



European
Games Developer
Federation

Mobile Games of Europe

White Paper of the
Mobile Games Special Interest Group of the
European Games Developer Federation
Fall 2010

Draft 1.2.

For discussion purposes only – do not distribute.

1 Introduction

1.1 *Purpose of paper*

In 2008, the board of the European Games Developer Federation established the Mobile Games Special Interest Group (SIG). The first mission of this SIG is to produce a white paper to contribute to a better understanding of the mobile games industry in Europe. This white paper represents the official viewpoint of the EGDF.

The white paper is intended to be distributed as widely as possible and stimulate a serious debate among mobile game developers, operators, publishers, handset manufacturers and other players in the mobile games industry.

The authors encourage everybody to respond, to react, and to suggest improvements to this document. Please send your comments to the EGDF at the dedicated **msig@egdf.eu** address.

1.2 *The EGDF*

The European Games Developer Federation is committed to the stimulation and development of a stable, vibrant and creative European games development sector that is competitive globally and recognized culturally.

The EGDF acts to advance the political and economic interests of the European computer and video games industry by providing a platform for collaboration and discussion between European institutions and game developers.

The federation represents some 500 studios based in Austria, Belgium, Denmark, Finland, France, Germany, Luxemburg, the Netherlands, Norway, Spain, Sweden, and the United Kingdom, which together employ about 17,000 people. The European computer and video games industry, including distributors and students in game educations, encompasses almost 100,000 individuals.

2 Market Overview

Mobile games have been in the hands of consumers since 1997 when a team of Nokia engineers realised that the mobile platform was advanced enough to support games. Amongst the first games is the now-famous Snake – these were embedded onto the handset and available to play, in perpetuity, free of charge. The first downloadable content arrived in 2000 and emerged in Europe – the “Les Games” portal from Orange France, run by In-fusio. Downloadable titles (largely Java ME based and distributed by operators) have dominated the market since.

The market for mobile games changed radically with the launch of the Apple App Store in 2008, giving a big boost to developer power in particular and broadening the market from a niche proposition to virtually every smartphone owner downloading mobile games.

2.1 Market to 2007

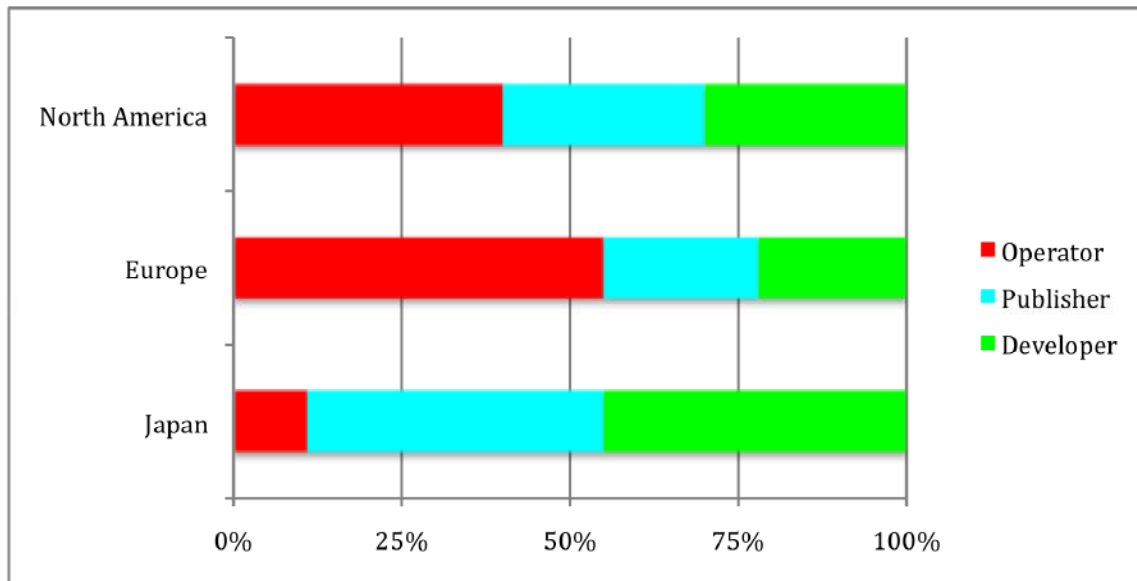
The early value chain was very operator-centric with developers typically working with publishers or aggregators which in turn had relationships with operators. Operators were the main distribution channel to reach the consumer.



Of course the end-customer relationship is very important in this business, as in so many others. However, all actors are co-dependent, and it is highly important for the health of an industry that information and resources are distributed and allocated in an efficient and fair manner. Unfortunately, European operators typically have the worst revenue sharing agreements with mobile games companies in all the major mobile games markets (see table below).

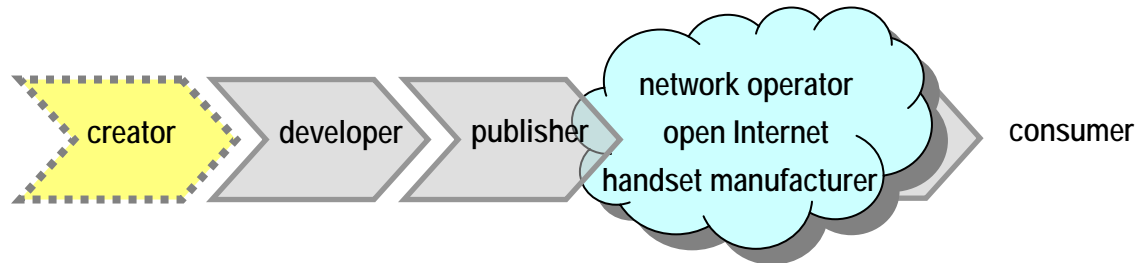
Mobile games can be developed with limited resources and thus the barriers to entry were low, and many small developers entered the scene with great hopes. The handset manufacturers, operators and general public all seemed to be of the opinion that games would be very important applications for mobile phones. However, operators were not keen on handling potentially hundreds of relationships with one- or two-person developers. Publishers and aggregators became the only external parties that were allowed access to the buyers at the operators, and developers were re-directed to contact them instead, effectively mirroring the “traditional” videogames industry where publishers and aggregators handle retail relationships.

