I wouldn't be surprised that many readers may not share my concerns over MMS. My goal isn't to imply MMS is fatally flawed, only to say that there isn't a very mature way for us to discuss its pros and cons. Take for example the fairly innocent phrase, "MMS is an extension of SMS and therefore a natural progression for the industry". This is an exact quote I lifted from a well-known industry speaker. I would claim there is an entire world of assumptions and potential misunderstandings in that phrase. How can we pull it apart and discuss it further?

That phrase is infused with 'Default Thinking', which is the underlying way people manage the complex process of product conceptualization. Product design is a rather soft discipline. There are no equations for insight or guarantees of success. In order to cope, most people use a personal set of beliefs to base their work. The problem is that such intuitive rules are rarely exposed. In most cases, few people really have a strong understanding of how they internalize the design process. They have a weak collection of axioms of design, broad market visions, or rules of execution that aren't clearly articulated. This collection exists in the background, much like the assumption that gravity exists. These rules are so ingrained in how some people think, certain ideas or positions are just obvious and therefore not questioned.

There is a popular parable that talks of fish not "seeing" the water. The point is that while fish live in water their entire life, they never appreciate it surrounds them. It so encompasses their life that it becomes part of the background. It just fades away and they focus on more obvious things like finding food or escaping from predators. Default Thinking is our product design 'water'. What makes it so dangerous is it's near invisibility to normal argument. It isn't composed of strong opinions that you can discuss easily, but subtle beliefs that are hard to pin down. In an attempt to make it more visible, I'd like to present four aspects of Default Thinking and discuss them in more detail: Legacy Vision, Consumer Confusion, Design Syntax and Design Semantics.

Legacy Vision

Legacy Vision is the approach we all take when first considering how to use a new technology: it gives us our initial use. This approach is very understandable: we look backwards at what we are doing, our current legacy, and apply the new technology in a manner to make this existing problem better. We see this approach throughout the history of technology. As an example, when movies were first invented, an expected use was to capture stage plays for later viewing. The same was true for the telephone, which was envisioned to listen to opera from a distant city. History has shown repeatedly that most new technologies are initially applied to an existing, backward looking, legacy task. These first uses aren't wrong, only naïve, as they apply the new technology to well known problems. In retrospect, many technologies are disruptive, changing the status quo and often end up being used in far more profound ways. The initial uses are quickly forgotten. Movies clearly evolved into something very different from stage plays and the phone was used for far more than opera. It takes time before the full impact of a new technology is understood and applied in a more significant way.

Legacy Vision applies to mobile phones today. Once mobile phones had wireless data capability, the 'obvious' thing to do was to look backwards and see the web. "The Web is hot, phones are hot, therefore web + phone has got to be hotter!" was the manic belief in the late 1990s. This lunging grasp isn't necessarily bad, only uninspiring. History implies there will most likely be a much stronger and more meaningful use of data enabled phones that goes well beyond the 'web on a phone' concept.

We need to be on guard against Legacy Vision as it implies a value that may not be there. In the case of MMS, the new technologies that presented themselves were color screens and small optical sensors. Digital cameras were a hot growth market so phones + cameras were perceived to be much hotter. The obvious thing to do was to take this cool new raw technology and extend SMS to send photos. The proven value of a previous market implies success in the future concept. This doesn't mean the concept is wrong of course. The point is that the value of the concept appears to be instantly valid; it just *has* to be successful. While indeed, there appears to be an intuitive value to 'sending a photo', additional questions such as "Do people really need this?" and "What are they doing in their lives where this has significant value?" need to be asked. When Legacy Vision is very strong, these questions are often considered trivial or worse, hopelessly academic. Just because something is a better message doesn't mean that it is the right kind of message.

A second problem with Legacy Vision is its strong negative impact on any explorations of alternative uses of the same technology. The initial use is often seen as so compelling, it short-circuits discussion in the longer-term solutions that will ultimately capture the true use of a disruptive technology. For example, we jumped from the basic technology of color screens and digital cameras straight into MMS. There are other product concepts that are potentially more interesting, such as sending a photo during a voice call. Somehow concepts like this just vanish from the landscape.

The original use of movies to capture stage plays wasn't wrong; it just wasn't ultimately all that exciting. Something much more interesting happened as the use of the technology matured. Most likely the same will happen with photos and phones. Something far more interesting will most likely come along. We should be getting used to this pattern and anticipate it.

Implied Consumer

Most companies that target the consumer don't intentionally try to design overly complex products. The difficulty is in truly understanding the actual consumer. Design problems often come using a naïve stereotype of the consumer that is more sophisticated than actually exists. Here is a good example:



This image shows how easy it is to miss the mark. This is a credit card pay terminal at a gas station. The clear indication there is a problem is the professionally printed sticker imploring you to 'PRESS THIS BUTTON'. This problem had to be so bad and widespread the company had these stickers distributed to all stations and put onto each terminal after the original terminal was deployed.

The strong implication of the "PRESS THIS BUTTON" sticker is that most people, at least initially, just want to pay for gas the old-fashioned way: by going inside to the cashier. The first mistake this design made was not to make the established task obvious to all users. It didn't understand it had to meet consumers' initial needs before introducing them to a new concept such as pay at the pump.

The Implied Consumer, in this case, is someone who wants to use the new pay at the pump feature. This may seem reasonable but it makes a common design mistake: confusing the need to create a design for a new feature, with the needs of the target customers. While paying at the pump is clearly a nice addition, it doesn't appear to be the first concern of the consumer, at least, not initially. While the designers of this terminal had no doubt good intentions, they adopted an Implied Consumer that didn't match the actual one.

