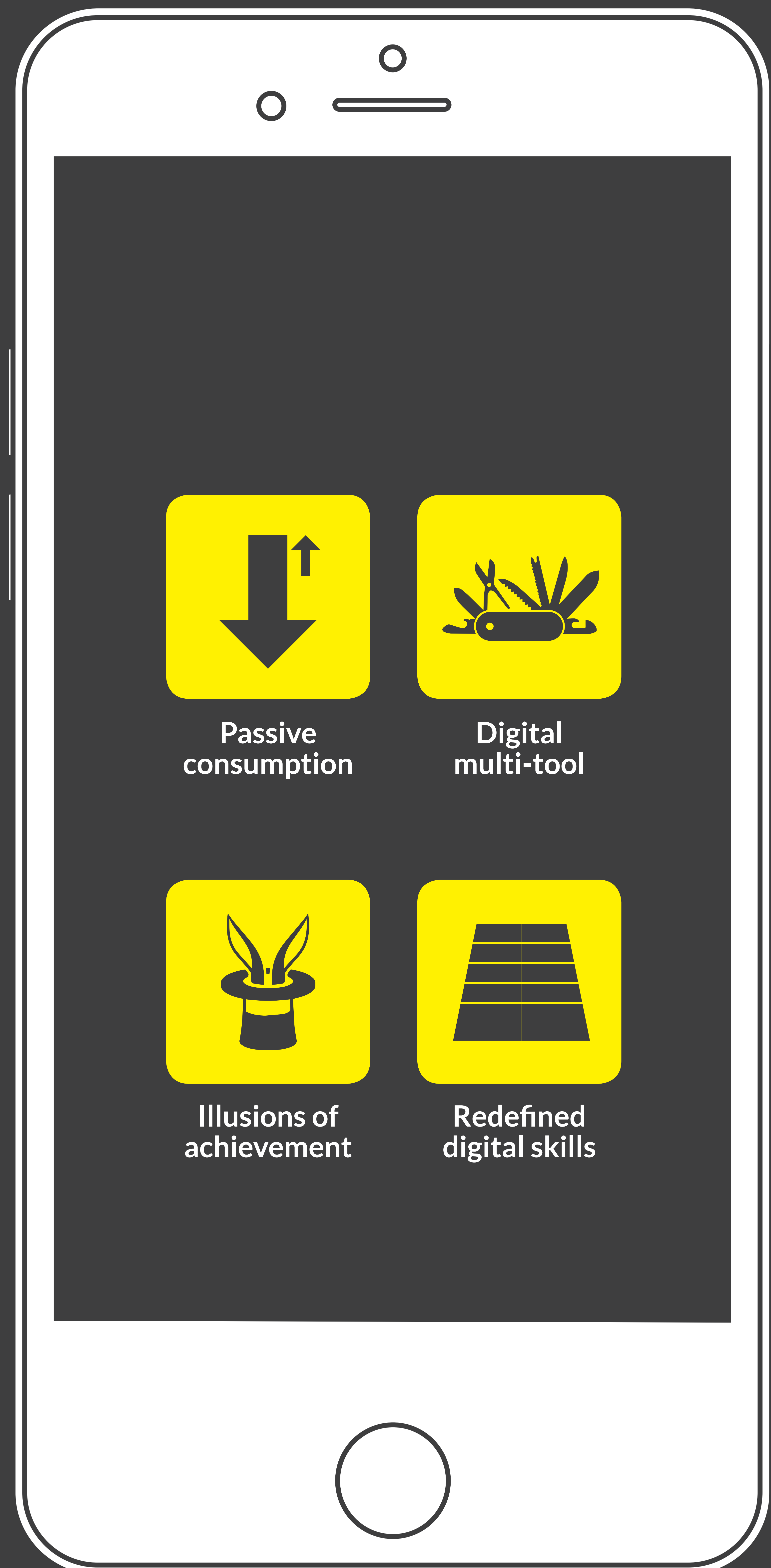


# Through the Looking Glass

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## Reflections on smartphone use

A new framework for understanding behaviour and enhancing skills







# Smartphones' limitations influence software design and user behaviour

## Users are drawn to passive consumption of content rather than active creation

### Input is a problem...

Smartphones are fundamentally unbalanced when it comes to data transfer.

Although screens are small, they can display fast moving, full colour content at high resolutions and their audio capability is improving all the time.

In contrast input is absurdly slow, even compared to other digital devices.

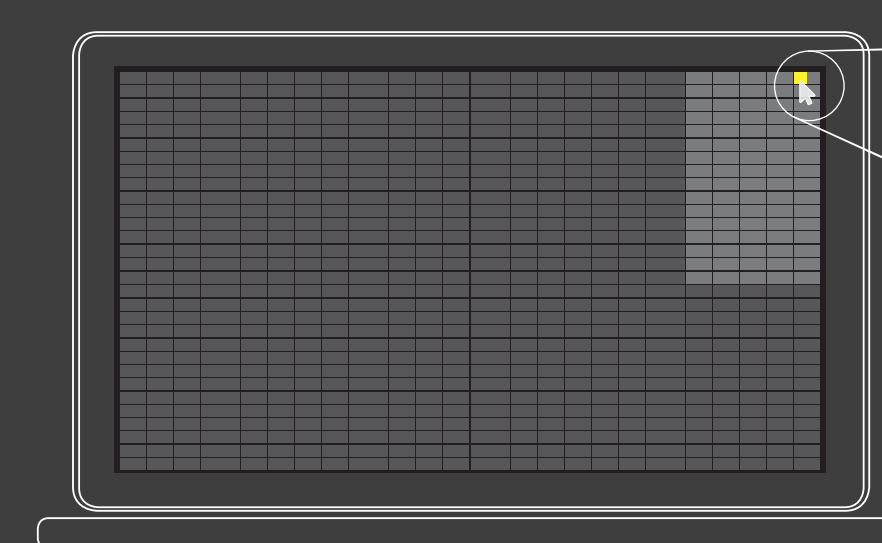
Smartphones are optimised for consumption over creation.

