



# Augmented reality: Designing immersive experiences that maximize consumer engagement

Joachim Scholz<sup>a,\*</sup>, Andrew N. Smith<sup>b</sup>

<sup>a</sup> *Orfalea College of Business, California Polytechnic State University, 1 Grand Avenue, San Luis Obispo, CA 93407, U.S.A.*

<sup>b</sup> *Girard School of Business, Merrimack College, 315 Turnpike Street, North Andover, MA 01845, U.S.A.*

## KEYWORDS

Augmented reality;  
Advertising;  
Branding;  
Consumer engagement;  
Interactive marketing;  
Mobile marketing;  
Social media;  
User-generated content;  
Virtual reality

**Abstract** Innovative marketers can now leverage augmented reality to craft immersive brand experiences, create more interactive advertising, and enable consumers to experience products and spaces in novel ways. Augmented reality (AR) is the practice of displaying digital information over people's real-time view of objects, people, or spaces in the physical world. While AR can play a valuable role in integrated marketing programs, little is known about the practice and how to execute effective AR programs in the marketplace. We address this gap by presenting a framework that describes the active and passive ingredients of augmented reality. We then describe the basic design decisions that marketers need to make when planning an augmented reality campaign. In addition, we explain how understanding and addressing the dynamics between various active and passive AR ingredients can help marketers to optimize their AR campaigns and enhance various types of consumer engagement: user-brand engagement, user-user engagement, and user-bystander engagement. Through our framework and analysis, we develop eight actionable recommendations—described with the acronym ENTANGLE—marketing managers can use to design immersive AR experiences that maximize consumer engagement.

© 2015 Kelley School of Business, Indiana University. Published by Elsevier Inc. All rights reserved.

## 1. Augmented reality: An emerging tool for marketers

How can marketers use emerging technologies to break through the clutter and create value for

consumers? Imagine IKEA could help consumers visualize how a new sofa might look next to their existing furniture, or a TV station could spice up consumers' mundane commutes by transporting them into a world of *The Walking Dead* zombies (Figure 1). Marketers can create these unique and valuable experiences by effectively leveraging augmented reality.

*Augmented reality* (AR) is the practice of augmenting a real-time direct or indirect view of the

\* Corresponding author

E-mail addresses: [jscholz@calpoly.edu](mailto:jscholz@calpoly.edu) (J. Scholz), [smithand@merrimack.edu](mailto:smithand@merrimack.edu) (A.N. Smith)

**Figure 1.** Augmented reality campaign for *The Walking Dead* TV show in Vienna, Austria\*



Two tram commuters flee a digital zombie that they, initially, believe to be real (AR campaign in the bogus window paradigm).

\*Source: Image provided courtesy of move121 Werbeagentur GmbH

physical world with virtual information (Carmigniani & Furht, 2011). The layer/world metaphor aptly captures the basic idea of augmented reality: marketers layer digital information (e.g., text, pictures, videos) over objects and spaces in the physical world (e.g., product packaging, advertisements, street scenes), and consumers experience these hybridized realities via digital screens (e.g., smart phones, video installations) or projections (e.g., holograms).

Many of the world's largest businesses—including Coca-Cola, McDonald's, and General Electric—have embraced augmented reality in their marketing programs. They have used AR to create interactive advertising and packaging, enhance retail experiences, and develop engrossing games. These types of AR initiatives already allow marketers to craft immersive brand narratives and enable consumers to experience products and spaces in novel ways. Moreover, future advancements in smart glasses and transparent screen technologies (Dibble, 2014) will integrate the human gaze with digital information ever more seamlessly, propelling AR into an estimated \$120 billion business by 2020 (Gaudiosi, 2015). In the words of an analyst at the 2015 Consumer Electronics Show, AR has the potential to “disrupt anything with a screen” (Bradshaw, 2015).

Growing media coverage about augmented reality reflects its emerging ubiquity. AR has been discussed in trade publications (e.g., Handley, 2013), business magazines (e.g., “Reality, Improved,” 2009), and national newspapers (e.g., Berlin, 2009) but has received little attention from business academics. If AR is mentioned in managerial-oriented journals, it is typically referenced only peripherally as part of a changing business environment or as something to be studied in the future (e.g., Dholakia & Reyes, 2013; Rohm, Gao, Sultan, &

Pagani, 2012; Zhao & Balagué, 2015). However, managers who wish to integrate augmented reality into their marketing programs need frameworks to inform their decision making. They need to understand the building blocks, design principles, and dynamics of augmented reality beyond its technical qualities and non-commercial applications (e.g., Broll et al., 2008; Hugues, Fuchs, & Nannipieri, 2011). What should marketers consider when designing AR experiences? How and when should they co-produce these experiences with consumers? How can they craft compelling AR experiences that tell brand narratives, create value, and engage consumers?

Informed by an analysis of over 50 augmented reality marketing initiatives from a broad array of AR paradigms (Table 1), we have developed a framework that describes: (1) the ingredients of augmented reality; (2) basic design decisions for developing compelling AR experiences; and (3) how marketers can optimize the dynamics of AR initiatives to increase consumer engagement. First, we introduce the building blocks of AR experiences, which can be identified as active ingredients and passive ingredients of the physical world. Second, we discuss the basic design decisions marketers have to make when developing AR initiatives. Marketers can design more successful AR experiences by defining the target audience and communications objectives, determining how the AR layer will be activated for users, regulating what content will be added to the AR layer and by whom, and planning for how the AR layer will integrate with specific social and physical contexts. Third, we describe how marketers can optimize their AR initiatives by making adjustments—often small and inexpensive—to their AR content and overall experience. As a part of this discussion, we elaborate on how marketers can facilitate three different types of consumer engagement by enabling users to interact with the digital content, other users, and people who are not currently participating in the AR experience. This framework allows us to develop eight actionable recommendations marketers can use to design immersive AR experiences that maximize consumer engagement.<sup>1</sup>

## 2. The ingredients of augmented reality

Every augmented reality experience is established and influenced by digital *AR content* (represented