Another aspect of the Implied Consumer is that they share all knowledge that the designers possess. Implied Consumers know enough to make decisions that are fairly complex. This is never intentional of course, but it is all too easy to put the consumer in a position to make a decision that seems 'obvious'.

This decision problem of the Implied Consumer is related to a graphic design rule introduced by Edward Tufte, " $1 + 1 = 3$ ". When you draw a single line on a page, you have only that. However, drawing a second parallel line actually adds two additional items to the overall graphic: the second line, and the white space in between. The white space acts like a third graphical element. There is a strong correlation of this rule in product design. Adding a second button to a product actually adds two additional aspects to the design: the second button and the requirement to understand the difference between these two buttons. The user must understand enough to intelligently choose which button to use.

The pay terminal has a severe case of $1+1=3$. Its second design mistake is to have a completely unneeded keypad on the left. There was most likely some future use for this keypad but as it is completely unused, it just adds visual clutter, giving the consumer 'another line' to understand and process. The third mistake is a series of instructions in the lower left that assumes the consumer wants to pay at the pump. There is nothing about paying inside. When consumers are confused, the only thing for them to read is something that doesn't help.

These last two mistakes together create quite a bit for the consumer to process in order to make the fairly simple decision to 'just pay as I always have'. In a sense, the consumer is put in the position that they must 'understand what they can safely ignore'. This is a central problem of the Implied Consumer. Asking consumers to make decisions unrelated to their primary task often puts them into a stressful situation: they just stare at the device, not knowing what they need to do. At this point, the need for the "PRESS THIS BUTTON" sticker is no longer so far fetched.

Most companies are sincere in trying to create easy to use products. The Implied Consumer tends to sneak up on designers, becoming stronger the longer they work with a problem. Complex issues become commonplace and even obvious to the designers. It becomes easy to

assume the consumer knows enough to make complex decisions. Any interface, no matter how simple in appearance will increase its difficulty if it asks novice users to make decisions. This is most severe when decisions are required that the consumer doesn't consider relevant to their main task. Of course, there is a large trade off to be made as decisions allow for more features to be presented. The point isn't to remove all decisions from a design but rather to acknowledge that decisions, especially extraneous ones, add complexity. The significance of this trade-off is rarely appreciated and can have a profound impact on many consumer-targeted products.

The issues raised by the Implied Consumer go much further than just the initial use of a consumer product. If this were the only issue, we would be in the age-old argument of "Why doesn't the user just read the manual?" Decisions have an impact not only on novice users but also for advanced users as they can be tired or just in a hurry. Interfaces that reduce decisions can be a win for users of all levels. The point here is not that decisions are inherently bad, but that unnecessary decisions have a large impact on both novice and advanced users.

This is the danger of using the Implied Consumer when designing a product. The underlying assumption is that they share the same pc savvy approach the product team had when making the design. This is why user testing is usually such a revelation to so many product teams. The inability for a consumer to make the correct decision using a particular design in a particular place is often stunning. Of course, this does not reflect on the ability of the consumer, but more in the ability of the product to communicate. The Implied Consumer needs to be well understood as a stumbling block and then exorcized from our product discussions so we can properly appreciate the difficulties in using a product in the field.

Design Syntax and Semantics

The term 'User Interface' causes many problems. It has become so broadly used that it is an imprecise term. A common request of most companies is that their next product has an 'easy to use User Interface'. The problem is that it's not clear what this actually means: nice graphics, no hierarchical menus, simplified task structure, better cognitive model, or fewer features? This is one of the key problems with Default Thinking as it considers the User Interface a little piece of code to be tacked onto the end of a product design. The best way out of the problem is to create a richer set of words to break down the vague phrase User Interface into smaller, more precise terms. I will suggest a good start is to break up the larger concept into two pieces: the Syntax and the Semantics of the design. The Syntax is the screen details. Examples of this are the screen layout, the choice of buttons and the task flow of the design. The Semantics are the broader motivational issues. Examples would be the context of use, the consumer's interpretation the design, and the consumer goals in using the product. Syntax is the HOW, Semantics is the WHY.

Design Syntax

Design Syntax issues were most acutely seen in the Mobile Industry during the early days of WAP. There were significant problems ranging from screen legibility, scrolling screens, hidden buttons, complex navigation, and technical reliability. These issues were rarely discussed by most industry insiders yet seem likely to be a major reason for the lack of consumer acceptance.

In the case of SMS and MMS, Default Thinking considers them to be nearly the same. The belief is that they both are just sending a message. This implies their UIs are also quite similar. The diagrams below show the detailed interaction required to send a message using both

products.

