

Magazine of the Canterbury Apple Users

# Applebyte



February 2016

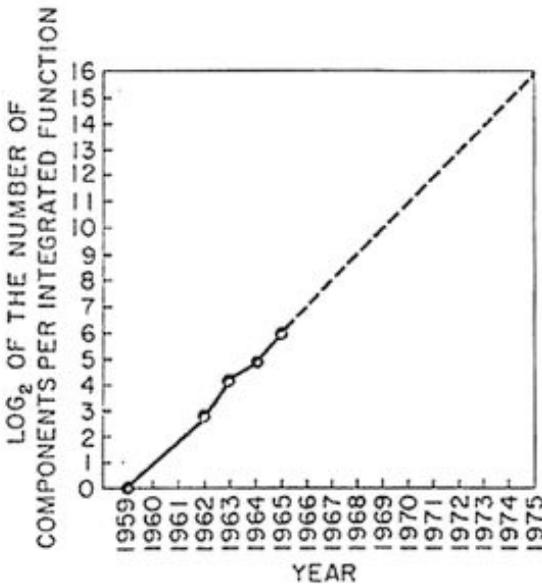


Fig. 2 Number of components per integrated function for minimum cost per component extrapolated vs time.

Moore's Law  
R.I.P.

**Convention Centre**

cnr Highsted & Sawyers Arm Roads

**February 24<sup>th</sup> 7:30 pm**

**APPLEBYTE** is the monthly magazine of:

Canterbury Apple User,  
a subgroup of Christchurch SeniorNet Mac Inc Society.

Submissions for publication are due by the 12th of the month of publication. Please submit all articles to:

**editor@appleusers.co.nz**

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# Meeting programme

Wednesday 24<sup>th</sup> February 2016

## 7:30 Monthly Meeting

- Welcome and News
- Gadgets for Apple Products; Guest speaker: Ben Gillett
- Questions & Answers
  - please bring your own
- Those other Apple Apps
- Supper

Come along and share your passion for Apple products. Learn about the latest technology, and enhance your skills. And meet with old and new friends over supper.

Visitors welcome.



## Submitting your article

Electronic submissions are preferred (to save wear and tear on my fingers). Just choose whatever format suits and send it to:

**[editor@appleusers.co.nz](mailto:editor@appleusers.co.nz)**

One page is roughly 450 words. Most articles are less than 4 pages, but longer articles may be accepted if of particular interest or relevance. Please ask in advance if you are planning a longer article.

Please write clearly; short sentences are recommended to help you do this. Use a spell-checker. If you are quoting some other article, please include an acknowledgment of your source.

Pictures can help explain your article, so by all means include one (or more) if appropriate. The format is not important - jpeg, tiff and gif are all fine, but try to provide a high quality image (300 dpi) if possible.

For screen shots, you can use the build-in Apple functions Apple-Shift-3 or Apple-Shift-4, or a utility such as Snapz Pro, available from:

**<http://www.macdownload.com>**.

## Next Deadline: 12 March 2016

- Meeting Feedback and Suggestions
- **Applebyte** Feedback and Suggestions

# Using PDFs

I think that we all, at some time or other, will have created a PDF file, and sent it to someone else, confident that the information will be properly formatted and readable by the recipient. And we have all received these files. Some of us also view these files a secure repository of the information - unchangeable, safe from tampering. Unfortunately (for those), this is a myth - data within a PDF file can usually be modified, and the software to do this has been available for about as long as the PDF format has existed.

Before considering what can be done with the contents of a PDF file, we need to understand just what a PDF file is.

Adobe developed the PDF (Portable Document Format) file as a universal interface for printing from its software. A single program could then be used to 'translate' the PDF file information to the language required by any of a long list of essentially incompatible printers. This centralised all the printer knowledge in one place for maintenance. The industry saw this and 'adopted' the idea as a general industry-wide function. Adobe implemented their printer utility for different computer systems, and eventually even submitted the PDF file format as an industry standard for anyone to use. Apple actually adopted the file structure as core functionality in the Mac OS X software, and, I recall, even used it for displaying windows on the screen, in addition to its more traditional printer role.

This is all very well, but just what is this PDF format? Perhaps the best way to explain it, is to think about taking a holiday. You have everything planned, and you are making your final preparations. You get all the thing that you want to take with you, and you pack them into a suitcase.