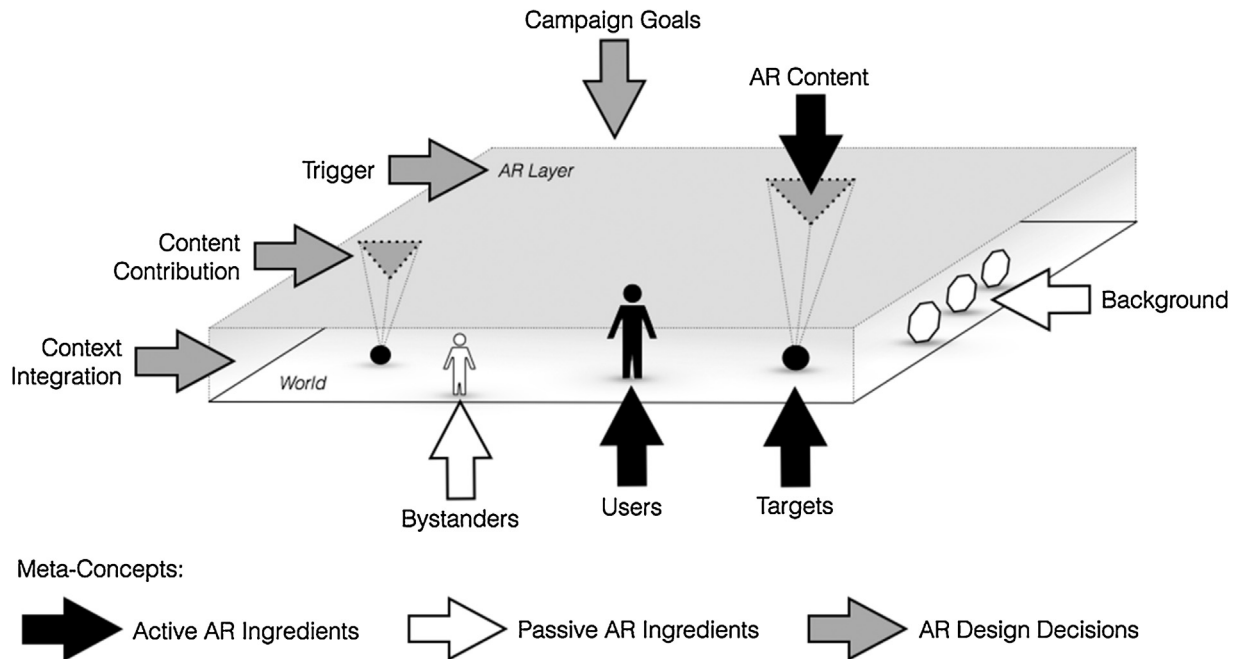
<sup>1</sup> For a summary of terms used, see the Appendix.

Table 1. Four typical augmented reality marketing paradigms

AR Paradigm	Description	Examples
Active Print / Packaging	Augmenting targets—presented in magazine and out-of-home advertisements, product packaging, catalogues, or other printed materials—with digital objects, typically using privately owned devices triggered by the user.	<ul style="list-style-type: none"> <li>• Volkswagen Juiced Up billboard in which a digital VW Beetle acrobatically jumps through the air.</li> <li>• IKEA catalogue in which promotional magazine is augmented with furniture, projecting it into a user's room.</li> <li>• Cadbury Quack Smack in which package of a chocolate bar is augmented with interactive game.</li> <li>• McDonald's Australia TrackMyMaccas packaging in which boxes are augmented with ingredient-sourcing information.</li> </ul>
Bogus Window	Augmenting the space in view of the user—typically via devices such as TV screens disguised as normal glass windows—with digital objects. The AR experience is usually initiated for the user, who views the AR experience through the bogus window. Since the augmentation occurs behind the bogus window, the user cannot see himself as part of the augmentation.	<ul style="list-style-type: none"> <li>• Pepsi Max bus shelter in which a live street scene is augmented—through a clandestine screen in the shelter—with fantastic images (e.g., UFOs, tigers).</li> <li>• <i>The Walking Dead</i> tram stop in which a live street scene is augmented—through a concealed screen in the stop fixture—with approaching zombies.</li> <li>• <i>Into the Storm</i> transport stop in which a live street scene is augmented—through an invisible screen in the stop shelter—with violent tornadoes.</li> </ul>
Geo-Layer	Augmenting the space around the user with digital objects that may or may not be linked to specific geolocations, typically using privately owned devices triggered by the user.	<ul style="list-style-type: none"> <li>• Tokyo Aquarium guide in which digital penguins lead consumers toward the attraction.</li> <li>• BOS Iced Tea forest in which users plant virtual trees across a city.</li> <li>• Kringle Santa Claus application in which parents can create artifacts providing evidence of Santa Claus visiting the home.</li> </ul>
Magic Mirror	Augmenting the space or objects around the user—or even the user himself—with digital objects, typically via public devices such as TV screens that may or may not be disguised as normal mirrors. The user can see himself as part of the augmentation, either in direct view in a digital mirror or by watching his actions on a screen from the perspective of a third person (in contrast to the bogus window paradigm).	<ul style="list-style-type: none"> <li>• Pepsi Max Monster Mirror campaign in which users' faces are transformed into werewolves and evil clowns.</li> <li>• National Geographic Channel in-mall campaign in which users are able to interact with virtual cheetahs, dolphins, and astronauts.</li> <li>• Lynx Angels Will Fall campaign in which angels fall automatically from the sky over users.</li> <li>• <i>The Bachelor Canada</i> campaign in which users are able to interact with digital bachelor star by receiving a ring or planting a kiss on his virtual cheek.</li> <li>• Timberland in-mall campaign in which users can virtually try on clothing and shoes using digital screens in shop windows.</li> </ul>

by dotted grey triangles in Figure 2) and four additional 'ingredients' in the physical world. Active ingredients (black arrows in Figure 2) include the aforementioned AR content, as well as consumers who participate in AR experiences (*users*) and

objects that are augmented with digital information (*targets*). Passive ingredients include non-participant witnesses (*bystanders*) and nearby, non-augmented objects and ambient conditions (*background*). These are not a direct part of an

**Figure 2. Augmented reality ingredients and design decisions**

augmentation, but can nevertheless profoundly influence how consumers experience and respond to market-oriented AR campaigns.