In most cases, from 2000 to 2008, operators had long-term agreements with a restricted number of publishers and aggregators and generally do not sign up new parties. A developer or publisher which did not have a deal in place with an operator had to use the services of an aggregator or publisher which did have an agreement in place. In these cases the developer share is further diluted. At this point it is important to define the difference between an aggregator and publisher. A publisher typically funds some or all of the development, taking some of the risk but the developer gets a lower (10% or less) share of the revenues. An aggregator typically takes completed games from developers and shares around 50% of the end user revenues. The table below shows the developer share assuming a 50/50 split between an aggregator and developer.



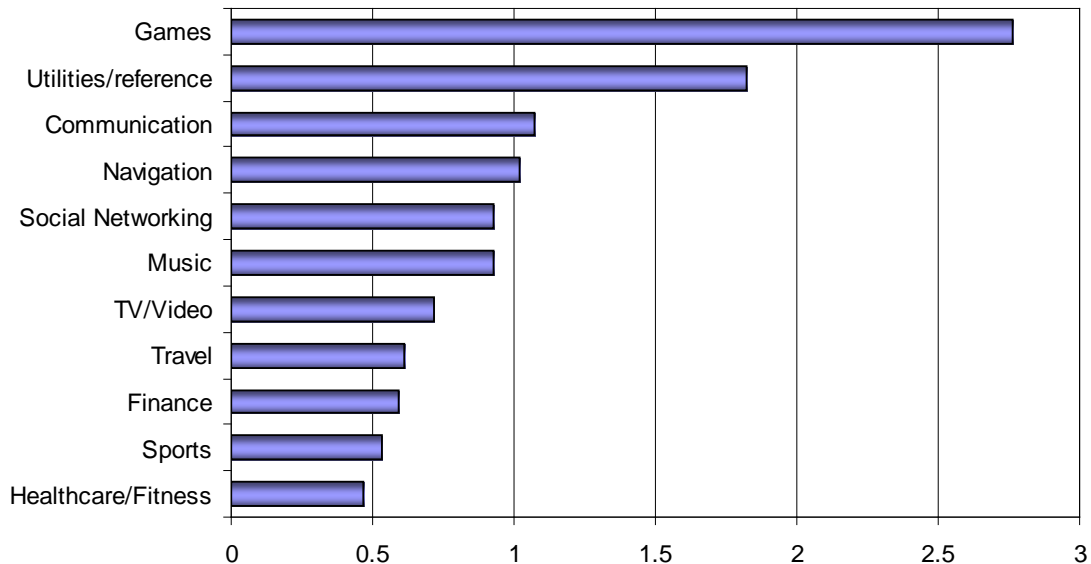
Erik Robertson of the EGDF adds, “the aggregators took half the revenue, in the worst case scenario without adding any value at all, re-distributing through each other, assembled portfolios of hundreds, even thousands, of games and thus totally marginalised the developers, financially and in terms of the influence over content creation. Developer revenue shares could drop to 1/16th of the end-user price, and sometimes eventually were not paid at all, due to incompatible, many-layered revenue-share reporting systems spanning continents”.

2.2 Market from 2008



Apple's launch of the App Store radically changed the market. Developers can upload applications directly to the App Store without the typically lengthy negotiations with publishers and operators – Apple claims over 90% of applications are approved with 10 days. The tight integration of the App Store with the device itself led many consumers to try out apps – Strategy Analytics consumer research shows that 93% of iPhone owners have downloaded at least one game or application, and 87% have downloaded multiple games or apps, and the average number of apps on an iPhone was 17.7. Games are by far the most popular category, accounting for 24% of all downloads.

Average number of apps installed by category



n=199, US and UK smartphone owners only. Source: Strategy Analytics

Price points on operator stores start at around € and up. In contrast, only 16% of applications on the Apple App Store are priced \$4.99 or higher. Developers set the price for apps stores and as competition has increased, more and more developers have priced apps at a lower price, or even free, in an effort to compete. 69% of iPhone respondents

claim that at least three quarters of the applications they have installed did not cost anything.

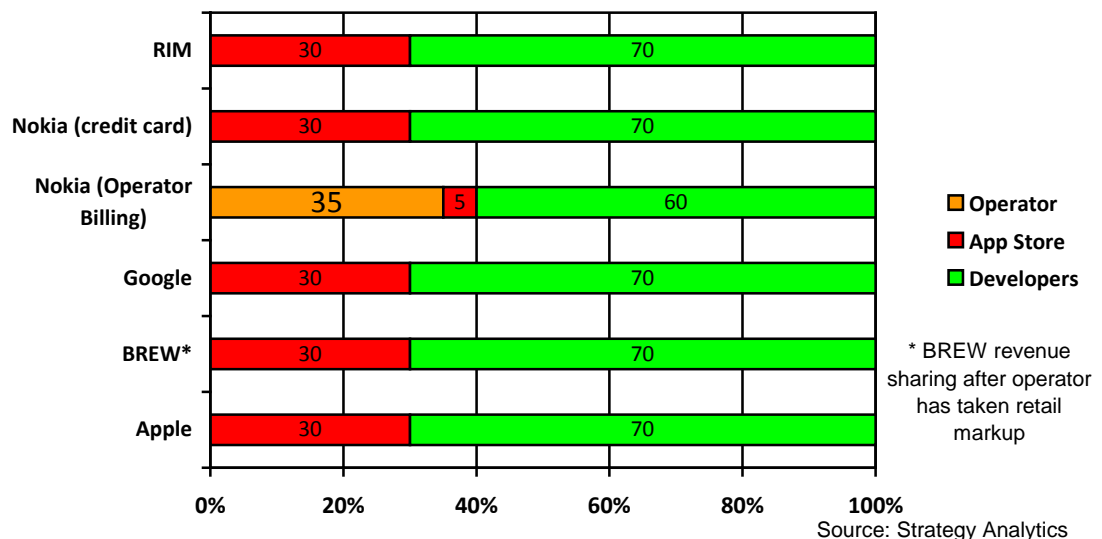
The launch of the App store was like the rolling stone that starts an avalanche. Like the mountain the avalanche tumbles down, the market landscape was hardly devoid of interest – application stores for mobile phones have been around since 1999 – but these have been largely forgotten in the noise the avalanche has generated. As it rolled down the slopes, the avalanche grew, picking up momentum as the other handset manufacturers got caught up.