Touch screens have moved forward at great speed in recent years.

The relatively small size of a smartphone screen in relation to the human finger means precision is limited.

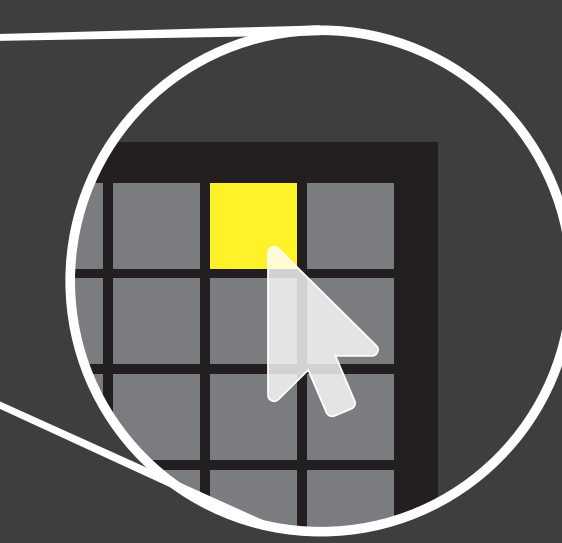
Gesture innovations enable a degree of secondary control, but anyone who's ever attempted a complex task on their smartphone will know that keyboards, mice and other input devices allow greater efficiency and flexibility.

Even the most powerful screen and interface technology compares badly with the physical control and communication capability in our non-digital lives – face-to-face communication, physical interactions with people or specialist tools.



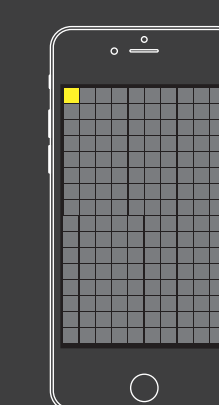
**Desktop or laptop**  
~64 x 48 effective working grid  
High-speed, dependable Wi-Fi or Wired connection

**Average laptop and desktop working area**  
~1024 x 768px



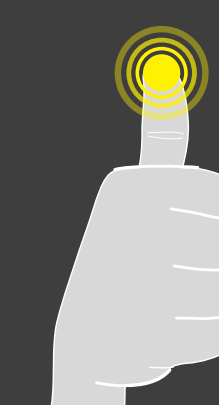
**Cursor accuracy**  
~1 x 1px

**Suggested minimum desktop button dimension**  
~16 x 16px



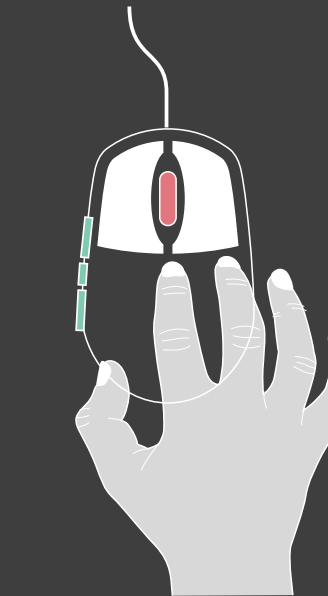
**Smartphone**  
~10 x 16 effective working grid  
Low-speed/intermittent Wi-Fi connection or smartphone network

**Average smart phone effective working area**  
~320 x 512px



**Finger accuracy**  
~32 x 32px

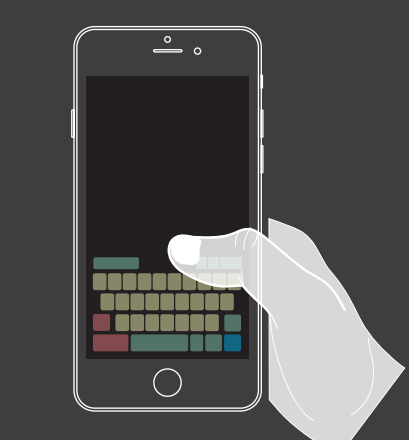
**Suggested minimum smartphone button dimension**  
~32 x 32px



Single click  
Double click  
Right click  
Scroll  
Modifiers



**Desktop/laptop**  
10 digit operation  
Mostly two handed  
Combinations inherent  
Options accessible  
Operation works in parallel with screen



**Smartphone**  
Single digit operation  
Mostly single handed  
Combinations impossible  
Options hidden  
Operation conceals screen

### ... so functionality is limited ...

Designers (and users) try to get around the input problem by creating shorthand communication and streamlining navigation and content.

Breadth and depth is compromised by the need to reduce the precision and speed of user input to fit the limitations of the device.

