THE UNITED STATES DEPARTMENT of JUSTICE

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SEARCH ANTITRUST SEARCH

FILING A NOTIFICATION UNDER THE NCRPA

On this page:

For more information, contact the Premerger Notification Unit at 202-514-2558.

What is the NCRPA?

The National Cooperative Research and Production Act of 1993 ("NCRPA" or "Act"), 15 U.S.C. §§ 4301-06, is designed to promote innovation, facilitate trade, and strengthen the competitiveness of the United States in world markets by:

- Clarifying the applicability of the rule of reason standard to the antitrust analysis of joint ventures and standards development organizations (or "SDOs") while engaged in a standards development activity.
- Providing for the possible recovery of attorneys fees by joint ventures and SDOs that are prevailing parties in damage actions brought against them under the antitrust laws.
- Providing to parties to joint ventures and to SDOs the opportunity to limit any possible monetary damages that might be sought from them in actions brought under the antitrust laws to actual—as opposed to treble—damages.

Why file a notification?

While the application of the rule of reason and attorneys' fee provisions to joint venture and SDO activity is automatic under the Act, **the limitation of possible antitrust damage exposure to actual damages occurs only after a venture or SDO files a notification** with the Antitrust Division of the Department of Justice (or the "Division") and the Federal Trade Commission (or "FTC") and the Division subsequently publishes a notice concerning the joint venture or SDO in the *Federal Register*.

Through the process of providing notifications under the NCRPA, joint ventures and SDOs inform the antitrust enforcement agencies and, through the publication (by the Division) of notices in the *Federal Register*, the public of their membership and activities, and any changes thereto.

What entities are eligible to file a notification?

Two types of entities are entitled to file notifications under the NCRPA:

- Joint ventures
- Standards development organizations

Joint Ventures

Joint ventures that are engaged in the following activities may file notifications under the Act:

- **Research and Development** ("R&D")
  A joint venture engaging in any activities for any one or more of the following purposes:
  - Theoretical analysis, experimentation, or systematic study of phenomena or observable facts
  - Development or testing of basic engineering techniques

ACTION CENTER

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- Extension of investigative findings or theory of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, prototypes, equipment, materials, and processes
- Testing in connection with the production of a product, process, or service by such venture
- Collection, exchange, and analysis of research or production information

- **Production**
  A joint venture engaging in any activities for any one or more of the following purposes:
  - The production of a product, process, or service
  - Testing in connection with the production of a product, process, or service by such venture
  - The collection, exchange, and analysis of research or production information.

However, a joint venture for production is not eligible to file a notification unless both of the following conditions are met:

- The principal facilities for such production are located in the United States or its territories.
- Each person who controls any party to such venture (including such party itself) is a United States person or a foreign person from a country whose law accords antitrust treatment no less favorable to United States persons than to such country's domestic persons with respect to participation in joint ventures for production.

Standards Development Organizations

Standards development organizations may file notifications under the Act. For purposes of the Act, a SDO is a domestic or international organization that plans, develops, establishes or coordinates voluntary consensus standards using procedures that incorporate the attributes of openness, balance of interests, due process, an appeals process, and consensus in a manner consistent with the Office of Management and Budget Circular Number A-119, as revised February 10, 1998. A standards development organization does not include the parties participating in the standards development organization.

What types of notifications are there?

There are two types of NCRPA notifications:

- **Original notifications**
  An original notification is made upon the formation of the joint venture or SDO.
- **Supplemental notifications**
  A supplemental notification is made when the activities of the joint venture or SDO change and, in the case of a joint venture, when its membership changes.

The information that must be included in a notification to the Division and the FTC differs somewhat in original and supplemental notifications. There are also differences in the information that must be provided by joint ventures for research and development, joint ventures for production, and standards development organizations. All information supplied to the enforcement agencies as part of an NCRPA notification is protected from disclosure; only the information published by the Division in the *Federal Register* becomes public.

What are the requirements for an original notification?

There are three components for every notification under the NCRPA. All three components apply to the three types of entities that may file: R&D joint ventures, production joint ventures and SDOs. Three copies of each of these items must be included in the filing—one copy must be sent to the FTC and two copies must be sent to the Division.

Original notifications by joint ventures must be submitted to the Division and FTC not later than 90 days after entering into a written agreement to form a joint venture for R&D or for production, and for SDOs not later than 90 days after commencing a standards development activity engaged in for the purpose of developing or promulgating voluntary consensus standards.

The three components of an original NCRPA notification are:

- **Information Concerning the Identity and Activities of the Joint Venture or SDO**

  R&D Joint Ventures: Provide a letter that states the name of the venture, identifies the names and addresses of the parties to the venture, and describes

the nature and objectives of the venture. The notification may contain any additional information or documentation that the venture wishes to provide with respect to its nature and objectives.

Production Joint Ventures: Provide a letter that states the name of the venture, clearly identifies the venture as a joint venture for production, discloses the identity, address and nationality of any person who is a party to the venture or who controls any party to the venture whether separately or with one or more other person, identifies the location of the venture's principal production facilities, and describes the nature and objectives of the venture. The notification may contain any additional information or documentation that the venture wishes to provide with respect to its nature and objectives.

Standards Development Organizations: Provide a letter that states the name and principal place of business of the SDO and that describes the nature of the SDO's activities, and further provide documents showing the nature and scope of the SDO's standards development activities.

