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Innovation Through Rapid R&D

Best practice guide to running your own in-house lab

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Econsultancy London
4th Floor, Wells Point
79 Wells Street
London W1T 3QN
United Kingdom

Telephone:
+44 207 269 1450

http://econsultancy.com
help@econsultancy.com

Econsultancy New York
350 7th Avenue, Suite 307
New York, NY 10001
United States

Telephone:
+1 212 971 0630

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1. Executive Summary

The **Innovation through Agile R&D** report, written by Fergus Roche at JOYLAB, describes an approach to building a pop-up lab in order to rapidly improve products, services and customer experiences.

The approach takes influences from many sources which have emerged over the past few years, from the Skunk Works of the US military through to the principles of the Agile manifesto.

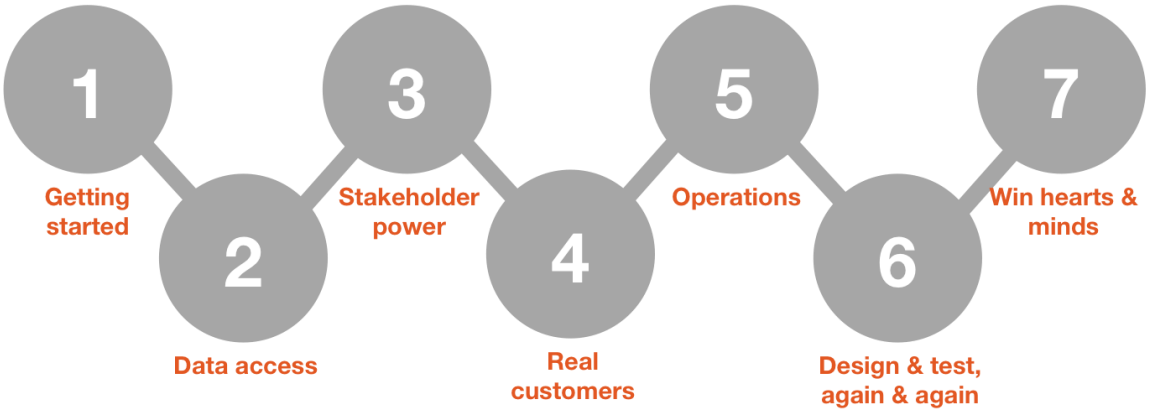
The benefits of in-house research and rapid prototyping

The main reason for doing any in-house research should be to take control of the learning experience and start to gain and act upon those insights first-hand. The rapid nature of change caused by digital means that it is more important than ever to understand and respond to customer change.

The following are benefits specific to rapid prototyping:

- It lets you build a simulation of reality: rapid prototyping lets you create a working simulation of your potential new solution. It provides an ability to explore alternate ways of working – testing out things that haven't been tried before because it wouldn't be feasible in the live environment.
- You can play with it: unlike a dull specification document, prototypes can be given to all groups of key stakeholders to gauge their reaction.
- You can test it: a working model allows for feedback. If the product isn't worth pursuing, the investment already made by the business is limited, saving costly mistakes.
- You can iterate: the feedback from testing provides the opportunity to improve and better the prototype.
- You can accurately estimate the real solution: the great thing about having a viable prototype solution is that it demonstrates what you actually want to build. It also provides insights into potential pitfalls, costs and opportunities that might not have been identified beforehand.

The seven-step approach to running your own in-house lab



1. Getting started

When getting started, make sure to focus your research (and the relevant questions) on a specific area or problem, as this is more likely to have a successful outcome.

Once this is done, you want to select, build and empower your team. They will need space and time and should prioritise the research questions accordingly.

2. Data access and analysis

Data is critical in terms of making the right decisions. Your team will need to have access to it and they may have to befriend a particular team internally (e.g. business analysis, finance or IT).

Once the data is gathered, focus on answering the basic questions. If the data to make assumptions or to test hypotheses is not available, do not be disheartened – even a lack of data will provide answers.

3. Stakeholder power

Support for the findings or results of your pop-up will depend on stakeholder buy-in. Gather the relevant department owners and experts for a workshop. This will help uncover the company's plans and priorities which might not be clearly visible to those in the wider organisation. Gather their requirements, add detail and prioritise.

If certain stakeholders cannot join a workshop, one-on-one interviews can help. Focus on listening, not telling, and ask open-ended questions.

4. Real customers

Throw out the net to get to your actual customers – use social media, CRM and sales databases to find those who pay for your products and services. Survey them for insight and make sure answers are statistically robust. After this, run qualitative insight sessions such as phone calls, focus groups, user experience tests and workshops. Try to be structured in your research so your findings hold up to the probing of budget-holding stakeholders.

5. Operations

Use front-line, operational staff to fill in the blanks of your research findings and to gain context. Use them as a sounding board to test assumptions and run brainstorming sessions to help shape your findings. Engage a wide spread of staff, as practices may be different between (even very similar) teams and you will likely need their support in the executional stages.

Once this is done, it is important to **re-group and replan.** Reconcile your budget, schedule any additional resources, estimate on the key requirements you plan to test, plan out and list any dependencies for the design phase.

6. Design and test

Make sure you have your ducks in order before beginning the design work: analysis findings clear in the team, key requirements prioritised, and time and space allocated for the team to complete the design work.

Design a working prototype that you can test with customers to see if it will work. Iterate and improve it using an agile, sprint-based methodology. Demonstrate it to your key stakeholders.

7. Win hearts and minds

R&D works best in a permissive culture where its value is understood. Take the time to explain your findings and develop a growing understanding of what you're up to. Share regular updates (such as blog posts) on what you're doing and take the time to compile a short montage of clips of any video evidence you've accrued. Aim for any about 1-2 minutes long that highlight your findings.

Take pictures of workshops and share these. Get your team to post every week, building up evidence.

Key considerations

- The seven-step process is a guideline, not a rule. Adjust as necessary.
- Don't lead users – listen to what they say and want.
- Making mistakes is to be expected.
- Stay small – a guerrilla approach to testing often works best. Limit the number of people on your team.
- Get backing from the highest level you can – the higher the level of support, the more room you will have to manoeuvre and experiment.

Industry comments on JOYLAB's seven-step approach for omnichannel

"The process JOYLAB set out and use is very similar to how we operate at B&Q. Rapid prototyping/agile UX should be modus operandi for retailers who want to implement a customer-centric, multichannel offering. Retailers will of course struggle to balance quick testing and integration with legacy systems, however businesses need to be able to adapt and change to the rapidly evolving digital landscape. Think fast – act fast."

Michael Durbridge, Omnichannel Director, B&Q

"In order to understand how customers want to shop our products, it's essential to glean insight through data. Developing that understanding fast – through agile R&D – helps retailers to quickly prioritise the right projects and identify bottlenecks. 'Fail fast' culture is beginning to permeate throughout retail. Being able to rapidly identify challenges and iterate solutions whilst avoiding costly investment in the wrong projects is invaluable. Both to the business and ultimately the end customer."

Andy McWilliams, Ecommerce Director, Anne Summers

"Agile processes and an unambiguous evidence base to support and develop a customer-focused proposition are vital to delivering multichannel. Customer needs and retail are changing so rapidly that we have to be able to understand those needs and implement change to meet them. Using JOYLAB's process goes a long way toward enabling retailers to do this."

Kristine Kirby, former Ecommerce Director at Hackett/Lipsy/Monsoon & Omnichannel Consultant

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1.1. About the author

Fergus Roche is a partner at JOYLAB and a customer experience digital industry veteran. He has worked with eBay, Argos, Sky, Qatar Airways, Cisco, HP Labs & British Red Cross. Fergus has worked at some of the leading UK design agencies and before this client-side in ecommerce at lastminute.com (where it all started for him).

An authority on user experience design (UX), Fergus is a recognised industry voice (UPA Turin conference) and regularly talks on the latest industry techniques.

Now pioneering new methodologies in live user testing, lean UX, rapid prototyping and lab culture, Fergus is dedicated to making omnichannel experience design a reality for global brands – rather than just a buzzword.

JOYLAB works with ambitious brands to design cutting-edge experiences; high street to haute couture, big box retail to pureplay digital. The seven-step method described in this paper is based on the approach JOYLAB uses to run omnichannel rapid prototyping projects with their clients.

1.2. About Econsultancy

Econsultancy's mission is to help its customers achieve excellence in digital business, marketing and ecommerce through research, training and events.

Founded in 1999, Econsultancy has offices in New York, London and Singapore.

Econsultancy is used by over 600,000 professionals every month. Subscribers get access to research, market data, best practice guides, case studies and elearning – all focused on helping individuals and enterprises get better at digital.

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2. Context and Background

2.1. Lean UX and the evolution of user experience design

The objective for every retailer is to develop an omnichannel experience where all the channels are working together, where the digital bridges seamlessly with the physical and information is readily available in-store or online. Buying decisions are then easier and the whole experience intuitively simple to use. It is this *omnichannel* experience that will generate the most sales.

To create such an all-encompassing omnichannel solution is not simple – and the technology investment is considerable. That's why it is vital to be sure about what you are creating *and that it works*. User experience design (UX) has come a long way and a combination of evolving methodologies and new technology allows us to be ruthless and rapid in creating these solutions. Many are calling this new way, lean UX.

However, UX has for many years become a documentation-heavy process that agencies have capitalised on – charging retailers huge sums for hundreds of wireframes and functional specs, updated endlessly. Lessons were expensive to learn and the customer experience was made over years rather than minutes.

To truly understand how today's UX can work – and how we use these methods for developing omnichannel solutions – let's briefly look at the evolution of UX design: the mash-up of research methods, rapid prototyping and agile working methodologies that brought us to our approach here at Joylab.

2.2. Skunk Works: the secret military beginnings of rapid prototyping

A bit of history... It is no coincidence that rapid prototyping has its origins in top-secret military innovation. The Skunk Works project – the official alias for Lockheed Martin's Advanced Development Programs (ADP)[1], which is still running today – is seen by many as the forerunner of modern rapid prototyping. Devised by Kelly Johnson back in the 1950s, it has delivered many of the world's most potent military weapons.

Skunk Works' approach to achieving innovation in tight timescales provides critical lessons for modern retail businesses needing to rapidly understand customer experience. Skunk Works was defined as *"a group within an organisation given a high degree of autonomy and unhampered by bureaucracy, tasked with working on advanced or secret projects"*.[2] This freedom is at the heart of lean UX and vital to rapid prototyping, enabling quick turnarounds, assessments, failures and re-thinks – all of which are crucial in developing any big technology solution.

Kelly Johnson, while at Lockheed Martin, came up with a set of 14 rules to work by. Below are those that are most relevant for this report – and which are as pertinent today in omnichannel rapid prototyping as they are for military innovation:

1. The Skunk Works manager must be given practically complete control of his programme. He should only report to a division president or higher.
2. The number of people having any connection with the project must be restricted in an almost vicious manner. Use a small number of good people.

[1] http://www.lockheedmartin.co.uk/us/aeronautics/skunkworks.html
[2] http://en.wikipedia.org/wiki/Skunk_Works#Aircraft

3. There must be a very simple drawing and drawing release system with great flexibility for making changes.
4. Only the bare minimum of reports should be required, but important work must be recorded thoroughly.
5. There must be a monthly cost review covering not only what has been spent and committed, but also projected costs to the conclusion of the programme.
6. The project team (contractor) must be delegated the authority to test its final product. It can and must test it in the initial stages. If it doesn't, the team rapidly loses its competency to design other vehicles (or, in our case, omnichannel solutions).

Source: Kelly's 14 Rules & Practices[3]

2.3. The evolution of user-centred design

User-centred design has been around since people started making tools. It was being evolved into information architecture at the library of Alexandria in 200BC: categorising, archiving and ensuring information was as simple to access as possible.

For the next 2,180 years, all user-centred design evolved through necessity: ergonomics to improve furniture, enhancements to aircraft following a crash investigation and so on. Even in the 1980s – with the mass commercialisation of IT – true UX was still an embryonic concept; computer manufacturers were content to let users do the hard work.

In the late 1980s, however, there was a paradigm shift. Practitioners working across the industry began to rethink things, such as the Rapid Application Development (RAD) approach[4], a precursor to the agile movement in many ways. Across the 1990s, tech leaders began formally discussing the topic of user-centred design that would lead on to the discipline of user experience design (UX) that's driving things today. As well as design being informed by human behaviour, product development was now routinely being informed by research, testing and, importantly, financial numbers and objectives.

> *"Technology has evolved dramatically over the years, but focusing on the user needs and business indicators has successfully guided us though frequent and often dramatic industry transitions."*
>
> *(UX Magazine, The Four Waves of User-Centered Design*[5]*)*

Skip forward to the last decade, to the growing dominance of the worldwide web, the development of ecommerce; where retail obsession was about how to create the most user-friendly digital experience. However, website UX design developed into a documentation-heavy process that agencies capitalised on – charging retailers huge sums for hundreds of wireframes and functional specs, updated endlessly.

This was an environment where many thought that a time-consuming 'blueprint' for the entire website construction was the primary requirement. UX was becoming more expensive than build – and with little or no user testing prior to going live, there were no real guarantees as to effectiveness. Lessons were expensive to learn, ironing out glitches was slow and improvements to the customer experience were made over years rather than minutes.

This laborious and financially unsustainable process led UX designers to start working on projects running agile-based methodologies. At the same time, the technology around UX design was

[3] http://www.lockheedmartin.co.uk/us/aeronautics/skunkworks/14rules.html
[4] http://en.wikipedia.org/wiki/Rapid_application_development
[5] http://uxmag.com/articles/the-four-waves-of-user-centered-design

advancing quickly. Things could be built quicker and prototyping tools became much more user - friendly in themselves – for example, the ubiquitous wireframe became interactive.

This eventually reached a point of simplicity that allowed designers to skip wireframes altogether, sketching out the screens and interactions that were required, then sitting with a front-end developer to see it built on the spot. At this point, the prototype was in the actual code base, which meant that designs could be instantly live-tested with real users – and retailers could see the results in real time for themselves. Iterations could be made based on real evidence. Big 'builds' were now less vulnerable to engineering directing the final experience (mostly) with user testing built into the process.

For some, this is becoming a reality today: lean UX (as it is now commonly called) has stopped UX being a hindrance. It has become nimble and evidence-based, guaranteeing effectiveness and allowing constant, rapid iterations to keep up with technology and achieve a better user experience.[6] However, the true winners are often the startups who don't have legacy systems, complex supply chains to manage, or traditional retail practices. These companies are often digital first by default and can develop software-as-a-service (SaaS) [i] offerings rapidly, that employ lean UX approaches very successfully.