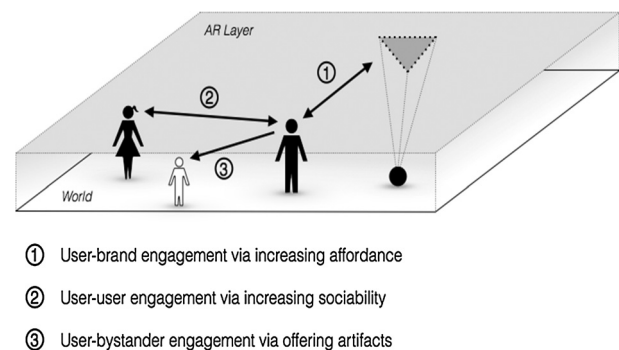
AR content is virtual information that is often perceived by consumers through digital devices (e.g., smart phones, large-screen AR installations) running generic AR browsers (e.g., Blippar, Junaio, Layar) or custom-made AR applications (e.g., Volkswagen Juiced Up). Virtual AR content can exist in a variety of formats, including text, pictures, videos, and animations. Collectively, all the content available for viewing within a particular AR application, or in one particular setting of a generic AR browser, makes up an AR layer. For example, Yelp's Monocle application augments a real-time view of the surrounding area with restaurant ratings in one AR layer and the location of close-by friends in a second, different AR layer.

Users are the people who directly experience an AR layer. They may do this through either a private (e.g., a smart phone) or publicly shared device (e.g., a projection screen). Users can share the same physical space—for example, if a screen displays an augmented view of the street behind a bus stop (e.g., bogus window paradigm)—or they may view the same AR layer while dispersed across different locations—for example, when readers of a magazine access the AR content of an active print campaign from their respective homes via smart phones.

In contrast, bystanders are people who do not experience an augmentation themselves but instead

observe a user's actions either directly—by sharing the same physical space—or indirectly—by viewing content (e.g., images) that a user has generated during his or her augmented experience (see user-bystander engagement in Figure 3). Bystanders can affect users' willingness to engage in AR experiences because bystanders form the social context of the experience; they act as generalized others whom users consider when determining whether their actions are socially appropriate (Mead, 1934). For example, some shoppers might refrain from participating in Timberland's street-facing virtual fitting room because their 'strange movements' could be seen by passersby.

Targets are entities in the physical world that are augmented with digital information. In many cases, targets are objects; for example, a marketer might

**Figure 3. Optimizing augmented reality for consumer engagement**



digitally overlay a brand narrative or ingredient information on product packing (e.g., Heinz Ketchup bottles). However, people may also be the target of augmentation. For example, clothing stores Topshop and Timberland have experimented with magic mirrors in fitting rooms and storefront windows, respectively, that superimpose digital images of their merchandise over live images of customers.

Every AR experience is interpreted within the context of the physical environment in which it is situated (Biocca, 2002). For example, a virtual IKEA couch augmented into a fully furnished living room has different meanings and value than the same virtual couch augmented into a grassy field full of grazing livestock. To capture the importance of the physical environment, we employ the term *background*: those objects and ambient conditions that share the same physical space as the target, but that are not augmented in this particular AR layer. The extent to which the background shapes the meanings of AR content varies from application to application; yet campaigns that adopt the active print/packaging paradigm are often less influenced by background as compared to the other paradigms described in Table 1.

These five ingredients—AR content, users, targets, bystanders, and background—are the building blocks required to design and optimize AR campaigns. They need to be considered first when making basic design decisions about how an AR campaign is accessed, populated with content, and experienced by users in their current context. Marketers can then leverage the dynamics between these five ingredients in order to increase the efficacy of their AR initiatives (see Section 4).

### 3. Designing AR experiences

Augmented reality is a new resource in marketers' toolkits. As such, some marketers might follow a technology-driven approach and prematurely commit to a particular AR device. We advise a different route and recommend that marketers let their objectives and the desired consumer experience guide the design of AR campaigns. In particular, we propose the following four steps for designing AR experiences (see grey arrows Figure 2):

1. Define your target audience and communications objectives (*campaign goals*);
2. Determine how the AR layer will be activated for users (*trigger*);

3. Regulate how, and by whom, the AR layer will be furnished with targets and AR content (*content contribution*); and
4. Establish how the AR layer will integrate with specific social and physical contexts (*context integration*).

As a first step, marketers should define their target audience and communications objectives in order to establish the campaign goals that will inform their AR design planning and the experience they hope to provide for users. Early adopters of new technologies might be a particularly suitable target audience for some AR campaigns (Yim & Chu, 2013), as these consumers are more likely to download and use the applications required for participating in active print and packaging or geo-layer AR campaigns. Companies that target less technologically savvy audiences can still employ AR; however, they may be more successful working within the magic mirror and bogus window paradigms, as these typically rely on public video installations rather than consumers' personal devices. In addition, marketers need to define the communications objectives they seek to achieve with an AR campaign: Do they want to create awareness for a new product, convey product knowledge, create emotional experiences, or cultivate communities and relationships? AR campaigns can achieve any of these objectives.

In the next two steps, managers need to define the roles that marketers and users will play in creating the AR layer with respect to how the AR layer is activated (*trigger*) and how it is furnished with targets and digital content (*content contribution*). In doing so, managers make decisions that profoundly shape the user experience and the amount of control marketers have over the AR campaign. It is therefore critical to align one's communications objectives with the ways in which a layer is produced.

The means by which an AR layer is activated and displayed to users is known as the trigger. In many cases, each individual user will engage in some deliberate action to activate the AR layer, such as scanning an active print advertisement in a magazine with a mobile device or accessing different clothing options on a magic mirror in a fitting room. Here, the user is in control over when—and often where—an AR layer is activated; this is likely to make users feel more positive about the AR content and explore it in further detail (e.g., Collier & Sherrell, 2010). Thus, letting users trigger the AR layer themselves aligns well with the objective of conveying product knowledge.

Conversely, marketers can trigger an AR layer for consumers, putting the marketer in control of who participates in an AR experience in a particular time and space. For example, the National Geographic Channel installed large screens across malls in Hungary and Belgium to create an AR experience in which shoppers were able to stand with and pretend to touch virtual cheetahs, dolphins, and astronauts. When marketers trigger the AR layer, consumers need not take deliberate action, which decreases the friction of initiating AR experiences. Thus, this type of trigger is particularly useful when the communications objective is to create awareness.

