

# A THEORY ABOUT IFE – OR –

*“Experience is a dear teacher, but fools  
“The wise make proverbs, and fools repeat them.” –Isaac Disraeli*

## **INTRODUCTION**

Wait! I'm not sure I wanted to repeat that last quote.

Is it possible to get seduced by the dark side of IFE? Indeed it is! It's happened many times. With over 10,000 aircraft in service ... many of them making numerous flights per day ... the total number of passengers flying is enormous. Even when a business concept is based upon only a small fraction of that total flying passenger population, it's easy to see how a business model can go astray. How many times in the history of IFE have we seen great ideas and business cases that were just not successful?

This is not to say that IFE has not made great strides in the last 20 years. Instead, we have seen tremendous innovations: the evolution from distributed audio systems to broadcast in-seat video, the introduction of interactivity, and of course, audio and video-on-demand. The latter was probably the most significant innovation ever seen in IFE. Well, perhaps replacing the 16mm tape wandering throughout the cabin inside a garden hose was also a good thing. But it was the introduction of Interactive VOD that was probably the greatest leap in technology IFE has ever seen. Audio video-on-demand (AVOD) was the first time technology was introduced for commercial airline use before the technology was available in the consumer world. In 1997, there were very few homes with the ability to have VOD from a cable supplier, yet IFE was providing this service to a small 300-seat community. Other successful innovations have been games, interactive menus, 3-D graphics, high performance networks, and recently, connectivity systems for passenger laptops, cell phones, and seatback displays.

Yet periodically we experience some new ideas, new innovations, or new business concepts that just don't seem to stick. It is not that the ideas are without merit or that the individuals pitching the concept do not have good intentions. But it is this drive for the “Killer App,” the one thing that IFE can offer that will make passengers flock to an airline or generate a significant amount of revenue for the airlines (and of course for the supplier) that at times leads us toward the dark side. If we look back at some of these failed ideas, we might see that they follow a trend. And maybe, just maybe, we can learn from these trends and apply this theory toward future innovative or business concepts.

This article explores a basic theory behind some of these failed innovations and suggests how we could apply this theory going forward.

## **AN IFE THEORY**

The IFE theory is based on a consistent set of patterns, or phases, that these failed business concepts followed. An idea is created that is quickly joined by other competitors (some of them new players) and embraced by airlines. A very demanding requirement is defined. Unfortunately, the idea doesn't work for a variety of reasons, and many companies fail in the endeavor. Perhaps technology just wasn't ready, or the business model relies on passenger revenue, which was not realized. The end result is that this new idea may be implemented but in a much more relaxed requirement. Let's explore these phases in more detail.

### **The “Idea” Phase**

The IFE Theory begins with the idea ... an epiphany. A new technology or innovation. A great idea that nobody has yet done in IFE—the “Killer App.” Usually it has something to do with making a lot of money for the airline and supplier at the expense of the passenger.

### **The “I Got It Too” Phase**

Not to be outdone, other suppliers claim to offer a similar, if not better, solution. In some cases, start-up companies are created based solely on this new idea or business opportunity.

# You Want to Put What on my Plane?

By Dan Reed

*"Fools rush in where fools have been before." - Unknown*  
*will learn at no other." - Benjamin Franklin*

## The "I Gotta Have It" Phase

Airlines embrace these new ideas after seeing the promise of the killer application, or an opportunity to get a free IFE system or a "ton of money." In some cases, airlines specify the new idea as a requirement in an RFP. These requirements may go beyond the initial concept, placing very high demands on the suppliers.

## The Peak

The goal is set. The demand is high to provide this new application or innovation with the intent of making a ton of money, offsetting the cost of the IFE system, and providing the airline with a very short return on investment.

## The "Die Trying" Phase

Unfortunately, many companies that attempt this new idea fail in the process. Either the technology was not ready, the business model was flawed, or expected passenger revenues simply did not materialize.

## The "Reality" Phase

The result is that the industry settles into a reality phase where this new idea is implemented, but on a more basic premise, not reaching the intended goal, but offering elements of the original design in a more relaxed set of requirements.