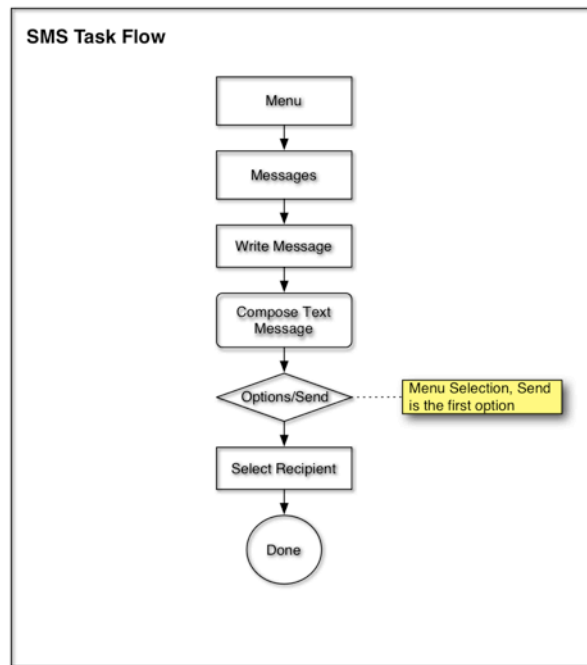


figure 1

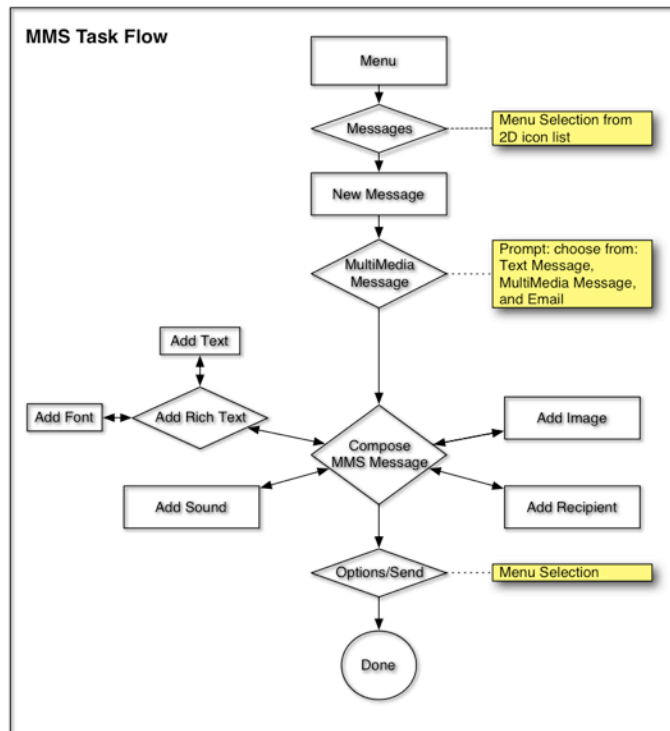


figure 2

The SMS task flow for the user is fairly trivial. As diagrammed in figure 1, sending a text involves a fairly simple set of steps: chose to send an SMS, compose the message as a long string of text, pick a recipient and then it is gone. To be fair, not all handsets have an SMS task flow this simple. It is, however, used with only small variations by many handset vendors.

MMS, as diagrammed in figure 2, is a bit more complex. First choose to send an MMS over an SMS, leaving a blank window. To this window add text, which is much like an SMS, but it is now possible to also add a photo, a sound clip, and a recipient. There is no sequence as you can add any of these in any order. However, without a recipient, the SEND option is not available to you. Note that both task flows are taken from the same handset company, one from a phone that is SMS only, and the other that has SMS and MMS as options.

Three observations can be made at this point. The first is that the Design Syntax of SMS is fairly linear: there is a sequential path that must be followed. It is hard for the consumer to make a mistake in that there are very few wrong turns to be made. The only real freedom they have is in the composition of the text of the message itself.

In contrast with MMS, there are many choices to be made. The consumer is forced to choose what type of message, what should be added in what order, where to place the photo, and where to place the sound clip. These decisions assume that the user knows the answers to these questions. The consumer must understand the fairly sophisticated document structure required of MMS before they can navigate this decision hierarchy.

The second observation is this creates a more mature perspective when discussing why people have trouble initially learning to use SMS. Breaking the SMS process down into this sequence of steps shows the actual "User Interface" can be grouped into two sections: a fairly simple set of sequential tasks and a fairly difficult process of composing text on a 12 button keypad. A common argument used in favor of MMS is that "People had difficulty getting used to SMS at first, there will be a similar period of adjustment for MMS". This statement must now to called into question as the most difficult part of SMS is a skill that is completely transferable to MMS, namely, the input of text. This implies that if people are indeed having trouble with MMS today, it is not for the same reason that people had with SMS. You can't just equate the learning curve of both products.

The final observation is that the concept of a message is completely different for MMS and SMS. SMS is an empty vessel and all you can do is add text. MMS has a more robust model, which is very much like a word processing document on a desktop computer. An MMS message is like an empty document that can contain text, photos, sounds, and addresses. All of these can be added in any order. If the message doesn't have an addressee, the SEND option isn't available and the message can't be sent. In the SMS model, after composing the message, the consumer is prompted for an addressee. The data richness of MMS creates the possibility for the consumer to make mistakes that were impossible with SMS. For example, it is possible to incorrectly place the photo so it is above the text instead of below. This forces the consumer to delete content and replace the photo it in the correct position.

Default Thinking implies that these two products are very similar when we can now see that this 'simple little layer', this trivial bit of Design Syntax, informs several deep observations of these two products. By escaping our Default Thinking it is quite obvious that these products differ not just in menu labels and icons but in a much more profound way at the data level and even the the numbers of mistakes possible in the process.

Analyzing the Design Syntax of a product is a communications tool. It is a technique to break through broad statements and get some detail into the discussion of a product. I find this tool works at two very different levels. The first is as a reductionist tool, breaking up broad statements with specific examples that can be called out, compared, and studied. This is what we've just completed in comparing SMS and MMS.

The second level is as a motivational tool when working on a product design. The more you take apart the Design Syntax of products, the more you appreciate how a complex flow creates unnecessary problems for the consumers. When working on new products, making the Design Syntax clean and simple becomes a much stronger, and more motivated goal.