While the concept of trigger describes who is given control over the display of an AR layer, the concept of content contribution describes who is authorized to furnish an AR layer by adding additional targets and AR content. In many cases, targets and AR content are contributed by a small group of people who tightly control the AR experience. For example, a marketer might design an active print campaign that displays a fixed amount of content in the AR layer, or plan an in-store experience in which consumers can virtually try on a limited range of merchandise (e.g., shoes at Lacoste). It is more important to tightly control the content available in an AR layer, for example, when the objective is to convey accurate information or a marketer is concerned about culture jammers generating content that can undermine the authenticity and identity value of a branding story (Thompson, Rindfleisch, & Arsel, 2006).

Alternatively, content may also be co-created by a wider range of users who are encouraged to make their own contributions or to modify existing digital content. For example, AR graffiti apps (e.g., Street Tag, Tagd) turn the physical world into a digital canvas in which consumers can leave messages or images on walls and public landmarks. Marketers may allow for the co-creation of content in order to empower consumers, cultivate brand communities, and stimulate advocacy. However, they should retain some control by developing community and content management policies to govern which users can contribute content, what types of content can be contributed (e.g., text, pictures, videos), and what type of content will be most valued and prioritized for display (e.g., consumer-rated, new, brand-consistent). Marketers should also devise plans for how the community or marketer will deal with inappropriate or brand-critical content in ways that do not damage the reputation of the brand (e.g., Noble, Noble, & Adjei, 2012). This type of community and content management is especially critical for AR initiatives that become successful at

fostering large numbers of contributors and a wide variety of content.

The fourth step in designing AR experiences, context integration, entails planning how—and how much—AR content is integrated with passive AR ingredients (i.e., bystanders and background). For example, is an augmented billboard advertisement designed for a specific intersection, with all of its surrounding buildings, traffic, and pedestrian flows; or, could it be placed almost anywhere with the same meaning and effect?

When deciding on how much an AR campaign is integrated with its surrounding social and physical contexts, marketers should keep in mind their communications objectives and the user experience they wish to offer. They should also consider constraints, as high levels of context integration typically require more planning, technical capability, and money. In some instances, marketers may wish to not integrate their experience into the surrounding context. For example, they may be able to save resources and still achieve their objectives of providing information and generating an emotional response by digitally layering a video over a product package. Such a video could be viewed almost anywhere with little change in the meanings it conveys, making it potentially easier to plan and execute.

On the other hand, marketers may wish to take greater advantage of AR's unique potential and integrate digital information more completely into the physical world. For example, IKEA recognized that consumers who buy new furniture for their homes often face insecurity over how the new item will fit into their existing arrangements and designed spaces. AR has the unique ability to visually demonstrate how a new item would complement such existing consumption constellations (Englis & Solomon, 1996). Consumers can use IKEA catalogues as targets to display, via a custom app, digital versions of an IKEA couch right inside their own living rooms. They can see how the couch will fit with non-augmented objects, such as side tables and other chairs, and they can change the color of the digital couch to see what would best match their uniquely designed spaces. By integrating the digital content with the surrounding physical context, IKEA provides an immersive customer experience that creates superior value.

Marketers who wish to increase the intrinsic appeal of their campaign through context-integrated content must be especially attuned to the social and physical environments in which the experience will unfold. For example, the Kringle app, which helps parents demonstrate to their children the existence of Santa Claus by digitally 'catching him on tape' in

their living room, improves the fit between AR content and background by letting users adjust the brightness level and size of the digital Santa. Considering the influence of all passive AR ingredients that can impact a user's experience is particularly important when designing campaigns for public places, such as streets, squares, malls, or stores. Marketers for *The Bachelor Canada*, for instance, fenced off an area in a mall so that individuals could, one at a time, have a special interactive moment with a digital version of that television show's romantically eligible star. If the AR designers had not restricted access in this way, passersby or multiple consumers could have accidentally or purposely ambled into the augmented scene, negatively impacting ambiance and user immersion and possibly creating frustration and disappointment. In public places, the risk of other people disrupting an experience is that much greater; they might, for example, walk between a user's screen and the real world target that is being augmented, or they might move into a user's space while he or she is trying to engage in some behavior as a part of an augmented experience (e.g., dancing, interacting with a digital object, manipulating a product package). Marketers should plan to mitigate the risk of these types of occurrences in order to ensure more positive and consistent consumer experiences.

To summarize: Marketers should follow four steps to design successful AR experiences. They should first formulate campaign goals by defining their target audience and communications objectives. Using this information, they should then guide decisions about how an AR layer is triggered and how it is populated with content. Finally, marketers should decide the extent to and ways in which an AR layer is integrated with the social/physical world. However, to truly optimize an augmented reality campaign, marketers must think beyond these considerations. They need to understand and address the dynamics between different active and passive AR ingredients in order to maximize consumer engagement and create immersive augmented reality experiences.

#### 4. Optimizing AR for consumer engagement

Consumer engagement—defined as the process of involving consumers in specific interactions and/or interactive experiences in order to build and enhance consumer relationships (Brodie, Ilic, Julic, & Hollebeek, 2013)—has become a strategic imperative for sustaining a competitive advantage. Previous research has offered several suggestions on how marketers can stimulate consumer engagement by

leveraging interactions in online communities (e.g., Muñoz & Schau, 2011) and social media (e.g., Kietzmann, Hermkens, McCarthy, & Sylvester, 2011). Mobile marketing has a particularly high potential to engage customers, as mobile devices allow marketers to interact with consumers in all contexts of their daily routines (e.g., Rohm et al., 2012). Augmented reality, by entangling branded content within consumers' social and physical environments, offers marketers a dynamic way to interact with consumers and to insert branded content into consumers' conversations. The important question thus becomes: How can marketers optimize their AR initiatives to maximize consumer engagement?

Optimizing the dynamics between active and passive AR ingredients can facilitate three types of consumer engagement: user-brand engagement, user-user engagement, and user-bystander engagement (see Figure 3). Oftentimes, marketers may increase engagement by making minor design changes to AR content or the ways in which consumers interact with AR content, other users, or bystanders. As such, optimizing an AR campaign's potential for engagement and increasing its return on investment may, in fact, be easier than first imagined.