- **Draft *Federal Register* Notice**

  All original NCRPA notifications should include a draft *Federal Register* notice.

  Joint Ventures: The notice must include the name of the venture, the identities of the parties, and a general description of the area of planned activity of the venture.

  Standards Development Organizations: The notice must identify the standards development organization and contain a general description of the standards development activities in which the SDO is engaged.

  Exemplars: Original *Federal Register* Notices
  Bold text indicates information to be provided by the joint venture or SDO.

  - For an R&D joint venture
  - For a production joint venture
  - For an SDO

- **Identification of Person or Persons with Authority to Approve the *Federal Register* Notice**

  Prior to publication by the Division of a *Federal Register* notice, the notice must be approved by the notifying joint venture or SDO. Consequently, the notification should provide the name and contact information of the person or persons authorized by the joint venture or SDO to approve the Division's proposed *Federal Register* notice.

Following the receipt of a proper notification, the Division will publish a notice in the *Federal Register* that identifies the parties to, and the activities of, the joint venture or SDO. Notifications may be withdrawn at any time before publication of a notice in the *Federal Register*; however, a joint venture or SDO does not receive the liability-limiting protections of the Act if its notification is withdrawn.

You may view published notices on the Federal Register website.

What are the requirements for a supplemental notification?

In order for joint ventures and SDOs that have filed original notifications to continue receiving the detrebling protections of the Act, such ventures and organizations must file supplemental notifications when changes occur after the initial filing.

Joint ventures: Supplemental notifications must be filed disclosing changes in membership or changes in the nature and/or objectives of the venture.

Standards Development Organizations: Supplemental notifications must be filed if there is an addition to or change in the standards setting activities performed by the SDO that were disclosed in the original notification.

Exemplars: Supplemental *Federal Register* Notices
Bold text indicates information to be provided by the joint venture or SDO.

- For an R&D joint venture
- For a production joint venture
- For an SDO

The same process applies to making a supplemental notification as is required when making the original notification. Two copies of the notification are sent to the Division and one copy to the FTC. The notification should provide information, and in the case of an SDO documentation, concerning the changes for which the

supplemental notification is being made, a draft *Federal Register* notice reflecting those changes, and the name and contact information of the person or persons authorized to approve the publication of the *Federal Register* notice.

It is not necessary to provide or restate information provided in an earlier notification. For example, if a supplemental notification is being filed because of a change of membership in a joint venture, it is not necessary to enumerate all current members in the notification, identifying the parties who have been added and those who have been dropped will suffice.

Supplemental notifications must be filed within 90 days of the occurrence of the change requiring the notification.

Where are notifications filed?

Original and supplemental NCRPA notifications should be delivered to the following locations:

U.S. Department of Justice (2 copies):
Antitrust Division
Premerger Notification Unit
950 Pennsylvania Ave., N.W., Room 3335
Washington, DC 20530
(For overnight delivery, use ZIP Code 20004.)
Phone: 202-514-2558

Federal Trade Commission (1 copy):
Office of Policy and Evaluation
Federal Trade Commission
6th and Pennsylvania Ave., N.W., Room 392
Washington, DC 20580

WHERE THE JOBS ARE:
THE APP ECONOMY

Research by

Dr. Michael Mandel
South Mountain Economics, LLC

February 7, 2012

WHERE THE JOBS ARE:
THE APP ECONOMY

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EXECUTIVE SUMMARY

How can the U.S. dig itself out of the current job drought? Government policy can temporarily boost employment. The ultimate answer, though, is innovation: The creation of new goods and services that spur the growth of new industries capable of employing tens or hundreds of thousands of workers.[1]

Nothing illustrates the job-creating power of innovation better than the App Economy. The incredibly rapid rise of smartphones, tablets, and social media, and the applications—"apps"—that run on them, is perhaps the biggest economic and technological phenomenon today. Almost a million apps have been created for the iPhone, iPad and Android alone, greatly augmenting the usefulness of mobile devices. Want to play games, track your workouts, write music? There are a plethora of apps to choose from, many of them free.

On an economic level, each app represents jobs—for programmers, for user interface designers, for marketers, for managers, for support staff. But how many? Conventional employment numbers from the Bureau of Labor Statistics are not able to track such a new phenomenon. So in this paper we analyze detailed information from The Conference Board Help-Wanted OnLine® (HWOL) database,[2] a comprehensive and up-to-the-minute compilation of want ads, to estimate the number of jobs in the App Economy.

This analysis—conducted for TechNet by Dr. Michael Mandel of South Mountain Economics, LLC—shows that the App Economy now is responsible for roughly 466,000 jobs in the United States, up from zero in 2007 when the iPhone was introduced. This total includes jobs at 'pure' app firms such as Zynga, a San Francisco-based maker of Facebook game apps that went public in December 2011. App Economy employment also includes app-related jobs at large companies such as Electronic Arts, Amazon, and AT&T, as well as app 'infrastructure' jobs at core firms such as Google, Apple, and Facebook. In additional, the App Economy total includes employment spillovers to the rest of the economy.

Moreover, we find that App Economy jobs are spread around the country. The top metro area

for App Economy jobs, according to our research, is New York City and its surrounding suburban counties, although San Francisco and San Jose together substantially exceed New York. And while California tops the list of App Economy states, states such as Georgia, Florida, and Illinois get their share as well. In fact, more than two-thirds of App Economy employment is outside of California and New York. Our results also suggest that the App Economy is still growing at a rapid clip, which shouldn't be a surprise to anyone.