A PDF file is a suitcase for all the bits of information that are needed to correctly print a set of data on the output device (usually a printer). If you are wanting to print text from a word-processor, the information will include the text characters, and the associated styling that you have selected - the character size, bold, italic, underlined, fonts, borders, etc. The font(s) that you used may not be available on the target computer, so the actual font descriptions of the characters that you used may also be needed in the file. The positioning of blocks of the text may also be important - for tables, spreadsheets, etc. If you included any images in your document, then copies of these will also be need to be included when all the information is packed together.

Adobe provides a free Acrobat Reader program on pretty well all computers to read (and print) PDF files. In more recent versions, the Reader will recognise forms, and permit you to enter your information into the fields of the form, and save the result as a new PDF file - perhaps to return to the originator.

In exchange for a little money, an arm, a leg and your first new-born, Adobe will licence to you their other software - Acrobat. This is their general PDF Utility. It can be used to set many options when creating the PDF initially (password protection, read-only flag, image resolution, high-end typography options, etc) and it can also be used to modify PDF files. You can rearrange the order of pages, add pages, delete pages, replace images and even modify some text.

Apple provides the application Preview that includes support to view, and modify PDF files. Whilst you don't appear to be able to modify existing text, you can add a white box over existing text - so that you can't see it, and you can add all text boxes anywhere on a page, so with a matching font and font-size, positioned over the previously placed white box, you can appear to have modified the existing text. Filling forms, and even applying your signature to a document are straight-forward (and is my preferred way to complete 'official' forms that request that you print, complete and scan/fax/post to return!)

These facilities will provide you with everything that you need most of the time; the other need that comes up is that you want to reuse some information in the PDF in another document. How do you get the bits out?

This will often depend upon what the information is. Consider these 2 examples:

This is sample text  
in a PDF file.

This is sample text  
in a PDF file.

They look much the same, but when you attempt to select some of the text, you see:

This is **sample text**  
in a PDF file.

**This is sample text**  
in a PDF file.

Some of the text in one is selected, but the whole of the other becomes selected. This is because the PDF 'suitcase' can contain many different contents. In the first case, the PDF contains text and formatting information, and the Mac software is quite happy to select part of the text, and you can then copy/paste that bit of information into your other document. In the second example the identically looking text is actually a jpg image - the text information just isn't there. (This often happens when the originator actually prints the text and then scans the printed document (as a jpg image) and saves the image in a PDF file.) In this case, you may find that it is easiest to just retype the information (if there isn't much) or use a program that will analyse the image and reconstruct the original text (Optical Character Recognition, OCR) - or you could ask the PDF file originator to send you a more friendly file.

There are a number of OCR programs available, and their general accuracy of recognition has improved over the past 25 years. I use Readiris currently. I think that there are also some iOS apps that will 'read' the image with the camera, and provide the text (even translating it into any of a large range of languages for you).

# We Need You!

## So! You are retired?

### What are you going to do to keep your mind agile?

On Tuesday March 1st, SeniorNet Mac is having a special get together of Tutors, Assistant Tutors and Helpers. There will be a training session for those who need to have a confidence builder followed by our Annual Tutors BBQ.

If you feel that being an Assistant Tutor or Helper would help you keep an agile mind and satisfy your need for social contact with other people and satisfy our needs for more helpers, then do not hesitate to telephone Derek Brown (365-6341) and make an enquiry and get the information that can help you achieve that agile mind.

**You can do more than crosswords and weeding the garden.**

**We need you !!!!!!!**

*Derek Brown  
Vice President  
SeniorNet Mac*

[And if weeding gardens is your thing ... have I the garden for you! - Ed]

# Talking to the Press

## Apple execs Eddy Cue & Craig Federighi talk Apple Music, App Store & more in new interview

John Gruber surprised podcast listeners by getting Apple's own Eddy Cue and Craig Federighi on The Talk Show to discuss a variety of topics behind Apple. Since Tim Cook took leadership at Apple, it hasn't been unheard of for Apple execs to appear on Gruber's show. The first occurrence



was last June when Phil Schiller met John Gruber on stage during WWDC to discuss Apple's recent announcements and decisions over the past few years. This marks the second time that Federighi has been on the The Talk Show, and Cue's first.

Topics included: the new features in Apple's upcoming OS releases (iOS 9.3 and tvOS 9.2); why Apple is expanding its public beta program for OS releases; iTunes's monolithic design; how personally involved Eddy and Craig are in using, testing, and installing beta software; and more.

Some scoops too, including: the weekly number of iTunes and App Store transactions, an updated Apple Music subscriber count, peak iMessage traffic per second, and the number of iCloud account holders.