##### 4.1. User-brand engagement

One type of engagement occurs when consumers act toward inanimate objects (Brodie et al., 2013). In augmented reality experiences, these actions can include, for example, watching how a product is embedded into an entertaining 3D landscape (e.g., McDonald's TrackMyMaccas), changing the color of a digital couch (e.g., IKEA catalogue), or pretending to pet a cheetah (e.g., National Geographic). All AR campaigns have the potential to generate user-brand engagement (see Figure 3); however, marketers can increase this type of engagement by enabling users to perform more immersive types of actions.

Virtual reality researchers differentiate between three types of actions—perception, manipulation, and interaction (Biocca, 2002; Lee, 2004)—that incrementally increase how immersive an experience is perceived to be by users. We apply this thinking to augmented reality and introduce the term *affordance* to describe the types of actions that are available to users of an AR initiative. Many AR campaigns, especially those that fall within the active print paradigm, only afford consumers the opportunity to passively perceive content (e.g., Volkswagen Juiced Up). While these campaigns might successfully generate brand exposure and interest, especially if they are novel (e.g., a large

installation, sophisticated content), they squander an opportunity to further engage customers via higher-level actions.

Offering users more engaging types of actions need not be technologically challenging or stupendously expensive. In fact, marketers can increase affordance levels rather easily by allowing users to manipulate what and how AR content is displayed. For example, AkzoNobel's Dulux Visualizer enables consumers to digitally paint their walls, and Heinz Ketchup allows users to flip through different recipe options that are digitally layered over the product package.

The highest level of user-brand engagement is achieved when an AR initiative affords users the ability to interact with AR content. For example, in Pepsi Max's Monster Mirror campaign, unsuspecting visitors are transformed—via magic mirrors in public washrooms—into werewolves and other monsters. Consumers are simultaneously both users and targets of the augmentation, resulting in an interactive experience: they are affected by the content they see and affect how the content is displayed by altering their facial expressions. True interaction, which requires users and AR content to mutually affect each other (Lee, 2004), may be technologically challenging to implement. However, marketers can increase user-brand engagement by allowing consumers the mere perception that they are interacting with AR content. This type of 'pretend interaction' is well facilitated by the magic mirror paradigm because consumers are able to observe themselves in relation to AR content. For example, shoppers pretend to pet digital cheetahs displayed in a National Geographic campaign or pretend to kiss Tim Warmels, star of *The Bachelor Canada*, on his digital cheeks. Even though these actions do not affect the content that is displayed, consumers can indulge in the fantasy of interacting with the digital content—as long as the AR campaign is designed in a way that allows space and time for these pretend interactions.

#### 4.2. User-user engagement

Consumer engagement is also strengthened when branded content is inserted into and/or facilitates interactions between members of an online community (Brodie et al., 2013). Through their AR initiative, marketers can thus aim to generate user-user engagement by enabling users to interact with other users of the same AR layer (see Figure 3). For this to happen, a user's actions toward AR content (i.e., manipulations or interactions) must be consequential for other users in that these other users are able to perceive the new or altered AR content and even

act upon it in return. In other words, user-user engagement is enabled by some form of sociability that allows for social interactions between either a specific group of users or among all users.

Greek chocolate brand Lacta provides sociability for specific groups of users by enabling customers to augment the chocolate bar's wrapper with private messages that are shared with friends and loved ones. BOS, a South-African producer of iced tea, provides sociability between all users by prompting customers to 'plant' virtual trees at their current location via scanning a BOS iced tea can with a custom-made AR application. Since all users are able to see each digital tree at the particular coordinates where it is planted, one user's actions are consequential for all other users, creating sustained levels of user-user engagement.

Increasing the level of sociability is a powerful way to add value to an AR initiative because it embeds the branded content into consumers' conversations. Augmented reality can facilitate interpersonal and even affectionate relationships between two people, as shown in the Lacta example, and it can strengthen brand communities, as exemplified in the BOS campaign. In either case, an AR campaign that integrates elements of sociability deepens the linking power (Cova, 1997) of a brand, creating strong relationships that draw customers in and encourage them to return time and again. Therefore, marketers are well advised to consider how their AR campaigns can facilitate user-user engagement.

#### 4.3. User-bystander engagement

A third type of consumer engagement emerges through the relationships that exist between users and bystanders (see Figure 3). While user-user engagement requires planning to increase the sociability of an AR experience, creating opportunities for user-bystander engagement can be more easily achieved by providing users with the opportunity to create artifacts that they can share in their social networks. Artifacts represent records of users' actions within an AR layer (e.g., images, status updates, tweets) that are observable to bystanders not currently participating in that AR experience. These visible records inform bystanders about an AR experience and can even stimulate bystanders to engage in the experience themselves.

Artifact creation is routinely built into many AR initiatives. For example, users can share a snapshot of their digitally decorated pint of Guinness on Facebook or tweet about their high score achieved in Cadbury's Quack Smack game. However, these types of artifacts are unlikely to result in sustained



user-bystander engagement because they do not offer much practical or social value to either the user or the bystander. Research on viral marketing (e.g., [Berger, 2013](#); [Kaplan & Haenlein, 2011](#)) suggests that messages which provide the sender with social currency or identity value are more likely to be shared; in addition, receivers are more likely to investigate messages that provide practical value, are surprising, or trigger an emotional response.