It must be noted, of course, that the App Economy is only four years old and extremely fluid. Both the location and number of app-related jobs are likely to shift greatly. It should also be noted that the figures presented in this paper are estimates, based on innovative techniques developed for this project. Finally, these may represent "jobs not lost" rather than net jobs gained.

Yet the basic principle holds. Innovation creates jobs, and in this case, lots of them.

BACKGROUND

'App', in the sense that we mean it today, did not exist before the iPhone was introduced in 2007. Apps are relatively lightweight programs, specifically designed to run on mobile platforms such as the iPhone and Android phones. In the past couple of years, the term 'app' has been extended to Facebook applications as well. In the prospectus for its initial public offering, Zynga described the App Economy in this way:

> In order to provide users with a wider range of engaging experiences, social networks and mobile operating systems have opened their platforms to developers, transforming the creation, distribution and consumption of digital content. We refer to this as the "App Economy." In the App Economy, developers can create applications accessing unique features of the platforms, distribute applications digitally to a broad audience and regularly update existing applications"[3]

The term 'App Economy' started coming into use in early 2009, and was popularized by a prescient November 2009 BusinessWeek cover story.[4]

The combination of ease of development and ease of delivery makes possible a stunning variety of apps. To just give some examples: You can take verbal notes; make your voice sound like a robot; schedule plane flights; play a baseball simulation; have customized news delivered to your device; create a digitized voodoo doll; and edit Microsoft Word documents.

But the App Economy is much more than a better delivery channel for software. From the economic perspective, we can think of the App Economy as a collection of interlocking innovative ecosystems. Each ecosystem consists of a core company, which creates and maintains a platform and an app marketplace, plus small and large companies that produce apps and/or mobile devices for that

platform. Businesses can belong to multiple ecosystems and usually do.

The key platforms in the App Economy today are

- Android, anchored by Google;
- Apple iOS, anchored by Apple;
- Blackberry, anchored by RIM;
- Facebook, anchored by Facebook;
- Windows Phone and Windows Mobile, anchored by Microsoft

Every major consumer-facing company, and many business-facing companies, has discovered that they need an app to be the public face of the business. In some sense, that makes the App Economy the construction sector of the 21st century, building a new front door to everyone's house and in some cases constructing a whole new house.

SIZING THE APP ECONOMY

The App Economy lends itself to several types of metrics. For example, it's relatively easy to count the number of apps in a particular app store, how many different developers, and even how many times apps have been downloaded. For example, the Apple App store had 529,550 active apps as of December 12, 2011, according to 148apps.biz, uploaded by 124,475 active publishers.[5]

Another important metric is revenue. By one estimate, the App Economy generated almost $20 billion in revenue in 2011.[6] This includes app downloads, in-app revenues, sales of virtual goods, and sales of physical goods and services.

Sizing the number of jobs generated by the App Economy is much more difficult, however. Any particular app could be created by a single teenager programmer, or by a large team at a big company. The process of updating and maintaining popular apps can be a hidden but a labor-intensive process. Finally, the construction and maintenance of the app infrastructure creates jobs as well.

One study of app-related jobs focused only on Facebook.[7] Three academics estimated the number of jobs created by Facebook apps using data on number of downloads and number of developers. They estimated that "the number of employees employed by third party developers [of Facebook apps] to be 53,434." Then they calculated a range of spillover effects into the national economy, leading them to conclude that "a conservative estimate of the employment impact of developers building apps on the Facebook Platform in the United States in 2011 is 182,744 full time jobs."

METHODOLOGY

This paper takes a different, more general approach to estimating the number of jobs in the App Economy. We want to understand the whole labor market built up around apps—not just at the third party developers, but at the core firms as well. And we want a methodology that cuts across all the different ecosystems.

If the App Economy was more mature, we might be able to use the data that comes from the government statisticians at the Bureau of Labor Statistics. With a few years lag, the government updates its industry categories to reflect changes in the economy. For example, there is now a relatively new industry category labeled "Internet publishing and broadcasting and web search," which includes companies such as Google, Yahoo, and Facebook.

However, the App Economy is far too new to show up in the government statistics. Instead, we use The Conference Board HWOL database, a compilation of online help-wanted ads that reflects "the full universe of all online advertised vacancies which are posted directly on internet job boards or through newspaper online ads."[8]

This database has many advantages for a detailed look at new industries. It's updated daily to reflect new ads, so it's completely up to date. The ads are categorized by occupational category that matches the BLS occupational categories, so the number of want ads can be compared to BLS occupational data. The database includes information on location and employers.

And perhaps most important, the database includes access to the full text of the ads, which allows keyword searches. This enables us to clearly identify those want ads that belong to the App Economy, with the right set of keywords.

Our procedure for estimating the number of App Economy jobs has several steps (see Table 1).

1. We identified a set of keywords that characterize want ads for App Economy computer and mathematical occupations, which for convenience we will call 'tech jobs';
2. We used historical relationships to estimate the ratio between the number of want ads for tech occupations and the actual level of tech employment;
3. We examined a sample of third-party app developers to estimate the ratio of tech jobs to non-tech jobs in the App Economy;
4. We drew from the literature to derive a conservative estimate of the spillover effects to the broader economy;
5. We used the location data in The Conference Board database to estimate App Economy jobs by metro area and by state.