#### Layout adjustment (responsive design)

How designers attempt to negate screensize issue

##### Programmes desktop browsers

- Open
- Multiple choices
- Lateral possibilities
- Navigation visible
- Text complete
- Language used
- Emails available
- Content balanced
- Many routes available
- Content decisions
- Escape options



##### 'Apps' & smartphone browsers

- Blinkered
- Few choices
- Linear content experience
- Menus collapsed/non-existent
- Text abbreviated
- Language replaced with icons
- Emails foregrounded
- Image/video dominant
- Scrolling replaces options
- Lazy loading removes decision making
- Auto play content

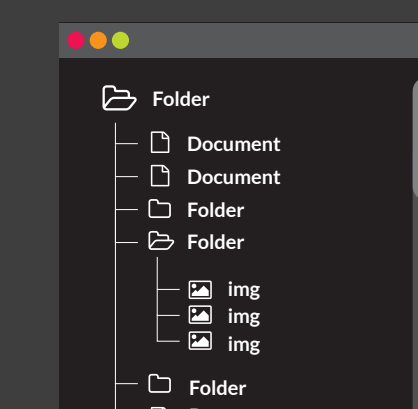


#### Structure adjustment (UX design)

How designers attempt to negate complexity/bluntness

##### Desktop/laptop

- Structure and OS exposed for exploration
- Navigable and available to browse
- A multitude of browsing options
- Tertiary devices to augment experience
- Put to sleep/session based
- Better sense of where you are
- Programme visibility
- Visible history
- Description, punctuation, emotion



"I am overwhelmed by love for it, I can't think about anything else."

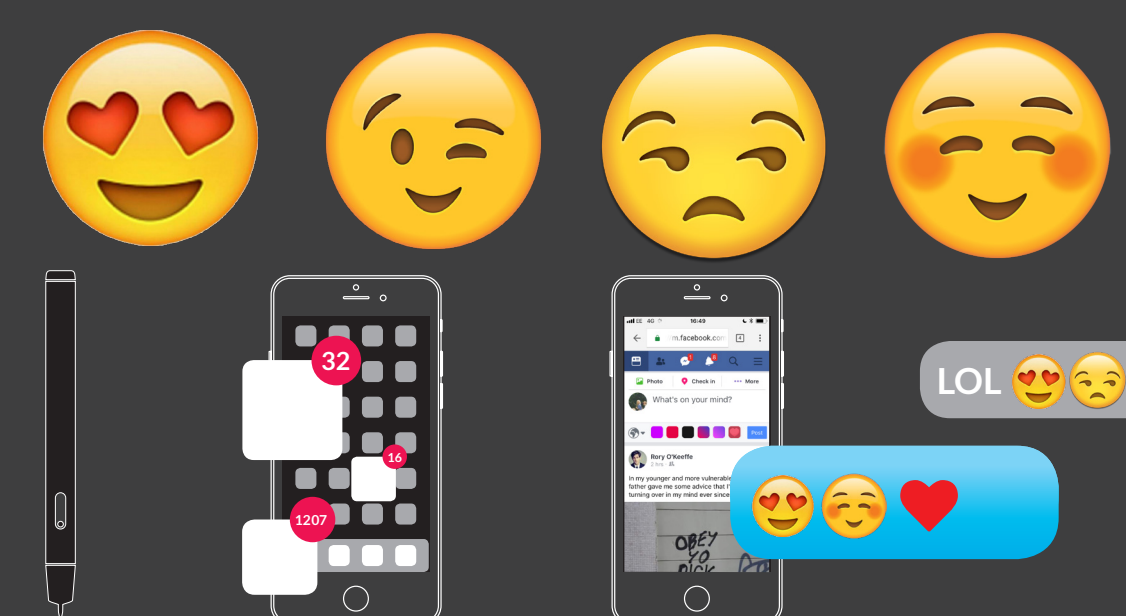
"I'm feeling weary, they are irritating me to the point of distraction. It's making me feel a frustration that is difficult to shift"

"I'm in a playful mood."

"Everything is fine with me, I'm full of the joys of spring. I feel wonderfully relaxed, fresh and alive."

##### Smartphone

- Apps act as consumption portals
- Attention-seeking notifications
- Gesture replaces control
- Tertiary devices to improve experience
- Always on
- Hidden windows
- Background apps and tasks
- Buried threads
- Icons, abbreviation, emojis