To demonstrate the validity of this theory, let's look at a few examples.

## EXAMPLE 1 - IN-SEAT TELEPHONES

### The "Idea" Phase

Somebody comes up with a brilliant idea: install in-seat telephones in the back of every seat for passenger use. With a dedicated terrestrial network, phone calls can be offered for a fraction of the cost of satellite-based phone calls. With the millions of passenger miles every year, the revenue that

### The Peak

The goal is set very high by either airline demands or supplier promises.

can be generated would be tremendous ...even to the point that the hardware can be provided and installed for free!

### The "Reality" Phase

The final result is a relaxation on requirements ... and a settlement on reality.

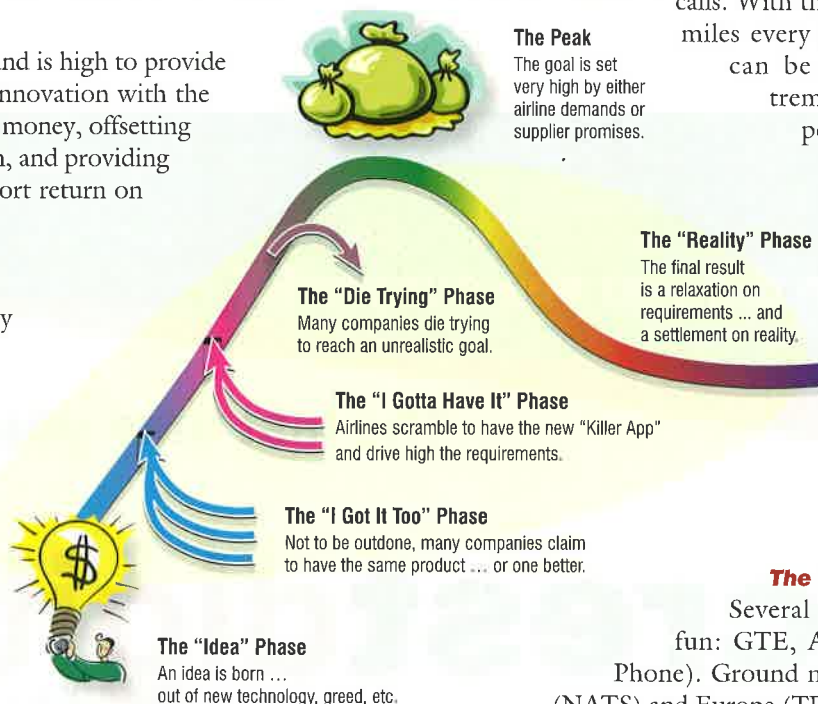
Mind you, this concept was created before the explosion of cell phones. Nevertheless, the promises are made and the business model looks promising.

### The "I Got It Too" Phase

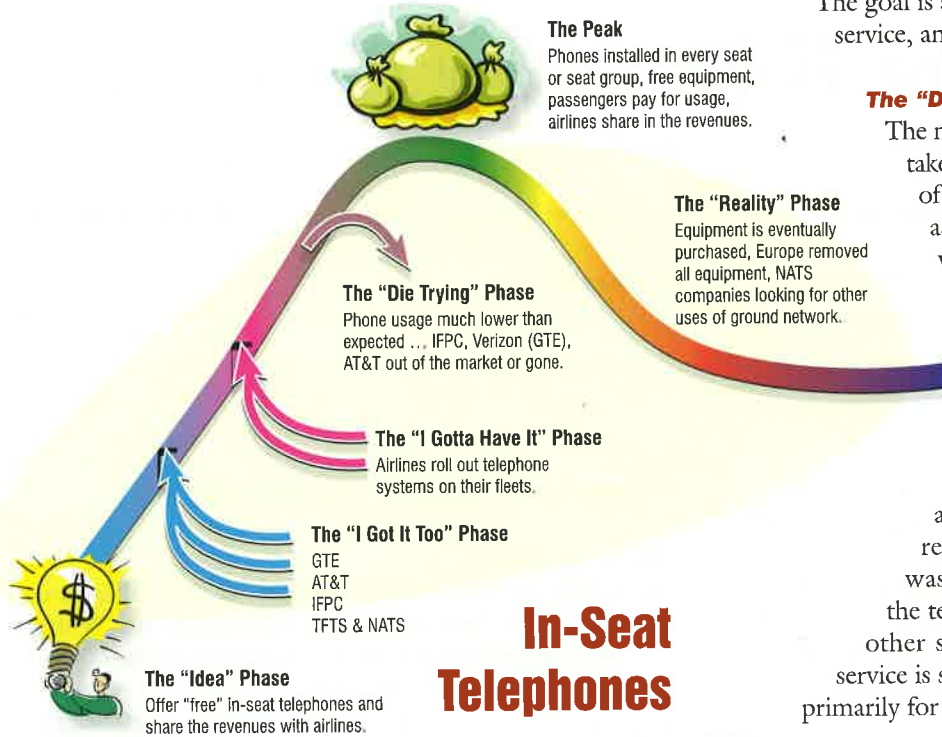
Several companies join in the fun: GTE, AT&T, IFPC (Inflight Phone). Ground networks across the US (NATS) and Europe (TFTS) are rolled out.