Table 1: Methodology Summary

Non-duplicated help-wanted ads for app economy jobs	Using The Conference Board Help-Wanted Online database, we identified want ads for computer and mathematical occupations containing one of the following key words or phrases: Android, app, Blackberry, "Facebook API", iOS, iPhone, "Windows Mobile," "Windows Phone".
Want-ad to employment ratio	We calculate the ratio between the number of want ads and the level of employment for app economy jobs, using 4 years of monthly data for computer and mathematical occupations from The Conference Board and from the BLS.
Tech employment to total employment ratio	We calculate the ratio between the number of tech jobs and total jobs in an App Economy company, using The Conference Board data on want ads for a sample of pure app economy companies.
Job creation multiplier	We estimate the total number of jobs created given the spillover effects of app economy jobs, based on our judgmental assessment of research on job multipliers.

RESULTS

The first step was to choose a set of key words and phrases that would give us a fair representation of tech jobs in the App Economy.[9] The key words and phrases we chose were:

- Android
- App
- Blackberry
- iOS
- iPhone
- "Facebook API"
- "Windows Mobile"
- "Windows Phone"

We identified all want ads for tech jobs—computer and mathematical occupations—which appeared online in the 90 days ending December 31, 2011, and contained at least one of these key words and phrases. In other words, this filter would capture an ad for a software engineer with iOS experience, or with knowledge of the Facebook API.

In order to verify that this filter was identifying the right want ads, we examined a sample of identified ads, and compared them to ads being run by well-known third party developers. For example, an ad by one App developer looking for an iOS development engineer and requiring "1–2+ years of iOS development experience" clearly was appropriate.

Over the 90-day period ending December 31, 2011, we identified roughly 44,400 non-duplicated ads for computer and mathematical occupations, and containing one or more of the above keywords. These are ads for U.S. jobs. By comparison, there were 952,000 want ads for all computer and mathematical occupations over the same period. As a result, App Economy want ads made up 4.7% of the tech job total.[10]

Now we need to establish a ratio between actual employment and want ads. Obviously this ratio varies depending on whether companies are hiring or not. It will also vary across occupations, since hiring practices are different depending on the type of job. For example, companies are more likely to run want ads for computer programmers than for managers, relative to the total level of employment.

However, an examination of the past four years of data of want ads for computer and mathematical occupations, in particular, suggests that tech jobs and tech want ads tend to move together, except for anomalous periods such as 2009, at the bottom of the downturn. In particular, roughly 3.5 million workers were employed in tech jobs (computer and mathematical occupations) in the fourth quarter of 2011, a period which also saw roughly 1 million tech want ads. That suggests a ratio of roughly 3.5 tech jobs for each tech want ad (90-day unduplicated).

We derived this 3.5 ratio for the broad category of computer and mathematical occupations (tech jobs). The major assumption of this paper is that the same ratio holds for tech jobs and tech want ads in the App Economy.[11]

Based on this ratio, our analysis suggests that there were 155,000 tech jobs in the App Economy as of December 2011. This number would include developer and tech support jobs at both dedicated app developers and at large companies who create apps for them or for others.

The next step is to calculate the ratio of non-tech jobs to tech jobs at App Economy enterprises. Obviously new startups in the tech area are weighted very heavily towards tech jobs—computer software engineers, developers and the like. But as companies grow, they add human resources, sales, marketing, and all sorts of other non-tech function. A careful examination of want ads placed by mid-size app developers suggests that a 1 to 1 ratio between tech jobs and non-tech jobs is not unreasonable.

That assumption implies that there are roughly 311,000 jobs in App Economy firms, not accounting for spillover effects into the rest of the economy (see Table 2). These include tech jobs, which require app-related skills, and the corresponding non-tech jobs.

Is 311,000 a big number or a small number? Figure 1 compares the App Economy employment (not including spillovers) with employment in several key tech industries. We see that App Economy employment is slightly larger than the number of jobs in the software publishing industry, at least as reported by the BLS. That makes the App Economy a significant force. (Remember that App Economy jobs are embedded within these industries, and are not a separate industry themselves).

SPILLOVERS

There's a very long history of economic studies calculating the job market impact of various activities, from Wall Street to real estate to exports to broadband. Within the context of these studies, it's traditional to use a multiplier to estimate the combination of the direct and indirect job creation, such as the number of restaurant jobs created in New York by each investment banker job.

While the general principle of a multiplier is obvious, there's a lot of dispute about how big it should be. The Facebook job study mentioned above, for example, assumed that the multiplier should lie between 2.4 and 3.4, based on past studies of the job impact of broadband (it's also traditional to use previous estimates of the multiplier, no matter how outrageous they are.)