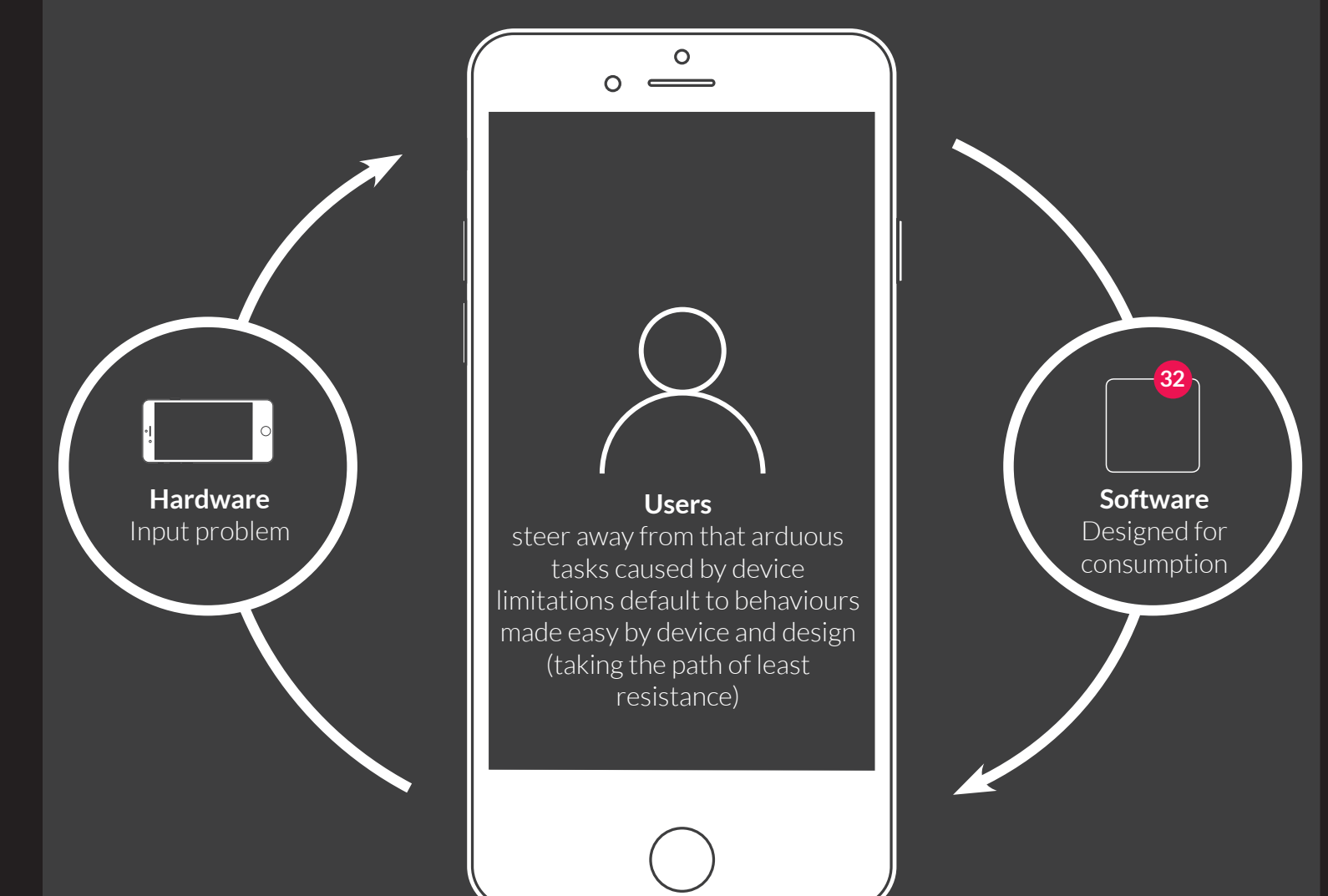


### ... creating a feedback loop.

Users confronted with imprecise and relatively unresponsive controls will inevitably become frustrated by design and content that isn't optimised for the device.

As users become used to flattened content and services, their input skills atrophy increasing their preference for streamlined solutions.

This creates a feedback loop that is difficult to combat. Even if designers want to deliver a richer experience, they will struggle in a market that offers 'easier', but 'flatter' alternatives.