Design Semantics

Design Semantics examines the motivation and the values the consumer has in using the product. This includes what they are trying to accomplish, how they interpret the design, or why are they using the product at all. Too often the primary focus of a User Interface is the superficial details of the design such as the icons and menus. Additional insights come from looking at the consumer's interpretation of the design and value it may have to them.

At first blush, SMS is perceived as a complex product, primarily as the text input is so difficult. When first introduced, many people felt that the average consumer would not put in the effort to become proficient in inputting text using a keypad. However, the value of sending an SMS was so high that many, many people persevered. The value actually overcame the difficulty of using early SMS handsets.

Most products rarely start with such a large motivational value upfront. Much more likely, the exact opposite is true: the value for a particular product concept doesn't really exist. No matter how good the design of the product, it will not succeed. The reason for analyzing the Design Semantics of a problem is much like doing user testing: understand how the consumer will use that product. If there is no apparent value to a product concept, the user interface is irrelevant.

This concern of a false consumer value isn't a new concept. Most mature consumer industries such as automobiles, prepared food, even beer, all do significant consumer trials before rolling out a full product. It isn't an exact science but it attempts to make sure a product will have value before the big money is spent bringing it to market. These industries appear to understand the need to validate a consumer's need, and reaction to a new product concept before spending considerable time and energy on it. The problem with Default Thinking is that it creates value too quickly, usually through Legacy Vision. This false value often motivates a product too quickly. This doesn't guarantee a product will fail but it does make it significantly more risky.

The mobile industry is maturing but still has a ways to go in comparison to other industries. There aren't enough studies of users to find out what consumers are doing to understand their communication needs. This is clearly a very difficult problem to answer well. However it has to be attempted so at least some discussion can occur, highlighting, if anything, at least the assumptions that are being made.

Let's consider the value proposition of MMS. The marketing materials you see in most phone shops make that value appear to be obvious, showing how fun it is to receive a "Happy Birthday!" message with a photo and embedded music, or even showing how to send photos while on vacation. This makes for very enticing advertising copy. By examining the Design Semantics a little more, I am attempting to discover the underlying value to the consumer. The best place to start here is to understand the current value of SMS today. Once we have a better

understanding of what is driving SMS, we will be in a much stronger position to evaluate the potential value of MMS.

Summary of Existing Work

There has been a considerable amount of work on the values that SMS currently provides, as well as some of the misconceptions about those values. For example, it is still a common belief that SMS has succeeded because it is a cheap alternative to voice communications. The basis of this idea appears to be the accounts provided by teenagers explaining their behavior by alluding to the minimal cost entailed. Close examination of their actual behavior shows clearly that cost is a very minimal driver of usage. This is not to say that these same users are without awareness of costs, but that other values provided by text are greater than and supersede these. For example, Kasesniemi (2003) shows convincingly that the ways in which SMS gets undertaken results in an increase of costs when compared to the costs that result from voice only communication: though each individual text costs considerably less than an individual voice call, Kasesniemi shows that texts are rarely if ever solitary, and are more often made up of a series. It is the series of texts that creates cost; and these are often very substantial. In addition, she and many others have shown that these costs are in practice viewed as insignificant to the value that SMS provides.

The most obvious value of SMS is its low level of intrusion: a recipient is not required to interrupt their activity to deal with the message nor is there any rule of conduct demanding specific speed of reply (Kasesniemi, 2003; but see also chapter 3 in this book looking at the moral obligation to reply at some time). SMS also allows both parties to modulate their turn – taking to suit their circumstances (chapters 5 and 6). A related value has to do with the time shifting nature of SMS, whereby it affords a mix of real time and asynchronous messaging (Ling, et al, chapter 4; for the benefits that this provides for minority groups see Bakken, chapter 8).

SMS also affords a degree of privacy that voice (and even MMS) does not, through allowing the user to create and read messages without the activity being excessively conspicuous to those around. One consequence of this is the still largely undocumented practice of using texts to subvert particular contexts such as meetings and TV watching. A more thoroughly researched area is on the use of text to develop relationships that would otherwise be subject to social control, the most clear example of this being Philippino women using text to have emotional and even sexual relationships with men (see chapter 10). Part of these usage patterns have to do with the ability of texts to have gift like properties, binding both sender and receiver into systems of obligation and exchange (chapter 14). Text also has some particular benefits when it comes to the articulation of meaning, with many researchers noting that with text individuals find that they can express themselves more clearly and with greater forethought than with real time talk. This results in the gifting just mentioned and also other shifts in social practices. Riviere & Licoppe for example (chapter 5) note that SMS is used by couples in France to avoid the violence that sometimes attends difficult emotional conversations.

When SMS first arrived, most people felt it was a trivial product. However, it met a deep need to communicate simply, less intensely, and in a time shifted manner, all of which enabled people to communicate in ways they wouldn't have normally done before.

In light of these studies, MMS's value proposition doesn't appear to be as strong. These studies show how SMS is used primarily for social interaction and information coordination. Lots of quick, small messages are going back and forth. People are sending lots of messages, exchanging information over time, and setting up rendezvous. In reading these studies, many

ideas come to mind to extend these services, some of which will be discussed below. However, the current interaction style that has been documented with these studies doesn't give the impression that sending photos is the obvious next step.

Of course, these studies do show potential uses for photos. The Filipino women using SMS to augment the dating ritual has could clearly gain value from being able to send a photo. However just because something can have initial value doesn't mean that it has longer term potential, i.e. it will continue to have value after initial use.