But for many retailers this is *not* a reality. How many retailers have adopted such practices and made them work for their organisations? How many are led by their technology platforms and legacy systems? Or struggling with a growing confusion of customer interactions dispersing across channels with no real oversight of it all? If this is you as you sit there trying to make sense of your omnichannel situation, there is a way. And it can be made to work for you. We believe the approach laid out below will give you the keys to running your own R&D in-house.

You are not alone either. Change is in the air: a number of innovation labs to drive product development are being set up.[7] Tesco, Marks & Spencer and Nordstrom have all developed their own autonomous labs: to operate outside of the constraints of the core business and ideate, trial and test concepts at a pace. John Lewis has recently launched their JLAB incubator. And Nordstrom Innovation Lab set up back in 2011, making them a relative market leader.

These labs are doing a great job at disproving the idea that larger organisations are often bureaucratic and perhaps doomed to fail at innovation. They employ and advocate the same techniques we use. Effectively having a lean startup i.e. innovation lab, which can move quickly and operate autonomously. But also directly input into in-store experiences, product developments and therefore the overarching business and brand strategies.

Lean UX example

One tool in the lean UX inventory is the Minimum Viable Product (MVP), a staple tool used by startups to establish whether or not their idea has legs. The focus here is on gaining insight through creating a prototype version of the offering, such as a shiny webpage to drive traffic to with a form. This approach allows the startup to understand pricing and levels of interest, as well as learning more about their target customers, all of which can be applied in the design of the actual solution.

For more info on MVPs, see:

- Kauffman Founders School Minimum Viable Product https://www.youtube.com/watch?v=xxjbxk8dUqI
- Product Hunt: from experiment to VC-backed startup (six months to $1m funding using the MVP model) https://medium.com/on-startups/planting-seeds-1af9a290c318

[6] *http://www.smashingmagazine.com/2011/03/07/lean-ux-getting-out-of-the-deliverables-business/*
[7] *http://joylab.co.uk/blog/the-rise-of-the-innovation-lab/*

2.4. UX and service design

In the evolving world of UX, another inevitable crossover was happening. Service design, an amalgamation of product design and change management, was quickly waking up to a user-centred approach to development. Rather than designing a service, then having to look around for the right product, you design everything holistically with the user experience leading the decision-making.

Pioneering practices included several UK agencies – Live/Work, Engine and Designit – but Ideo in the US was particularly revolutionary in shifting user-centric thinking beyond service design into the realm of product design. Through inventions that ranged from Apple's first mouse to the flat-topped toothpaste tube that stands upside down, they became instrumental in transforming the design world's thinking towards products and services that were designed in harmony to create a better user experience.

This step change in service delivery is having a profound effect on many industries, particularly the development of omnichannel in retail.

2.5. The evolution of omnichannel

With everything becoming more user-centred – and agile project management enabling rapid honing of user experiences across the digital and physical worlds – the Holy Grail for organisations has become all about consistency of experience: ensuring every user 'touchpoint' delivers the same ease and brand experience. From simple things like receipts and decor, to complex processes like customer service systems, all of it can (and must) now be seen as part of one experience, of which digital is just one ever-evolving part.

The challenge then is how to align disparate operational departments and brand touchpoints. Traditionally, operational departments sit wide across an organisation – as separate entities with separate (small) R&D budgets. This is completely at odds with the ideology of modern service design and the holistic brand experience. Retail is waking up and grasping that we live in an omnichannel world. Retail organisations are creating new roles – Multichannel and Omnichannel Directors.

This role is yet to be clearly defined however – in some large retailers such as Tesco, the role is to be an 'agitator', overseeing all the other business units, breaking down silos and processes to create new, more holistic ways of working. In mid-sized corporations, the challenge is again to break down historical barriers between ecommerce and brand, all with the aim of creating a seamless, overarching customer experience.

The trouble is – and this is exactly why retailers need agile methodologies – nothing stays the same for long and the goalposts are prone to frequent shifting. New processes cannot be set in place unless they are flexible to change. Agile needs to be embedded organisation-wide.

2.5.1. The Amazon effect

Just after 2010, it became very evident that the web was completely changing customers' expectations. In ecommerce, it's easy to find what you're looking for without moving – you can compare products, see what other buyers think and when you purchase, your details are remembered to personalise the experience further next time.

Now when someone walks into a store, they want to build in the best parts of their digital experience. Why wouldn't you want to be remembered, compare products and services, or use social media to complement your experience? But consumers are reduced to pulling out their mobile phone, figuring out how to compare across channels, finding the product and somehow 'knowing' that they are looking at the correct version of the product. It's frustrating and no one

has yet mastered seamlessly connecting all the channels. In addition to this, retailers still don't have a single data view on their customers, or for instance, mobile-optimised websites that know when customers are in-store.

Product availability and inventory location is another area that needs rapid addressing. Most retailers are struggling to understand customer expectations about stock: they want to easily access the right colour, size and model. It's not good enough to drive products to the store and let the customer buy what's there – it has to be more helpful, engaging, intuitive and personalised, or customers find it archaic and a waste of time. At the very least there needs to be visibility of all products and a simple way to get them. This is the complexity of the digital-physical relationship, but the opportunities for those who get it right are enormous.

"Only 10% of retailers have been on the omnichannel journey for three years or more."

IDC's top 10 predictions for 2014[8]

2.6. Where we are now

The goal of great customer experience design still remains the same: finding the win-win-win between the best user experience, brand immersion and the retailer's business objectives. For example, making a checkout flow easier ensures not just a better user experience but also increased conversion and therefore sales. Understanding that is simple. It now becomes about understanding customer expectations and using the smartest technology to optimise the cross-channel experience (at every touchpoint), specifically aimed at boosting conversion and sales, while deepening the customer's engagement with the brand.

Sneakerboy store[9]

8 http://www.mmh.com/article/idc_releases_top_10_predictions_for_2014_signals_omni_channel_surge

9 http://www.fubiz.net/wp-content/uploads/2014/06/Sneakerboy-Melbourne-Store-by-March-Studio-5.jpg

Watch Chris Cyvetos explain how he and his partners designed their new business Sneakerboy for an omnichannel customer experience: http://ecly.co/sneakerboy (video on YouTube).

2.7. Aligning your technical solutions for omnichannel omnipotence

A large part of omnichannel success is determined by the technology you implement and use well – like having livestock inventory for your click-and-collect offering. But solutions are expensive. And when an organisation is knee deep in the technical solution and legacy systems, looking down a long list of requirements which are all vying for prioritisation, it is easy to become overwhelmed and disoriented, losing focus of the main objectives and wasting money on the wrong priorities. Before implementation it's vital to get as deep an understanding as possible of what you want to achieve. For example:

- Define your organisation's vision, for example: "To provide the best customer service possible" (Zappos mission statement[10]).
- Determine the key objectives to meeting this.
- Understand the customer and their behaviour.
- Research your existing customer touchpoints across your organisation.
- Remove the siloed approach (i.e. by channel) and develop your omnichannel proposition holistically.
- Learn how to leverage the touchpoints to achieve your overall mission.

Knowledge of the above ensures your organisation can handle the inevitable shifts in the marketplace and that the projects you're running stay on target, focused on the company's mission and aligned with your key objectives. Having this level of understanding and certainty before implementation also means the solution will be far more effective from the beginning, saving money on long-term fixes and short-term loss of sales.

Using a 'mash-up' of agile methodologies, state-of-the-art service design and rapid prototyping, it's possible to prototype key user interactions to fine tune the omnichannel solution. You can clearly map out the customer touchpoints across the channels, see how the channels should integrate and how to align the customer experience across those channels. This means vital questions can be reliably answered upfront. For example, how is the customer using their mobile device in-store? Can they learn more about the products in-store? Are they checking their calendars? Are they sharing socially?

The more you know at the start about this complex ecosystem of interactions, the tighter your expensive technical solution will be in combining service with sales. It all relies on rapid prototyping from quick turnaround research. And this is where the pop-up lab comes in.

[10] *http://retailindustry.about.com/od/retailbestpractices/ig/Company-Mission-Statements/Zappos-com-Mission-Statement.htm*

3. The Pop-up Lab

The aim of the pop-up lab is to create a small, agile Research & Design (R&D) unit, ideally under the radar, yet fully empowered to dig and find out truths. Think pop-up shop – temporary, cost-effective, simple to set up and take down. These findings will enable your new pop-up lab team to run rapid prototyping and testing to help develop an effective omnichannel offering for your company. Before we move on to the seven-step approach to running a pop-up lab, we'll explore the following:

- Benefits of in-house research into omnichannel
- Defining rapid prototyping
- Benefits of rapid prototyping

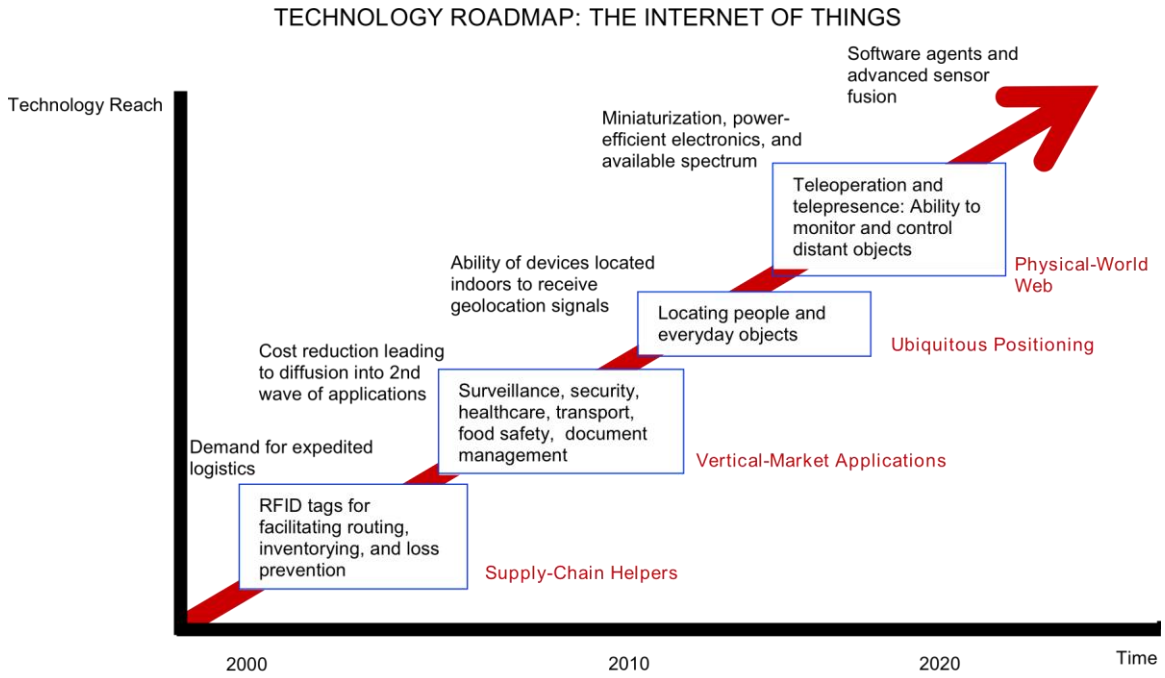
3.1. Benefits of in-house research into omnichannel

The main reason for doing any in-house research should be to take control of the learning experience and start to gain those insights first-hand. *"It is no longer acceptable to close your eyes and hand over to IBM or Oracle."*[11] We're not saying don't work with third-party researchers and experts – that's what we do – but it's vital to be in control.

"The unfamiliar is not the same as the improbable", as stated by Lord Rees (the Astronomer Royal). Although he applied this to global risks, it is a real problem for any organisation and its leadership. Retail businesses will inevitably see a complete omnichannel future as unfamiliar and focus on the day-to-day concerns and risks of the business. Seeing the bigger picture (or the bigger risk) is a trickier proposition. A fully integrated, digital-pervasive retail environment can seem improbable, particularly for some key stakeholders, who may be critical to moving the business forward. This is where Joylab's approach to researching, rapid prototyping and testing can make this future tangible and help define the solutions required.

You need to develop a deep understanding of your omnichannel environment and its nature. It sounds obvious, but the internet continues to change everything. In terms of omnichannel, it's the digital dimension that is driving this change. Everything is connecting through the Internet of Things[12], embedding sensors and data points everywhere. Everything across your business will be internet-enabled eventually. This is happening across all sectors from finance to travel to telecoms. Retail is no different.

[11] http://www.ft.com/cms/s/0/20167be6-1bf2-11e4-9db1-00144feabdc0.html#axzz3A5mKSB3Y
[12] *Watch a great explanatory video of the Internet of Things:* http://ecly.co/the-iot



Source: Wikipedia[13]

For this reason, we believe you need to develop an in-house research programme – and never let it out of your sight. In such a changing landscape, where technology is rampantly altering the fabric of the retail industry, it is as fundamental to gain the skills to investigate it yourself. But, this is not just about identifying problems, but about designing the solutions as well – which brings us onto rapid prototyping.

3.2. Defining rapid prototyping

Rapid prototyping is all about quickly creating a model of the concept you're designing, in order to test its viability. *"The rapid prototyping approach… is a key tool to help users and analysts 'think out of the box' about innovative ways that technology might radically reinvent a core business process."*[14]

The reason to build prototypes is mainly a pragmatic one: not to waste money building something that won't work. The problem has always been how, unless you see it live, will you know that a new process or expensive technical platform will work? Your omnichannel environment isn't like anyone else's – there are many variables that together make your situation completely different to that of another retailer. This is where rapid prototyping can light the way and provide much more certainty, tailored specifically to your organisation.

3.2.1. It lets you build a simulation of reality

Rapid prototyping lets you create a working simulation of your new solution. You can even integrate those components that you believe are completely unique, like your customers, your store systems, or even those really odd legacy systems into a prototype to test it. Or, you can just simulate the specific variables of your world.

The real beauty though, is the ability to explore alternate ways of working – test out things that you've never tried before because you couldn't in the live environment. Along this path is where innovation lies.

[13] http://upload.wikimedia.org/wikipedia/commons/5/5a/Internet_of_Things.png
[14] http://en.wikipedia.org/wiki/Rapid_application_development

For your omnichannel situation, it's possible to prototype key user interactions to fine tune the omnichannel solution. You can clearly map out the customer touchpoints across the channels, see how the channels should integrate and how to align the customer experience across the channels. For example, how is the customer using their mobile device in-store? Can they learn more about the products in-store? Are they checking their calendars? Or are they sharing something socially?