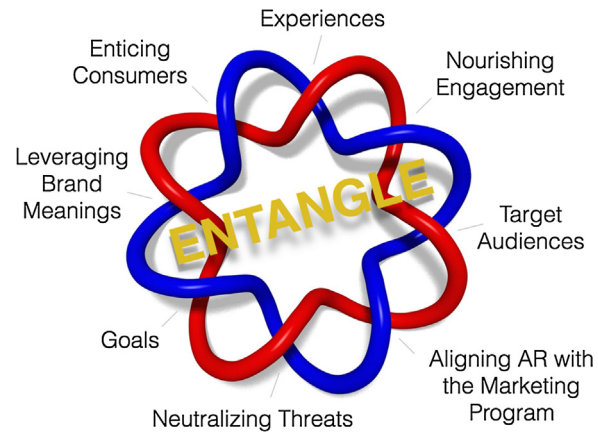
Thus, marketers should keep in mind users' and bystanders' perspectives and their shared relationships when designing artifacts. For example, *Total Film* magazine created an AR campaign involving a compelling identity-bolstering artifact: users who viewed the cover of its 2012 interactive issue through an AR application were able to share an image of themselves on the cover of the publication. Creating this personalized artifact playfully supported the fantasy of being a celebrity; consequently, users were more likely to share this artifact because it supported self-presentation and identity goals. Bystanders, in turn, were surprised by seeing a familiar face in an unexpected and unanticipated context, fueling their curiosity about the origins of the image. These types of user-bystander interactions successfully employ word-of-mouth to reach new target audiences. At best, artifacts that provide value to users and bystanders can even help an AR campaign to go viral ([Kaplan & Haenlein, 2011](#)), especially when bystanders are so intrigued by the artifacts that they decide to participate in the experience themselves and create their own artifacts.

In the following section, we leverage these unique insights from our framework and analysis to develop eight actionable recommendations that marketers can use to design AR experiences that maximize consumer engagement.

## 5. Entangling augmented reality: Recommendations for marketers

Augmented reality is an emerging marketing practice, and managers can benefit from knowing how best to leverage its unique potential. A comprehensive approach to market-oriented AR extends planning beyond technology to designing immersive AR experiences that leverage both active and passive AR ingredients and engage consumers in a variety of ways. To craft experiences that generate value for both consumers and marketers, managers are advised to entangle digital AR content with the physical and social contexts of consumers' lives. In this vein, we recommend that marketers ENTANGLE their augmented reality initiatives. That is, in order

**Figure 4. Entangling augmented reality**



to create dazzling AR programs, marketers should think about (see [Figure 4](#)):

- Experiences;
- Nourishing engagement;
- Target audiences;
- Aligning AR with the marketing program;
- Neutralizing threats;
- Goals;
- Leveraging brand meanings; and
- Enticing consumers.

### 5.1. Experiences

Augmented reality initiatives should be consumer-experience driven rather than technology driven. Marketers' efforts should be guided by consumer insights about unique, stimulating, and valuable experiences that are made possible by AR technologies. These insights should then shape where such an experience should occur, how it could ideally be triggered, and what content it should feature. While it might be exciting to leverage the newest technology or platform, initiatives that prematurely commit to a particular approach risk failing to connect with consumers, appearing gimmicky in the process. AR experiences that fail to meet or exceed consumer expectations may also impair brand image, waste resources, and imperil future programs involving AR or other emerging marketing technologies.

## 5.2. Nourishing engagement

Marketers should focus their attention on nourishing consumer engagement as opposed to being overly consumed with producing the flashiest, biggest, or costliest AR campaign. Managers can often encourage engagement through relatively minor and inexpensive design decisions. Affording consumers the opportunity to choose or manipulate the content they view—or at least to more readily interact with it—can nourish user-brand engagement. Take, for instance, marketing campaigns that operate within the bogus window paradigm. Architects of these campaigns can design AR content in ways that provide sufficient time and space for consumers to insert themselves into the narrative of the AR experience. This can be achieved, for example, by having AR content approach the user's vantage point: Pepsi Max depicts a tiger running toward a bus shelter from a far enough distance that it gives commuters time to perceive the animal and insert themselves into the narrative by running away from it. These types of smart yet simple design fixes can enhance affordances and consumer engagement with AR campaigns. Marketers can also fine-tune the dynamics of AR campaigns to bolster user-user and user-bystander engagement. They can, for example, enable consumers to share content within or outside of an augmented experience, especially content that supports social and identity goals. Allowing for greater sociability and/or the creation of intriguing artifacts through these means represent simple and cost-effective ways marketers can optimize AR experiences for consumers.

## 5.3. Target audiences

Previous research suggests that early adopters of new technologies (e.g., [Yim & Chu, 2013](#)) and opinion leaders (e.g., [Lyons & Henderson, 2005](#)) are particularly important target audiences for AR initiatives, as these consumers can help to diffuse AR technologies and create content. Our discussion on the role of artifacts in catalyzing word-of-mouth implies that marketers should also keep in mind an additional target audience: potential participants who receive these artifacts. This line of thinking has implications for primary audience selection since marketers should aim to identify users who are more likely to create additional awareness and expand the reach of an AR campaign through sharing artifacts in their social networks. It also has implications for AR planning, as programs should provide artifacts that are of interest to bystanders. For example, Pepsi Max's Monster Mirror campaign and similar AR 'prankvertisements' aim to create

viral campaigns through provocative events. These campaigns successfully encourage social media sharing, provide entertainment value to non-users, and illustrate the value of planning AR campaigns for broader audiences.

## 5.4. Aligning AR with the marketing program

Marketers can maximize AR's potential by thoughtfully integrating it into an overall marketing program. Augmented reality can provide unique benefits to an integrated marketing communications campaign, for example, by showcasing how products fit into consumers' homes (e.g., IKEA catalogue). AR can also stimulate communications among customers and generate impressions in owned and earned media. Artifacts that fulfill users' self-presentation goals are more likely to be shared on social media, thereby generating word-of-mouth for the brand. Clever campaigns are also frequently discussed in trade magazines and online blogs. Marketers can boost the reach and return of their AR investment by creating supportive campaign elements. For example, *The Walking Dead* campaign ran for only a few days at a single bus shelter in Austria, but the behind-the-scenes video generated more than 12 million views and over 400,000 Facebook shares.

AR initiatives that are not automatically triggered may need support from other marketing campaign elements. Marketers can use product packaging, advertising, and in-store displays to encourage consumers to download and use AR applications. When an AR experience is rooted in one particular place (e.g., Volkswagen's Juiced Up campaign in Toronto), it may even be helpful to employ brand ambassadors to encourage passersby to try the AR experience.

Finally, it is important to recall that AR's usefulness is not limited to marketing communications. Augmented reality can enhance retail experiences or be an integral part of product offerings (e.g., enhanced ski goggles). AR can also be used to cultivate brand communities because it offers new ways to foster relationships between consumers, brands, and spaces. Significantly, AR can help mobile marketers overcome the challenges associated with limited digital 'real estate' ([Shankar, Venkatesh, Hofacker, & Naik, 2010](#)) by extending the screen into the real world.