### The "I Gotta Have It" Phase

With the promise of free equipment and a share of the revenues, airlines in the US, and in some cases Europe, sign up for the service. Hundreds of aircraft are outfitted with equipment.



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**The Peak**

The goal is set: free equipment, low-cost telephone service, and a share of the revenue.

**The "Die Trying" Phase**

The market for in-seat telephones just doesn't take off. Passenger revenue is minimal. Cost of the service was not necessarily the issue as experiments with lower cost services were also not successful. As a result, some companies have either disappeared (IFPC) or have discontinued the service (AT&T, Jet Phone, Verizon, etc.).

**The "Reality" Phase**

The concept of offering free equipment and a service funded by passenger revenue was not successful. Equipment was eventually offered for purchase, and the terrestrial network is now being used for other services. Satellite-based in-seat phone service is still being offered on long-haul flights—primarily for the upper classes.

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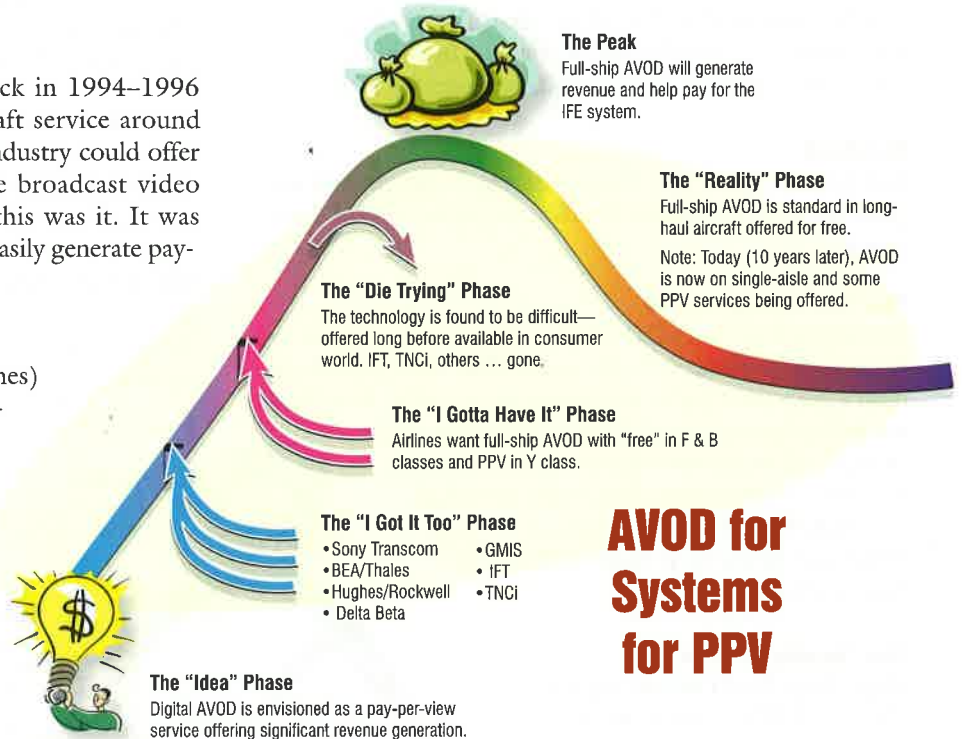
## EXAMPLE 2 - AVOD PAY-PER-VIEW