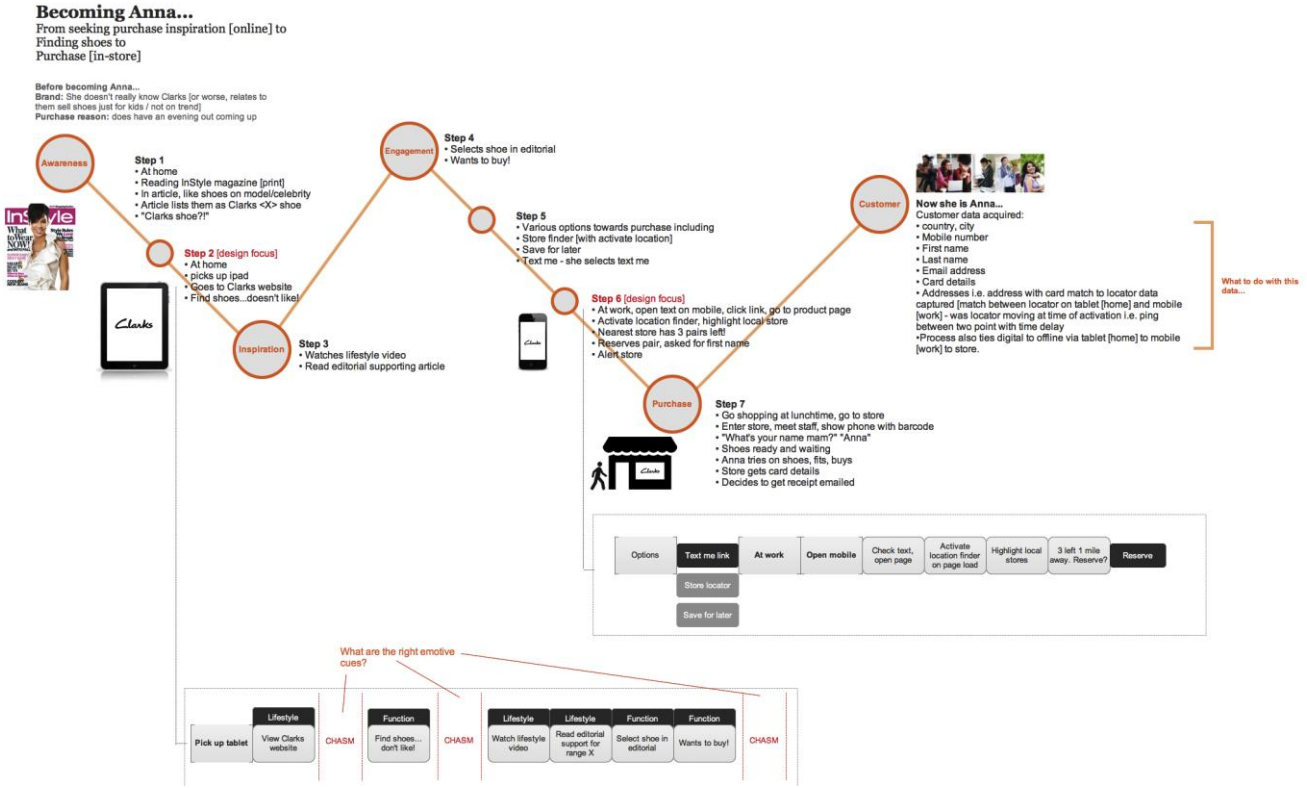


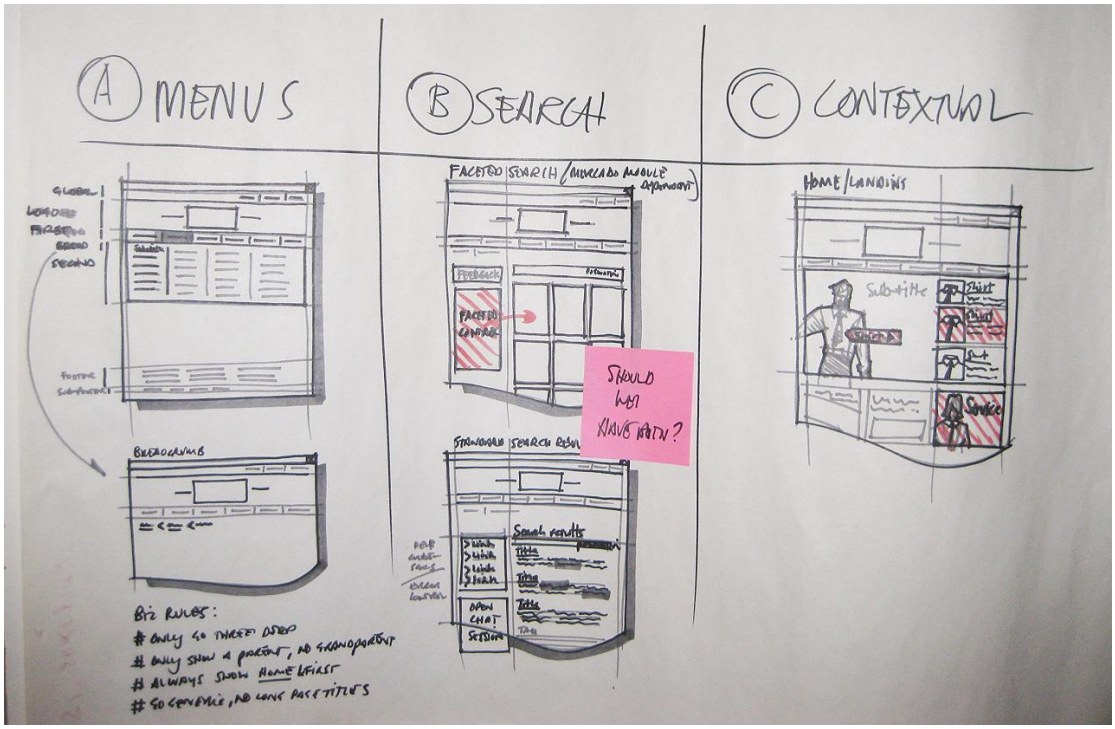
Diagram of 'Future Omnichannel Customer Flow' for retailer [Clarks](), from project undertaken by author, Fergus Roche, for agency [E3 Media]().

The more you know upfront about this complex ecosystem of interactions, the tighter your expensive technical solutions will be in combining customer service with sales. Creating effective solutions through rapid prototyping relies on insights from your research. As you have to test the prototype with real customers, you will learn rapidly if your ideas will fail or succeed.

3.2.2. Building prototypes: fidelity and complexity

So prototypes are ways you can model a solution that you can test and demonstrate. (That's why, for government and academic funding, a prototype is called a demonstrator – a term they prefer.) And this means that, rather than just sharing holes with your sponsors and company boards, you can share real, working solutions too.

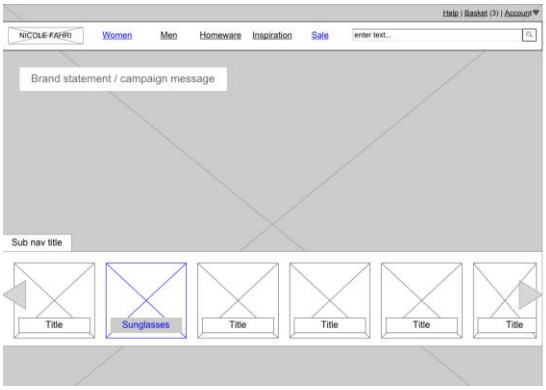
Prototype (or demonstrator) is a fairly generic term though. To understand more about building them, we need to define them. A good way to class a prototype is by its level of (a) fidelity and (b) complexity.

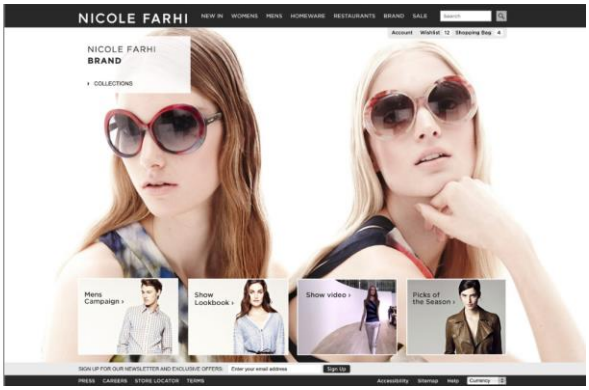


Early sketches (or scamps) from project undertaken by author, Fergus Roche

Level of fidelity

The fidelity of a prototype *"refers to the degree to which a model or simulation (prototype) reproduces the state and behaviour of a real-world object, feature or condition"*.[15] Surprisingly, the level of fidelity of your prototype to get feedback from testing can be very low and still be relevant – even sketches on paper (as in this tutorial video on tablet paper prototype testing: http://ecly.co/prototyping-tutorial). If you're new to this, it's far lower than you'd expect. The reason for this is simply: we are all used to production-level stuff and assume that it needs to look that good. Academic research has still not proven that high levels of fidelity improve the results when testing digital prototypes.[16]





Iterative prototypes for Nicole Farhi from project undertaken by author, Fergus Roche, with Darius Pocha

Level of complexity

The point here, as above, is that you don't need to go to huge lengths to get the insights you need to move ahead. For example, often you don't need to fully integrate with technical systems to create a prototype that can simulate the relevant user interactions.

[15] http://en.wikipedia.org/wiki/Fidelity
[16] http://pro.sagepub.com/content/46/5/661.short?rss=1&ssource=mfr

Prototype example

You want to test customer behaviour in-store around coupon QR codes on the back of till receipts. To test this, you don't have to implement QR codes into the POS device. You could create a printout of a prototype receipt, with a generic QR code. You could further give a prepped phone to the participant, which masquerades the QR code interaction and takes them straight to the mobile website screen you wanted to test. For this, you would just need a mocked-up receipt and a prototype app loaded onto a smartphone. All of which you could create in an afternoon.

NB: The prototype's purpose is merely to simulate what you want to test. Across the tests you run, start simple and build up both your levels of fidelity and complexity.

However, there are times when you will need to develop more complex prototypes. Remember though, you want to move fast – be rapid. While it may be great to prototype with some of the actual technical systems, if it's going to take months before you can test it, it's not worth it.

3.3. The benefits of rapid prototyping

As mentioned in the previous section, the key reason for rapid prototyping is to ensure money isn't wasted building something that won't work. Across the history of technical systems integration, one of the major stumbling blocks has been building the wrong solution, against the wrong requirements for the wrong reasons – delivering something that neither works properly, nor is used. There are several key benefits to rapid prototyping:

- Reduce risk from your actual solution.
- Play with it.
- Test it.
- Iterate it.
- Help technical estimating.

Reduce risk from your actual solution

In other words, making sure you don't waste money implementing the wrong thing (as described above).

Play with it – unlike a dull specification document

Prototyping a solution helps to visualise the thing the key stakeholders (e.g. heads of departments) were asking for in their requirements.

This is of huge value – the designers can demonstrate it early and ask: "is this what you meant?" Whereas the key stakeholders can use the prototype to get engagement from other stakeholders in their departments: "look what we're building".

Test it

When it's all heading in the right direction, you can get customers to play with the prototype too and see what they think. This can actually be one of the most important tests you do.

Think of the Segway – venture capitalist John Doerr believed that "it would be more important than the internet" and nearly $100 million was spent on its development. If only they'd tested the idea with some real people, in a real environment and said: 'well?'.[17]

Iterate your solution

Build your prototypes small enough, then you can iterate and test, thereby increasing the quality of your solution before it goes live. And when you fail it won't hurt. Try stuff out, release to a smaller group of users and learn from this release. It's the same with the pop-up lab. More so. Be permissive, prototype solutions and test them. If they fail, it's okay. Better here than with live systems. If you don't allow failure, then you won't take risks and learn something you don't already know.

Iteration lesson

Once upon a time there was a pottery teacher who decided to run an experiment. He split his students into two groups: one group had to make the perfect vase by the end of the year, while the other had to make as many vases as they could before the end of the year. Turns out, the latter group made the better vase.

Google releases new code every day of the year.

Accurate estimation of the real solution

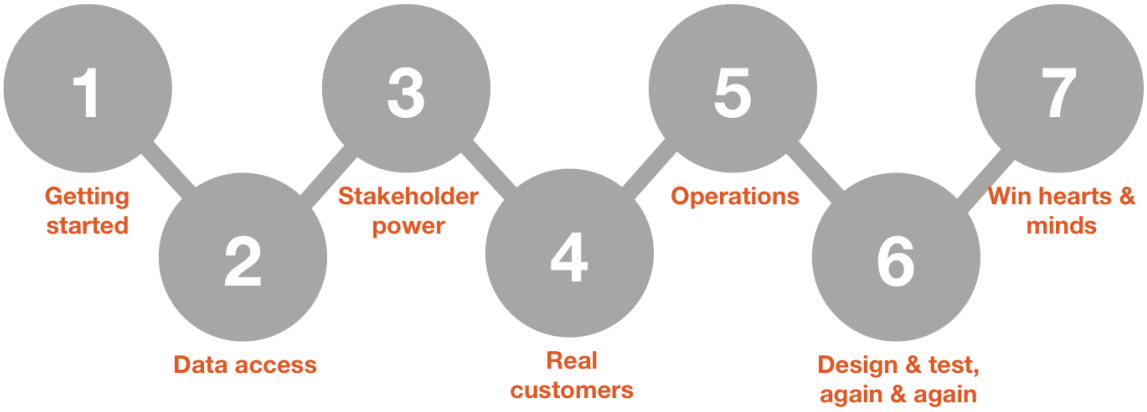
The great thing about having a viable prototype solution is that it demonstrates what you actually want to build, to those that are involved in actual delivery, technical integration and services delivery partners etc. All these people can now see a working model of the intended solution. "Oh, that's what you want. I see…".

For more on the cost of setting up a pop-up lab, skip to Budgeting and Resourcing section.

[17] *http://en.wikipedia.org/wiki/Segway_Inc*.

4. The Seven-Step Process

Okay, this is the how-to section. In seven steps you can have your pop-up lab up and running – and winning. The steps are:



Follow these and you'll have an in-house, pop-up laboratory for crafting data-driven, rapid R&D projects. This approach won't require a shiny Centre of Excellence nor a black budget off-the-books department (like with Skunk Works). Think pop-up shop – temporary, cost-effective, simple to set up and take down. So let's get going...

STOP!

4.1. A quick note about timeframes

Oh yes... each of these steps can take hours, days or weeks. Even months. It really depends on how complex your research aims are, your available budget and your appetite. Know this though: if you give yourself a year to run your pop-up lab, you'll take a year. Probably longer. If you give yourself just a week, you might achieve what you wanted in just that week. The key question is, will 51 more weeks of effort add 51 times more value? Will your business benefit from that year's worth of effort?