## 5.5. Neutralizing threats

The power of AR lies in its unique ability to intertwine digital information with the physical world;

however, this also makes it vulnerable to threats that marketers must proactively manage. We have already emphasized the importance of ensuring effective alignment between digital content and the physical environment (i.e., context integration). In addition to tending the risk of the background conflicting with poorly integrated AR content, marketers should also be mindful of how the brand meanings they plan to craft via AR can be subverted by activists and competitors. When deciding where to physically place their initiatives, marketers who seek to protect their desired brand image should therefore ask themselves how hostile entities could respond to further their own aims: What other paid media spaces exist around an active print billboard, or what is in the sightline behind a bogus window installation? For example, in Pepsi Max's bogus window campaign, the live street scene behind the bus shelter is augmented with fantastic images of UFOs and tigers. If it were possible to purchase media placements (e.g., billboards) in the street behind the bus shelter, Coca-Cola—maker of the competing Coke Zero brand—could try to gain awareness, take credit for the AR initiative, or even mount a witty advertising retort by constantly being present in the augmented scene via the background media. If potential threats exist, marketers should take action to mitigate these risks or relocate their AR initiative to a new location.

Once settled on a location, marketers must attempt to manage the spaces in which their AR programs will be experienced. Lego stores, for example, are outfitted with AR installations that project 3D models onto product boxes; however, if a store is crowded with bystanders, a shopper is likely less able to engage with the installation or take the time to fully inspect the resulting model, thus impairing the consumer experience. Marketers might therefore design the space to ensure visibility and maintain open space around the in-store installation.

Finally, in addition to safeguarding brand image through space planning, marketers should also neutralize threats to their brand through appropriate content management strategies that enable them to moderate and shape digital contributions in ways that user content supports a positive brand image.

## 5.6. Goals

AR campaigns should be guided by marketer goals. For example, if brand awareness is an objective, marketers should plan for qualities that can enhance awareness, such as location in a public setting, an automatic trigger, a shared-screen experience, and a plethora of artifact options for users. In contrast,

if the goal is to support a brand community, marketers should consider AR initiatives that afford opportunities for manipulating or interacting with content and allowing users to contribute additional content. Incorporating sociability would also be important since the linking value it generates would motivate users to return to an AR layer. Furthermore, marketers would benefit from designing experiences for individuals' devices, such as smart phones, because they are better suited for response input (e.g., commenting).

## 5.7. Leveraging brand meanings

To design an optimal AR experience, marketers must ensure that their initiative is consistent with the brand's intended image. For example, *The Walking Dead* AR campaign successfully engaged both users and bystanders by closely mimicking the shock appeal of the television show; in particular, it received approval from fans, who were exposed to the campaign via word-of-mouth discussions. Other marketers—such as National Geographic, Pepsi Max, and BOS Iced Tea—also ran campaigns consistent with their brands' overall positioning approaches. This is yet another straightforward approach that AR marketers can embrace without having to spend considerable sums of money. They can design creatively aligned AR experiences that, as discussed previously, also uniquely contribute to broader integrated marketing campaigns.

## 5.8. Enticing consumers

Marketers should design valuable AR programs that entice consumers to try, and re-visit, AR experiences. Marketers need to present individuals with attractive reasons to self-activate the AR layer, especially when the consumers are in control of the trigger decision (Dobelea, Toleman, & Beverland, 2005; Zhao & Balagué, 2015). Yet controlling the trigger decision does not absolve marketers from providing value, as they risk irritating consumers if the initiative does not deliver informational, entertainment, social, or identity value.

Our framework suggests many ways how marketers can create value for consumers via augmented reality. For example, integrating augmented content with physical background factors can provide informational value about marketplace offerings and how they might fit into a consumer's life (e.g., Ikea catalogue); interactive experiences that allow users to choose, manipulate, or respond to marketer or user-generated content can offer entertainment value (e.g., Cadbury's Quack Smack); sociable AR experiences enable consumers

to develop social relationships with other users (e.g., BOS Iced Tea); and artifacts that facilitate self-presentation goals can help consumers to construct their identities (e.g., *Total Film* magazine). Marketers who are able to deliver value to consumers can attract them to AR programs and face less risk of offending them through campaigns that are perceived to be intrusive or jarring.

## 6. Conclusion

Augmented reality has the strong potential to make unique contributions to integrated marketing programs. To realize its potential, however, marketers must think beyond novel technologies to how they

can develop immersive consumer experiences that entangle digital information with the social and physical world. They have to think about the active and passive ingredients of augmented reality. They also have to design user experiences that take into consideration their communications objectives, target audience characteristics, content management strategies, triggers, and the social-physical context of consumers' lives. Most importantly, they need to focus on consumer engagement and the dimensions that drive it, such as affordance, sociability, and artifacts. Marketers who develop thoughtful plans that leverage each of these factors are well positioned to delight consumers and provide groundbreaking AR programs.

## Appendix. Glossary of augmented reality concepts

Concept	Definition
Active AR Ingredients	Those elements that are a direct part of an augmented experience (i.e., AR content, users, and targets).
Affordance	The types of actions (i.e., perception, manipulation, and interaction) available to users of an AR layer. At the lowest level of affordance, users can perceive digital AR content, while at the highest they can actually interact with this content. Higher levels of affordance increase user-brand engagement.
AR Content	The virtual information (e.g., text, pictures, videos, 3D animations)—perceived by users through digital screens—that augments objects, people, or spaces in the physical world.
AR Layer	All the virtual information available for viewing within a particular AR application or installation. For example, Yelp might create an AR layer that augments a particular street with digital business review information, while Urbanspoon could create an entirely different AR layer that augments the same physical space with different virtual content.
Artifacts	Records of users' actions within an AR layer (e.g., images, status updates, tweets) that are observable to bystanders who are not currently participating in that AR experience. Providing opportunities to create intriguing artifacts increases user-bystander engagement.
Augmented Reality (AR)	The practice of displaying digital information over people's real-time view of objects, people, or spaces in the physical world (e.g., a product package augmented with a map that conveys information about the product's source ingredients). Augmented digital information may be viewed by users, for example, via smart phone screens, large video installations, or holographic projections.
Background	The objects and ambient conditions that share the same physical space as the targets, but that are not augmented within a particular AR layer.
Bystanders	The people who do not directly experience augmented reality, but who observe a user's actions, either directly in the same physical space or indirectly by viewing user-generated content.
Consumer Engagement	The process of involving consumers in specific interactions and/or interactive experiences in order to build and enhance consumer relationships. Consumers may be engaged with brands, other users, or people outside of an augmented experience (i.e., bystanders).
Content Contribution	The process of adding digital content to a new or existing target. Contributions may be limited to a marketer or select group of users.
Context Integration	The extent to which the AR layer is integrated with the background and bystanders (i.e., passive ingredients). A more context-integrated AR experience might, for example, take into account surrounding objects (e.g., IKEA catalogue).