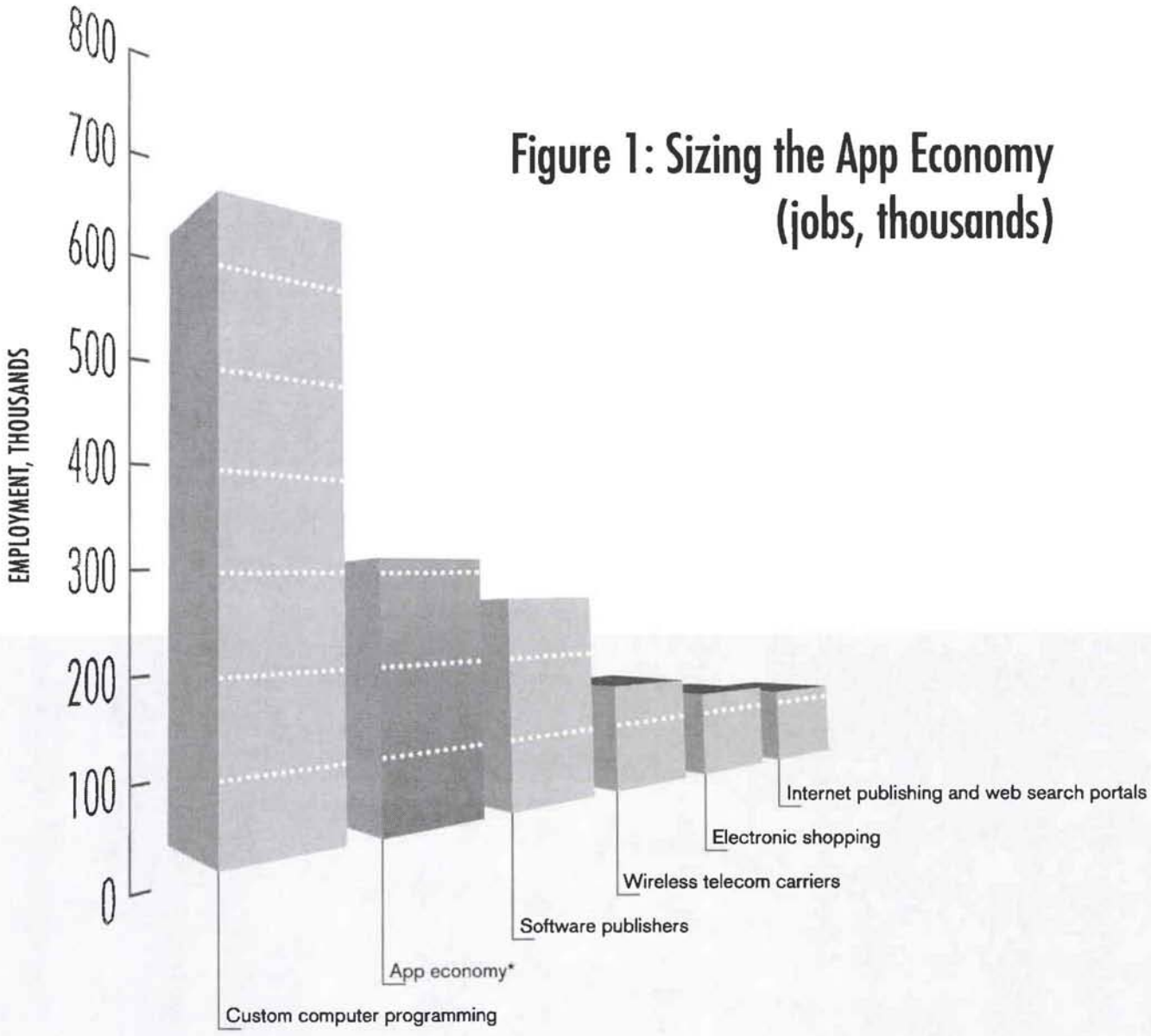
For the purpose of this study, we use a conservative multiplier of 1.5. Based on this multiplier, every app economy job generates another 0.5 jobs in the rest of the economy. This may be unduly conservative, but it suggests that in the aggregate, roughly 466,000 jobs have been created by the App Economy since the iPhone was introduced in 2007.

Table 2: Estimating the Size of the App Economy, December 2011*

SOURCE	NUMBER (thousands)
Non-duplicated help-wanted ads for app economy jobs (computer and mathematical occupations only)	**44.4**
Want-ad to employment ratio for computer and mathematical occupations	x 3.5
Estimated computer and mathematical employment in App Economy	**=155.4**
Tech to total employment ratio	x 2
Total jobs in App Economy	**=310.8**
Multiplier for job creation outside the app companies	x 1.5
Total economic impact	**=466.1**

*90 days ending December 31, 2011. Numbers may be rounded.
Data: The Conference Board, South Mountain Economics LLC.

Figure 1: Sizing the App Economy (jobs, thousands)



*App economy employment, not including spillovers. Based on 90 days ending December 31, 2011. Industry employment as of November 2011. App economy jobs are distributed across all industries. Data: The Conference Board, BLS

GEOGRAPHIC DISTRIBUTION

People think of the App Economy as being centered in Silicon Valley, because that's the headquarters of the core firms—Apple, Google, and Facebook. What's more, the most visible pure app company, Zynga, is located in San Francisco.

But judging by the location of want ads, the App Economy is widely distributed around the country. Table 3 shows the top 10 metro regions for distribution of App Economy jobs across metro areas, with the New York metro area accounting for 9.2% of the total, followed closely by San Francisco and San Jose metro areas.

Probably one reason for New York's prominence is the concentration of media, advertising, and finance in the region. These are all sectors where major companies have been virtually forced to create apps or be left behind. Indeed, the App Economy may be playing a key role in keeping the New York City economy afloat during the downturn.

Not surprisingly, App Economy employment in San Francisco and San Jose together exceeds New York's total. Other non-NY and non-Silicon Valley metro areas on the top ten list include Seattle, Los Angeles, Washington DC, Chicago, and Boston. These are all areas where the App Economy presence is significant.

We can do the same analysis on a state level, as shown in Table 4. App Economy jobs are concentrated in California, which has almost one-quarter of the total. The next four states are New York, Washington, Texas, and surprisingly, New Jersey.