Set yourself a timeframe and work to it. Design all your tasks back from your timeframe. Make sure the timeframe is short enough to build momentum. Adjust as you go, but *hold* on to your timeframe.

4.2. Getting started

It sounds obvious but before hitting the ground, it's vital to have your research aim clear, as well as a team ready to begin researching this aim. The point is to be small and agile, ideally under the radar but empowered to dig and find out truths. So how do you get started? Here are the key steps:

- Focus your research: sniper fire not carpet bombing.
- Define your research questions.
- Build your team.
- Empower your team: give them the skeleton key to the company.
- Get your team some space: the mobile war room.
- Prioritise your research questions.

4.2.1. Focus your research: sniper fire not carpet bombing

In many cases it will be clear what you need to research: the customer experience in-store, how customer data can be transferred across channels seamlessly, or click & collect touchpoints. If it's not obvious where to start, get out and talk to your operational teams.

At this stage, just decide where you want to point your lab. Just the problem/opportunity you want to explore. This is your research aim.

Example: Pinpoint your R&D

One of our clients, The Entertainer, had set up the technical infrastructure for their click & collect offering, i.e. warehouse and store stock inventory was connected and all inventories live.

However, the click & collect customer experience was getting confusing: too many options, with more on the way, and one of the most important touchpoints – the website – wasn't helping. Our job was to take this experience and make it clearer and more beneficial to the customer.

4.2.2. Decide on your research questions

Now that you have the research aim, start pulling that apart and write down the questions you'd like the research to answer. Don't be too vague e.g. 'who are our customers?' is too general. The more specific you are, the more detailed and accurate the findings will be.

You don't need to get these exactly right, but attempting to write down a research question will help to frame the research in your mind. We often focus around a key customer experience.

Example: Focus on a customer experience

"A customer gets home and picks up a missed delivery card. With the other hand they pull out their mobile. Standing at their door they have our card in one hand and their mobile in the other. What could we do to make this customer experience awesome, not a disappointment?"

How will typical users react? This necessitates:

- User research – what will they do in this scenario? What do they want? What do they need?
- Business goal – automate next steps.
- Business processes – which business processes run this scenario?
- IT processes – which systems are involved?
- Customer services – what potential pitfalls should we be wary of?

A simple customer experience can and will have many interrelated processes that will need understanding to facilitate any change and development. List them out and include your assumptions.

This is from a project for Yodel, the delivery provider.

4.2.3. Build your team

Keep your team small. Think guerrilla and move fast. If the job involves more than seven team members, create multiple teams focused on different research questions. But to get started, steer clear of multi-team research and just keep the team small.

For more info on creating your very own team, skip down to Section 6.2 – Resourcing and building your A-Team.

4.2.4. Empower your team: give them the skeleton key

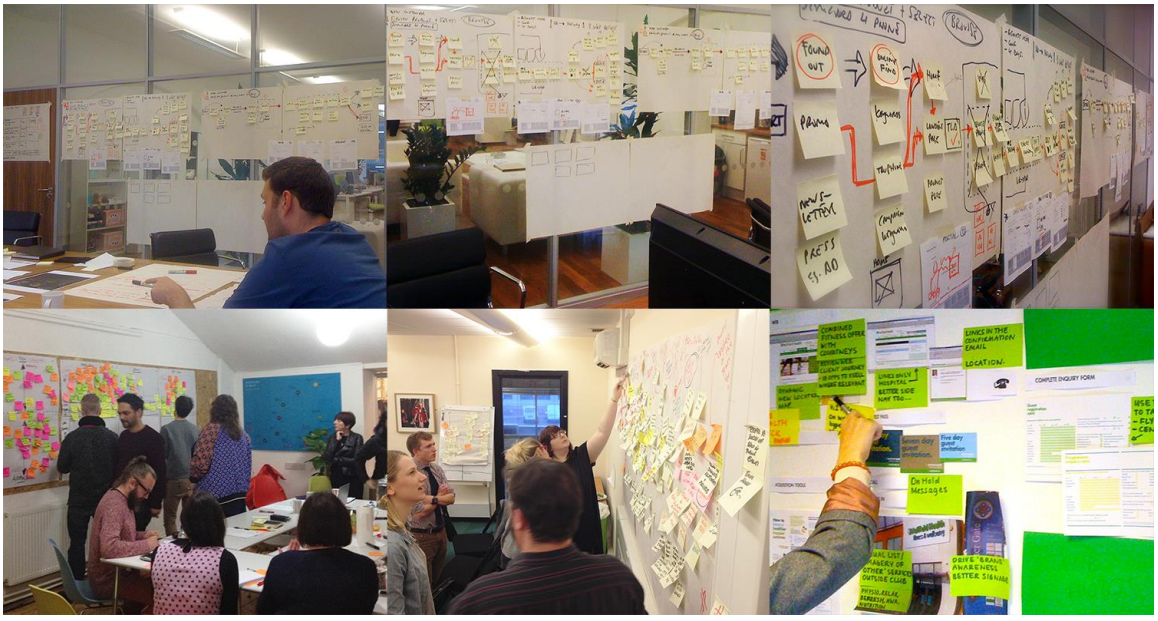
This could be the most important area of all. It's where your project lead and/or sponsor will be critical in opening doors to get to the really priceless answers.

All companies have existing processes, hierarchies and 'ways of doing things' – often rigid, bureaucratic systems not designed to keep up with the rapid pace of this kind of free-flowing, open-ended operation. Your team needs to be empowered, data made available and freedom granted to be creative in their methodology.

If there's one thing that can slow teams down it's when you need to lift the lid on your own company's systems. And you will have to. Operational and IT departments don't do R&D day to day, so the project won't seem important. So your team needs a big stick (or an email of authorisation), with your sponsor's name emblazoned on it, to wave around and get things done.

4.2.5. Get your team some space: the mobile war room

To gather maximum information in minimum time, your team will need to be constantly on the move – yet also require the resources of an office-based research team. Bear this in mind when designing their base. As the research develops, this room will evolve into a mobile war room – somewhere they can stick findings up on the wall and visualise data to constantly monitor and adapt their questions and processes. However, the space needs to be light and nimble enough so that everything in the room can be taken down and moved in less than ten minutes to another location.



Pop-up war rooms – images from the author, Fergus Roche working at or with www.onebigfield.com, www.e3media.co.uk and www.joylab.co.uk

Remember it's *not* the shiny room that counts (we know, we've worked in some lovely shiny rooms at agencies and clients). Ideally it's just a room with lots of wall space, lots of light, no other meetings in it and strict instructions not to touch anything. If that's not possible, then just a wall in your office that your team can work on. Don't be precious, improvise. The critical thing is somewhere you can put up your thoughts and evidence – *and take a step back*. You've watched the detectives in crime dramas. That's you now. And it really works (for R&D anyway).

Detective Molly Solverson's evidence board from the wonderful Fargo[18]

4.2.6. Prioritise your research questions

Get your team together and start to prioritise your research questions. Brainstorm the best approaches with the team to answer your research questions. The team should very rapidly spew out further questions, issues, problems, challenges etc. If not, you've probably assembled the wrong team.

This is an ongoing effort, but it is a key stage so you can decide what data you need to access, which stakeholders to organise for workshops and the like (more on this to follow).

Summary

Getting started on the path to running your own pop-up lab is all about two things:

- Prioritising your research questions
- Getting your team set up to run rapid prototyping and understand the aim of the lab

Critical activities you need to have completed are:

- Decided where you will focus your research.
- Recruited your team, specifically those who will run your early research activities.
- Got the team the access rights they will need.
- Got them a space to work out of.
- Prioritised your research questions.

Exercises

1. Do you have a clear idea of what you want to investigate? If not, skip to the next exercise. If yes, turn these thoughts into five research questions. Write them down and share these with a colleague for feedback.
2. Do you need to get to grips with the state of your channels and just find out what's actually going on? If not, skip to the next exercise. If you do, pick the one channel you know least

[18] http://uproxx.files.wordpress.com/2014/06/fargowall.gif?w=650

about, for example, mobile with location services. Now write down five things you'd like to find out about this channel in relation to your company. Write these as research questions and share with a co-worker for feedback.

3. Thinking about your research questions, who would you want in your pop-up lab A-team? Write down your candidate list and prioritise based on ability and availability. If you're not sure, speak to co-workers and work up a list.
4. Write down five places you could use for a war room for your A-team. Best and worst case scenarios.
5. Pick a competitor in your market space, one who you think is probably pretty good at omnichannel. Now write down three questions for your new research team to go and investigate about your competitor's omnichannel-ness. They need to provide proof that will help to benchmark your competitor's omnichannel effectiveness.

4.3. Data access and analysis

The whole purpose of the pop-up lab is to ensure your business decisions are informed – not by hearsay, 'gut-feel' or just stakeholder opinion – but by hard and fast data. Don't worry, the gut feelings of stakeholders will be taken into account, but evidence must ground your work. Piece by piece you are building a crystal clear picture of your omnichannel effectiveness and customer interactions (or lack of). In JOYLAB's experience, aim for the following:

- Find the data
- Assess the data
- Organise and (rapidly) analyse the data
- Don't be disheartened!

4.3.1. Find the data

Generally, getting access to data is not a straightforward exercise – get this started as soon as possible. Work out where all the data collection points are. The bigger the organisation, the more diverse and disparate these data points will be. And the older the organisation, the more siloed it will be – so data points will be disconnected.

There are several ways to go after data. Firstly, you need to navigate the existing structures. Typical data sources include:

- *Channel-specific* e.g. web and mobile via statistics packages like Google Analytics, and the same with the social channel.
- *Department-specific* e.g. sales reports for those Monday morning status meetings.
- *Customer-specific* e.g. CRM systems, customer purchase records, customer service records (although customer data is often organised by channel and department).
- *Data department-controlled:* IT will be an obvious place. If your organisation does have business intelligence (BI) departments, go and befriend them. Or even better, recruit one of your researchers from these teams.

4.3.2. Assess the data

Assess data as you go. If it's enough information and you have a clear picture, skip to the next step. If it throws up more questions, you fail to gain insight, the data is a mess or untrustworthy, it's time to get serious. At this point, we will:

- Follow the money.

- Invade IT.

By *following the money*, you will build up an accurate picture and be able to find the correct data sources. Then you just need to work back, get access to the direct data sources and compile direct. It has a couple of big drawbacks. Namely approval. When you follow the money, it will not be straightforward as it will be organised by reporting lines, P&Ls etc. To skip above this, you will need to access high level financial reporting. At this point, you will need to play your sponsor card. Or potentially upgrade your sponsor. As mentioned earlier, this is where you need director or board-level sponsorship to green light your access.

Simultaneously, *invade IT*. Often the IT department holds all the keys, looks after the data and has admin level access to all systems. There are many ways to approach IT, however we recommend you use one or all of the following levers: lots of carrots, such as the promise of new technology, lots of waving the sponsor's email, or just recruit another researcher from within IT who has the right knowledge.

And remember, if you have in-house developer teams, they will be able to waltz through most of the IT systems and some will be brilliant at it. Recruit, beg, borrow and steal, but get that data!

4.3.3. Organise and (rapidly) analyse the data

Start off by using any of the existing data tools' own reports, such as Sitecore or your CRM analytics etc. If not, or time is limited, dump everything into a spreadsheet. When you are ready, start building a database of your own or use some shiny analytics tools – there are lots of good ones. But keep it simple, unless you happened to recruit a statistician. Otherwise, stick it into a table and look at it. Share the load across your fledgling team – the more eyes on the data the better.

Start answering the basic questions, such as the make-up of the audience. It will begin building a picture and testing your assumptions. Don't just look for similarities. If you find something odd – something that doesn't follow a trend or an expectation – keep digging. You may have found a seam of gold. There are two basic mindsets to apply to data analysis for your research:

1. **Collection – just show me the numbers**
   a. Total sales for a particular store versus another store.
   b. Using Facebook Analytics to gather the geographical source of fans.
2. **Patterns – making shapes in the data**
   a. Reviewing customer services call logs (not just the CS reports)
   b. Looking at customer data from different sources to find a pattern or trend and validate evidence – sales data versus CRM data versus audience survey data, for example.

Don't just do the first.

4.3.4. Don't be disheartened

Sometimes you can find very interesting things. However, at other times you feel completely lost and don't know where to look across the sea of data.

If you're surprised at the lack of data and/or specific data from the first round, don't worry, this is also a good thing to discover. Data – even a lack of it – always provides answers. Highlight the gaps in the data – these will start to reveal the gaps in the bigger picture you are forming of your omnichannel performance. It's also a good thing for future planning: as you build requirements for your new business model, develop data points that will allow you to create deeper analytics.

Example: Google Analytics exit page trick

Data analytics doesn't need to be complex to be illuminating. One of the first things we do when we're looking at the web channel is look at the top five exit pages (over the last three months). This gives you an immediate starting point to investigating customer behaviour in the web channel. If it's a 'Contact us' page, okay. If it's a sign-in or checkout page, you know something is wrong. Now you have a starting point to fan out and begin investigating.

Summary

It is critical that you become robust in your approach and don't just rely on stakeholders and your own gut instinct. This means finding and analysing actual data sources you have within your organisation, including web analytics, customer sales data, customer service issue logs, etc. Remain sceptical and be open to your assumptions being wrong. Critical activities you need to have completed are:

- Find the data – it will be channel, department and customer-specific, as well as being controlled by specific departments.
- Assess the data – be aware, it may not immediately answer your questions and you will need to dig more deeply. Ways that often work include following the money and invading IT – in the nicest possible way.
- Organise and analyse the data – put it in a spreadsheet or use analytics tools if you can. Remember you'll need to refer to the data across your project, so do organise it.
- Don't be disheartened by what you find – even a lack of data is useful. It tells you what's missing.

Exercises

1. Write down all the places you know where there is data stored across the company.
2. Now review your list by each channel and add in any data sources you may have missed.
3. Review your research questions. Highlight which ones that you think will be useful.
4. Go and get access to the ones you need. Keep your trusty list of data stores with you and when you try to get access, check to ensure it is the relevant data store and whether there are there any others.
5. (For product leads and sponsors) Start getting cosy and extra friendly with your BI and IT teams, especially the leadership of these departments. Or indeed anyone that holds keys to company data.

Got questions? Feel free to get in touch and we'll give you pointers – @joylab.