### The "Idea" Phase

AVOD for inflight was developed back in 1994-1996 and introduced into commercial aircraft service around 1996. This was the first time the IFE industry could offer on-demand movies rather than simple broadcast video channels. Talk about a "Killer App," this was it. It was thought that on-demand movies would easily generate pay-per-view revenues.

### The "I Got It Too" Phase

All IFE companies (and several new ones) scrambled to offer AVOD functions—and all had different solutions (IFT, P@ssport, MAS 3000i, Delta Beta, Thales MDDS, and TopSeries). One start-up company, Inflight Technologies (IFT), based its whole business case on pay-per-view and passenger revenue to the point that IFT maintained strict control of the content.



## AVOD for Systems for PPV

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**The "I Gotta Have It" Phase**

Needless to say, all airlines demanded AVOD. In general, the concept was to offer the service for free in the upper classes and a PPV revenue-generation model for Y classes.

**The Peak**

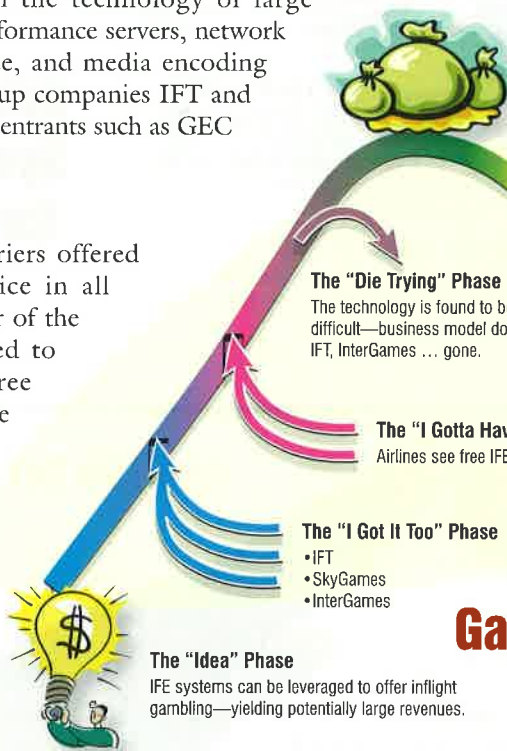
Full-ship interactive AVOD systems were promised with the potential of PPV revenue to offset the higher cost of these systems.

**The "Die Trying" Phase**

The technology of AVOD was found to be very difficult to implement, particularly in the mid 1990s. This technology didn't even exist yet in the consumer market. Suppliers needed expertise in the technology of large storage and high performance servers, network delivery performance, and media encoding and decoding. Start-up companies IFT and TNCi and some new entrants such as GEC Marconi failed.

**The "Reality" Phase**

Once long-haul carriers offered "free" AVOD service in all classes the remainder of the industry were forced to conform. Today, free AVOD services are standard offerings for long-haul aircraft. AVOD service is also now in service on single-aisle aircraft with some pay-per-view or pay-per-access service being offered.



The potential return on investment was so huge, major casinos were involved, along with banks and financial institutions offering to finance the IFE system.

**The "I Got It Too" Phase**

New companies formed to offer gaming systems—IFT, Skygames, InterGames, some of which were supported by major casinos.

**The "I Gotta Have It" Phase**

Are you kidding? With the amount of shared revenue promised by the gaming companies, along with free IFE equipment, airlines said, "Bring it on!"

**The Peak**

A huge amount of revenues is promised along with free IFE systems financed by potential passenger revenues.

**The "Die Trying" Phase**

Well, what can we say? None of these gaming systems were successful—the technology needed to support this requirement was simply not available in the mid '90s.