Table 3: Location of App Economy Jobs by Metro Area

MSA	PERCENTAGE OF APP ECONOMY JOBS, DECEMBER 2011*
New York-Northern New Jersey-Long Island	9.2%
San Francisco-Oakland-Fremont	8.5%
San Jose-Sunnyvale-Santa Clara	6.3%
Seattle-Tacoma-Bellevue	5.7%
Los Angeles-Long Beach-Santa Ana	5.1%
Washington-Arlington-Alexandria	4.8%
Chicago-Naperville-Joliet	3.5%
Boston-Cambridge-Quincy	3.5%
Atlanta-Sandy Springs-Marietta	3.3%
Dallas-Fort Worth-Arlington	2.6%
San Diego-Carlsbad-San Marcos	2.3%
Philadelphia-Camden-Wilmington	1.9%
Portland-Vancouver-Beaverton	1.8%
Minneapolis-St. Paul-Bloomington	1.6%
Denver-Aurora	1.3%
Detroit-Warren-Livonia	1.1%
Phoenix-Mesa-Scottsdale	1.1%
Austin-Round Rock	1.1%
Baltimore-Towson	0.9%
Miami-Fort Lauderdale-Miami Beach	0.9%
Houston-Sugar Land-Baytown	0.8%

*Based on 90 days of unduplicated want ads, ending December 31, 2011.
Data: The Conference Board, South Mountain Economics LLC

Table 4: Top Ten States for App Economy Jobs

STATE	PERCENTAGE OF APP ECONOMY JOBS
California	23.8%
New York	6.9%
Washington	6.4%
Texas	5.4%
New Jersey	4.2%
Illinois	4.0%
Massachusetts	3.9%
Georgia	3.7%
Virginia	3.5%
Florida	3.1%

Data: The Conference Board, South Mountain Economics LLC.

GROWTH

Has App Economy employment topped out, or can we expect it to grow further? To get an idea of the labor market trends in the App Economy, we look at the number of want ads for computer and mathematical occupations that use the word 'app'. That won't be a completely accurate measure—since some ads use the word 'app' simply as an abbreviation for any software application—but it does give a good idea of growth.

In Figure 2 we see that the growth in the App Economy has followed the classic S-shape. The figure shows a slight dip in early 2009, reflecting the deep overall recession. That was followed by a dramatic acceleration in 2009, 2010 and early 2011, and then a relative slowing of growth.

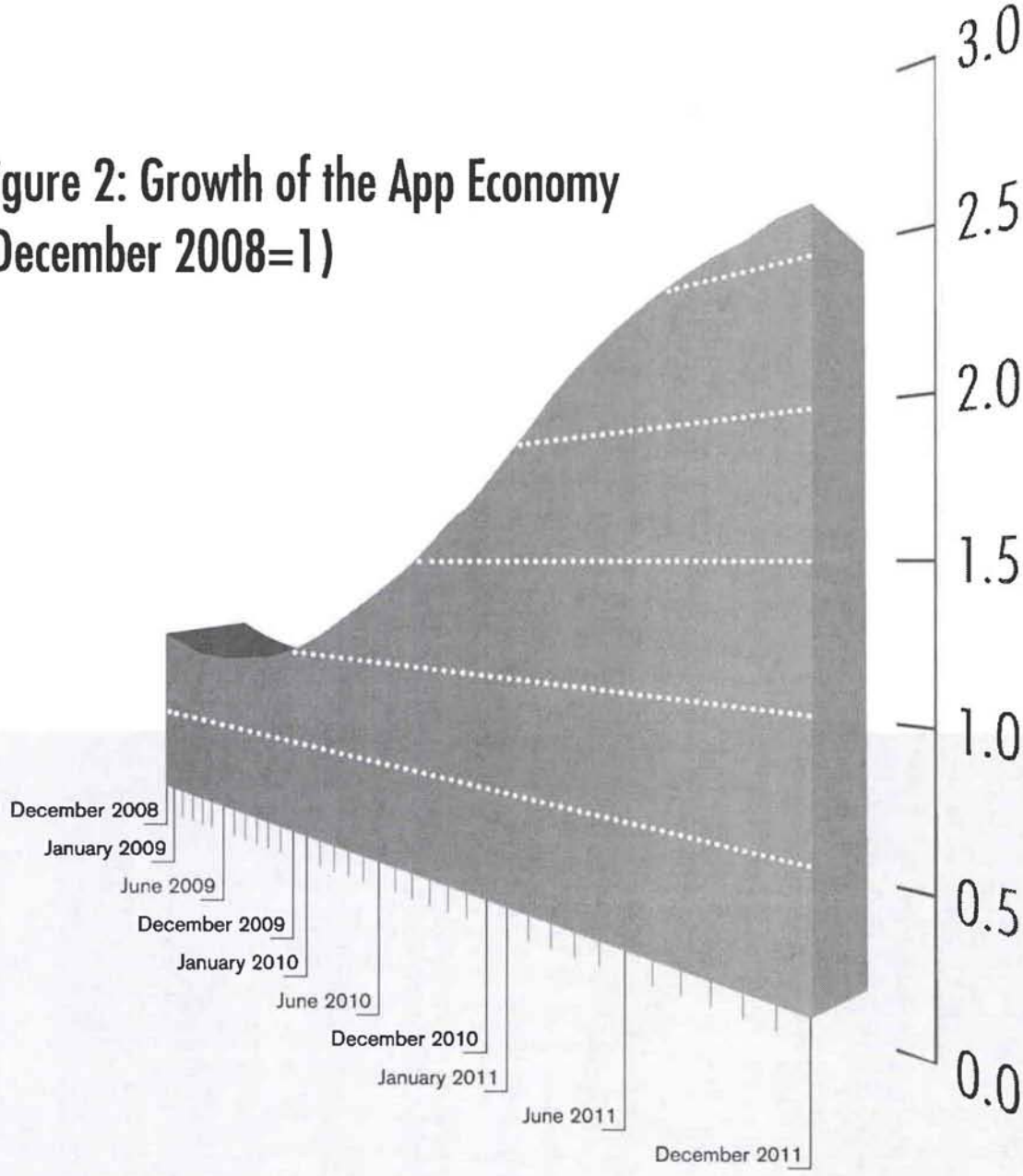
However, the key word here is 'relative'. In the year ending December 2011, the average number of tech want ads containing the word 'app' was still 45% higher than the previous year. That's rapid expansion by anyone's standards.