Cue and Federighi open up about their personal experiences with using the Apple ecosystem and how even they find bugs and usability issues to discuss with their teams. From awkward purchasing situations on the Apple TV, to the difficulties with Siri in handling multilingual requests for non-English speakers. Federighi also re-confirms the incoming update to the Apple Remote app on iOS including Siri Remote features. This brought up a great question from Gruber in regards to allowing multiple users on the Apple TV at the same time. Federighi stated that it *would* be possible for one to use the Remote app, and another user to use the Siri Remote at the same on the Apple TV. This makes it more accessible for those multiplayer gaming situations where buying a dedicated gaming controller at that time just isn't feasible.

They also delve into some previously unreported numbers in today's show to discuss the scale of Apple's services. At peak times, Messages sees 200,000 messages being sent per second. The App Store and iTunes stores process over 750 million transactions every week, and "billions of dollars" through Apple Pay. Cue explains with over a billion active devices, there are currently 782 million iCloud users (with some having multiple devices). In Apple Maps alone, they've corrected and notified over 2.5 million different customer feedback issues.

Cue also belabors the discussions around the iTunes applications and the environment it brings to customers. Starting with discussions internally two years ago, Cue re-iterates that iTunes was designed at a time when everything was synced with cables. He quickly touches on the idea that when Apple was introducing Apple Music, they played with building it "all in the cloud" because "Apple Music's all in the cloud", but by doing so it might have limited users from uploading their music into the cloud without a tool like iTunes. Cue finalizes his statements explaining, "we've got a new refresh, with the new version of OS X coming out next month, that makes it even easier to use in the music space."

You can listen to the interview within the iTunes' podcast section.

# iOS Mail: Create 'Unread' Folder

In iOS 7, Apple introduced the option to add an "Unread" mailbox to the iOS Mail app, giving users a place to aggregate all incoming email for quick access. The feature was never widely publicized, and as a result, many iOS users today are unaware that it exists.

Adding an "Unread" mailbox takes just a few taps, but it's highly useful, especially when you've got a lot of incoming emails. To enable the Unread mailbox on your iPhone or iPad, follow the step-by-step instructions:

1. Open the Mail app.
2. Tap "Edit" in the upper right corner.
3. Scroll down beyond the currently enabled mailboxes, and check the "Unread" box.
4. Use the hamburger button to move the Unread box to a spot that's most convenient for your usage habits.
5. Tap "Done."

Each incoming email will be filtered into the "Unread" mailbox as its received, and when read, the email will be removed from the box so you can always keep tabs on what hasn't been read. You can also filter emails by other parameters using specialized boxes found in the Mail app, including total emails received in a day, emails with attachments, flagged emails, and more.

# More iPad Magic

Dick Johnson - AUSOM

## Clock

Clock is just so handy. When I go abroad I can dial up times in different cities so I have some sense of how the time in the city in which I am present relates to time in other cities, and particularly to Melbourne (Fig.16). Then, of great value, is the alarm function to get me up when I might sleep through and miss a flight or an appointment (Fig.17). Lastly, the stopwatch (Fig.18). I'm using this every day on my regular walk to keep a tab on my fitness level. With the ability to set lap times you can make accurate allowances for having to wait at traffic lights to cross busy roads.



Fig.16 World clock



Fig.17 Alarm



Fig.18 Stopwatch

## Calculator

In the progress from iOS 7 to iOS 8, Apple, in its infinite wisdom decided to drop complex functions. In iOS 7 you can rotate the iPhone so that its long axis is horizontal when the complex functions appear. In iOS 8 this doesn't happen. While I always delight in remembering that  $\log_4$  to the base 10 is 0.6020, the number of times I use such complex functions is actually zero. Add, subtract, multiply and divide is all I need plus the occasional use of percentages, and all this exists in the very simple but very easy to use Calculator provided (Fig.19). Anyone who needs a complex calculator can quickly find one in the App Store, mostly free to download at zero cost.



Simple calculator

## Compass

In recent times Apple has been providing a compass for the iPhone, a sign of the ever advancing technology being progressively crammed into this tiny device. When you tap the Compass icon you are presented with a circle and a red ball. To calibrate the compass so that it understands its orientation, you have to roll the red ball around the circle by tilting the iPhone in various directions. Once done, Compass responds with a comprehensive readout on your orientation and the direction of north.