**Gambling**

Internet gambling didn't exist yet. The system relied on a very slow, expensive, and nonstandard connectivity service to validate and authorize the gaming service. The IFE system was required to provide a highly reliable and secure network with substantial audit trail capabilities. The US government also had something to say about not allowing gambling enterprises over its airspace.

The last we heard, IFT was in the dry cleaning business, InterGames is long gone, yet Skygames is still apparently around.

**The "Reality" Phase**

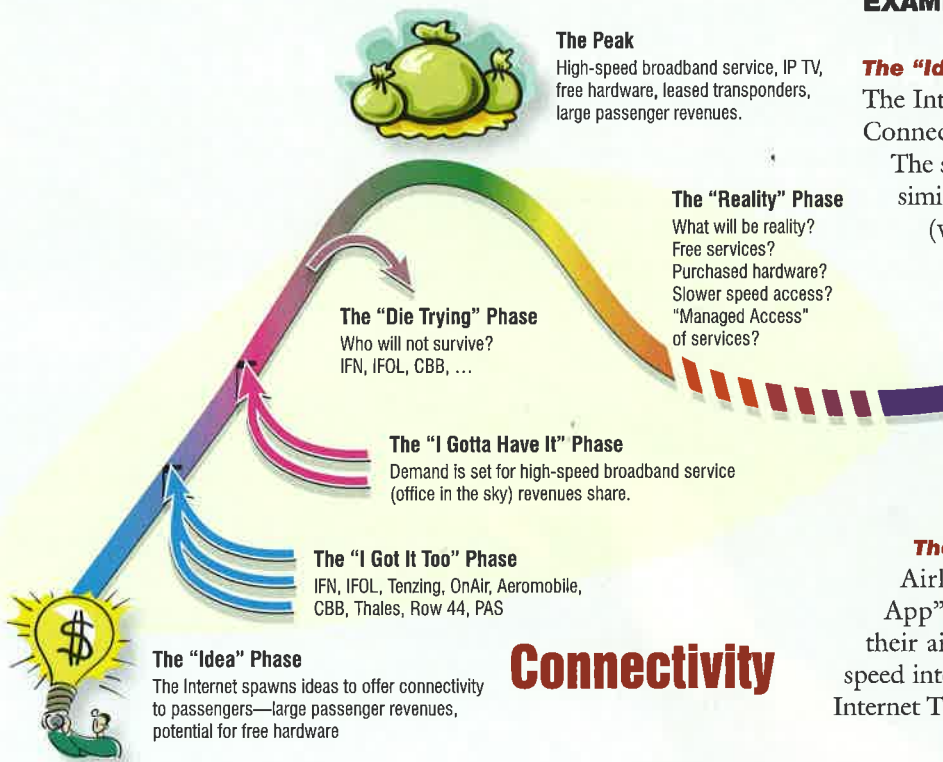
Today, IFE systems are still purchased, casino-style games are offered for free, and passenger revenues have yet to be seen. However, we must now consider that technology has changed. Internet gambling is a reality, IFE systems now offer standard Internet-like systems, and connectivity systems have been able to offer access to the Internet. Should our model be revised to show an upswing after the reality phase?

**EXAMPLE 3 - GAMBLING**

**The "Idea" Phase**

Gambling! What could be more of a sure thing than making money from gambling from a captured audience? The ability of offering a gambling or "gaming" system became possible with the introduction of interactive IFE systems in the mid '90s. The prospect of gambling was projected to make "a ton of money." Just do the math: 1,000 aircraft outfitted with 300 seats means over 100 million flying passengers per year. Using a conservative assumption of 10% of passenger usage, each spending \$30 on gambling, would result in over \$300 million being spent on gaming annually.

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**EXAMPLE 4: FUTURE CONNECTIVITY**

**The "Idea" Phase**

The Internet spawns a flurry of activity to offer Connectivity to passengers during the flight. The success of the Internet promises to bring similar revenues onboard, revenue generation (with a share to the airline), and even free connectivity hardware.

**The "I Got It Too" Phase**

Many new (and old) companies form to offer complete end-to-end services: IFOL (Inflight OnLine), InFlight Network (IFN), Tenzing, OnAir, Aeromobile, PAS, Row 44, ...