FUTURE GROWTH AND CONCLUSIONS

We have taken a snap shot of the App Economy, using The Conference Board HWOL database as our illumination. According to our analysis, the App Economy has created roughly 466,000 jobs since the iPhone was introduced in 2007.

How big can the App Economy get? That depends in many ways on the future of wireless and social networks. If wireless and social network platforms continue to grow, then we can expect the App Economy to grow along with them.

Figure 2: Growth of the App Economy (December 2008=1)



Help-wanted ads for computer and mathematical occupations that contain the word 'app'; 12-month moving average
Data: The Conference Board

ABOUT TECHNET

TechNet is the preeminent bipartisan political network of CEOs and Seniors Executives that promotes the growth of technology-led innovation. Founded in 1997 by visionaries John Doerr, Jim Barksdale and John Chambers, TechNet unites with government leaders across the country to sculpt public policies that ensure American competitiveness and economic leadership. TechNet members are chief executive officers and senior executives of the nation's leading companies in the fields of information technology, biotechnology, clean technology, venture capital, e-commerce and finance. Together, they represent two million employees and $800 billion in revenues. As part of our network, TechNet members enjoy unique access to critical discussion that shapes our nation's public policy. TechNet provides members the opportunity to forge deep relationships with both federal and state policymakers and other industry leaders. Under the direction of industry leaders, TechNet is now the technology industry's strongest voice in innovation, as a powerful fundraising network, an effective policy advocacy organization and through its nonprofit ConvergeUS with a mission of uniting the industry around technology enabled solutions to solve societal problems. Through our policies, our advocacy, and the power of our network, TechNet has an extraordinary impact on federal and state issues that are critical to sustaining American competitiveness in the global market. Learn more about TechNet at www.technet.org or follow us on Twitter @technetupdate.

ABOUT DR. MICHAEL MANDEL

Dr. Michael Mandel is president of South Mountain Economics LLC, a consulting firm which tracks the impact of innovation and trade on state, local, and national labor markets. His blog, "Mandel on Innovation and Growth," can be found at http://www.southmountaineconomics.com. Dr. Mandel, who holds a PhD in economics from Harvard University, formerly served as chief economist at BusinessWeek, where he directed the magazine's coverage of the domestic and global economies. While at BusinessWeek, Dr. Mandel was named one of the top 100 business journalists of the 20th century for his writings on innovation and growth. He received multiple awards for his work, including "Best Economic Journalist of the Year" by the World Leadership Forum, and the Gerald Loeb Award for Business and Financial Journalism, the top award in the field. Dr. Mandel also serves as Chief Economic Strategist at the Progressive Policy Institute in Washington DC. He is Senior Fellow at the Mack Center for Technological Innovation at the Wharton School, and produces education-oriented economics videos through his company Visible Economy LLC. He is also the author of four books, including an introductory economics textbook, ***Economics: The Basics***, now in its second edition. His main twitter feed is @MichaelMandel, and his textbook twitter feed is @MandeltheBasics.

ENDNOTES

1. See, for example, the July 2010 paper from the Progressive Policy Institute: "The Coming Communications Boom? Jobs, Innovation and Countercyclical Regulatory Policy".
2. We thank June Shelp and The Conference Board for use of their well-organized Help Wanted OnLine® (HWOL) database. The Conference Board bears no responsibility for the analysis in this report.
3. Zynga prospectus, filed 12/15/11
4. "Inside the App Economy," *BusinessWeek*, November 2, 2009.
5. http://148apps.biz/app-store-metrics/
6. "How Big is the US App-Economy? Estimates and Forecasts 2011-2015" by Appnation and Rubinson Partners, Inc., November 2011
7. "The Facebook App Economy," Il-Horn Hann, Siva Viswanathan and Byungwan Koh , University of Maryland, September 2011
8. The monthly public release can be found at http://www.conference-board.org/data/helpwantedonline.cfm
9. At this stage we are focused solely on tech jobs, which are computer and mathematical occupations. This category includes software and web developers; database and network administrators; computer support specialists; statisticians; and related technicians. We can identify non-tech App Economy want ads from The Conference Board database if we know the employer is a pure app company such as Zynga. More generally, however, an ad for a human resources job at an app developer cannot be distinguished from other HR jobs.
10. If we look at shorter periods, the number of non-duplicated want ads goes down, of course. For example, in the week ending December 15, there were 10585 non-duplicated want ads for App Economy tech jobs, roughly 4.1% of the total for all tech want ads for that week.
11. When we look at individual app developers, this ratio seemed roughly correct.