*Compass now operative*

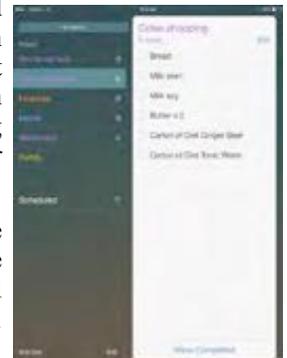


## Reminders

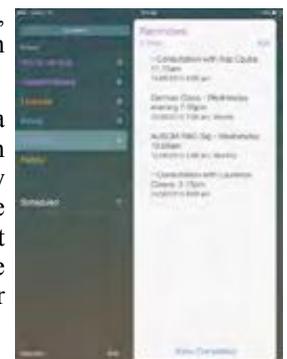
The Reminders app on the iPad is a simple utility that allows you to keep small lists of things to do, things to buy, people to visit etc. Having got into it, I've found it far more flexible and responsive than I had imagined. I've been using Menu Calendar on the Mac but Reminders has the advantage of appearing on all the iCloud connected units, so that having created a set of appointments, they now appear on the Mac and the iPhone as well.

Let's begin with a simple shopping list. I have one called Coles Shopping. Just tap into the panel of empty items, the virtual keyboard will appear, and you type in your entries (Fig.22). When you've finished your list, just tap DONE. It is replaced by EDIT, which allows you to add or delete items. It seems that once you've started a list, you can't change its title, but you can certainly create a new list with considerable ease and give it any title you like.

More interesting is appointments. I've put in a couple of medical appointments, together with the AUSOM R&O SIG and my Wednesday evening German class (Fig.23). Each of these defines the date and time of the appointment and also when I want to be reminded. Because they are a list of specific times and dates for events, they also appear in the Scheduled list, again with the time and date of the



*Fig.22 - Creating a shopping list*



*Fig.23 - Creating a set of reminders*

event, and the time and date of the reminder to be delivered.

If you tap a scheduled item in the Reminders list, a small circled *i* will appear. Tap this to reveal information in the LH pane about the settings (Fig.25). Here you can adjust the time when the reminder is sent by spinning the date, the time and the am/pm wheels. The German Class is set to weekly, but if you tap this it reveals options for day, week, fortnight, month and year or even never, which last represents the case of a once off appointment. If you tap



Fig.25 - Amending the Schedule

End Repeat you can adjust this to a specific date. I've set my German Class to stop reminding me on 1st September, as I leave for overseas on this date.

If you want to add a list then tap Add List displayed in Figure 22. A virtual keyboard appears together with a row of coloured dots at the top. Start typing your entries and tap any one of these to colour code your new list.

To delete a list, tap the Edit at the foot of the LH pane. The Edit in the RH pane specifies individual items in the list. In the LH pane it affects the whole list. When you do this you see the triple bars on the right, which enable you to touch and move items relative to one another in the array of lists. Now tap a red circled minus-sign button to generate a further alert demanding that you confirm the deletion. Once confirmed the item vanishes.

*Thanks to Ausom for permission to reproduce this.*

## Perform Conversions

*Pam Doughty, Ausom*

Tap the Magnifier icon near the top-right of your Mac screen.

Try typing "8 stone to kgm" — magic! Yes, but it's also smart enough in many cases to give a conversion if you just give it an amount. Type '\$1550' and you'll immediately be told what that is in Australian dollars, and then when the window opens further you'll see Euros, British Pounds Sterling, Japanese Yen and Canadian Dollars.

If you are more interested in entering an amount in Australian Dollars try 15 AUD and the following will be the result (well, it will probably be different when you try — this was my result on 17 Jan 2016).



# CAU Photo Competition

## Manipulated

The entries were:



1st: “**Motukarara**” submitted by Barry Clark



2nd: “**Glass from China**” submitted by Virginia Pennell



3rd: “**Red Poppy**” submitted by Annemarie Beukman



## Portraits



1st: “AL” submitted by Newell Grenfell



2nd: “Gwenda” submitted by Virginia Pennell



3rd: “Silvana” submitted by Jan Tedesco



More next month



# Review: Dashlane

It's scary to think that the lowly password is, in many cases, all that separates our most private data from utter ruin - so we bury our heads in the sand and don't think about it. Passwords are hard to get right, and all too easy to accidentally let fall in the hands of the shady characters that lurk around the dark corners of the Internet, ready to steal every last bit of our digital footprints for their own profit.