4.4. Stakeholder power combined

You are going to change things. It's both inevitable and desirable – and "if it ain't broke" doesn't apply here. To that end, you need to gather insights and win hearts and minds for your venture. You will need to engage a wide range of staff across your company to understand what's actually going on and ask them what they want. The steps to engaging your stakeholders are:

- Gather the stakeholders and experts
- Run brainstorming workshops
- Assess channel projects
- Capture requirements and prioritise

- Add detail and re-prioritise

4.4.1. Gather the stakeholders and experts

Across your company there will be those with a vested interest in your solution, such as stakeholders and knowledge experts i.e. the ones who know how a process actually works in your company. There are two main research ways to engage them:

- One-to-one interviews
- Stakeholder workshops (see below)

One-to-one interviews

We almost always favour workshops, however there are times when only a one-to-one interview will work because of availability, location etc. When you run one-to-one interviews it's always useful to follow a few key principles:

- Write down your questions before the interview.
- Rearticulate briefly to the interviewee why you are talking to them.
- Focus on listening, not telling.
- Ask open-ended questions.
- If they want to bemoan stuff, listen. It will make you seem receptive.
- If you know they are wrong, don't correct them. You are there to hear their view.
- Take notes.
- Afterwards write it up and share with the team.

NB: If the only time you can get with a key staff member is after work over drinks, so be it. The key is to engage and learn what this key person believes.

Experts

In addition to the key stakeholders, there are all sorts of other staff members who you will often need to engage. These include the experts. These are the folks who really know how a system or process works in your company. They know the nuts and bolts. Find the key ones for your brainstorming workshops.

For more on engaging the experts and wider operational staff, skip to Section 4.6 – Operations: assess findings with staff.

4.4.2. Run brainstorming workshops

Where possible, we almost always run stakeholder brainstorming sessions. They are fast (everyone's in one place), they break the business silos, explain processes well and begin the all-important hearts and minds process, winning everyone over to your project's aims early on. For more info on running stakeholder workshops, see author's SlideShare presentation on running user-centred stakeholder workshops[19].

[19] *http://www.slideshare.net/ferg4ddc/how-to-run-a-usercentered-requirements-gathering-workshop-8635307*

Clarks stakeholder workshop, July 2014 – taken from JOYLAB stakeholder co-design workshop with Clarks run by author, Fergus Roche

4.4.3. Assess the channel projects

Understand where your research sits within the wider organisation's current and future objectives. For many internal teams, this will be a straightforward exercise. Take the time to understand both current and future projects. For example, "IT are planning to upgrading the CRM and it will change X" or "we're rebranding next month". These projects can be either blockers or levers to your research outcomes.

Discover your company's project plans and understand their priorities. Join up the different channels. Start winning hearts and minds across the business for your research purpose. In addition, you may be able to use these projects to gain insight to support your project.

4.4.4. Capture requirements and prioritise

Gather requirements from stakeholder sessions and projects. And then prioritise in terms of chronological importance. Add as much detail as possible to those requirements that align to your research aims. Review and discuss them as a team, then play it back to your stakeholders for review and feedback.

Issue: Shouldn't we meet with the stakeholders first and then do the data analysis?

In practice, you will do both at the same time. Organising stakeholders can sometimes take time, aligning calendars, etc.

However, finding and getting access to data not in your control can take even longer. So start and plan them both from the outset and let findings from either step support the other. There is not one right order. Only what can be done quickly. Momentum is key.

Summary

You will need to engage people across your organisation that will have a stake in the systems and customer interactions you will change. These stakeholders will give you real insight into the way things work now. We recommend engaging them early on. There are two ways to do this:

- One-to-one interviews
- Group-based workshops

We recommend using the latter approach and run workshops. Design your workshops around your research questions and customer journeys. Aim to populate your workshops with a mix of stakeholders and experts from across your business.

Get them to explain 'how it all works' now. Learn about their issues and challenges. Ask them what they want and need to improve the customer experience. Definitely let them design. In the process, turn all this feedback into requirements for your new future. And then prioritise these requirements, based on your research questions and company aims. Critical activities you need to have completed are to have:

- Learned about stakeholder remits and how these will impact on your plans.
- Shared any findings you have gathered.
- Discovered their project plans and understood their priorities.
- Assessed channel projects.
- Captured requirements and prioritised them.
- Started to win hearts and minds for your research purpose.

Exercises

1. List the key stakeholders you will need to engage across the company, organised by your research questions.
2. List the knowledge experts across key customer journeys. These are the nuts-and-bolts people who actually know how things really work 'on the ground'. Talk to your key stakeholders about your project and ask them who the knowledge experts are.
3. Talk to key departments about projects they have in-flight or coming up that will either be blockers or which you can lever for your project.
4. Write down requirements. Do this as a team. Review these as a team. If they are loose and not very detailed that's okay. You just aren't ready to continue. Do more research.

4.5. Real customers and spending time with them

Yes, it's time to get out there and engage with the horse's mouth – the reason your business exists – the customer. This can still be partly deskbound (for example, running surveys, etc.), but there is simply no substitute for getting out and getting into their brains.

4.5.1. Why? Kirk versus Spock

Let's be honest, the Enterprise is a better ship with Kirk *and* Spock. You too are about to go boldly forward into the unknown, so you want both Kirk and Spock onboard. Kirk is qualitative research – he's empathy, all human. Spock is quantitative – cold, hard logic. He's all about big data.

The user research will be mainly qualitative in nature (remember, we are humans trying to design for better human interactions). Basically this will be asking them questions, listening and observing their behaviour. Learn what real customers believe about interacting with your company and what kind of relationship they want with your brand.

Use this information to compare with both the quantitative data you've been amassing and the opinions of your stakeholders. Attack the truth from five or six different angles and it might show itself. We use the following steps to carry out user research:

- Recruit real customers.
- Run qualitative tests with your sample set.
- Try to be structured in your research.

4.5.2. Recruit real customers

We need to be honest: recruiting real users is always harder than you expect. If you want a real representative sample of paying customers, it takes time. Again, start this task early – don't cheat and just recruit staff. You can obviously recruit through an outside agency – there are some great user recruitment providers, such as People for Research. But you can also do it yourself. Here's how:

- **Step 1: Throw out the net**
  - Use your social media channel to recruit, on Facebook (see below example) for instance.
  - Use your CRM/sales databases to email existing customers.
- **Step 2: Survey them**
  - Create a questionnaire and ask them what they think and believe.
  - Use the survey to gain some segmentation answers: age, gender, location, purchase frequency, which channels, etc.
  - Use an online survey tool – there are some great tools now that offer in-built analytics, such as Fluid Surveys or the ubiquitous Survey Monkey. Other survey tools include Toluna QuickSurveys, SurveyGizmo and Clicktools.
  - Use the survey to recruit for your user research – ask to contact them and offer incentives.
  - Don't make the survey too long. The longer the survey, the greater the dropout.
  - Put you marketing hat on – when you send out your survey, craft an engaging hook copy and, again, incentivise, perhaps a chance to win product X or a £20 gift voucher. Otherwise you will be waiting a long time for results.
  - You need a representative sample set of your population. Ideally, there are a number of key factors that help determine this, such as defining the margin of error and the confidence level (see aside on survey sample sizes below).
  - However, if this isn't possible, aim for between 400 and 600 respondents as a general rule of thumb.
  - Close your survey when it hits the right number, then using the survey tool's stats package, review and analyse.
  - Now gather a representative sample set of 10 to 20 respondents (exactly who you're after and who have agreed to be contacted).
  - Go and talk to them (see below).

	Confidence level = 95%			Confidence level = 99%		
	Margin of error			Margin of error		
Population size	5%	2,5%	1%	5%	2,5%	1%
100	80	94	99	87	96	99
500	217	377	475	285	421	485
1.000	278	606	906	399	727	943
10.000	370	1.332	4.899	622	2.098	6.239
100.000	383	1.513	8.762	659	2.585	14.227
500.000	384	1.532	9.423	663	2.640	16.055
1.000.000	384	1.534	9.512	663	2.647	16.317

Quick aside on survey sample sizes[20]

When a population is over 20,000, the sample size required doesn't vary massively. Now, if you can accept a confidence level of 95% (you can) and a margin of error of 5% (you can first time), then for any customer sample set of between 100,000 and 1,000,000, you only need 384 respondents. And for a confidence level of 99% it's 663. So 400 to 600 respondents will be fine.

NB: There's plenty of info online for sample sizes and sampling size calculators: https://www.checkmarket.com/market-research-resources/sample-size-calculator/.

Example: Using social media channels to recruit users

It's possible and viable to use your existing social media channels such as Facebook and Twitter to recruit users for your research.

While working with a well-known high street retailer, the author used their social media channel to gather research findings in UK, Poland, Canada and Indonesia. These countries offered a representative sample across the global audience. The approach included:

- Offering the first 50 participants Amazon vouchers, to get traction.
- Linking the offer to an online survey – to filter out non-target participants.
- Using remote tools – the task was to redesign the menus, so an online card sort tool was used.
- Following up a smaller group with a phone interview to explore the findings further.

This approach enabled the author to run research across multiple countries and gain the insight needed in a matter of weeks without shipping researchers to the specific countries involved.

NB: This example references an approach used by the author, Fergus Roche in a project for agency http://www.e3media.co.uk while at http://www.onebigfield.com.

If you have good traction with your customers through your social channels, then this can be a really useful channel for recruitment. Otherwise, you could engage a user recruitment supplier.

[20] *https://www.checkmarket.com/2013/02/how-to-estimate-your-population-and-survey-sample-size/*

4.5.3. Run qualitative tests with your sample set

There are many tests you can run, but the key things to do are to ask and observe. Get on the phone and ask questions. Get some customers into the office and observe how they interact with your website. Get others into one of your stores and observe what they do. Here are some typical research activities we run:

Phone interviews

- Arrange a time to call (morning, afternoon or evening). You can even include this question in the survey and let the customer decide.
- Create a crib sheet of ten questions you want to ask. Keep your questions explorative and, as a rule, don't ask them your main research question directly – usually it will be too contextual and exclusive (for instance, 'how do we increase greater cross-channel purchase behaviour?), or it will bias their answers.
- Write open-ended questions that cover the area of investigation (for example "tell me about the last time you bought a product from us") otherwise your interviews will be very quick and not much use.[21]
- For planning, assume an interview is 10-20 minutes and you can complete ten phone interviews in a single day per researcher.

Co-design workshops

Co-design workshops are an excellent way to gain insight with your customers. *"Co-design encourages the blurring of the role between user and designer, focusing on the process by which the design objective is created."*[22] There are various ways to run co-design sessions with customers – our favoured way is as a workshop. With co-design, when you mix real customers with stakeholders, something special can happen: real gems of solutions can come out of these sessions.

You now have multiple data sources reviewed and understood, you've run stakeholder workshops and prioritised a direction for your research. Now's the time to mix that all up with real, live customers to inform your thinking. Ideas formed now will have a high level of validity. Some tips for co-design workshops include:

- Run them after your stakeholder workshops, for qualifying some of the key scenarios you're investigating.
- Use them as you start to zero in on your design phase and you want to test your focus and thinking.
- Run sessions just like stakeholder workshops (as mentioned above), but remember:
  - Plan your tasks more carefully.
  - Look after the interviewees carefully and don't treat them like staff.
  - Use them wisely and listen to whatever they say. If they say something that makes no sense to you, or is just plain wrong, remember that it's true to them – just like with stakeholders.

For more info on co-design workshops and running them, we recommend reviewing The Story of Co-design by Think Public: http://ecly.co/story-co-design (video).

[21] *http://www.dism.ssri.duke.edu/pdfs/Tipsheet - Qualitative Interviews.pdf*
[22] *http://en.wikipedia.org/wiki/Co-design*

Focus groups

We prefer co-design sessions, but sometimes focus groups are useful:

- Gather a cross-section of customers together in a room (choose a nice room).
- Afternoons or evenings are good. Including alcohol (if your customers are over 18) can make things more illuminating. Remember, with focus groups it's all about getting the group discussion going and observing it to gain insight.
- Mix in small activities with the group discussions to break things up (try word-association games, for example "tick which word best describes your experience in the store", etc.).
- Give the group something to focus their attention on (such as examples of your products, brand elements, video of your store, projection of your website, etc.)

Usability tests

There are many ways to run usability tests to understand how well something is working, from lab-based tests at your offices and remote testing to in-store, or anywhere else that has the right user experience. Like most research, there are tried and tested methods for doing this. You will make mistakes but the gains from observing real customers doing a task you've begun to design are hugely beneficial. Some tips:

- The key here is observation – give the participant a task and observe what they do. Then interview them for feedback.
- We recommend starting out by running a remote, unmoderated usability test either using your own sourced participants or ones supplied. There are now plenty of really good services, such as www.usertesting.com and www.whatusersdo.com.
- Skip the lab tests when you're starting out – they can be expensive.
- If you want to observe the participants directly, bring them into your offices and run your test session in one of your meeting rooms.

NB: Online remote services aren't always great in some countries, but they are getting better. However, this is still a cost-effective way to run user testing in lots of countries from your desk in HQ.

For more info on running user testing:

- Great explanation on running lab-based user-testing
  http://techcrunch.com/2014/02/26/how-to-run-live-user-testing-part-2-test-day/
- Rocket Surgery Made Easy by Steve Krug: Usability Demo
  https://www.youtube.com/watch?v=QckIzHC99Xc
- Playtesting – critical components of user testing
  https://www.youtube.com/watch?v=on7endO4lPY
- Breaking your bad habits
  http://www.usertesting.com/blog/2014/05/27/the-top-10-user-testing-bad-habits-and-how-to-fix-them/

On-site 'live' testing

Live testing is carried out in the target live environment with real customers, who DON'T know they are being tested, in order to learn about the user experience we're designing for. It seems to work especially well with cross-channel experiences, such as physical to digital. Unlike A/B and multivariate testing [ii], it's designed for testing early prototypes of a solution.

By using rapidly-built prototypes, live testing offers real-time user data and insight from a product/service/app that's as close to the real thing as possible. By resembling the real thing, acting like the real thing and even offering similar interactions and content to what users would encounter with the live solution, we gain tremendous insight. This is what it's all about.

Be aware, this type of user testing is not straightforward. But if you've got the stores and the customers, you can get out there and start testing your prototypes in a real store. This is especially relevant to those elements that start in the store like in-store ads, POS devices and other types of staff-supported customer engagement.

For more info on running live user testing, see 'Get out of the lab! Run live user testing for omnichannel', a blog post from JOYLAB: http://joylab.co.uk/blog/run-live-user-testing-we-dare-you/.