2.3 How Apple changed the market for developers

Apple has of course had an enormous positive impact on the market from a developer perspective, but has also had a few negative impacts.

Positive influences:

- **Success of hardware has generated a lot of hype** amongst both the public and the investment community. This is particularly noticeable in the US where there is a large community of developers which have so far been mostly ignoring the mobile phone as a development platform. These companies entering the market have led to an impressive amount of innovation. US investors, often sceptical of the mobile phone as a platform, have recently been pumping money into start-up development houses, in turn spurring the market, and innovation, further.
- **Single SDK for over 50m devices.** The mobile phone environment is different to the desktop environment as there multiple operating systems and different handset specifications. Typically developers would have to create multiple versions of the same game for different handsets, and this increases the development costs astronomically. Gameloft indicates that a typical title sold through operator channels would have over 1000 different versions created. The Apple iPhone and iPod Touch share a single SDK, so a developer can reach a target market of over 100m handsets by creating only one version.
- **Better revenue shares.** Apple's 70/30 split in favour of developers is rapidly becoming the industry norm, even amongst the operator community. This is transforming the industry into a viable business for smaller developers in particular.



- **User-friendliness drives uptake and penetration.** The very simple access and download, and familiar payment systems of the App Store has led to much higher frequencies of application download. In contrast, other manufacturers' handset-

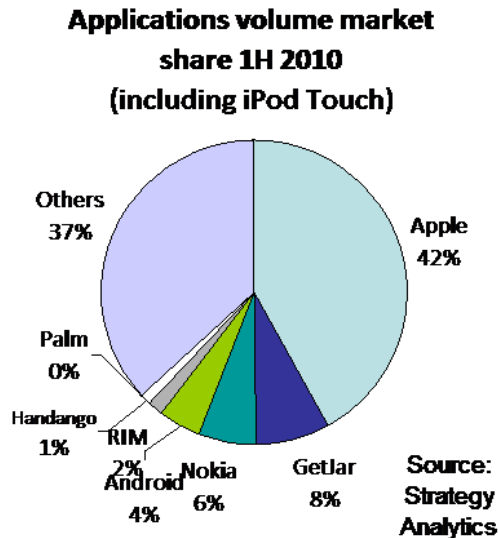
- installed storefronts are, when at all allowed by the network operators, hard to find, hidden far below top-level menus and when launched, hard to navigate.
- **Fast time to market**, which is important especially for media companies.
 - **Smaller companies can distribute through app stores.** Apple's content management system allows even small one-man developers to upload and sell content via the App Store. Other app stores have followed suit, and today many operators are changing their content management systems to follow suit, opening many new doors to the developer community.

Negative Influences

- **Greater developer community has led to intense price competition.**
- **Lack of search functionality.** The typical app store, including Apple's, is little more than a series of lists, making it extremely hard for newer developers listing content to be found by consumers.
- **Lack of marketing tools.** Application stores provide no tools for developers to promote products, unlike a typical physical retail environment. The challenges of the business of digital distribution have not been adequately considered by the creators of the application stores.
- **US-centric business and content.** The overwhelming majority of games and applications on Apple's App Store come from US companies and is English-language. Furthermore, US developers were explicitly favoured, given several months' head start on Europe and the world in access to Apple developer resources. Orange France actually had to create its own French-language content for its iPhone customers, listing the content on the app store as any other developer would. In order for the new generation of application stores to have the same impact on a pan-European basis as they have had in the US, more language and country-specific content must be created by European developers. It is vital for continued industry growth across Europe that local European developers are supported in their efforts.
- **Gold rush mentality, again.** The very high level of interest again stimulates smaller developers to invest a few man-months in an application, after hearing of initial fantastic successes. However, very many will again be disappointed, as it is no longer just a few dozen applications available for download by a couple of hundred thousand enthusiastic early adopters, but tens of thousands of applications. Conversion rates from the free versions to paid-for content are dropping.
- **Barrier to growth – Apple will not have a huge market share** Despite the hype around the Apple iPhone, it is worth bearing in mind that Apple has a market share of 2% of the total handset market (source: Strategy Analytics).