Luckily, there are Password managers applications that help us save ourselves. "1 Password" has been available for some time, but today we are looking at another that brings another view to this area.

## Pass the word

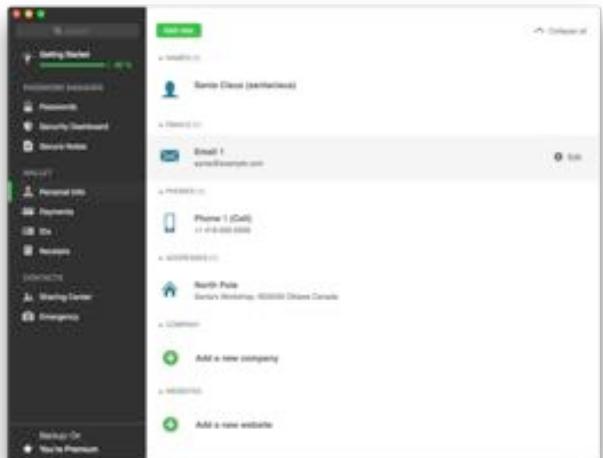
Like every other app in this space, Dashlane's primary function is to save and collect the usernames and passwords you use to connect to various websites. The app's interface, however, seems to have been built with the (correct) idea that most users lack the expertise to manage their online identities correctly.



Thus, you can expect a lot of handholding at every step of the way. This is immediately evident when you first launch the app, which takes you through a detailed step-by-step process to pick a master password, install the appropriate extensions for all your browsers, and import your existing information from other password managers.

If you're a password management veteran, this welcoming mat is a bit on the heavy side, but it's certain to be a boon to less experienced users. For my part, I will note that I imported all kinds of data from two of Dashlane's competitors as well as from my Mac's keychain, without any problem whatsoever.

*In addition to passwords, the app lets you store credit cards, secure notes, and personal information that can be used to quickly fill a web form.*



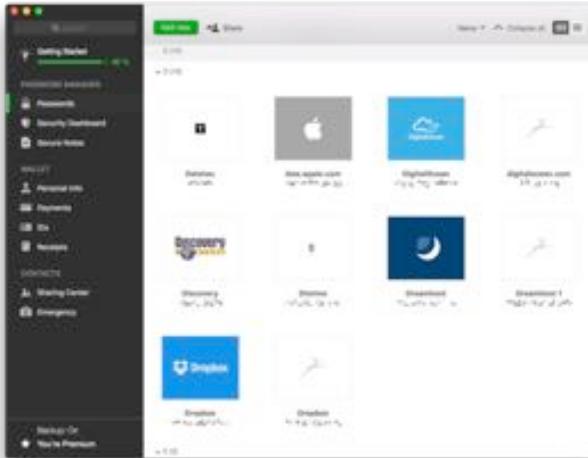
## An extension in every browser

Dashlane is compatible with all three popular browsers and makes installing extensions for Safari, Chrome, and Firefox as easy as picking an item from a menu and following a few instructions.

In addition to logins and passwords, you can also use Dashlane to autofill all kinds of forms with your personal information and credit card data. Unlike Safari's own autofill, the app will also save and fill the CVV code on your credit cards, which makes for fewer trips into your wallet when you want to buy something online.

In keeping with the rest of the user interface, the browser extensions tend to be quite verbose. For example, when they detect a new login, they display a modal dialog that captures the browser's entire input until you've decided whether you want to store the username and password inside Dashlane. Like with the introduction, this feels a bit overbearing but is also a great way to encourage users to save as much of their data as possible for later use.

*Dashlane stores all your passwords in a secure digital vault; it automatically matches them to the appropriate icon or logo, and features a powerful search function for quick access.*



## The good kind of audit

Managing your passwords doesn't just mean saving them and using them to quickly fill out login forms, of course. You also need to choose *good* passwords that are hard to guess, avoid using them across multiple websites, and make sure that they are changed on a regular basis.

Thanks to a couple of handy features, Dashlane makes this process very easy. The first, which goes by the name of Security Dashboard, audits the contents of your digital vault for passwords that need changing because they are either too weak, too old, or too frequently used. The dashboard provides a clear visual representation of what needs to be done and even suggests some quick actions that improve your situation with minimal effort.

The second, appropriately named Password Changer, allows you to automatically change your password on a number of popular websites without actually having to visit them: You simply provide the new password, and Dashlane takes care of the entire process for you; it even allows you to address multiple sites at the same time, using a different strong passphrase for each of them.