FOR IMMEDIATE RELEASE
WEDNESDAY, APRIL 23, 1997

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JUSTICE DEPARTMENT APPROVES PETROLEUM EXPLORATION AND PRODUCTION JOINT RESEARCH AND DEVELOPMENT PROPOSAL

Amoco, Arco, Exxon, Mobil, Shell, Texaco, Texas A&M University, Initial Members of Cooperative

WASHINGTON, D.C. -- The Department of Justice approved today a proposal by six major oil companies and a Texas university to form the Petroleum E&P Cooperative--a joint venture that would engage in research and development relating to oil exploration and production.

The Department's Antitrust Division said that the cooperative agreement did not appear to be designed to restrict price, output or research competition amongst its members, and that the joint venture may even have the procompetitive effect of promoting innovation.

The initial members of the cooperative are Amoco, Arco, Exxon, Mobil, Shell, Texaco and Texas A&M University. Membership will be open to any oil exploration and production firm, other than oil field service firms.

Joel I. Klein, Acting Assistant Attorney General in charge of the Department's Antitrust Division stated that the formation of the joint venture in the manner proposed "would not create any risks to competition."

Klein also said that "to the extent that the cooperative in fact engages in research efforts that would not be undertaken by individual firms, the joint venture may have the procompetitive effect of promoting innovation."

Under the proposal, individual oil services firms will participate in specific research projects of the cooperative. A unit of Texas A&M University will develop the cooperative's annual research plan, coordinate its implementation, furnish support staff for the research undertaken, and inform the federal antitrust authorities, under the National Cooperative Research and Development Act, of the cooperative's specific research projects and any changes in its membership.

All members will retain the right to engage in independent research and to retain any intellectual property rights derived from such independent research. Members will continue to engage in independent research that far exceeds the scope of the cooperative, whose initial annual budget is expected to be less than $5 million.

According to the applicants, in 1996 there were at least 61 entities pursuing petroleum exploration and production research, with total research budgets in excess of $1 billion.

The Department's position was stated in a business review

letter from Klein to counsel for the group.

Under the Department's Business Review Procedure, an organization may submit a proposed action to the Antitrust Division and receive a statement as to whether the Division will challenge the action under the antitrust laws.

A file containing the business review request and the Department's response may be examined in the Legal Procedure Unit of the Antitrust Division, Suite 215, Liberty Place, 325 7th Street, N.W., Department of Justice, Washington, D.C. 20004. After a 30-day period, the documents supporting the business review will be added to the file.

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97-166

BUSINESS CENTER Apr 19, 2007 11:00 pm

AT&T Announces Integration of Wired and Wireless

By Matt Hamblen, Computerworld

AT&T says that it has integrated wire-line and wireless services and devices to it midsize and large business customers. The announcement follows the merger with BellSouth and consolidation with Cingular Wireless more than three months ago.

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The integration efforts will result in fewer headaches for customers who previously had to deal with two or more sales representatives and separate contracts for both wireless and wire-line services, said Bill Archer, senior vice president of product management at AT&T, in an interview.

The announcement demonstrates AT&T's "intent to deliver a simple, seamless customer experience across customer service types," Archer said.

In a statement, AT&T also said that "customers may receive discounts on their wireless services" if they have combined wire-line and wireless business with AT&T. However, Archer said he could not generalize about the range of possible discounts.

"It depends on so many variables," he said.

Savings will also result for customers buying wireless and wire-line simply because more of the calls would be over a single AT&T network, avoiding the extra costs a customer pays for having to go "off-net" to another carrier, he noted.

AT&T also announced that wireless data access from a mobile laptop can now be carried over AT&T's virtual private network (VPN). That access had previously only been possible via wire-line access. In addition, small businesses can now get wireless services from AT&T atop integrated local, long-distance and Digital Subscriber Line (DSL) services, Archer added.

For branch offices, a network remote-access routing device for as many as eight users, called AT&T Netgate, was announced. It will give a branch office DSL access to corporate VPNs, but it can also have wireless cellular as a backup method, Archer said. It works over a service called ANIRA, for AT&T Network IP Remote Access.

One analyst, Gene Signorini of Yankee Group Research in Boston, said AT&T's announcement shows the carrier is accelerating efforts to provide services for customers for whom wireless is growing as a percentage of their overall communications spending.

Signorini added that big customers are still unlikely to have a single carrier provide all networking services. That's because no single carrier can offer everything needed and because a second carrier is a good idea in the event of a failure by the first. The Research In Motion BlackBerry outage is a good example of why companies need backup plans and backup providers, he said.

"It's good to have other options in case of failure, but still there's an increasing need to integrate across wireless and wireline networks," Signorini said.

AT&T competitor Verizon Communications Inc. has made some strides towards coordinating wireless and wireless sales to customers , but single billing remains an issue, he said. Verizon Wireless is still jointly owned by Vodafone Group, he noted.

Sprint also has integrated capabilities, but not to the extent of AT&T, he noted.

Signorini said it remains to be seen how much of a discount AT&T will give customers that integrate wireless and wireline, but he said a typical large customer could get a discount when it reaches a set threshold of total minutes, use or dollars spent.

"It could be if you spend x dollars, you get x discount," he said.

COMPUTERWORLD

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