4.5.4. Try to be structured in your research

There is a balance between rigid process and keeping things moving. Where possible, employ some structure to your research. But don't let this become a barrier – for example, sticking rigidly to some initial questions that aren't relevant in a certain scenario. Remain flexible and sponge-like. You are doing this to learn.

Having robust approaches will help you in two key ways:

1. It will make your research more dependable and accurate.
2. You will be questioned by stakeholders, especially if you're testing their assumptions. You need to be able to show your results and they will need to stack up – or at least gain their trust.

Summary

You need to get out into the field and spend time with real customers. There are various ways to engage real customers for your research aims. Use the following approaches:

- Recruit real customers – use your CRM and social channels.
- Survey them to ask specific questions related to your research.
- Engage a small sub-set to run qualitative tests, such as phone interviews, co-design workshops and usability testing.
- Try to be structured in your research – it is important to develop some robustness in your approach.

By the end of this phase, you should have an updated, richer appreciation of your customers and their needs. Combine this with your findings from your databases and stakeholders' opinions and you will be in a strong position when you begin to design solutions for them.

Exercises

1. Investigate which method for engaging customers will work best for the project (CRM emails and/or social channel).
2. List the questions you would like to ask customers when you survey them.
3. Turn your questions into a survey using an online survey tool. Review and run it.
4. Think of ways to run a co-design session with real customers and which stakeholders should you also bring along. Plan it out and list out unknowns or things you are unsure about.

4.6. Operations: assess findings with staff

Use operational staff to fill in the blanks in your research findings. Bed your findings around actual operational processes and uncover hidden opportunities and solutions.

By now you should have already engaged various key operational staff during the workshops. However, it can often happen that these early stakeholder workshops are only with senior stakeholders. If you haven't engaged operational staff – those who actually manage the customer touchpoints, like shop staff, management, customer services, shipping and returns departments, etc. – now is the time. They can often tell you what's really happening about how processes actually work, rather than you relying on any documented processes (which often aren't accurately documented or don't exist).

Engaging them can be as simple as taking your findings to operational staff, especially if they're not based at HQ – make the trek, visit and engage them.

Ultimately, when the changes you're designing go live, these are the teams that may have to deal with it. Our experience has shown that there are often some real gems of insight within operational teams. In summary, we tend to run some or all of the following steps:

- Engage a wide spread of operational staff.
- Fill in the blanks in your findings and gain context.
- Run brainstorming sessions to help shape your findings.
- Co-design with operational staff.

4.6.1. Engage a wide spread of operational staff

If you have multiple operational teams in different stores doing similar jobs, assume there will be variation. Don't just rely on one team to represent the rest. They won't. Cherry-pick from across the stores and run workshops to explore.

An alternate approach if you need to engage a large workforce is to apply the same approach you used with your customer research. Create a survey, keep the questions focused, get them to confirm their department and location, etc. Again, filter them for phone interviews or invite them to workshops. If there are intranets and forums that staff use, try these. (Although we've not found these particularly useful, except to display the project results and provide a status point to direct people to internally.)

4.6.2. Fill in the blanks in your findings and gain context

Quite often you will be gathering data from disparate sources and will have blanks. Lots of them. Especially if it's high-level staff. There will come points when you really need to understand the specific actions taken by customers. And the processes that flow from these actions.

Operational staff will fill in many of the blanks and help you to connect up your findings – as well as offering an additional data source.

4.6.3. Run brainstorming sessions to help shape your findings

Use operational staff as a sounding board to test any findings. Always run sessions mixing staff from different departments. Aim to get them thinking from the customer's point of view by framing the session around user journeys.

Depending on the nature of your research, you can simply expedite things and bring them into the earlier stakeholder workshops, mixing up senior and operational staff. But this should be guided

by your research questions. Wave your sponsor stick with operational management and get them into your workshops. As with customers, run co-design sessions too with staff.

Process-mapping interactions with operational staff image taken from a project run by the author, Fergus Roche, at JOYLAB[23]

Summary

Use operational staff to fill in the blanks in your research findings. Across these teams are the knowledge experts who really know how your company is run, especially around customer touchpoints. Key tasks to complete are:

- Engage operational staff.
- Fill in the blanks in your findings with the staff.
- Run brainstorming sessions with operational staff.
- Where possible, also co-design with operational staff (and customers).

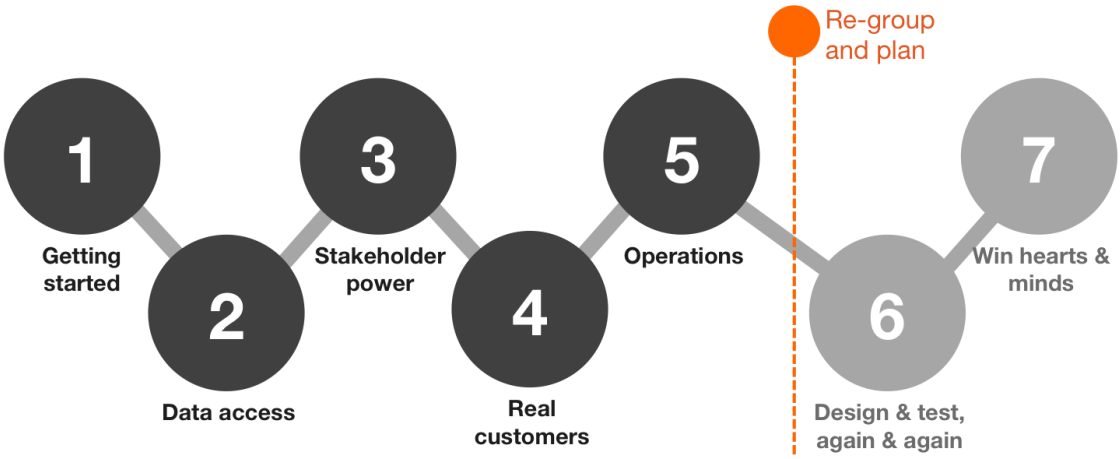
Exercises

1. Who can you identify as key knowledge experts across the key user journeys? Write them down.
2. Think about where you and your A-team really lack knowledge about the workings of your company – in relation to your research questions. List out the relevant departments you will need to approach.

[23] *JOYLAB partnered on the project with National Theatre Wales and NoFit State Circus. The project was supported by the Digital R&D Fund for the Arts in Wales – Nesta, Arts & Humanities Research Council and public funding by the National Lottery through Arts Council of Wales.*

4.7. Plan before you design

STOP and take stock. You should by now have completed steps one to five:



You should have the following information before entering the design step:

- **Research findings** – with conclusions and useful insights
- A **prioritised set of requirements**
- Some **solution ideas** – gained from engaging stakeholders and customers
- **Sponsor sign-off** to proceed

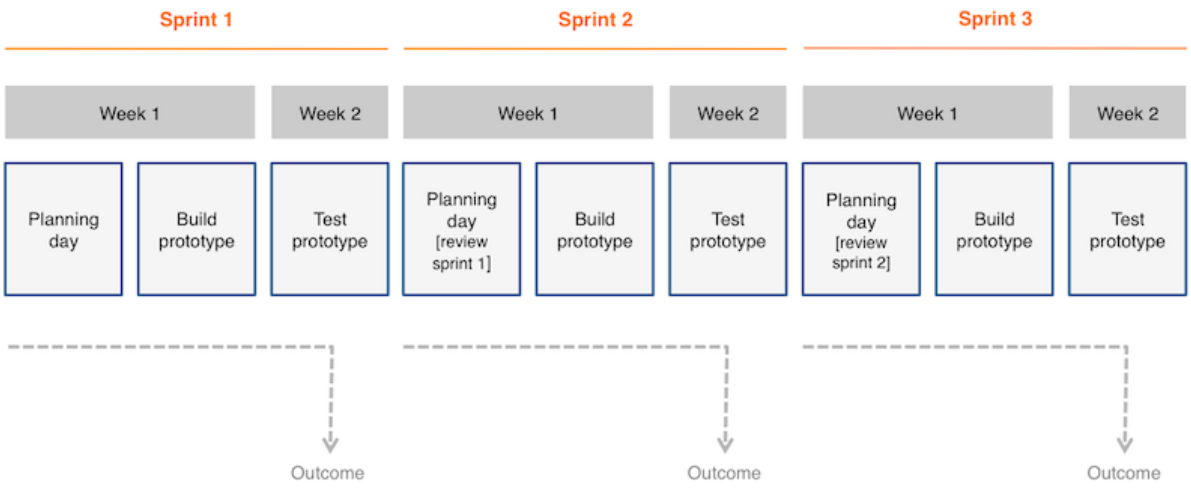
Now it's time for some planning. At this stage we recommend:

- Reconcile your budget to date – how much time/effort/cost have you spent on research?
- Estimate on the key requirements you intend to design and test.
- Plan out the design phase.
- Schedule any additional resources required.
- List dependencies for design phase.

How to run the design phase

During the research phases, time can stretch out as you are dependent on data and staff availability. For the design phase, you can take much tighter control over the variables.

We recommend running the design phase along a series of sprints, applying agile project methodology. There's lots written about agile project methodologies – it is a wonderful approach to technical development. We tend to run the design (prototyping and testing phase), over a series of two-weekly sprints. [iii]



Sprint-based, rapid-prototyping approach

This approach is iterative, namely you design and build a prototype in week one and then test it during the next week. At the end of the two weeks, you get together as a team, run a planning day and implement your learnings into the next iteration.

You can demonstrate to stakeholders and sponsors per sprint. However, we recommend that you're able to run with some autonomy and demo on a monthly basis. This approach has the added benefit of simplifying the management of the design phase.

For more info on the project planning approach, see the Budgeting and planning section.

Summary

Before you reach your design step, it is important to stop, take stock and do some planning. You should have the following tasks completed:

- Research findings – with conclusions and useful insights
- A prioritised set of requirements
- Solution ideas – gained from engaging stakeholders and customers
- Sponsor sign-off to proceed

Working up a plan going into the design and testing phases will include:

- Reconciling your budget to date
- Estimating on the key requirements for design
- Planning out the design phase e.g. scheduling, resourcing

Get this done and you'll be in good shape to move forward.

4.8. Design and test, again and again

When you start to dig you will find holes. It's the nature of research. Sometimes it's easy when you start unpicking business processes that have grown organically. But you need to make bridges too: this is what the design phase achieves. At first you only need to create a prototype, something simple that demonstrates your solution in a way that you can both test and demonstrate.

As you progress through the design phase, iterating your solution, you will finish up with a working (and tested) prototype that demonstrates what you need to build for production. The design phase has the following steps:

- Complete design planning
- Design a prototype
- Test it
- Iterate and demonstrate

4.8.1. Complete design planning

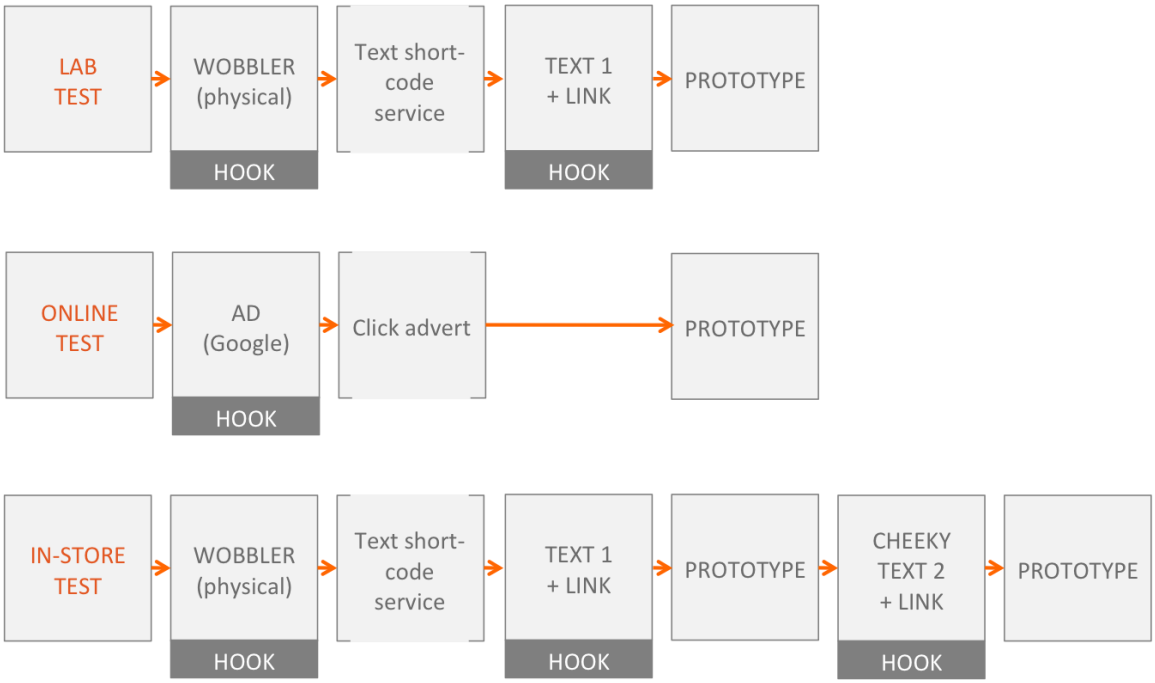
When you begin the design phase, you really want to have your ducks in order: analysis findings are clear in the team, key requirements are prioritised, and time and space is allocated for the team to complete the design work. During this phase, it is critical that the project lead protects the team to just focus on the design. And likewise, the sponsor protects the team from stakeholder micro-management. Ring-fence and protect your fledgling designers.

For more info on the design planning, skip back a step to Section 4.7 – Plan before you design.

4.8.2. Design a prototype

The aim here is to design a prototype you can test and demonstrate. As previously stated, it can be paper-based, interactive, a simple web-based click-through demo that works on a mobile, etc. For more info on designing prototypes, skip back to Section 3.2 – Defining rapid prototyping.

For omnichannel rapid prototyping, sometimes you are designing processes that sit across channels. The most obvious distinction is between the physical and digital. Chunk up the elements to be tested, building up components of the overall process.



Process flow for a series of tests run across physical and digital (a Wobbler is a shelf advert device which wobbles to get the customer's attention)

Remember, keep it simple and specific if you can.

4.8.3. Test it

It's odd how testing often gets forgotten. Don't. Remember you believe it works, you designed it – so you're biased. Now is the time to be wrong, not later. Start with those users you've already engaged. Get them in a relevant environment (ideally their own), run task-based tests, observe and assess.