*The Security Dashboard analyzes your passwords and tells you which ones need changing because they are too weak or have been reused across multiple sites. In many cases, the app can even change your logins without any manual intervention.*



### **Syncing to conclusions**

The basic version of Dashlane is free, and can only store your private data—encrypted using industry-standard algorithms—locally on your hard drive.

If you want to back up your digital vault or synchronize it across multiple devices, including those running iOS and Windows, the company also offers a custom cloud offering that saves all the information on its servers for a fee of \$40 per year. This also comes with the ability to access your passwords over the Web and share them in a secure way with colleagues and family members.

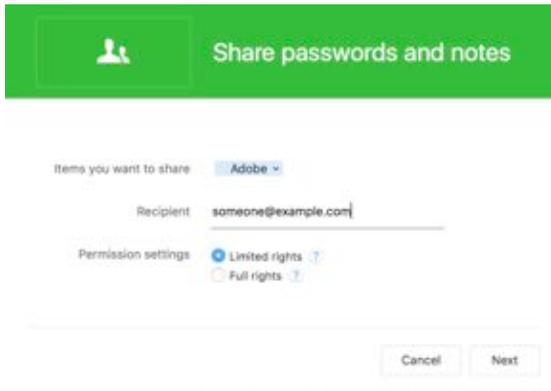
It may seem odd to trust all your sensitive information to a third party over which you have no control, but it's really no different than what happens with any other app of this kind, and there's no reason to believe that the folks behind Dashlane are nothing but dead serious about the security of their cloud offer.

Ultimately, Dashlane is a great digital vault, particularly for users that need a little help navigating the sometimes complex world of security. It integrates well with all the apps you're likely to use every day, offers a compelling sync offering, and automates many drudging tasks that, while crucial to good password hygiene, are often overlooked because of their menial nature.

### **Bottom line**

Ultimately, Dashlane is a great digital vault, particularly for users that need a little help navigating the sometimes complex world of security. It integrates well with all the apps you're likely to use every day, offers a compelling sync offering, and automates many drudging tasks that, while crucial to good password hygiene, are often overlooked because of their menial nature.

The app's unique selling feature is its extraordinary user-friendliness. If you're worried about the safety of your online data but haven't ever quite managed to feel comfortable with a password manager because it felt too difficult to use, I'd bet that Dashlane would be a welcome breath of fresh air, particularly given its price point, and a great way to finally get a handle on what could be one of the most important aspects of your Internet life.



*Dashlane's powerful sharing features allow you to let colleagues and family members access your secure items. You can even give them varying levels of access; for example, you can let them use, but not view, your passwords.*

## Around About

I am sure that there is the usual amount of goings-on around - but I haven't (been around), so I have some catching up to do. Instead I have been recladding a building using some shoddy, inferior materials - not the original plan, but that is what I have to work with. If you were manufacturing cladding sheets 900 x 2400mm, wouldn't you think that a rectangular shape may be desirable - you know: straight sides joining at 90 degrees. I thought that this was so elementary, that it was several days into the job before I was silly enough to take the time to check!

The sheets appear to have been made for the roof of Apple's circular new HQ building ... they are all bowed ... the long sides are actually curved! And of course, the corners are not 90 degrees either!

So now I have a pretty good idea why things did not fit together properly.

Anyway, what is going on in the Apple World. Strong rumours are suggesting a new 4" iPhone in mid-March (that is the original iPhone size - not the new bigger versions), and Apple Watch discounts also suggest a clearing of existing stock in preparation of a new version of that device.

We will have more goings-on next month.

# In Remembrance

## Moore's law really is dead this time

The chip industry is no longer going to treat Gordon Moore's law as the target to aim for.

*Gordon Moore's original graph, showing projected transistor counts, long before the term "Moore's law" was coined.*

Moore's law has died at the age of 51 after an extended illness.

In 1965, Intel co-founder Gordon Moore made an observation that the number of components in integrated circuits was doubling every 12 months or so. Moreover, as this site wrote extensively about in 2003, that the number of transistors per chip that resulted in the lowest price per transistor was doubling every 12 months. In 1965, this meant that 50 transistors per chip offered the lowest per-transistor cost; Moore predicted that by 1970, this would rise to 1,000 components per chip, and that the price per transistor would drop by 90 percent.

With a little more data and some simplification, this observation became "Moore's law": the number of transistors per chip would double every 12 months.