3 Today's Mobile Games Market

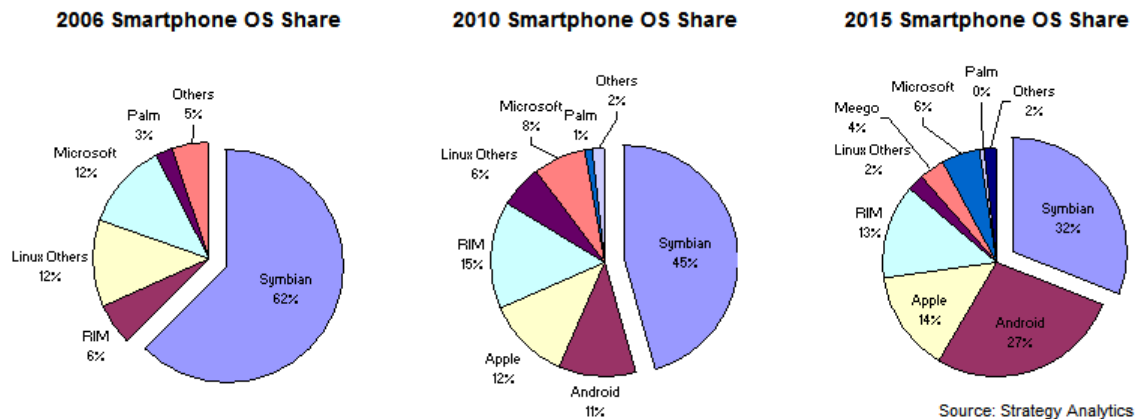
Apple's App Store has marched to become the market leader in a very short space of time. However, operators still have a strong position, and in fact the second largest store in terms of downloads is GetJar, which focuses on Java content for feature phones. There are of course several competing stores from other handset vendors, notably Google's Android Market, Nokia's Ovi and RIM's App World.



The “Others” category includes operators and smaller stores.

One of the critical points to note is that although Apple today has a strong position, the rest of the market is extremely fragmented. Within this market fragmentation, there are then subsequent, multiple additional layers of fragmentation. A developer creating an app for the iPhone will, in many cases, only have to produce one version of the app (admittedly to utilise the full functionality of the more recent devices, additional versions may have to be created but fragmentation is minimal). A developer creating an app for distribution via Nokia, for example, must produce multiple versions for each of the Nokia handsets, and likewise the same is true of Android, RIM and particularly Java.

As the market develops, we anticipate greater fragmentation challenges. The graph below shows how the smartphone market has evolved and is projected to evolve in the coming years. In 2006, Symbian dominated and there were fewer platforms in the market. As the market evolves, there are both more platforms and no single platform has a dominant market share.



Apple only accounts for a small percentage (12% today) of the smartphone market, and by 2015 there will be nearly a billion non-Apple smartphones in use by consumers. Unless the industry changes its approach to handset design, the challenges of fragmentation will only grow as time goes on. This will have a significant effect on the profitability of developers, particularly smaller (often more innovative) developers. This is likely to be challenging as handset manufacturers need to be able to differentiate products from competitors, and fragmentation is thus an inevitable part of this market.

3.1 Addressing Fragmentation

For the game developer community fragmentation and the inherent costs it incurs is the major issue of developing applications and games for mobile. Fragmentation is the necessity to create many hundreds of versions of a game in order to be able to reach a worldwide market. Unlike the relatively homogenous PC and console games markets, mobile games developers have a bewildering array of handset types, operating systems, screen resolutions, differences in 'standards' implementation, input/output/control mechanisms, screen types to contend with .

The costs of such fragmentation can often be over 50% of the total cost of the game project. That is 50% of cost that adds no value to an end customer and is only an enabler to address a larger footprint. Anything that can reduce or eliminate such cost can be directly ploughed back into better gameplay, enhanced user experience and better testing to deliver a superior product.

Publishers/developers often are required to port to a certain minimum range of handsets within an operator portfolio in order to have their game accepted as part of the game deck.

As the operator has traditionally been the best route to market, this has created a whole industry of porting houses whose job it is to ease the creation of the hundreds of SKUs required.

With the advent of the Apple Apps Store many developers have wholly embraced the homogenous and simple nature of the platform and the business model. It is clear how the money is made. The game platform capability is high so the user experience is very positive and the money flow is fair and allows for reinvestment in further game development. Many developers have dropped developing for other mobile platforms because of the success of the Apps Store as a channel to market. Also, they simply cannot afford to target a range of fragmented platforms some of which don't clearly offer a significant enough return on investment given the number of target devices out there. Whether this one-channel strategy is a good choice is the question. Although there are a handful of studios which made several millions, there are hundreds of studios who were a lot less successful on the App Store,

There have been many initiatives to fight fragmentation in the mobile content industry

Use of Java has been the mainstay of the supposed 'write once run anywhere' gaming development however as anyone within the industry will attest to, this has largely failed to meet its initial promised goals. Java games are still the mainstay of the developer/publisher revenues but are rapidly being overtaken by 'native' gaming on iPhone.

In February 2006 at the 3GSM Congress in Barcelona, A consortium of companies led by Texas Instruments announced that they had cooperated to align industry leaders to streamline introduction of premium mobile games by defining and supporting a common architecture for premium mobile games. The companies that had joined the initiatives were: Activision, Digital Chocolate, Electronic Arts, Ideaworks3D, Konami, Microsoft, MontaVista Software, Nokia, Samsung, SK Telecom, Square Enix, Symbian Limited and the Tao Group.

In their press release we read: "Adapting games to multiple handset models and operating systems adds significant cost and development time for gaming developers, which can result in less compelling gaming content for consumers. The architecture will help different devices and operating systems present a common set of minimum capabilities that game developers can rely upon, making game porting easier and more efficient. With less time spent developing multiple versions of a single game, content developers will instead be able to focus on creating new gaming titles for mobile consumers with richer graphics and features."

Unfortunately the group activity was not widely adopted as an industry standard for a variety of reasons, but not after writing a few very useful technical papers, still available via the Open Mobile Alliance (www.oma.org). Interestingly, some of the companies within the original consortium do use the Class Capability nomenclature to define different handset capabilities and the complexity and richness of games that can be developed on each one of those classes.