In addition, the gift exchange studies may indeed show a potential value. It is possible to create quite a complex MMS, one that includes not only a picture but sound and text as well. This has value as a gift. There clearly could be a small study in the gift giving groups to see how they would respond to photos as gifts to understand this further. The real issue is not that this could be a gift but more likely, how often it would be used. If used rarely, it has little long term potential.

It must be made perfectly clear that discussing these studies does not prove anything. These studies only point out that there is strong reason to be skeptical. While there are many issues to discuss further, these studies show that the primary uses of SMS do not appear to be reflected in the benefits of MMS. Understanding more of how SMS is used puts us in a stronger position to discuss its strengths. This doesn't mean that MMS can't eventually succeed; only that is clearly will not replace SMS usage. MMS's market value is hardly a given.

This discussion is not meant to be a proof of MMS's demise. The point here isn't to use Design Semantics to create an "equation of product success", only a topology of analysis. In the case of SMS, the current ethnographic research enables us to debate potential future products with more facts and less opinion. We are at least trying to see the problem from the eyes of the user, raising concerns and discussing options. To be fair, there could easily be a new, as yet undiscovered, social need that will enthusiastically embrace photo messaging. My concern is that at this point, MMS appears to be working more on wishful thinking.

MMS Summary

We started off this chapter with the quote, "MMS is an extension of SMS and therefore a natural progression for the industry". Here are the four aspects of Default Thinking in summary applied to MMS:

There is clearly Legacy Vision in that it sees itself as an extension of SMS. This is a warning sign there is an implied value that may not be justified. The considerable success of digital cameras is interesting but certainly not a guarantee of the future success of MMS.

There is the Implied Consumer as a more experienced user is required to use the more complex document model, one which is more like a PC document than an SMS. This too is a risk and needs to be discussed further.

The Design Syntax of the MMS is also much more complex as it involves a series of branching decisions instead of the SMS model of sequential use. This, and its more complex document model, requires more of the consumer and may create some problems for a potentially broad range of users.

The Design Semantics of MMS assumes its value is based on the value SMS. Current user research implies the true value of SMS is based on a complex series of social and interactive attributes which don't seem to be greatly enhanced by photos. There are many directions that

SMS can be improved upon based on the studies cited above, but it isn't clear that photos are an obvious means to accomplish that.

Of course, to definitively state that MMS is a hopeless flawed concept would be rash. My point in this discussion is to show how these four aspects of Default Thinking provide a way to deconstruct a concept and to provide a means to discuss a product in greater detail. While I do think this discussion has shown significant weakness in the MMS product concept, the larger purpose is to have a means to discuss any issue in greater detail. This of course can cut both ways as I'm handing critics a set of tools to dispute my claims. I would heartily encourage this. The purpose of this chapter isn't to prove MMS is doomed but rather to show both how we can discuss it in greater detail and also use this discussion to discuss other mobile service concepts.

For example, an improved MMS client that significantly reduces the complexity of its current Design Syntax would be a very interesting product to discuss. There might also be other groups whose value of a photo is so high that they will avidly use it. It is also possible that MMS will have value completely outside of the typical SMS usage pattern. For example, instead of having value between friends exchanging photos, it could be used to receive one-way information from content centers such as weather reports or movie stills. These are all useful and forward-looking conversations.

Creating Future Product Concepts

Approach

This chapter is only half complete. Going through the Default Thinking of MMS was a useful exercise, but to use this analysis only to criticize is a bit of a waste. There are several insights here that imply future products. A fundamental rule of design is that criticism is easy, creation is hard. However, this type of criticism puts us into a good position to create future concepts that build upon the success of SMS.

Creating new product concepts is a rather complex process. As a professional designer, I often see new ideas that are very experimental, with no possible means of implementation. Of course, this can be useful as it opens up new ways of thinking. However, products that are too far out into the future tend to be easily forgotten. Sometimes, a more efficacious approach is to use technology as a lens, constraining your designs within a certain framework. This is, ironically, often a liberating experience as it focuses your thoughts and concepts. In a sense, it gives you your vocabulary and you have to write the verse. To show how this works, I'd like to use the MMS analysis of this chapter to brainstorm a series of three new products, each using a different technology as a starting point: 1) an existing SMS handset, 2) a technical extension of SMS, and 3) a technical extension of MMS. Just so I don't become too beholden to technology, I'd like to offer a fourth product with no technological basis at all.

How do we start?

The natural Default Thinking approach of MMS focuses on improving the message. Adding photo and sound capability to SMS implies an inherently better message. In light of our growing understanding of how and why SMS's are being sent, it seems more useful to focus new technology not on the message, but more on the needs motivating the message. Why are people sending messages and how can we make this easier and more useful?

The research cited in this book shows that the use of SMS is inherently social: coordinating meetings, exchanging scraps of information, giving gifts and sharing emotions. Instead of

focusing on just the message we should look at the entire social transaction. Here is just one concept of how a typical SMS exchange takes place:

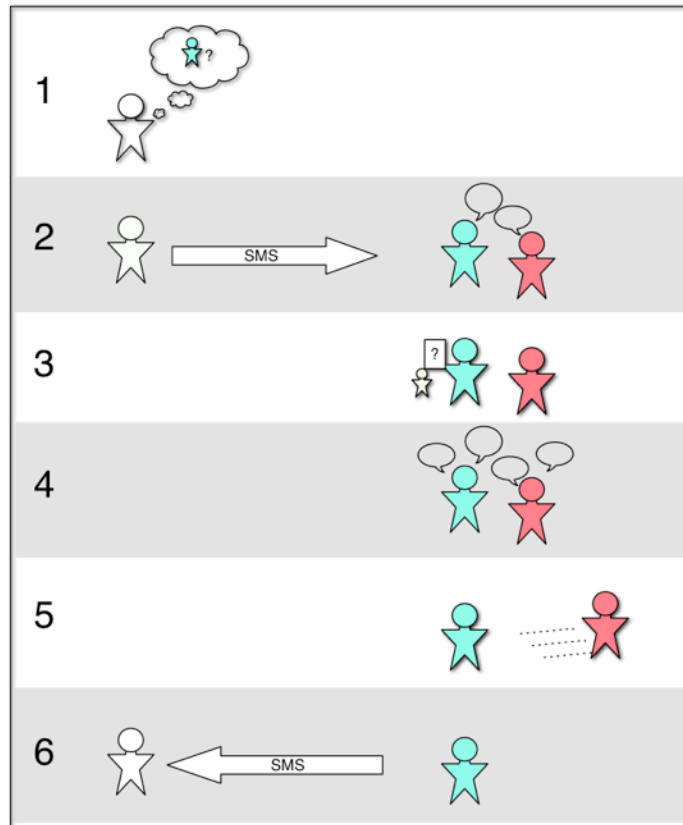


figure 3

Figure 3 diagrams a more complete social scene. In Step 1, the initial sender is curious about the person on the right. This represents a very broad concern and SMS is only one possible solution to this question. Step 2 is the actual use of SMS to ask a “Where are you?” type of question. Step 3 is the receipt of the SMS. Notice that the receiver is in the middle of a conversation and the SMS interrupts this. However in step 4, the conversation resumes. In Step 5, the conversation concludes and a reply is sent in step 6.

There are many possible directions and observations that come from looking at SMS this particular way. The most obvious is that the actual SMS is just a small part of a larger social motivation and transaction. In fact, most of this interaction is in fact a response to the impact of the SMS concept. For example, if the question truly was “Where are you?” seeing the receiver on the sender’s phone in some way completely solves the problem (assuming there are no privacy violations of course) In light of this, focusing on just improving SMS seems a bit trivial. Seeing this larger context invites several questions:

- Step 1: What other ways can the sender answer their question? Is the receiver available at this time? Would they invite an interruption? Would they prefer a voice call?

- Step 2: What is the impact of receiving a message? Does this create problems with the conversation?
- Step 3: What are coping mechanisms of receiving SMS or voice calls?
- Step 4: How important is it to reply to an SMS immediately? Does this create other tensions?
- Step 5: Is the conversation terminated early due to the pending message?
- Step 6: What are possible ways to reply to this message? Is it possible to forget to reply?

Another question arises when looking at this process as a negotiation. The tools are fairly blunt with little ability to control the intensity of the interaction. When in physical proximity, there are many choices in interacting, ranging from a wave across the room, a tap on the shoulder, a vocal interruption to even a strong physical shove. None of these choices are available with SMS. This situation becomes even more complex when considering a group interaction.

SMS may be a bit humble to attempt to be a full part of this social dynamic. However, it is an intriguing position from which to ponder and reflect. If anything, it puts me 'in my place' as a designer so I appreciate how difficult it will be for any technology to integrate well within a typical social interaction.

On the other hand, I also find this empowering as it implies profound products, such as SMS, sometimes have simple features. SMS is a rather blunt tool yet it is used in surprisingly subtle ways. This subtlety comes not from its technological depth but the social machinations of its use. It is sometimes surprising how successful blunt tools can be. It wouldn't surprise me if the next great mobile service, whatever it turns out to be, will be initially seen by industry experts as trivially simple and unlikely to succeed.

Technology and Business Issues

Limiting any new product concepts to SMS or MMS has a large advantage: there will be no need to change the underlying infrastructure of the mobile network. This is important as it means that new products can be immediately used, without waiting for standards bodies or worldwide rollout for these services to begin.

However, nothing is ever easy in the real world. These new concepts will require custom software on handsets. This raises a common problem in any business level discussion: how can you introduce a new product when initially, very few consumers will have it? The thinking goes that you won't have a viable product until it is widespread. The problem, of course, is how do you initially motivate people to get the new product? This chicken or egg problem was an issue when SMS first appeared, and is still an ongoing problem with MMS today.

I don't wish to dwell on this issue as this chapter is about insight and discussion of new product concepts. However I need to quickly establish that this isn't a hopeless endeavor, even though this point clearly needs a deeper discussion. There is no doubt that any concept we come up with, will have to face this problem of a broader market acceptance. However there are two factors that make this problem less severe. The first is that some new handsets can download applications to be used immediately. This removes the problem of waiting for a new handset each time you want to try a new feature.

The second is that that most communication for consumers is between a small numbers of people. If everyone in this social network has this new feature, the value will most likely be strong enough for it to be used. Example social networks would be a family, a small business,

or a group of friends. Push-To-Talk services in the US succeeded using this very approach by selling contracts into small businesses, giving everyone in the company, effectively a new set of services.

Four Product Concepts

Existing handsets: Gift Storage

This first product concept will attempt to use SMS and mobile handsets as they are, without any change. This is particularly challenging as the beautiful simplicity of SMS, by its very nature, doesn't allow much room to add anything new to the mix. SMS does what it does very well, but no more. Attempts at SMS 'applications' have succeeded, but only by forcing the consumer to use keywords or websites to configure a service before using it, making their design syntax quite complex.

Any attempt at a new concept is best based on a problem to be solved. The gift exchange work done by Harper and Tayler pointed out a key problem for many teenagers: how to safely store prized messages. It was too easy for them to lose messages through accidental deletion, lack of capacity on the handset or lost phones. Harper's work suggests some interesting hardware concepts to solve the problem. The attempt with this design exercise is to stick with exactly what we have today.