Gordon Moore's observation was not driven by any particular scientific or engineering necessity. It was a reflection on just how things happened to turn out. The silicon chip industry took note and started using it not merely as a descriptive, predictive observation, but as a prescriptive, positive law: a target that the entire industry should hit.

Hitting this target didn't happen by accident. Building a silicon chip is a complex process, and it uses machinery, software, and raw materials that are sourced from a number of different companies. To ensure that all the different players are aligned and working on compatible timetables to preserve Moore's law, the industry has published roadmaps laying out the expected technologies and transitions that will be needed to preserve Moore's law. The Semiconductor Industry Association, a predominantly North American group that includes Intel, AMD, TSMC, GlobalFoundries, and IBM, started publishing roadmaps in 1992, and in 1998 the SIA joined up with similar organizations around the world to

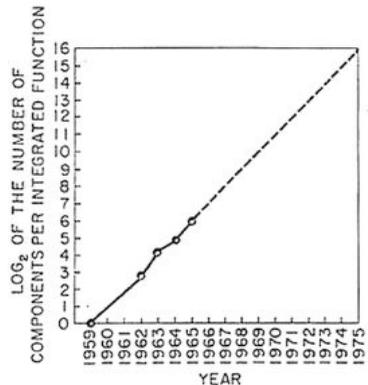


Fig. 2 Number of components per integrated function for minimum cost per component extrapolated vs time.

produce the International Technology Roadmap for Semiconductors. The most recent roadmap was published in 2013.

Problems with the original formulation of Moore's law became apparent at an early date. In 1975, with more empirical data available, Gordon Moore himself updated the law to have a doubling time of 24 months rather than the initial 12. Still, for three decades, simple geometric scaling—just making everything on a chip smaller—enabled steady shrinks and conformed with Moore's prediction.

In the 2000s, it was clear that this geometric scaling was at an end, but various technical measures were devised to keep pace of the Moore's law curves. At 90nm, strained silicon was introduced; at 45nm, new materials to increase the capacitance of each transistor layered on the silicon were introduced. At 22nm, tri-gate transistors maintained the scaling.

But even these new techniques were up against a wall. The photolithography process used to transfer the chip patterns to the silicon wafer has been under considerable pressure: currently, light with a 193 nanometre wavelength is used to create chips with features just 14 nanometres. The oversized light wavelength is not insurmountable but adds extra complexity and cost to the manufacturing process. It has long been hoped that extreme UV (EUV), with a 13.5nm wavelength, will ease this constraint, but production-ready EUV technology has proven difficult to engineer.

Even with EUV, it's unclear just how much further scaling is even possible; at 2nm, transistors would be just 10 atoms wide, and it's unlikely that they'd operate reliably at such a small scale. Even if these problems were resolved, the specter of power usage and dissipation looms large: as the transistors are packed ever tighter, dissipating the energy that they use becomes ever harder.

The new techniques, such as strained silicon and tri-gate transistors, took more than a decade to put in production. EUV has been talked about for longer still. There's also a significant cost factor. There's a kind of undesired counterpart to Moore's law, Rock's law, which observes that the cost of a chip fabrication plant doubles every 4 years. Technology may provide ways to further increase the number of transistors packed into a chip, but the manufacturing facilities to build these chips may be prohibitively expensive—a situation compounded by the growing use of smaller, cheaper processors.

We've recently seen these factors cause real problems for chip companies. Intel originally planned to switch to 10nm in 2016 with the Cannonlake processor, a shrunk version of the 14nm Skylakes shipping today. In July last year, the company changed this plan. An extra processor generation, Kaby Lake, will be released in 2016, still using the 14nm process. Cannonlake and 10nm are still planned but are not due until the second half of 2017.

Compounding all this is that all these extra transistors have become increasingly hard to use. In the 1980s and 1990s the value of the extra transistors was obvious: the Pentium was much faster than the 486, the Pentium II much faster than the Pentium, and so on and so forth. Existing workloads gained substantial speed-ups just from processor upgrades, thanks to a combination of better processors (going from simple in-order processors to complex superscalar out-of-order processors) and higher clockspeeds. Those easy improvements stopped coming in the 2000s. Constrained by heat, clock speeds have largely stood still, and the performance of each individual processor core has increased only incrementally. What we see instead are multiple processor cores within a single chip. This increases the overall theoretical performance of a processor, but it can be difficult to actually exploit this improvement in software.

These difficulties mean that the Moore's law-driven roadmap is now at an end. ITRS decided in 2014 that its next roadmap would no longer be beholden to Moore's "law," and *Nature* writes that the next ITRS roadmap, published next month, will instead take a different approach.

