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Inside The Iphone

Apple's Product Development Process



Design process

Interaction Design Foundation

When creating a new product within Apple the design process is not over when the manufacturing process begins. The products are built, tested and reviewed by the design team, they then make improvements and rebuild the model over again. This process can go on for 4-6 weeks.

After this process the product is then taken to the EPM (engineering program manager) and the GSM (global supply manager). This is where further tests are conducted on the new product to improve the quality. The product is then taken to Apple headquarters at Cupertino.

The packaging room - This is where prototypes are unboxed in a very-high security area, this is to ensure there is not leaked information about new products.

The final step in the design process is the development of the launch of the product. When it is decided the product is as good as it can be it enters the action plan, also known as "the rules of the road". This process is where all the responsibilities and actions are outlined prior to the commercial launch of the product.



How does Apple's design process work?

Ideas

Throughout the "ideas" stage senior managers express their interests in what they want for a new product. During this process there is not yet any visual concept ideas complete, it is only making sketches.

Prototyping

This stage is nicknamed the "pixel-perfect prototypes", this is a very long process and requires long hours of work from the development team. This stage is also nicknamed the "10 to 3 to 1" stage, this is because the process starts with each member coming up with ten design concepts. Then three concepts are selected as finalists, then it is narrowed down to the final concept.

Apple's New Product Process (ANPP)

This is the beginning stage of production, ANPP is a document that outlines the process and what happens in each stage. This document is created by the product manager (EPM) and the global supply manager (GSM). The difference between the EPM and the GSM is that the EPM coordinates the work between engineers, whilst the GSM focuses on the production part.

Peer Design Meetings

These peer meetings are conducted weekly between the design team and the engineers to review the products and make improvements to the overall design idea.

The Production Management

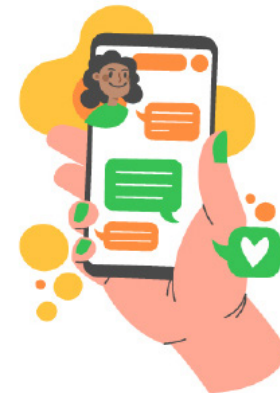
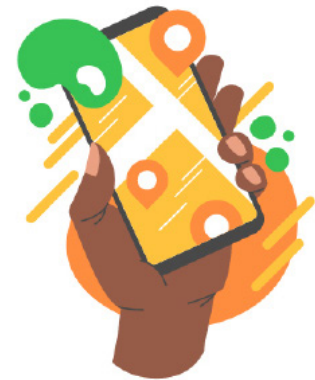
Both the EPM and the GSM have the responsibility of overlooking the production process, they spend the majority of their time in China.

Testing the Product

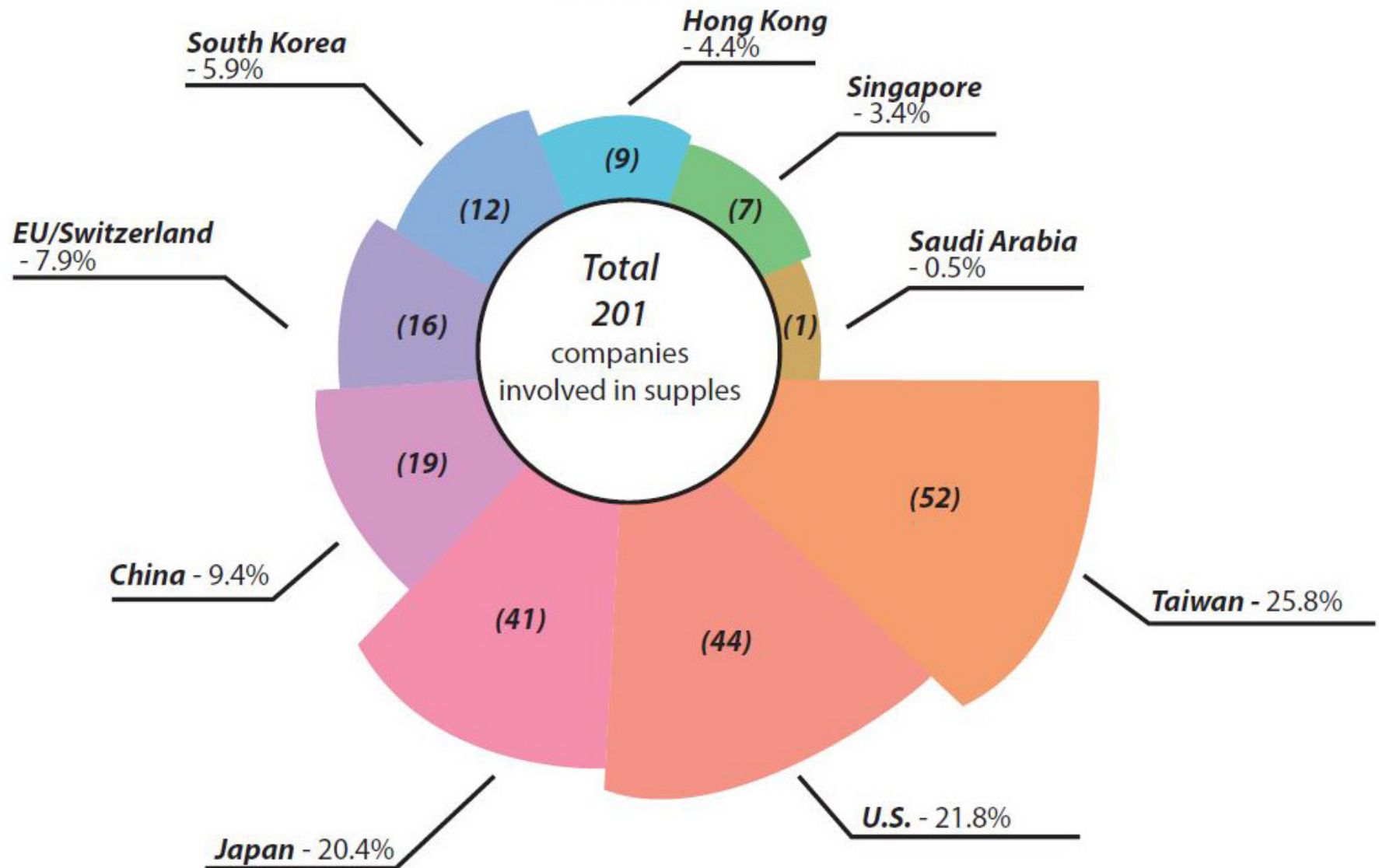
Throughout this stage the EPM and the GSM review the products and provide feedback and make improvements, the product then goes back to production, this process can be repeated as many times that is required to ensure the best product.