## Appendix (Continued)

Passive AR Ingredients	Those elements that are not a direct part of an augmentation (i.e., bystanders and background), but which can impact the experiences of those who are immersed in an augmented reality.
Sociability	The extent to which one user's actions (i.e., manipulations or interactions) are consequential for other users of the same AR layer (e.g., a user can read and respond to a message in an AR layer). Higher levels of sociability increase user-user engagement.
Targets	The entities in the real world (e.g., objects, people, spaces) that are augmented with digital information as a part of an AR initiative.
Trigger	The way in which an AR layer and experience may be activated for use by or for a user. An AR experience may be triggered by the marketer or through the actions of a user.
Users	The people who participate in an augmented reality experience by accessing virtual content that is layered—in real-time—over some object or space in the physical world.

## References

- Berger, J. (2013). *Contagious: Why things catch on*. New York: Simon & Schuster.
- Berlin, L. (2009, July 12). Kicking reality up a notch. *The New York Times*, p. BU3.
- Biocca, F. (2002). The evolution of interactive media: Toward "being there" in nonlinear narrative worlds. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 97–130). New York: Psychology Press.
- Bradshaw, T. (2015, January 4). Virtual and augmented reality look to sharpen the picture at CES. *The Financial Times*. Retrieved from <http://www.ft.com/>
- Brodie, R. J., Ilic, A., Julic, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(1), 105–114.
- Broll, W., Lindt, I., Herbst, I., Ohlenburg, J., Braun, A. K., & Wetzel, R. (2008). Toward next-gen mobile AR games. *Computer Graphics and Applications. IEEE*, 28(4), 40–48.
- Carmigniani, J., & Furht, B. (2011). Augmented reality: An overview. In B. Furht (Ed.), *Handbook of augmented reality* (pp. 3–46). New York: Springer.
- Collier, J. E., & Sherrell, D. L. (2010). Examining the influence of control and convenience in a self-service setting. *Journal of the Academy of Marketing Science*, 38(4), 490–509.
- Cova, B. (1997). Community and consumption: Towards a definition of the "linking value" of product or services. *European Journal of Marketing*, 31(3/4), 297–316.
- Dholakia, N., & Reyes, I. (2013). Virtuality as place and process. *Journal of Marketing Management*, 29(13/14), 1580–1591.
- Dibble, A. (2014, September 16). 12 promising augmented reality devices—The state of AR hardware. *Brainberry Global*. Retrieved from <http://brainerryglobal.com/12-promising-augmented-reality-devices-state-ar-hardware/>
- Dobelea, A., Toleman, D., & Beverland, M. (2005). Controlled infection! Spreading the brand message through viral marketing. *Business Horizons*, 48(2), 143–149.
- Englis, B. G., & Solomon, M. R. (1996). Using consumption constellations to develop integrated communications strategies. *Journal of Business Research*, 37(3), 183–191.
- Gaudiosi, J. (2015, April 25). How augmented reality and virtual reality will generate \$150 billion in revenue by 2020. *Fortune*. Retrieved from <http://fortune.com/2015/04/25/augmented-reality-virtual-reality/>
- Handley, L. (2013, January 17). Looking through the page into the material world. *Marketing Week*, 27–30.
- Hugues, O., Fuchs, P., & Nannipieri, O. (2011). New augmented reality taxonomy: Technologies and features of augmented environment. In B. Furht (Ed.), *Handbook of augmented reality* (pp. 47–63). New York: Springer.
- Kaplan, A. M., & Haenlein, M. (2011). Two hearts in three-quarter time: How to waltz the social media/viral marketing dance. *Business Horizons*, 54(3), 253–263.
- Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Sylvester, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54(3), 241–251.
- Lee, K. M. (2004). Presence, explicated. *Communication Theory*, 14(1), 27–50.
- Lyons, B., & Henderson, K. (2005). Opinion leadership in a computer-mediated environment. *Journal of Consumer Behaviour*, 4(5), 319–329.
- Mead, G. H. (1934). *Mind, self, and society*. Chicago: The University of Chicago Press.
- Muñiz, A. M., & Schau, H. J. (2011). How to inspire value-laden collaborative consumer-generated content. *Business Horizons*, 54(3), 209–217.
- Noble, C. H., Noble, S. M., & Adjei, M. T. (2012). Let them talk! Managing primary and extended online brand communities for success. *Business Horizons*, 55(5), 475–483.
- "Reality, improved." (2009, September 5). *The Economist*, 392(8647), 20–21.
- Rohm, A. J., Gao, T., Sultan, F., & Pagani, M. (2012). Brand in the hand: A cross-market investigation of consumer acceptance of mobile marketing. *Business Horizons*, 55(5), 485–493.
- Shankar, V., Venkatesh, A., Hofacker, C., & Naik, P. (2010). Mobile marketing in the retailing environment: Current insights and future research avenues. *Journal of Interactive Marketing*, 24(2), 111–120.
- Thompson, C. J., Rindfleisch, A., & Arsel, Z. (2006). Emotional branding and the strategic value of the doppelgänger brand image. *Journal of Marketing*, 70(1), 50–64.
- Yim, M. Y., & Chu, S. C. (2013, April 5). *Extending the electronic technology acceptance model: The case of augmented reality-based advertising*. Paper presented at the Annual Conference of the American Academy of Advertising, Albuquerque, NM.
- Zhao, Z., & Balagué, C. (2015). Designing branded mobile apps: Fundamentals and recommendations. *Business Horizons*, 58(3), 305–315.