Fragmentation issues are not limited to the wide array of Mobile Operating Systems. It is actually a much wider spread of elements of the mobile games eco-system:

| Hardware | Software | Feature variations | Localisation | Network and Environmental fragmentation |
|--|---|---|---|---|
| Memory size CPU speed Input mode Screensize, Screen Type, GPU/no GPU, | Handset API's, Driver quality, Codecs, UI functions | Free vs paid Lite/full/premium versions | Language, local requirements (colours, taste, censorship, | Network API's, -billing -client information -location -messaging services |
| Connectivity (bluetooth, IR, GPRS, 3G | OS Implementation diversity (different OS versions (i.e. Android 1.x, 2.x), | | | Operator branding |
| Additional features and hardware (Camera, screen touch response, accelerometer, GPS) | | | | App Store branding, Technical requirements |

The latest initiative that specifically looks at the fragmentation issues on the network-side is GSMA's initiative One API (<http://oneapi.aepona.com>).

Unlike fixed broadband, mobile network operators have traditionally placed a barrier-to-entry that has hindered developers from innovating on the mobile Web. Proprietary operator APIs, so-called 'Walled Gardens', and contractual differences have stifled the creation of cross-operator Web applications.

Meanwhile, many features a network can offer (authentication, seamless charging, location assistance, push messaging, connection awareness, etc.) are locked up and hence not utilised. This is a lose-lose for both operators and developers.

One API is an open, public Beta, run by the GSMA. The One API includes functions for Messaging, Charging, Location, Data Connection Profile, and User Profile.

Next to these large industry initiatives, fragmentation has spawned companies who provide de-fragmenting solutions to game developers that offer the promise of reduced porting cost, shorter times to market and improved native performance. Examples include

- Ideaworks3D with their solution Airplay,
- Alcatel-Lucent,
- Polarbit with Fusion,
- Mobile Distillery with Celsius.

Testing your application to a wide range of mobile phones is a commercial service provided by companies like Device Anywhere and Perfecto Mobile.

As can be seen in the overview in the appendix, other industry consortia such as WAC, OMA and Webinos are fighting against fragmentation as well. However, when we take a closer look at the list of the consortia above, developers are absent in these initiatives.

We think developers, and especially mobile game developers, are those who can give valuable contributions to the specifications, the discussions and the implementation of new standards and tools.

They can provide a vision that is not just looking at the fragmentation on the operator side or the handset side, but everything in between, including the tools that they are using and/or that are available on the market.

The size and the available resources of game development studios make it difficult for them to allocate qualified personnel to vast workgroup programmes or EU-funded projects. Solutions need to be found to enable studios to participate in the fight against fragmentation.

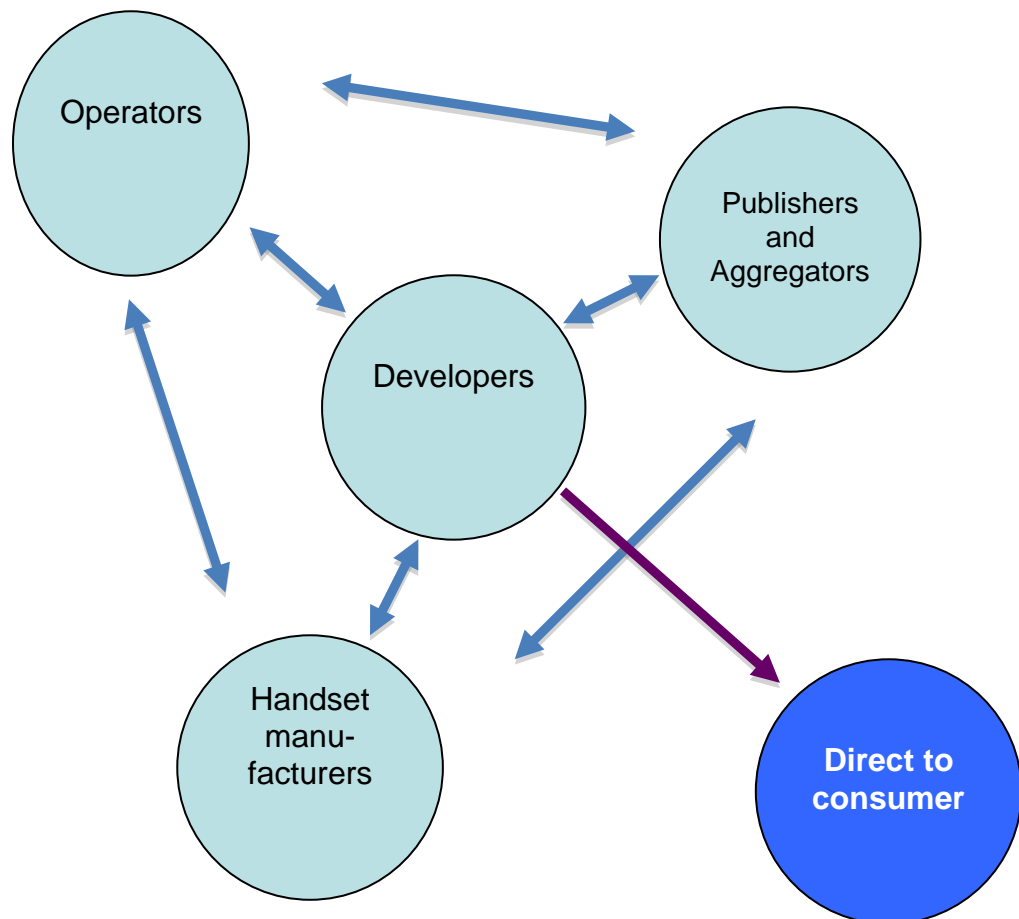
3.2 Business Relationships

Much like the traditional games industry, developers typically work with publishers, which often provide an up-front payment to cover development costs and are typically responsible for getting the game to market through a network of relationships, usually with operators.

Some developers also work directly with operators, but this is relatively rare. Operators typically prefer to work with aggregators and the more traditional publishers, who can contribute a continuous supply of a range of games.

Handset manufacturers have historically worked with a select few developers to provide pre-installed games. With the advent of application stores, manufacturers are now working with many developers to fill the stores.

Lastly, some developers choose to go direct to consumer (D2C). This approach is relatively rare as most developers do not have a marketing budget.