One approach would be for a service provider to provide a "SafeStorage" phone number. If a particularly valuable text has just been received, the person just forwards it to this number for safekeeping. Later all forwarded messages could be retrieved through a website, logging into it with the forwarding handset's phone number. As most service providers already have a website suite of services for existing customers, this is a fairly simple addition.

Given the strong value for storage Harper has documented in his study, it would make sense to discuss what could be done with the stored messages at the website. In addition to storage, organization and annotation come to mind as having potential value.

This application is rather modest in scope but it seems worth considering as it is fairly easy to implement and motivated by a established need.

SMS with new software: Tap

We'll now move up the technology curve a bit and consider an application that works using SMS as a delivery platform. The difference is that it requires custom software on the handset to send and receive a special type of text message.

As I mentioned earlier, the value from SMS comes not from its rich feature set but what is done using its limited features. Even an empty SMS can have value. Although no text is sent, the message isn't really empty of content as it has a sender and an arrival time, both of which can have meaning depending on social context.

This text-free message can be thought of as the social equivalent of a tap on the shoulder. It could have all sorts of potential meanings, each dictated by the particular social environment in which it was sent. For a family in a theme park, tapping could mean it is time for lunch. It could also mean a lover is thinking of their partner during the day. It could even have a business value, signaling a colleague it is time to come into a meeting.

If we were to create such a simple, if empty text message, it would have a radically simpler

Design Syntax than a normal SMS. Sending such a message involves only highlighting a contact followed by selecting the "Tap" option. That's it, the message would be sent. This quickness can have significant value itself, and must not be underestimated. With such a minimal effort, this interaction would encourage people to send messages when they normally wouldn't.

A related type of content free 'quick contact' can be seen in some push to talk systems I have observed. Pushing the Talk button briefly sends only a 'chirp' to the other handset. The intended use is to act as a 'ring tone', a polite alert to the receiver that an exchange is about to take place. However, I have seen this chirp used to 'hurry people up' when others are waiting or even to repeatedly chirp someone if only to tease them. This implies that augmenting simple social interaction can have surprising implications.

The value of Tap comes from a streamlined Design Syntax. By reducing it to a minimum, the expected usage will go up. A quick prototype and field study would go a long way in determining the value and potential issues. Notice how this concept design is strengthened on two fronts. First, the social insights of the existing research help us discuss value, or the Design Semantics of the service. Second, the very simple nature of the low-level user interface, or the Design Syntax, is also very powerful. We can discuss how quick and easy this service will be and how this affects its appeal. By creating a service that can be evaluated at both levels, the strength of an idea becomes easier to see and discuss.

MMS with new software: VoiceSMS

We'll now move even further up the technology curve and consider an application that works using MMS but requires custom software on the handset. It became clear through the Design Syntax section above that the majority of the 'UI work' in sending an SMS was the text input. When people choose not to send an SMS it is usually due to the frustrations of text entry and not problems with the user interface.

One solution to this problem would be to mimic the simple SMS Design Syntax but replace text input aspect with a voice recording. This VoiceSMS would be sent with just 2 actions, one to start recording and another to select a recipient, mimicking the design syntax of most SMS clients today. Like the original SMS syntax, it would be sequential with no branching. In addition to being simple and fast, it also has the benefit of conveying real emotion through the voice so it might add value by allowing the message to carry more meaning. Much like the discussion of Tap above, this would be a radically simple interaction, significantly faster and easier due to its extremely small number of interaction steps. This simplicity in itself may drive usage.

On the negative side, the message would be harder to receive in noisy environments. It also isn't as easy to send in crowded situations as you would be announcing to the world your message content. However, given the propensity for people to have conversations in public, it doesn't seem unreasonable to speak messages as well. Finally, it isn't as easy to send or even receive discretely, a large benefit in meeting or class situations. VoiceSMS clearly will not replace SMS but it does offer an alternative for many people may never bother with just SMS as it currently stands.

What I enjoy about the VoiceSMS concept is that it pulls from our discussion at both the Design Syntax and Semantics levels. We know that increasing the emotive content is important to a message but our Design Syntax work pushes the design to be more like the SMS model with no branching a very few interaction steps. So while one might be tempted to argue that

VoiceSMS is just a restricted MMS, the significantly streamlined nature of its Design Syntax puts it into a completely different category. This is one reason why I find exploring mobile services so interesting. It is surprising that something like VoiceSMS, which is so easily dismissed as a derivative MMS is in reality a very different product.

However, our Design Semantics sensitivity also informs our concerns about the product. There are clear cases where VoiceSMS will not work. But we can now acknowledge them up front, create better user and focus group tests and even consider scrapping the product if these concerns are too great.

As with Tap above, this is an exploration that clearly needs further study. The purpose here is not to pull a barn burner project out of thin air but to show how concentrating on breaking out of Default Thinking can lead us to more interesting concepts. Clearly some marketing work and certainly a prototype trial would go a long way in identifying any issues, opportunities, and concerns with this product.

No technical grounding: GroupSMS

The Problem

The previous three concepts all used existing technologies. This has its place in creating more short-term concepts that can be more easily implemented. At this time, I'd like to ignore technology completely and discuss just an existing problem and try to brainstorm a useful product.

Communicating with a group is a strong use of SMS today. However it involves a complicated clustering of a series of one-to-one messages in order to build up a group consensus. Providing a means to simply this would have very strong value. This isn't a new observation and the industry has taken been pushing Instant Messaging (IM) or even Email as solutions to this problem. There is also Keyani, Farnham's work in this book (Chapter #TBD) using SMS only as a solution to this problem.