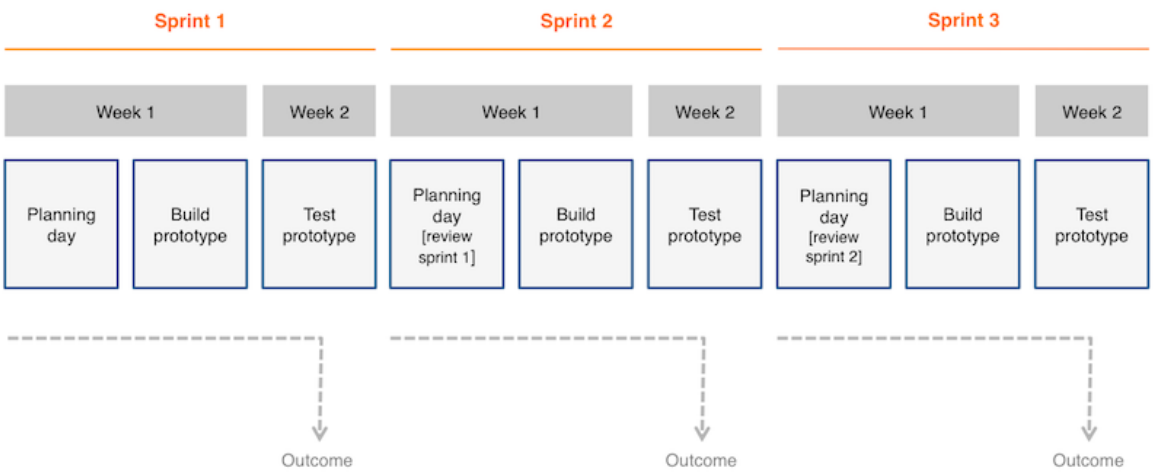
For more about customer testing, skip back to Section 4.5 – Real customers and spending time with them which looks at:

- Focus groups
- Usability tests
- Live in-store testing

4.8.4. Iterate and demonstrate

Post-testing, make any necessary adjustments to your prototype. Or scrap it and start again. Did it test well? Were the results relevant? Is it ready to demonstrate?

If it is ready, demonstrate. And move onto the next sprint. Below is a diagram of a three-sprint design phase:



Once you have completed the first sprint, you move onto the next design iteration and update or build a new prototype of the solution. Rinse and repeat across each iteration/sprint. And at the end of the design phase, you will have:

- Created a working prototype of the key requirement(s).
- Designed the solution in collaboration with stakeholders and/or users.
- Tested your prototype to see if it works.
- Demonstrated your solution to the key stakeholders.

For more on iterating across the design phase, skip back to Section 4.7 – Plan before you design.

Summary

During the design phase you need to create a prototype of your proposed solution and then test it. This solution answers your prioritised requirements. After you have tested it, regroup, take on board the learnings and iterate your design i.e. adapt and refine your prototype and then test again. Continue this cyclical process until you are confident of your design. Key outcomes from the design phase are to have:

- Created a working prototype of the key requirement(s).
- Designed the solution in collaboration with stakeholders and/or users.
- Tested your prototype to see if it works.
- Demonstrated your solution to the key stakeholders.

Exercises

1. Create a paper prototype of a new store locator service designed for mobile phone users. Design for the following scenario:

   The user is walking along a city centre high street and can't find your store. They get out their mobile to find out where the store is (NB: this is an existing customer).

2. Walk into one of your stores and ask a customer to test your prototype.

Got questions? Feel free to get in touch and we'll give you pointers – @joylab.

4.9. Win hearts and minds: share your findings

R&D works best in a permissive culture where its value is understood. Take the time to explain your findings and develop a growing understanding of what you're up to. When people across your company know about your findings and the outcome of your pop-up lab – and the extra insight you are gaining – it will be easier to win hearts and minds for this approach to R&D. And that means it's easier to find support with future research efforts.

In an ideal world, you will embed these processes into your organisation. You will have your own lab. Where this is a reality, regular communication of what the R&D team is up to is critical (unless commercial reasons preclude this).

Share learnings

Take the time to write up and share your findings. If you can do this while your pop-up lab is running, all the better – it will be much easier further down the line. Write blog posts, make videos, present at company meetings and share research assets.

One of the simplest ways is use your company's intranet. This can pay dividends later on:

- Share regular updates (such as blog posts) on what you're doing.
- Take the time to compile a short montage of clips of any video evidence you've accrued. Aim for any about 1-2 minutes long that highlight your findings.
- Take pictures of workshops and share these. Get your team to post every week, building up evidence.

NB: If for any reason the company intranet isn't very good, just create a password-locked blog on a free blogging platform like Tumblr and share this via email – especially to key stakeholders and sponsors.

4.9.1. Get into dialogue and gain further insight

Remember it's all about gaining insight and feedback: especially if you do this exercise from the beginning. Answer questions and engage staff. Go wide. It can be a great way to get some feedback on your research and hear from people within the organisation that you didn't talk to originally.

Summary

You need to take the time to engage the wider organisation not only to help in the research but also to pave the way for the organisational change that your work will create. Key steps to complete are to:

- Share learnings – take the time to write up and share your findings.
- Get into dialogue and gain further insight.
- Win hearts and minds – R&D works best in a permissive culture where its value is understood. Take the time to explain your findings and develop converts.

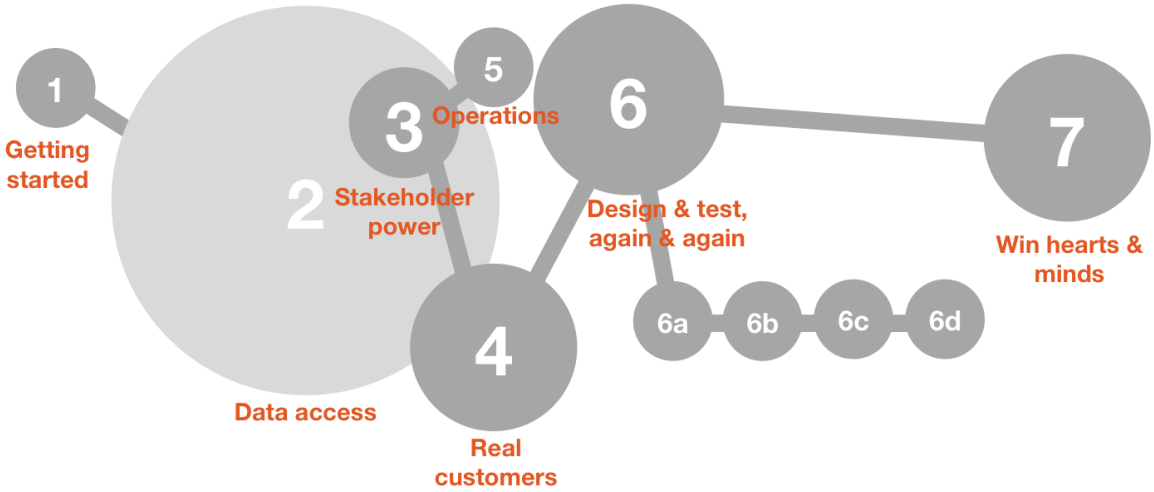
Exercises

1. List the key ways you can use existing internal communications to share information about your project, through an intranet news post, for example. Prioritise these around both ease of access for you and reach within the company.
2. List five alternate ways you could engage stakeholders (i.e. senior management and staff) about your project and share all the incredible learnings you will discover.

3. Imagine your budget for communicating your project has become limitless. List five ways you would go about engaging your colleagues, for example, create a mock-up shop, with customers and gadgets from five years in the future. Now brainstorm with a colleague just how you can do any of that with just a morning's effort (and no real budget).

4.10. Remember, these are guidelines not rules

So that's it: an in-depth look at our seven-step process to setting up and running a pop-up lab. Does it matter if you do it in this order? Not always, but it can help. Especially to get into the swing of doing in-house research. However, sometimes you can't – some data always takes time to get hold of and staff calendars won't align around your research. Also, some steps are more productive when you do them simultaneously. Below is an example of the seven-step process in action from one of our projects:



The seven-step flow... for real

The key is to be flexible and opportunistic. Stay small, plant your research questions as a rallying point, range out and hunt down the answers you're missing. Keep eyes and ears open, cover ground quickly, and look for patterns and signs. Then you will see a path open up or an idea worth following. As a team, design for that idea. Test and iterate it. And test it some more. Then if you and your sponsors are satisfied, go build your future for real.

5. Challenges and Opportunities

There is an argument that you should leave the research to 'proper' researchers – either academic researchers or companies like, well us. We don't agree with that (hence this guide). Go and get stuck in. Observe customers' actual behaviour, look at the stats of dropout, and puzzle it out. And if you're lucky, (very lucky), you'll see the truth. Prod and prod until the data stops being fuzzy and the patterns emerge. Don't worry, keep doubt to hand, and dig.

But, and there is always a but as you guessed, there are pitfalls or challenges on the rocky road to answers. However, know that these are the same for experienced researchers too.

Luckily there are, we believe, clear opportunities too – and not just tactical ones on the lead up to Christmas, but many, many more. Still, let's start with the challenges.

5.1. Challenges

There are several key challenges to overcome in doing R&D work like this. They are critical and, in some cases will be down to human nature. These include:

- Don't lead users, listen.
- The truth is always slightly to the left.
- Known knowns, known unknowns and unknown unknowns.
- Making mistakes means you're making decisions.
- Stay small, go guerrilla.
- Just enough.

5.1.1. Don't lead users, listen

During your research, you will be engaging people: asking them questions, observing user behaviour and facilitating workshops with stakeholders. You will hear things that you will believe or know to be wrong – things that aren't relevant to your research or contradictory. It is critical to keep an open mind and listen; not to steer people to say what you want or expect them to say. This is one of the hardest things about research.

We all have a world view, full of assumptions. Especially so at work, where we need to make decisions based on our knowledge. We all feel we know far more than we actually do, this is typically human. It's called confirmation bias [iv].

Empathy is the key trait here. Help people to open up and tell you what they believe – whatever it may be. And when you facilitate groups of people, help everyone to take part. Sometimes it's the quiet ones who will give you that lead. Or even one side of the truth.

5.1.2. The truth is always slightly to the left

The best way to find stuff out is from at least five or six different angles. It's not that people are wrong, it's just that there are usually gaps in people's knowledge. Run quantitative analysis and look at the stats. But also talk to and observe real people. Ask the opinions of your frontline staff, managers and developers too. Just never do only one or the other. Always cross-reference. Attack the truth from five or six different angles and it might show itself.

5.1.3. Known knows, known unknowns and unknown unknowns

This odd phrase, famously used by Donald Rumsfeld (US Secretary of Defence during the Iraq War), is very pertinent when doing research. Really.

There are things that you will know (*known knowns*) going into the research, for example, customers use mobile phones to find stores, but these need confirming for accuracy and importance. There are *known unknowns,* such as customers use mobile phones, but do they use them for purchasing? While in store to browse the catalogue? How much? Which phones? These need answering. And then there are *unknown unknowns*, things you know nothing about.

Research will help you discover new things. Good and bad things. Confirm the things you know, answer the known unknowns and discover the unknown unknowns. Take this to heart.

NB: There is a fourth factor, the unknown known (as extrapolated by Slavoj Žižek in reaction to this Rumsfeld-ism), which is worth bearing in mind – the things we intentionally refuse to admit/include. In our world of rapid prototyping, this can include typical things like:

- Ideas and requirements that are deprioritised
- Findings that are obviously out of scope

But it also covers our biases – our decisions to ignore evidence, metrics and the elephants in the room. Be aware.

5.1.4. Making mistakes means you're making decisions

This is often a hard one to let in to the process. Many of you reading this don't want to make mistakes, there's just too much at stake at work day to day. But that can often mean no decisions are made. Or only small decisions, with marginal impact to keep risk low. However, for your pop-up lab it is critical.

This is why we work small and iterate. It becomes permissive to make leaps! If you build a prototype out of paper, it's throwaway. As the effort was minimal it doesn't matter if it fails. Nor will you get emotionally attached to your design either (and we all do). In addition, making decisions is critical to gaining momentum. Analysis and brainstorming must never fall into procrastinating – here it's critical that the project lead supports the risks and leads.

When you plan out your design phase, make sure you have at least three iterations. If you don't you won't be able to fail. Having two iterations doesn't count as the pressure will be on the second if the first fails. Plus, you won't test the second as you won't be able to make any changes. And now it's a small fatal slip right back to where so many digital projects sit: build a prototype, test it and… "okay, let's go straight to development".

5.1.5. Stay small, go guerrilla

Speed is of the essence, so keep the core team small. Single digits only. Make sure the team are freed up to make decisions on the fly and not burdened with too much oversight. This means you have review milestones for the sponsor (and stakeholders), but otherwise let the team get on and don't let management micro-manage their decisions. If this happens, the lab will grind to a halt and die. This is why Skunk Works rules one and two are:

- The Skunk Works manager must be given practically *complete control* of his programme. (S)he should *only report* to a division president or higher.
- The number of people having any connection with the project *must be restricted in an almost vicious manner*. Use a small number of good people.

A critical component of the team is their ability to get to key stakeholders and unlock data. Make sure when going into the research that the team get the support they need – remember *empower your team: give them the skeleton key to the company*. This is a pivotal role of the sponsor – they need to support the team by opening doors and clearing paths.

5.1.6. Just enough

One of the key concepts from the agile project methodology is 'just enough', i.e. *"the goal being to have just enough documentation at just the right time for just the right audience"*.[24] This approach should be applied throughout the project to all elements, especially your prototypes.

It's very easy to assume you need much better looking prototypes to get a valid response. As detailed in Section 3 – The Pop-up Lab, the level of fidelity and complexity of a prototype needed to demonstrate and test is often far lower than you might think. The watch phrase should always be: "what's just enough to provide valid data/insight?". This along with momentum are probably two of the most important elements.

5.2. Opportunities

> *"Like it or not, we live in interesting times. They are times of danger and uncertainty; but they are also the most creative of any time in the history of mankind"*
>
> *(Day of Affirmation speech, Robert F. Kennedy, Cape Town, South Africa, 1966)*[25]

The world we live in, where digital is binding channels together into one potentially holistic (or continual) experience, and where location and connection will only diminish or increase the fidelity of our shopping experience, is enabling these interesting times. Think of showrooming – the early reaction to this was fear and negativity.[26] Then a retailer like Sneakerboy positively embraces it in their Australian store design – removing tills *and* stock; and instead handling all sales online with fulfilment to customer out of Hong Kong to reduce costs for customers [v].