3.3 Strengths and weaknesses of each relationship

| | Strength | Weakness |
|-----------------------------------|--|--|
| Publisher | Development budget Marketing support Distribution reach | Typically low revenue share Developer does not keep IP |
| Operator | Reach can be good when dealing with tier 1 operators Operator controls billing Operator close to consumer for on-portal Potential for good marketing support | Requires developers to support wide handset mix, difficult Q&A process Slow time to market Varied revenue shares OTA (“over-the-air”) distribution limits size of games |
| Manufacturer – App Store | Manufacturer close to consumer for own app store Large games downloads allowed Typically good revenue shares Quick time to market for app store distribution Fewer fragmentation issues Developer owns IP | Limited market share Lots of competition |
| Manufacturer – pre-installed | Directly into consumer’s hands Possibility of try and buy and other business models Little or no fragmentation issues Marketing from manufacturer Typically good revenues for developers | Very few opportunities with lots of competition Long time to market Typically exclusive deals so game cannot be sold elsewhere Typically manufacturer owns IP |
| Direct-to-consumer via partner | Largest addressable market Poor reputation for many D2C companies for timely payments | Challenges reaching addressable market |
| Direct-to-consumer from developer | Developer controls time to market, handset support, more creative control Developer keeps IP Developer creates direct relationship with consumer | Marketing is expensive Success far from guaranteed |

4 Strategic Recommendations

4.1 *The operator-developer relationship*

In many ways, the market for games on smartphones is now being taken care of through distribution on manufacturers' own smartphone stores. However, the greatest potential for market increase will come from the overwhelming majority of feature phone users. Smartphones account for 16% of the market in 2009, which is expected to rise to 30% in 2014 (source: Strategy Analytics). While this is a large volume of handsets, smartphones will remain in the minority. Operators will have a critical role to play in addressing the feature phone market and thus could have a much greater impact on the mobile games market than any manufacturer, even Apple, will ever have.

A good dialogue between developers and operators is essential for this growth in the market to occur. This has traditionally been lacking in the mobile games industry. However, since operators have seen the success of Apple's App Store, they are beginning to understand that a good developer community can generate a lot of revenue.

Challenges:

- **Limit the number of APIs to reduce fragmentation.** The GSMA's OneAPI initiative could have the capacity to reduce this, but it has been slow taking off. The Joint Innovation Lab (collaboration between Vodafone, Verizon, China Mobile and Softbank) has released a set of APIs likely to be limited to those operators, which launched on the Vodafone network in 2010.
- **Reduce handset coverage requirements to realistic numbers.** Operators often ask for all of the handsets they distribute to consumers being supported by new releases, although many of the more basic phones will see little or no games downloads, leading to a poor return on investment for other players in the value chain.
- **Offer improved revenue shares.** Operators should learn from the successful business models of the App Store, and the business models already used by operators in Japan, that when developers receive a larger revenue share, this money is re-invested in creating better, more compelling and innovative content to further drive the market.
- **Developer programs should be improved and expanded.** Orange is one of the most active operators in terms of engaging the development community, running "developer camps" and offering testing facilities. Initiatives such as these are critical to help developers overcome the problem of "fragmentation" – the sheer number of platforms and devices which must be supported in order to launch an application to an operator's entire user base is a particular problem facing developers working with operators.

4.2 The publisher-developer relationship

Publishers have focused on building a large distribution footprint with operators. The success of manufacturers in moving into this market has challenged the publishers' addressable market and in the short term has diminished their importance. Developers can work directly with manufacturers for distribution onto smartphones without publisher involvement and with relatively small resources spent on developing these distribution channels. Operators are also opening their doors to the smaller developers. This is very different from how developers had to work with operators, where it's expensive and costly to build these relationships and publishers therefore had a major role to play.

So what are publishers giving the developer when it comes to app stores?

Cross-platform distribution has its own challenges and publishers, with much larger marketing budgets than developers, are best placed to fill the role of marketers. Some publishers also have the funds to acquire well known intellectual properties (such as movies) which can increase games sales.

One of the new challenges for publishers in this new App Store landscape is to take up the successes of the App Stores and bring them to the much larger, non-smartphone market. A publisher could also assist developers in porting their successful iPhone application to OVI, Microsoft, Blackberry, and Android.

Generally speaking, the marketing of mobile games is still the work of pioneers such as Fox Mobile, Handango, Buongiorno, ZED and others.

Customer support will of course be of increasing higher importance as the user base grows, and may very well become more of a deciding competitive factor.

4.3 The developer-manufacturer relationship

This has been the new paradigm which has emerged in the last 18 months, but does it represent the future of the market? As far as smartphones are concerned, this is the critical relationship. The work of manufacturers and hardware partners has driven the market forward in a way that no other category of company has managed. Not just Apple, but other manufacturers have taken a leading role in technological innovation. Apple's App Store demonstrated the importance of bringing good developer relations to the forefront and has taken the final leap from technical innovation to genuine market innovation, the piece of the puzzle which was missing.

So what are the most important things the manufacturers can do for the developers?

- Handsets made available before they come to market
- Technical innovation in hands of developers before it is in the hands of consumers
- SDKs – coherence and reduction of device requirements fragmentation

- Limit damage of device fragmentation through further industry standards – such as the work of and within Kronos Group, OpenGL, OMA, SKT and others.

Quoting the EGDF Games Technology Research Priorities 2009 paper, we find that the EGDF have clearly pointed out some latent European strategic advantages:

“Mobile units, smart-phones, handhelds, and related embodiments of ICT technology are likely to be the next-generation personal computers. The importance of games for such future hardware units are most likely quite obvious to the researchers and development engineers working on them. This does not necessarily mean that they are empowered to consult and involve the technology and content creators for games – the game developers – in early-stage decisions, such as regarding hardware, operating system functionality, input and output interfaces and auxiliary hardware. This is an area of high strategic importance, and the world’s leading mobile unit developers and the world’s leading developers of interactive content – the European game developers – should be very strongly encouraged to join forces.”