# Smartphones' versatility comes at a cost

## Users default to this 'multi-tool' for most tasks

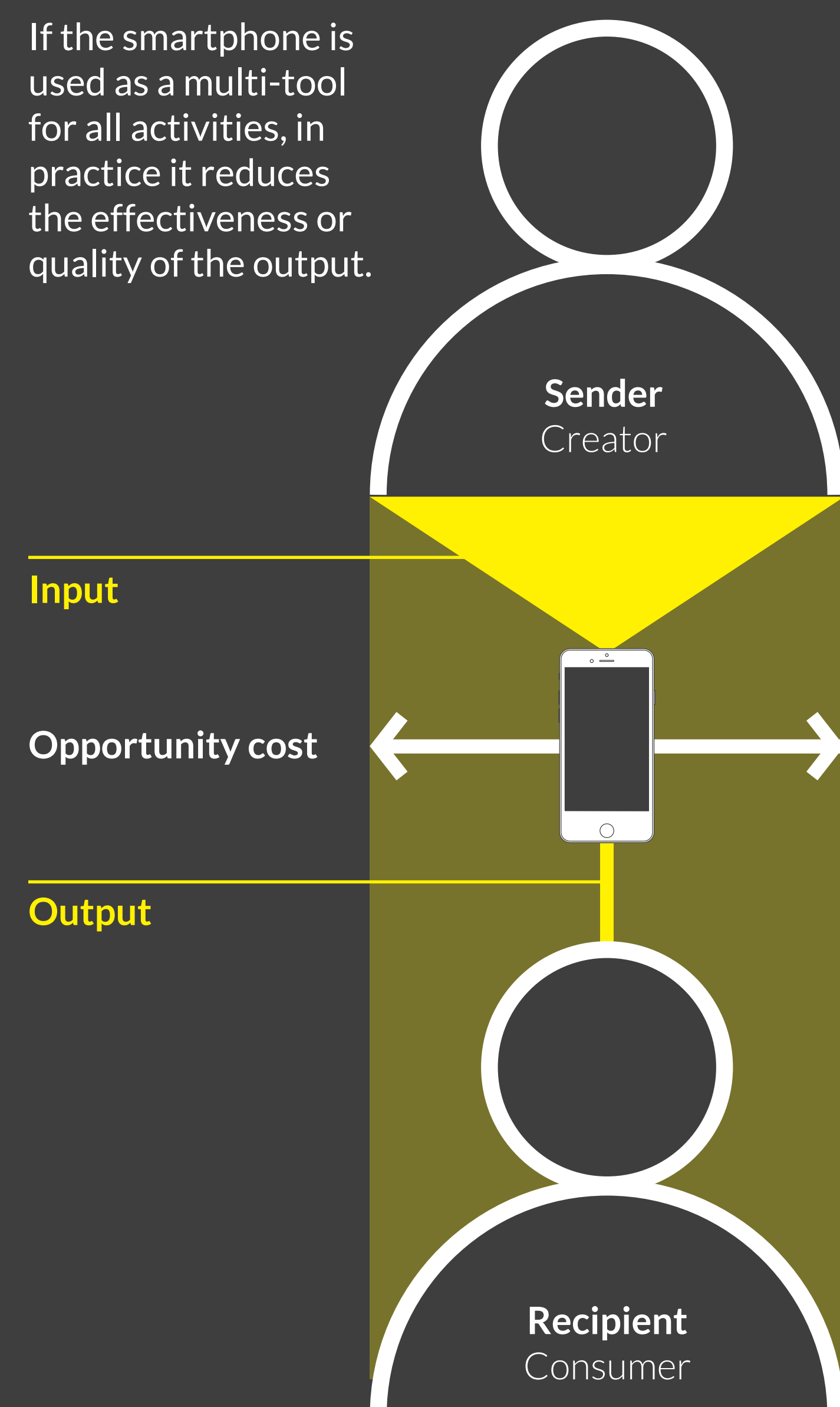
### Opportunity costs

Using the wrong tool for a job results in an opportunity cost – in effectiveness, precision or speed.

If you only have access to one tool, a flexible, portable, multi-tool is likely to be your best option. A Swiss army knife would be invaluable if you found yourself stranded on a desert island.

In many cases, however, specialised tools will increase productivity and those who master their use and choose them when appropriate will outperform those who do not.

If the smartphone is used as a multi-tool for all activities, in practice it reduces the effectiveness or quality of the output.



### Default behaviour – smartphone as Swiss army knife

Many users default to using their smartphones for everything, despite there being better tools available.

Every time someone uses their phone instead of a more effective specialised tool, there is an associated opportunity cost.

In some scenarios this is a price worth paying, but we find that users aren't consciously evaluating their choice.



### What people say

Respondents often seem oblivious to the limitations of their chosen tool.



“I’m too busy to see my friends in real life but I’m in touch with them all the time.”

**The Illusion of connection**  
**Olympia, 17**  
Average phone usage:  
3.8HRS/DAY



“I’m 40% fluent in French according to the app.”

**Illusion of exploration**  
**Samantha, 23**  
Average phone usage:  
5HRS/DAY



“When I make videos, I can edit them on the phone, it’s not like I need a laptop for it.”

**Illusion of creativity**  
**Joanne, 20**  
Average phone usage:  
6.4HRS/DAY



“My phone is great for organisation. I even sort my taxes out on it.”

**Illusion of productivity**  
**Simon, 23**  
Average phone usage:  
1.7HRS/DAY





# Users have illusions their smartphones meet all their needs

Significant opportunity costs go un-noticed and unchecked

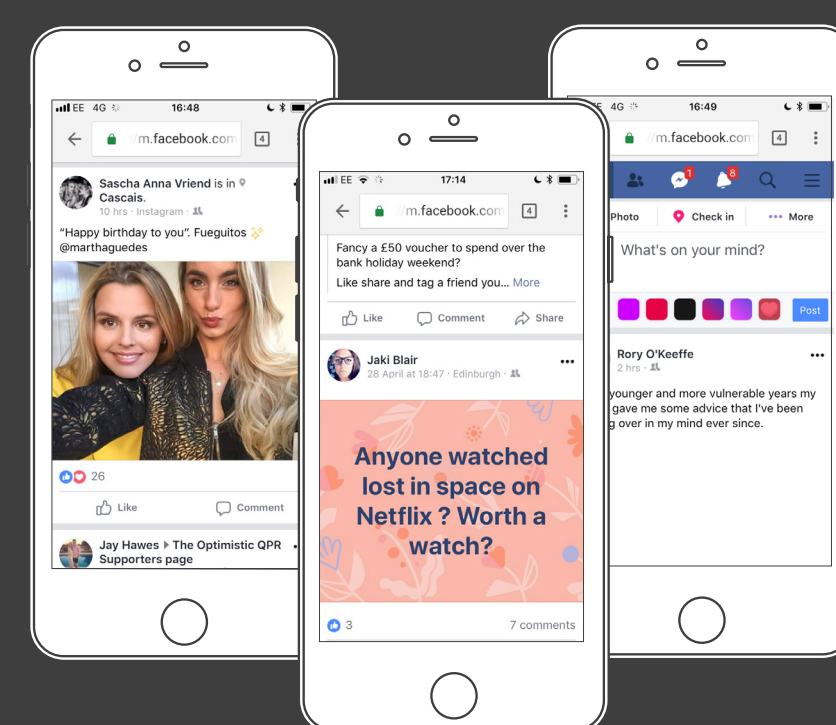
## Beliefs vs reality

Smartphone users often wrongly believe their phones are satisfying their motivations and meeting their needs.