Rather than focus on the technology used in the chips, the new roadmap will take an approach it describes as "More than Moore." The growth of smartphones and Internet of Things, for example, means that a diverse array of sensors and low power processors are now of great importance to chip companies. The highly integrated chips used in these devices mean that it's desirable to build processors that aren't just logic and cache, but which also include RAM, power regulation, analog components for GPS, cellular, and Wi-Fi radios, or even microelectromechanical components such as gyroscopes and accelerometers.

These different kinds of component traditionally use different manufacturing processes to handle their different needs, and the new roadmap will outline plans for bringing them together. Integrating the different manufacturing processes and handling the different materials will need new processes and supporting technology. For manufacturers building chips for these new markets, addressing this kind of problem is arguably more relevant than slavishly doubling the number of logic transistors.

There will also be a focus on new technology beyond the silicon CMOS process currently used. Intel has already announced that it will be dropping silicon at 7nm. Indium antimonide (InSb) and indium gallium arsenide (InGaAs) have both shown promise, and both offer much higher switching speeds at much lower power than silicon. Carbon, both in its nanotube and graphene forms, continues to be investigated and may prove better still.

While a lesser priority, scaling is not off the roadmap entirely. Beyond tri-gate transistors, perhaps around 2020, are "gate all around" transistors

and nanowires. The mid-2020s could bring monolithic 3D chips, where a single piece of silicon has multiple layers of components that are built up on a single die.

As for the future, massive scaling isn't off the cards completely. The use of alternative materials, different quantum effects, or even more exotic techniques such as superconducting may provide a way to bring back the easy scaling that was enjoyed for decades, or even the more complex scaling of the last fifteen years. A big enough boost could even reinvigorate the demand for processors that are just plain *faster*, rather than smaller or lower power.

But for now, lawbreaking is going to be the new normal. Moore's law's time as a guide of what will come next, and as a rule to be followed, is at an end.

## Do NOT Try This

Every once in a while an awful bug is discovered that can crash an iPhone, render it nearly useless, or rarely, worse. It turns out you can completely destroy an iPhone and make it inoperable by simply changing the devices date to a specific time and date far in the past - like back to just 1 Jan 1970 !.

**Do not try this yourself**, you will ruin the iPhone, the iPod touch, the iPad. Apple will correct this shortly.. **Absolutely Do NOT Try This.**

## Another Oppps

### **Bug in Adobe Creative Cloud updater erases root level Mac data**

Adobe has pulled its most recent Creative Cloud update after the version was found to contain an errant script that automatically deletes locally stored Mac user data without warning. No estimated fix timeframe yet.

## SeniorNet Mac

**Computer Training Lessons:** Two-hour sessions, once a week for four weeks. Course notes are provided. Classes are small with a maximum of six students and two tutors per lesson.

**Social Events:** Held on the fourth Tuesday of the month.

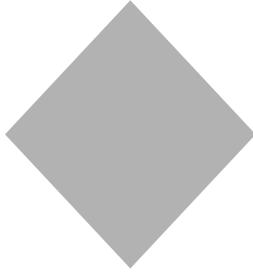
**Newsletter:** Supplied every two months.

We are now located at: 190 Worcester Str, Christchurch.

Contact: If you would like to join SeniorNet Mac and are in the 55-plus age group, please contact Allan Rutherford at (03) 352-4950, or email:

[ajmr@xtra.co.nz](mailto:ajmr@xtra.co.nz),

# About the user group



## Aims

*Canterbury Apple Users is a non-profit subsection of SeniorNet Mac (Christchurch) that exists for the purpose of exchanging ideas and expertise about the use of Apple computers, the Macintosh operating systems, and related hardware and software.*

## Meeting venue

Meetings are held on the last Wednesday of each month (except December) beginning at 7:30pm, at the Convention Centre, corner Highsted and Sawyers Arms Roads.

Drinks, and maybe a snack, are available while we all calm down after the excitement of the meeting.

If you find it difficult to get to meetings, please contact an organizer to see how we can help.



## Group contacts

Website

<http://www.appleusers.co.nz>

Mailing Lists

**Peter Fitchett**  
[listadmin@appleusers.co.nz](mailto:listadmin@appleusers.co.nz)

(3) 960 8189

The HELP email list is open to all Mac users who wish to give or receive assistance. See our website for instruction on how to subscribe/unsubscribe.



Apple User Group