**The "I Gotta Have It" Phase**

Airlines see this as the potential "Killer App" and specify connectivity services for their aircraft. But the demand is set for high-speed internet access (office in the sky) including Internet TV (IP TV) capabilities.

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### **The Peak**

A goal is set very high: high-speed broadband access to the Internet with support for streaming media services and virtual private network (VPN) access, free or at least very low-cost hardware, and the promise of a share in passenger revenues.

### **The "Die Trying" Phase**

Early adopters such as IFN and IFOL are no longer around. The failure of CBB was based on a number of issues, including the high cost of providing the connectivity service, expensive (and large) onboard equipment, and low passenger usage. Who will survive?

### **The "Reality" Phase**

What will be the reality? Will there be free Internet service once one or more airlines introduce it for free (much like the way AVOD PPV went)? Free hardware or purchased hardware? Will passenger usage be sufficient enough to make the business model work? Will lower bandwidth at a lower cost be more successful compared to high bandwidth, high cost solutions?

We are already seeing the introduction of a managed service ... meaning a highly controlled access to specific network services rather than an open access to the Internet. Alternative services of cell phone voice and data are also now being introduced.

## **CONCLUSION**

The trend curve on connectivity has not yet found its reality point. With several failures already in the history books, it will be interesting to watch how this evolves.

There are other innovations in development at the time of this writing. One particular concept, targeted advertising, is a powerful moneymaker for the Internet and is currently being proposed for IFE systems. Claims are being made of huge revenue potential—this time from advertisers and not passengers. The concept of targeted advertising provides advertising banners (or specific video clips) dynamically inserted into the IFE menu based on the demographics and preferences of the passenger using the IFE system at the seat. With IFE systems designed around Internet technology and the potential of Internet-ready connectivity systems, targeted

advertising may indeed generate significant revenue. But will it be successful? Will the revenue be sufficient enough to offset the cost of IFE hardware as some companies claim?

In addition to this basic theory, there are a few key points that we can draw from these examples:

1. Prior to AVOD, the IFE industry was offering services and technology about 3–5 years after the technology was introduced in the consumer industry. Tape players, CRT projectors, LCD displays, and Nintendo games were all introduced into IFE years after their emergence in the consumer industry. But when AVOD was offered, the IFE industry was years ahead of the consumer market. It took many years to stabilize AVOD technology and encoding/decoding standards.
2. The concept of pay-per-access works until the first competitive airline offers the same service for free. To this day, pay-per-view on long-haul routes has yet to be seen. And once offered for free, it is difficult to return to a pay-per-access model.
3. Offering free IFE systems based on future passenger revenue has yet to be successfully proven.
4. Services involving communication technologies tend to be more successful when they are based on existing services. Satellite TV using existing DISH and DirecTV satellite networks, communications using the existing INMARSAT network, ACARS, etc. are still in operation today. Networks designed specifically for airline usage such as the NATS and TFTS networks for inflight telephony are difficult to justify.

The intent of this IFE theory is not to stop innovation. There are many new ideas and concepts in the works that promise to open up the capabilities of the interactive IFE systems. Modern IFE systems are now based on an Internet-like model of server/client architectures, very high network bandwidth using the Internet protocol (IP), and standard HTML pages used as IFE menus. We have only begun to exploit the capabilities of modern IFE systems. We just need to maintain a solid base of reality, a common business sense, and learn from our past lessons.



Author Dan Reed is Thales Vice President of Product Strategy responsible for the overall product strategy and business development of the company. Dan has been with Thales Avionics Inflight Systems (formerly BEAerospace, B/E Avionics, and Sextant IFS) since 1992. He joined the firm as the Director of Engineering and has held the positions of Vice President of Engineering, Vice President of Technical Marketing, Vice President Sales and Marketing, and Vice President of Business Development. Prior to joining Thales IFS/BE Aerospace, Dan held senior-level technical management positions with high tech firms and has led multidisciplinary engineering teams in the development of telephone communication products, local and wide-area network systems, interactive voice-response systems, and real-time process control systems.