IM ignores all of the lessons we have learned from SMS. It can never work for at least two reasons. The first is that it requires everyone in the group to be "Logged in" at the same time. One of the key values of SMS, and even voice calling, is that the receiver doesn't have to do anything special. SMS and calls always arrive with no effort on the receiver's part, as long as they are in a coverage area. Requiring people to be logged in to a chat server means that that chatting is only possible with some of your friends some of the time. SMS and Voice work, in contrast, for all of your friends all of the time.

The second is that SMS gives the receiver a little breathing room. If they are in a discussion, or getting off of a bus, they can take care of whatever they are doing before replying. SMS in a sense allows a certain amount of time shifting so conversations can take place as the situation allows. You can be getting along with your life and still maintain an SMS conversation over an entire day. Chatting through IM is very different as it is fairly demanding of your attention, intruding into your life. This provides a disincentive to turning on chat during many portions of the day.

Email isn't a solution either as it makes managing the thread of a conversation difficult: not everyone does a 'reply to all'. Even if they did, the inbox is littered with messages that don't form a coherent conversation. This is why the group send feature of SMS, which mimics some of this email behavior, is also inadequate.

Concerns

Any solution to group interaction needs to understand the environment in which it will be used. Independent of the technology, any solution should address the following needs:

- It should be possible to post a question to a group of people. All should receive it and all replies should be visible to the same group.
- There should be no requirement to log into a server throughout the day. Messages should be able to be received with no premeditated effort.
- Like SMS, messages should be replied to at a convenient time.
- One to one SMS messages will still exist! A completely separate 'Group Message' application is an odd exposure of the consumer to the underpinnings of technology. Sending a message to a single person or a group is almost the same act, the only difference is that more people receive the message.
- A follow on point is that it seems likely that a one to one exchange could morph into a group exchange. The opposite is also true with a group exchange turning into a side chat. Forcing consumers to switch applications depending on how many people you're communicating with seems a bit arbitrary.
- Group messages could get quite busy with replies and replies to replies. A means of grouping them together would be helpful.
- Creating groups could be a complex problem and needs to be watched carefully as the Design Syntax of this issue could overwhelm the process.

First Insight

The concerns have given us quite a list! The key insight is that we want a group discussion application integrated with, and based on, the interaction style of SMS. What we are really after is an SMS style bulletin board system with a new inbox organization. The messages should be collected into groups instead of all shoved together into a single large list.

This also raises a surprising issue. Managing a group thread of SMS messages also has value for one-on-one situations! In fact, there may be very little difference between 1-1 messaging and group messaging as both manage replies into threads to be viewed easily. The only difference is that more people are involved.

This is a very significant observation as it implies there is really no difference between the social uses of SMS and IM. Both are just exchanging small text messages. The point isn't necessarily that SMS must grow to encompass IM but more that the two need to merge into a single application. Forcing consumers to choose between sending an SMS or sending a chat message is exposing too much technical plumbing.

In fact, there seems likely to be a major train wreck in the making as the industry will be asking the consumer to use up to 4 types of messaging technologies in the same handset: SMS, MMS, Email, and IM. This feels like the Implied Consumer all over. How will your basic consumer be able to make a decision on which product to use? Breaking out of default thinking propels us to take pity on the deluged consumer and create a product that simplifies this presentation.

A second important point is that we can't just wave our hands and say "SMS needs to add group addressing". Design Syntax should warn us that we have to look at this issue very

carefully and not assume it is a trivial problem. Sending a message to a group implies that messages either have to have multiple recipients or that it is possible to create groups. Creating groups isn't terribly hard but it is a very proactive PC centered concept. It implies that users create 'group objects', know where to find them, and know how to edit them. These tasks all seem trivial to us PC savvy users but they, much like MMS, require a certain sophistication that not all consumers will share with us. The final point is that we really don't even have a strong understanding of what 'groups' mean in the context of mobile phones. Will most messaging be between 2 people, 3, 12? If most group discussions will be small, just adding recipients to a chat and not allow the creation of stored groups might be completely acceptable. I don't have the answer to this question at this time. However, it has to be called out as a key issue. In my experience what most likely will happen is that no one will be able to figure it out for sure. This creates fear in the product team so they choose the most complete solution they can just to be sure that every possible contingency is covered. This of course will most likely create a heavy solution that will spoil the ability for most consumers to ever cope with the design. My gut reaction is that most groups will be fairly small and that making multiple addresses easy is critical to the problem. Clearly GroupSMS is a complex product and I haven't done it justice in this limited space. However the purpose of this chapter is to show how Default Thinking takes place in mobile service product discussions and how to combat it. There is clearly plenty of work left in creating a good GroupSMS product but these discussions have put us in a much stronger position to create a product that will work for most consumers.

Conclusion

This chapter started out with a criticism of MMS, showing how Default Thinking is a common means of thinking in many product design situations. While MMS has some flaws, the goal was not to prove its design defaults but to show how we can discuss products in a more articulate way, using the components of Default Thinking: Legacy Vision, Implied Consumer, Design Syntax and Design Semantics.

The MMS discussion enabled a broader consideration of the mobile space, creating not absolute truth but a richer landscape to discuss and argue. Doing this put us into a much stronger position to discuss future products. The four mobile product examples given are all in need of more work to validate them, but they are at least motivated by user insights that go beyond classic Default Thinking that is currently seen in the Mobile Service space today.

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