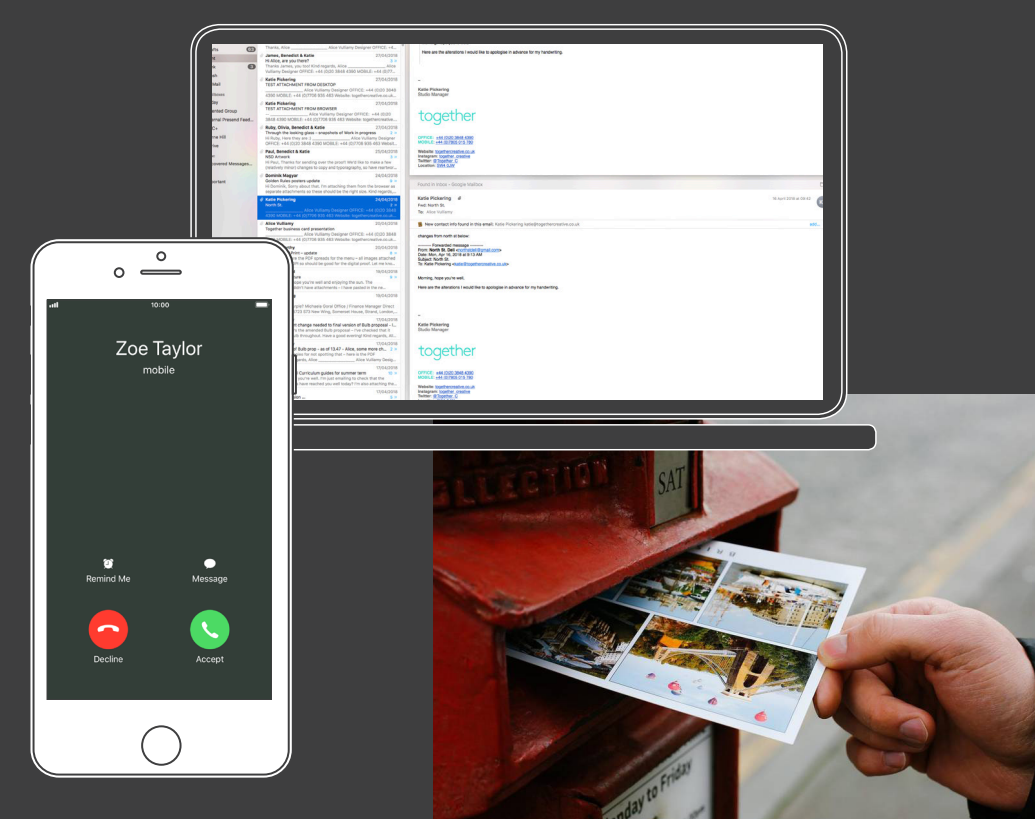
- **Illusion of connection** – People believe they are maintaining and developing relationships via their smartphones, often at a direct cost to more meaningful contact.
- **Illusion of productivity** – People believe they are getting everything done on their phones, without considering whether there might be better tools. For example, using a smartphone to create a CV.
- **Illusion of exploration** – People believe they have access to a wealth of knowledge and ideas, without considering filter bubbles or whether there are more suitable ways to retain and compare information.
- **Illusion of creativity** – People believe smartphones give them the ability to create and share, but the limitations of smartphone functionality make creation and manipulation less effective than using other tools.