Packaging

This process is the designing of the packaging and is tested on the new prototypes, the goal is to be eye-catching and intriguing to consumers.



Where Apple's suppliers are from (in percent)



PARTS AND PROFITS

Key suppliers for the iPhone X

T Taiwan U U.S. S South Korea C China J Japan A Austria H Hong Kong Sw Switzerland

DUAL CAMERA

Lens

Largan Precision T

Most valuable stock per share in Taiwan; net income, revenue surged over 700% in decade through 2016

Revenue up over
700%

Genius Electronic Optical T

Shares have jumped over 160% in 2017

CMOS image sensors

Sony J

Shares have risen over 50% in 2017

TRUEDEPTH 3-D-SENSING CAMERA

Receiver

Largan Precision T

Genius T

Kantatsu J

Sensor

STMicroelectronics Sw

Infrared filter

Viavi U

Sensor assembly

Tong Hsing T

PROJECTOR

Vertical-cavity surface-emitting laser (VCSEL)

Lumentum U

Finisar U

II-VI U

Wafer-level lens

Himax T

Ams A

Defractive optical element (DOE)

TSMC T

Xintec T

Optical parts assembly

Ams A

Laser manufacturer

Win Semi T

Laser tester

Chroma T

3-D camera module assembly

LG Innotek S

Sharp (Japan-based unit of Taiwan's Foxconn)

Ceramic substrate

Kyocera J

ASSEMBLY

Foxconn T

Longtime major iPhone assembler; Taiwan's biggest company by revenue; sales climbed 155%, net income doubled from 2007-2016

Sales up over
150%

CASING

Glass back, cover glass

Biel Crystal H

World's largest cover-glass maker; also key supplier for Samsung; planning Hong Kong IPO

Lens Technology C

Biel's rival; also key supplier of screen glass for Samsung, Oppo, others; stock has risen over 130% since Shenzhen IPO in 2015

Stock up over
130%

Stainless steel frames, casing assembly

Foxconn Technology T

Foxconn unit; main business is metal casing, mechanical parts; also key assembler for Nintendo

DISPLAY

OLED panels

Samsung Electronics S

3-D force touch module

TPK Holding T

Also supplier for iPad touch module, MacBook touch bar

General Interface Solution T

Foxconn subsidiary

NAND FLASH MEMORY CHIPS

Toshiba J

Forced to sell profitable memory chip unit to pay for losses at U.S. nuclear business in 2017; second-largest maker of flash memory chips after Samsung

Western Digital/ SanDisk U

Third-largest NAND flash memory player after Samsung, Toshiba

MODEM CHIPS

Qualcomm U

World's No. 1 mobile chip supplier; locked in legal battle with Apple since January 2017 over licensing fees

Intel U

World's biggest maker of core processor chips for PCs, servers; has supplied modems to Apple since 2016, as Apple looks to cut reliance on Qualcomm

A11 BIONIC CORE PROCESSORS

TSMC T

Sole manufacturer of iPhone core processors in 2014, 2016, 2017; most valuable company in Taiwan by market cap; sales, net profit tripled in decade through 2016

Net profit up
200%

DRAM CHIPS

Samsung Electronics S

Controls largest share of global DRAM market; sole OLED display supplier for iPhone X

SK Hynix S

World's No. 2 DRAM maker; shares have climbed more than 70% in 2017

Shares up more than
70%

Micron U

World's No. 3 DRAM maker; shares have surged over 90% in 2017

BATTERIES

Cells

LG Chemical S

Shares have risen 30% in 2017

Samsung SDI S

Shares have jumped 90% in 2017

Share price up
90%

BATTERY PACKS

Desay Battery C

Sales jumped nearly 200%, net income nearly doubled from 2012 to 2016

Sales up nearly
200%

Sunwoda C

Sales rose 100%, net income climbed nearly 170% from 2014 to 2016

Simplo Technology T

Competition from Chinese rivals Desay, Sunwoda contributed to revenue drops in 2013, 2016; looking to supply electric bikes, other industrial products to offset headwinds

AUDIO

Microphones, speakers

Knowles U

World's top maker of MEMS microphones; seeing growing competition from Chinese players AAC Technologies, GoerTek

AAC Technologies C

Has grown into a global leader in audio parts; sales, net income jumped more than 600% in decade through 2016

Net income up
600%

GoerTek C

Like AAC Technologies, has grown into a top global audio parts maker; sales jumped 165%, net income rose 82% from 2012-2016

Sales up
165%

Merry Electronics T

Losing market share to Chinese rivals AAC Technologies, GoerTek