4.4 D2C relations/developer going alone?

Fox Mobile, Boungiorno and others are taking over operator store management, especially for tier 2 operators, and some manufacturer brand stores as well, so their business is changing, now stepping into a role in more like a publisher-developer relationship

Developers going it alone – Fishlabs, Pangea and other iPhone developers, Digital Chocolate and others have chosen this route to an increasing degree. There are distinct advantages in building direct consumer relationships, which can actually be initiated by using app stores at the outset, in combination with using social networks, but ultimately this may be limited by the relative small scale of developers, and thus the breadth of their offering in the eyes of the individual consumer.

Possibly an avenue worth exploring is for developers to join forces in common storefronts and distribution networks, but this is likely of limited interest to larger developers and a risky proposition for smaller ones, so it would take special effort on the hands of a few enthusiasts to become reality.

4.5 The developer/financing relationship

Since the emergence of mobile games in 1997, European studios have excelled in creating exceptional quality mobile games. The first generation of studios, notably Elkware, Iomo, Digital Bridges, Haiku, received investment from outside Europe, creating a “brain drain” of mobile games talent. This trend has continued until today. European VCs and investment banks are not investing in mobile games studios.

Public European media funding is made available to film and TV companies, and in some cases games companies. The proposed restrictions on the upcoming MEDIA programme, excluding all games not made as direct tie-ins or promotional material, for film and TV productions, does not seem to pose any particular disadvantage for mobile games, but seems to treat all games equally bad.

National and regional games support systems, for example the Nordic Game Program, has supported many mobile games projects, but it is doubtful that these systems are optimal for mobile games. Furthermore, they have hard time ensuring that the games supported actually reach the consumer, other than through actually setting up their own distribution portals, something they are actually doing, although as yet without the marketing resources necessary.

5 Conclusion: Giving European Developers a Voice

Europe does have some important players – Nokia, Sony Ericsson, Gameloft, just to name a few – and there are already there a few of the right ingredients available for Europe to be a major mobile games powerhouse on the world stage. We also have a highly creative and competent developer SME industry.

Europe is also a leading actor in relevant research, and we have a public sector on the European Union, national, and regional levels, which is very interested in and supportive of wireless infrastructure, mobile applications, networked society, and even of games.

What we lack are the recipes – the strategies and action agendas - that will strengthen the above relationships, thus building mutual awareness and hands-on co-operation between leading handset manufacturers and innovative content creators, that can realise the true potential of European industry in this field, and help shape tomorrow's society.

The Mobile Games Special Interest Group of the European Games Developer Federation is totally committed to achieving this, and will take every opportunity to promote it, but is also acutely dependent on accessing further resources and mobilising more talent and ideas.

To help out in this important mission, please contact msig@egdf.eu.

6 Appendix: Fragmentation Initiatives

| | |
|--|--|
| WAC | http://www.wholesaleappcommunity.com |
| | The Wholesale Applications Community (WAC) is a not-for-profit open global alliance of many of the world's largest telecommunications operators. There are also 15 handset manufacturers involved. WAC wants to provide a simple route to market for developers and provide access to the latest and widest range of innovative applications and services to as many customers as possible worldwide. |
| | AT&T, China Mobile, Deutsche Telekom AG, GSMA, KT, NTT DoCoMo, Orange, SK Telecom, Smart Communications, Softbank Mobile, Telekom Austria Group, Telecom Italia, Telefónica, Telenor group, Verizon Wireless and Vodafone. |
| JIL and OMTP BONDI both merged with WAC in July 2010 | |
| OMA | http://www.openmobilealliance.org |
| | OMA is the focal point for the development of mobile service enabler specifications, which support the creation of interoperable end-to-end mobile services. OMA drives service enabler architectures and open enabler interfaces that are independent of the underlying wireless networks and platforms. OMA creates interoperable mobile data service enablers that work across devices, service providers, operators, networks, and geographies. Toward that end, OMA will develop test specifications, encourage third party tool development, and conduct test activities that allow vendors to test their implementations. |
| | Activision, Andrew LLC, Bell Canada, Bouygues Telecom, China Mobile Communications Co, China Telecommunications Corp., China Unicom, Cinterion Wireless Modules Gmb, Comverse, Danal Entertainment Inc., Deutsche Telekom AG, TMO, Fraunhofer Gesellschaft e.V., Fujitsu Limited, Garmin International Inc., Gemalto N.V., Giesecke & Devrient GmbH, Global Locate Spain S.L., GSM Association, Hewlett Packard, Hitachi Limited, HTC Corporation, Huawei Technologies Co., Ltd, iAnywhere Solutions Inc., IBM Corporation, Innopath Software, Irdeto, KDDI Corporation, KT Corp., LG Electronics Inc., LG Telecom Ltd., Mediatek Inc., Motorola, NDS, Neustar, Nokia, Nokia Siemens Networks, Openwave, Oracle America, Inc., Palm, Inc., RealNetworks, Inc., Rogers Wireless Inc., Rohde & Schwarz GmbH & Co. KG, Sagem Wireless, SanDisk, Smith Micro Software, Inc., Softbank Mobile Corp., Sony Ericsson Mobile Comm., AB' Sprint, Syniverse Technologies, Inc., Tekelec, Telcordia Technologies, Inc., Telecom Italia S.p.A, Telecommunication Systems, Inc, Telefonica SA, Telenor ASA, TeliaSonera, Telstra Corporation Limited, US Cellular, Verizon, Vodafone, ZTE Corporation. Sponsors: Alcatel-Lucent, AT&T, Ericsson, Intel Corporation, Microsoft, NEC Corporation, NTT DOCOMO, INC. Orange SA, Qualcomm, Inc, Research In Motion Limited, Samsung Electronics, SK Telecom. |
| WAC | http://www.wholesaleappcommunity.com |
| | The Wholesale Applications Community (WAC) is a not-for-profit open global alliance of many of the world's largest telecommunications operators. There are also 15 handset manufacturers involved. WAC wants to provide a simple route to market for developers and provide access to the latest and widest range of innovative applications and services to as many customers as possible worldwide. |
| | AT&T, China Mobile, Deutsche Telekom AG, GSMA, KT, NTT DoCoMo, Orange, SK Telecom, Smart Communications, Softbank Mobile, Telekom Austria Group, Telecom Italia, Telefónica, Telenor group, Verizon Wireless and Vodafone. |
| JIL and OMTP BONDI both merged with WAC in July 2010 | |
| OMA | http://www.openmobilealliance.org |
| | OMA is the focal point for the development of mobile service enabler specifications, which support the creation of interoperable end-to-end mobile services. OMA drives service enabler architectures and open enabler interfaces that are independent of the underlying wireless networks and platforms. OMA creates interoperable mobile data service enablers that work across devices, service providers, operators, networks, and geographies. Toward that end, OMA will develop test specifications, encourage third party tool |