### Illusion of connection



Facebook



Phone

Email

Postcard

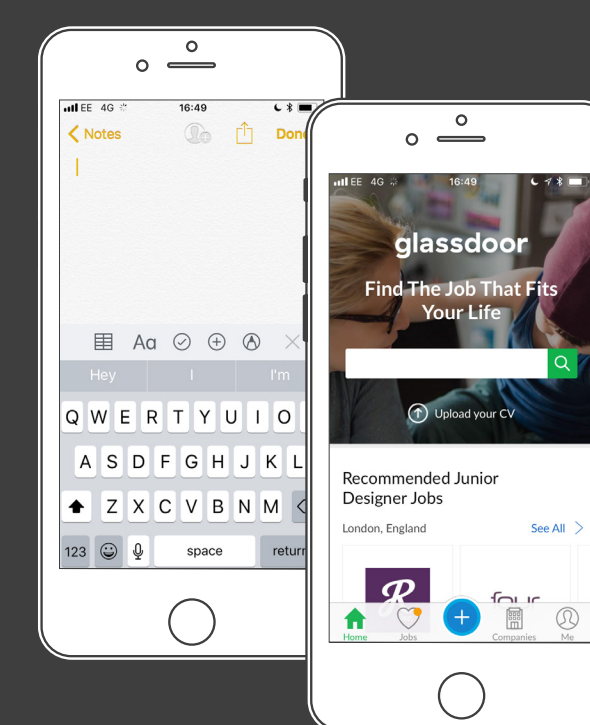


Joining a local team

Coffee with friends



### Illusion of productivity



Meeting notes

Job search



Calendar

Maps

Street view

Wall planner

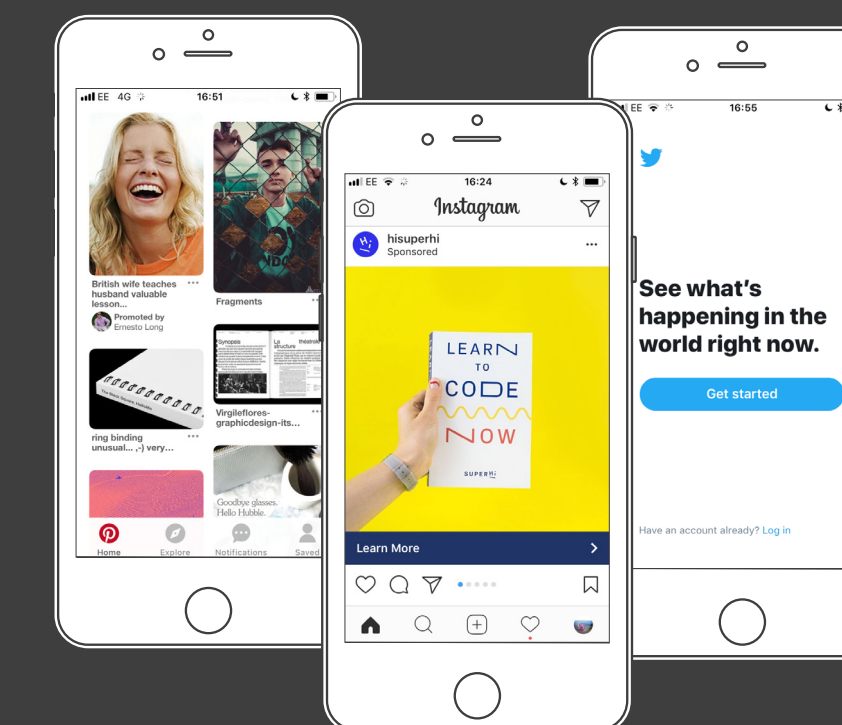


Ideas workshop

Business meeting



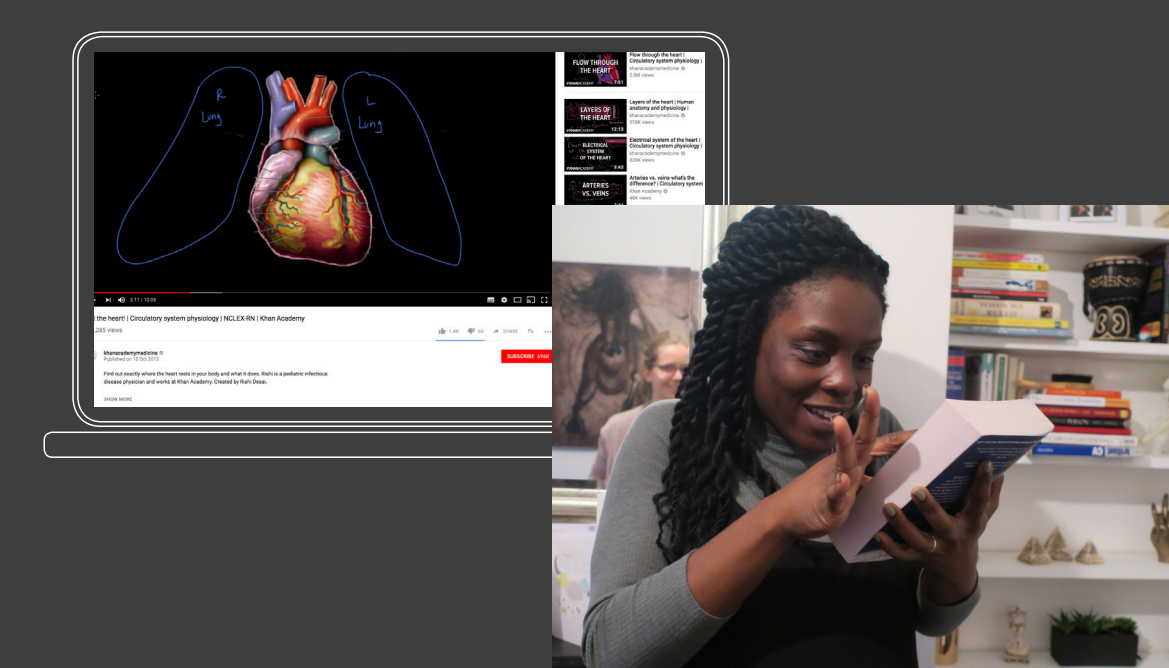
### Illusion of exploration



Pinterest

Instagram

Twitter



Online tutorial

Books

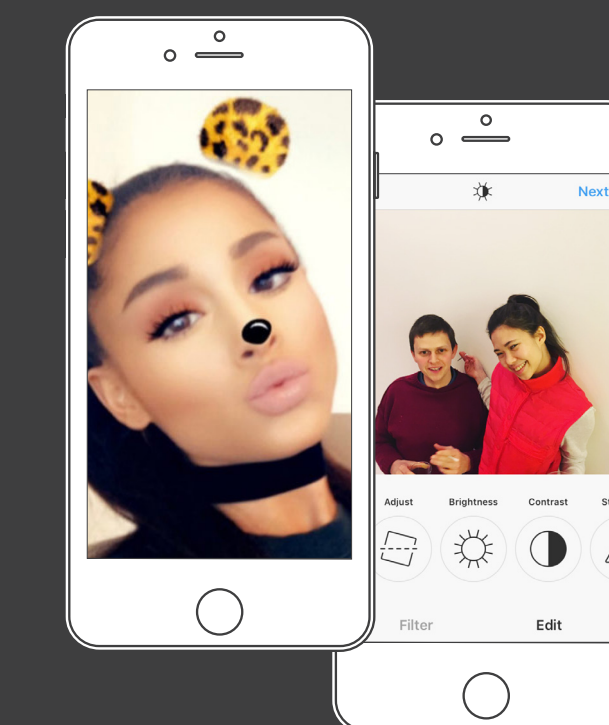


Seeing the sights

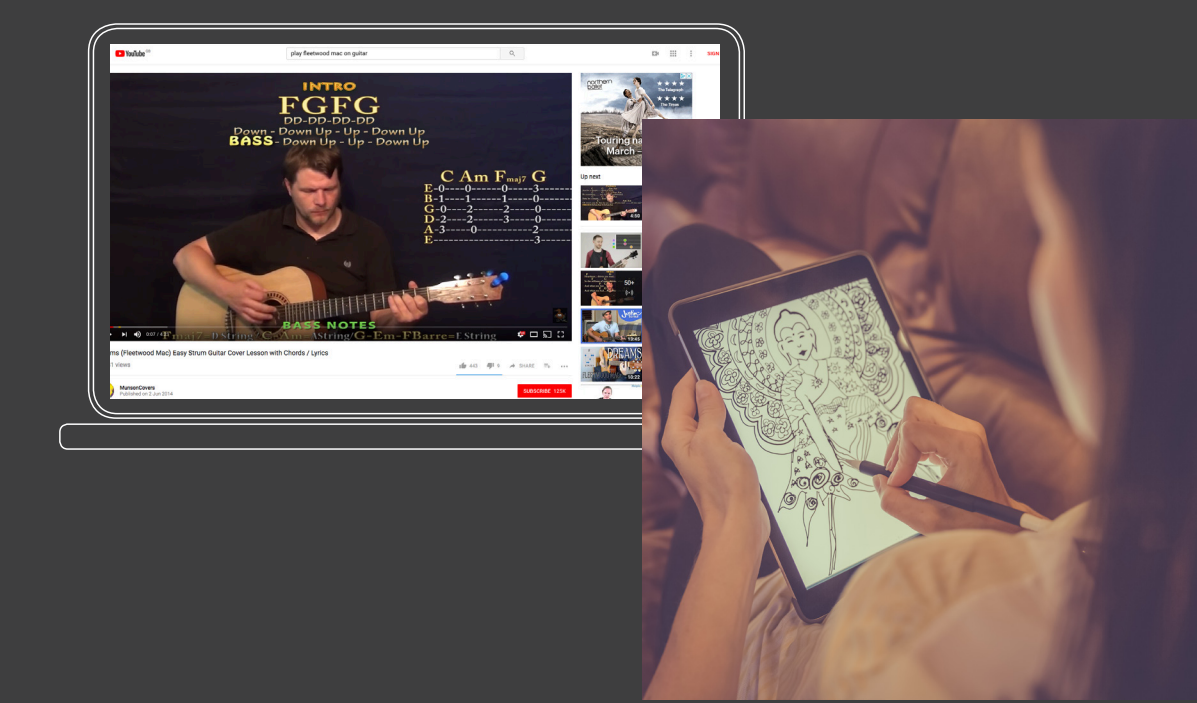
Visiting an exhibition



### Illusion of creativity



Filters



Guitar lesson online

Sketchpad on tablet



Gardening

Playing guitar





# How can we better equip young people?

An expanded concept of 'digital skills' to educate and empower

## The need for a more comprehensive framework

Most digital skills frameworks are understandably focused on the digital environment and are device neutral. They tend to outline the skills a user needs to make a device function at different levels.

Some do go further in linking tasks using digital services to higher order goals, writing emails for the purpose of communication, for example.

Our research suggests that there is a need for digital skills frameworks that help people appreciate that any digital tool is one amongst many - including some that are non-digital.

Being digitally skilled requires the appreciation of a wider toolkit and the strengths, weaknesses and cost of using tools in any given situation.

## The framework – the progression of users

**Goal driven**  
A progression of mindsets  
(Proposed extended framework)

↑  
Increasing self-awareness

**Functional**  
A scale of technical competency  
(Existing frameworks)

**Skilled innovators**  
Thinking big

5

**Selective specialists**  
Making discerning choices

4

**Mindful operators**  
Aware of the options

3

**Goal setters**  
Purpose oriented

2

**Default users**  
Basic operation

1

## Statements and questions to assess capability

Could better tools be created – how might they work and how might they look?

User is able to conceive of, and ultimately create, alternative tools that are best suited to their goal

Which is the best tool for my goal?

User is able to evaluate the strengths and weaknesses of different tools and appreciates possible opportunity costs

Is using this tool really helping me achieve my goals?

User reflects on outcomes of tool use in relation to overarching goals

Can I use it meet my goals?

User is able to make use of the device's functionality in pursuit of a goal or purpose

Can I make it work?

User has capabilities to make use of device functionality