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| | development, and conduct test activities that allow vendors to test their implementations. |
| | <p>Activision, Andrew LLC, Bell Canada, Bouygues Telecom, China Mobile Communications Co, China Telecommunications Corp., China Unicom, Cinterion Wireless Modules Gmb, Comverse, Danal Entertainment Inc., Deutsche Telekom AG, TMO, Fraunhofer Gesellschaft e.V., Fujitsu Limited, Garmin International Inc., Gemalto N.V., Giesecke & Devrient GmbH, Global Locate Spain S.L., GSM Association, Hewlett Packard, Hitachi Limited, HTC Corporation, Huawei Technologies Co., Ltd, iAnywhere Solutions Inc., IBM Corporation, Innopath Software, Irdeto, KDDI Corporation, KT Corp., LG Electronics Inc., LG Telecom Ltd., Mediatek Inc., Motorola, NDS, Neustar, Nokia, Nokia Siemens Networks, Openwave, Oracle America, Inc., Palm, Inc., RealNetworks, Inc., Rogers Wireless Inc., Rohde & Schwarz GmbH & Co. KG, Sagem Wireless, SanDisk, Smith Micro Software, Inc., Softbank Mobile Corp., Sony Ericsson Mobile Comm., AB' Sprint, Syniverse Technologies, Inc., Tekelec, Telcordia Technologies, Inc., Telecom Italia S.p.A, Telecommunication Systems, Inc, Telefonica SA, Telenor ASA, TeliaSonera, Telstra Corporation Limited, US Cellular, Verizon, Vodafone, ZTE Corporation.</p> <p>Sponsors: Alcatel-Lucent, AT&T, Ericsson, Intel Corporation, Microsoft, NEC Corporation, NTT DOCOMO, INC. Orange SA, Qualcomm, Inc, Research In Motion Limited, Samsung Electronics, SK Telecom.</p> |

7 Appendix: Author Biographies

7.1.1 Maarten Noyons

Maarten Noyons is the founder of the International Mobile Gaming Awards (IMGA), the leading awards for mobile games, sponsored and endorsed by the mobile entertainment industry. The Awards recognize and award innovation and creativity in mobile games. In his 25 year career in the media industry, Mr. Noyons has developed, produced, bought and sold innovative content and services on many platforms including television, PC, CD-ROM, internet, interactive television, fixed and wireless networks. His credits include award winning commercials and music videos and spearheading interactive entertainment concepts, such as the first interactive Auction TV channel iBidLive, and SMS TV formats.

7.1.2 David MacQueen

David MacQueen is Director for Strategy Analytics Wireless Media Strategies service, providing insight and strategic advice on all aspects of consumer mobile data products and services. Key areas of research include mobile advertising, games, music, social networking, TV and video.

Mr. MacQueen has a decade of experience at a senior level in the mobile media sector. Prior to joining Strategy Analytics, David spent 3 years at Screen Digest, where he built and subsequently headed up the 'Mobile Media Intelligence' service, providing data and analysis on the mobile sector for media companies. Before that, David started up The Games Kitchen, a wireless games development company, which in its 5 year lifespan attracted clients including Disney, Panasonic and Sega.

David MacQueen holds a BSc in Chemistry from Heriot-Watt University in Edinburgh where he also undertook PhD research.

7.1.3 Bryce Johnstone

Bryce is currently consultant for Media Vault and Ideaworks3D.

His career spans 25 years of worldwide experience in the semiconductor industry and 10 years in mobile. At Texas Instruments, where he was responsible for the OMAP developer network, he has worked closely with the complete mobile ecosystem including worldwide companies such as Samsung, Nokia, ARM, SEMC, Sun, ICL, SKT, NEC, NTT DoCoMo, Adobe, EA. In this context he has been active in the Open Mobile Alliance.

He received a bachelor's degree in Electrical Engineering and Electronics from the University of Edinburgh and holds an MBA from the Open University (UK).

7.1.4 Erik Robertson

Erik Robertson (b. 1961) has never had a proper job. Instead, he has with varying success had own businesses, mostly where the IT and marketing fields touch. He has started a dozen or so companies, and develops computer games since 1997. After preparatory work in 2004-05, he since January 1, 2006 leads the resulting Nordic Game Program according to a six-year plan. This is a part of the official Nordic cultural co-operation, between Denmark, Finland, Iceland, Norway, and Sweden, and is fully financed by the Nordic Council of Ministers.

Erik has also founded the Malmö NyföretagarCenter enterprise agency, and the trade organisations Spelplan-ASGD and European Games Developer Federation.

He has Bachelor of Arts and Bachelor of Business Administration degrees from Lund University and has also published internationally in the field of entrepreneurship research.