An omnichannel future will abound with opportunity – both for the customer and the prepared retailer. Just take shipping for a moment. Amazon is stepping completely leftfield with Prime Air[27] using drones to deliver goods to customers, potentially cutting down the delivery time to under 30 minutes. Yes, the US flight authority has grounded the programme[28], but Amazon has pivoted and is testing in India[29]. If you think it's a marketing gimmick, the recruitment for Amazon's R&D team[30] doesn't demonstrate this. And Google are confirmed too, with Google Wing[31].

Now it's true that most retailers don't have these companies' R&D budgets, but why does Amazon set such margin aside for R&D? Senior management believe in it – specifically Amazon CEO, Jeff Bezos.[32]

[24] http://www.agilemodeling.com/essays/agileDocumentation.html
[25] http://rfkcenter.org/day-of-affirmation-sud-africa
[26] http://www.theguardian.com/media-network/media-network-blog/2014/jan/15/showrooming-opportunity-retail-threat
[27] http://www.amazon.com/b?node=8037720011
[28] http://timesofindia.indiatimes.com/tech/tech-news/Amazon-seeks-FAA-permission-to-test-drones/articleshow/38209916.cms
[29] http://thediplomat.com/2014/08/amazon-will-test-drone-delivery-system-in-india/
[30] http://www.amazon.com/gp/jobs/ref=j_sq_btn?jobSearchKeywords=%22Prime+Air%22&category=*&location=*&x=34&y=8
[31] http://www.digitalstrategyconsulting.com/netimperative/news/2014/08/google_tests_home_delivery_drones_with_project_wing.php
[32] http://www.businessinsider.com/why-i-jeff-bezos-keep-spending-billions-on-amazon-rd-2011-4

R&D Spend in $B	2011	2012	2013	YOY Growth %
Samsung Electronics	9.1	10.6	13.2	24.53%
Intel	8.3	10.1	10.5	3.96%
Microsoft	9	9.8	10.4	6.12%
Google	5.2	6.8	8	17.65%
Amazon	2.9	4.6	6.5	41.30%
IBM	6.2	6.3	6.2	-1.59%
Cisco	5.8	5.5	5.9	7.27%
Qualcomm	3	3.9	5	28.21%
Oracle	4.5	4.5	4.9	8.89%
Apple	2.4	3.4	4.5	32.35%
HP	3.3	3.4	3.1	-8.82%
SAP	2.6	3	3.1	3.33%
Total	62.3	71.9	81.3	13.07%

Top 10 R&D spenders, in $B across 2011-2013
http://www.appsruntheworld.com/menus/pageSecondaryLink/37/6

Our seven-step approach will allow you to begin to make R&D permissive, or adapt your existing R&D practices.

Take a step back and imagine your company's future. A future where all things are connected, in real time. A future where you can readily redesign and react to market forces, particularly the digital forces that are reshaping retail for the foreseeable future. You can design for it rather than passively await it. You can investigate it with our approach and discover the opportunities that you see other companies in the market taking.

5.2.1. We are all creative

Know this too – we are all creative. While many agencies sell their creative capacity – it's what you want (see below excerpt from the SoDA Report 2014[33]), you too have creative capacity. And *way* more than you believe.

Excerpt from the 2014 SoDA Report

The greatest resource your business has to grow is the minds of you and your colleagues. To change and adapt, is to be creative. There are no specials. Or as Vitruvius said in The Lego Movie: "*You are the most special, most talented, and most extraordinary person in the universe*."[34]

[33] https://econsultancy.com/reports/the-soda-report-digital-marketing-outlook-2014
[34] http://en.wikiquote.org/wiki/The_Lego_Movie

6. Budgeting and Resourcing

Trust the method and you can plan for the unknown has always been a watch phrase for us. Our approach is not specific to a problem or solution. It's the other way round: it is an approach to defining the problem and designing a solution for the problem. It is possible to even complete all the steps in a day, especially if you have access to the data, customers for testing and can knock together a team the day before. Below are three key areas to help you get off the ground:

- Budgeting and planning
- Resourcing
- Backing

6.1. Budgeting and planning

The key to budgeting is understanding your constraints and working back from them, be it a deadline, the complexity of your company's existing systems etc. Constraints are no bad thing, they help to frame what can and can't be done in real terms. There are a few key principles that apply to project management:

- Time
- Cost
- Scope
- Quality

Let's apply these terms to consider budgeting for a rapid prototyping project.

6.1.1. Time

When starting out, set yourself a timeframe and work to it. Even if there isn't a deadline, create one. Design all your tasks back from your timeframe. Make sure the timeframe is short enough to build momentum. Adjust as you go, but hold to your timeframe. Rally the team, clear the path and keep to your timeframe.

6.1.2. Scope

This is something you often define as you go during the project. During the research phase, you have your research questions and a loose idea of where to look, for example POS data in-store, but stock-keeping practices are out of scope.

After your stakeholder workshops and once most of your early research has been completed, you will have captured lots of requirements and before you begin designing, you will need to have prioritised them. Now you can start working out your effort to design for, also known as cost.

6.1.3. Cost

Estimations. Finger-in-the-air. "But we need to sign something off!" Ah, costing it all up. First things first, accept that as a human you can't always estimate accurately. Experience and practice obviously help, but you're wandering off into the unknown here.

For the early research tasks, such as looking at your data, break up the tasks into the effort involved:

- Someone (researcher) spends two days looking at available data.

This effort of two days, can now be costed. For running workshops with stakeholders, determine how many there are, how easily you can get them together and assign some time:

- Workshop preparation (Project Lead) – 1/2 day
- Run workshop (Project Lead, Researcher) – 1 day
- Compile findings (Researcher) – 1 day

Okay, that's 3.5 days of effort (cost). And so on through the step tasks. Once you get into the work, you will discover how accurate you have been, where the blockers are etc. And then readjust and keep a clear eye on the scope, timings and where things are taking longer than your initial estimate.

Next, assign some time to build and test a prototype. But you don't know yet what you're building?! That's okay. A simple rule of thumb we often use is: a week to build a prototype, one week to test it. That's a two-week sprint of effort. Assume you will run a series of sprints (iterating and testing your design concepts).

By fixing a window of effort into a two-week sprint arbitrarily, you have defined the available effort (cost) you can apply to your requirements (scope). This will also help to define just how much time you can spend on making it good (quality). Let's look at quality.

6.2. Quality

Quality is defined in two ways in rapid prototyping for us. One is *just enough*, as mentioned above. The quality of the prototypes and the documentation should be just enough to move you forward. During the research elements, you need to be 'confident' that your research has shown you the 'truth'. Your confidence should be determined by the quality of your findings.

Quality can be tricky in rapid prototyping. We all often want to make things production-ready, especially where we're trying to make something look like it is production-ready for customers to test and stakeholders to get buy-in. But if you stick to the concept of *just enough*, it can really help to steer you through the quality riddle. For more on planning for the design phase and developing your prototypes, see Section 4.7 – Plan before you design.

NB: 'Just enough' is key to the agile project methodology and a key concept of lean UX with Minimum Viable Product (MVP) [vi].

So what does this actually look like? Below are two examples of rapid prototyping projects we have run over the last year. The first was over six weeks, the latter six months. The project schedules (as a task list) are displayed to show working examples of our approach.

Example 1: A six-week rapid prototyping project

Earlier this year we ran a rapid prototyping project for a SaaS product within the FMCG market. At the start of the project it was clear there had been considerable market and customer analysis (both in-house and with agencies). And this data (both raw and prepped) was made available to the team. In addition, the starting point was a two-day immersion workshop, organised by the lead organisation, pulling all the key experts and stakeholders together for a big old ideation session.

So off the bat, we had both *access and assess the data,* plus *combine the power of key stakeholders*. After some further rounds of planning and prep, we ran a phase of rapid prototyping. Below is the schedule (as a task list) from the project:

Pre-design		
		Getting started
	Mar-Apr 14	Project prep, planning & contractual sign-offs
		Access and assess the data
	Mar-14	Supplied by 3rd party agencies and internal parties (raw data & research assets)
		Combine the power of key stakeholders
	Mar-14	2 day workshop with key stakeholders, 3rd party agencies & product experts
Design & testing		
		Spend time with real users
		Design a solution and test it [v1]
		Sprint 1 (online testing)
Week 1	May-14	Planning day
	May-14	Create all design & copy assets for test 1
	May-14	Review design assets
	May-14	Deliver design assets
	May-14	Create prototype
	Jun-14	Combine design assets with prototype
Week 2	Jun-14	Confirm discussions with target store(s)
	Jun-14	Review prototype
	Jun-14	Confirm testing
	Jun-14	Test preperation
	Jun-14	Run online test
	Jun-14	Findings
Week 3		**Sprint 2 (lab testing)**
	Jun-14	Planning day
	Jun-14	Recruitment briefing
	Jun-14	Organise test lab & prep
	Jun-14	Create all design & copy assets for test 2
	Jun-14	Review design assets
	Jun-14	Deliver design assets
	Jun-14	Create prototype
	Jun-14	Combine design assets with prototype
Week 4	Jun-14	Review prototype
	Jun-14	Test preperation
	Jun-14	Run lab test
	Jun-14	Observe testing
	Jun-14	Findings
Week 5		**Sprint 3 (in-store testing)**
	Jun-14	Sprint 3 planning day
	Jun-14	Recruitment briefing
	Jun-14	Organise test lab & prep [or store]
	Jun-14	Create all design & copy assets for test 2
	Jun-14	Review design assets
	Jun-14	Deliver design assets
	Jun-14	Create prototype
	Jun-14	Review prototype
Week 6	Jun-14	Prototype amends
	Jun-14	Test preperation
	Jul-14	Run lab test
	Jul-14	Observe testing
	Jul-14	Findings
	Jul-14	Presentation prep
Post-design		
		Share findings and win hearts & minds
	Jul-14	Presentation

Example 1 schedule of work (six-week rapid prototyping), taken from a project led by the author, Fergus Roche, at JOYLAB

Example 2: A six-month rapid prototyping project

Here is a schedule from a recent six-month rapid prototyping project. When we began the project the team set the 'key test', the one we needed to aim for, as 1 May – it needed to tie in with a large scale event. This became the fourth live test (see below).

Date	Task	Est. Days	Actual days
	Getting started		
Nov-13	Project sign-off by funders	n/a	n/a
Nov-13	Project team set-up	n/a	n/a
	Access and assess the data		
Dec-13	Competitor analysis	2	1
Dec-13	Data analysis	1	1
Jan-14	Tech audit of existing systems	1	0.5
Dec-13	Tech audit meetings	1	0.5
Jan-14	Map out existing channels	1	1
Jan-14	Context documentation	0	2
	Spend time with real users		
Dec13-Jan 14	Audience research	7	7
	Audience research	0	0.5
Dec13-Jan 14	community engagement	3	1.5
Jan-14	Output	0	2
	Combine the power of key stakeholders		
Jan-14	Assess findings with operational staff stakeholders co-design sessions	2	3
	Stakeholders co-design sessions	0	2
Jan-14	Audience co-design session	2	3
	Design a solution and test it [v1]		
Jan - Feb 14	solution design	4	3
Feb-14	Initial prototyping	5	3
Oct 13-Jun 14	Present prototype to partners	1	4
Feb-14	Prototype testing [test 1]	2	2
Mar-14	Further prototyping	0	2
Mar-14	prototype testing [test 2]	0	1.5
Mar-14	Further prototyping	0	2
Mar-14	Prototype testing [test 3]	0	0.5
	<Plan before you design>		
	Design a solution and test it [v2]		
Mar-14	Visual design	4	5
Mar - Apr 14	Solution build & amends	18	18
Mar-Apr 14	Support across the development phase	0	4
Apr-14	Solution testing [test 2]	4	0
	Solution testing [test 2]		0
Apr-14	Content creation	3	3
Apr-14	Content amendments	1	1
01-May	Live test run [test 3] [test 4]	3	3
30-May	Live test run [test 5]	0	2
Jun 14 -	**Share findings and win hearts & minds**	n/a	n/a

Example 2 schedule of work (six-month rapid prototyping), taken from a project led by the author, Fergus Roche, at JOYLAB

The estimated days column shows estimates from back in October 2013. We had a date to work to, 1 May 2014, giving us the *time* variable. We also had an available budget for the work, giving us *cost*. This leaves two dimensions to plan against: *scope* and *quality*. To handle *scope*, we applied the method and then once into the project, the scope of the solution design and testing became apparent. For quality, we used the *just enough* approach and applied multiple approaches to the research tasks to given us the confidence to move forward.

Using the above approach, once you have assigned available effort, i.e. *time* to a given activity (labour days), you can assign a monetary value to each labour day. This will give you your budget. Or, work in reverse, and cut your tasks to your budget. In practice, it is usually both. As during your budgeting, you will oscillate between both till you plant your flag, pick a number and get sign-off.

Just try to be honest. And remember, if you're not doing the work, get those who will actually do the work to do the estimate too.

6.3. Resourcing and building your A-Team

When choosing your team, the key here is to keep it small and nimble. More than three, no more than seven. There are times when you may need to build up. But never bigger that a *two-pizza team*: *"If you can't feed a team with two pizzas, it's too large. That limits a task force to five to seven people, depending on their appetites."*[35] This is the definition Amazon used for years for its internal teams. And if it works for Amazon... The key roles you will most likely want are:

If you can create a team where the researcher can also prototype, great. There will also be times when the project is small enough that the project lead can double as the project manager. In fact, you don't need to start with your team fully formed. Scale as you move through the project. Below are the key traits you're looking for when pulling your team together.

6.3.1. Project lead

Also known as the product owner (agile) or product manager, the project lead runs the team. (S)he owns the research aims and drives the project. If there is one team member who needs to master project momentum, it's the project lead. They must rally the team and provide direction. Key skills include:

- Experienced enough in your organisation to know people and get things done.
- Strong personality with the ability to generate momentum.

They must be given autonomy and be fully supported by the sponsor.

[35] http://www.fastcompany.com/50106/inside-mind-jeff-bezos

The next three roles can all be one person. But there is some variation. Look at the tasks you have, scale of the job and personnel available in your organisation.

6.3.2. Researcher/analyst

Cherry-pick from across your company, ideally not from one department. Pluck people from your business intelligence and IT departments: think business analyst, people who can handle data in a spreadsheet and, even better, manipulate data intelligence tools. Their key tasks should define them, which are to:

- Review company data.
- Meet and interview stakeholders and customers.
- Need to 'get out in the field' and do customer research.
- Empathy with interviewees.

6.3.3. Experience designer

Find the designer out there, but remember you want them to craft interaction across different channels. What's important here isn't visual design skills – although that's not a bad place to start. It's design principles and empathy. They need to listen to and absorb the research findings and ideally get involved in the research. Their key tasks will include:

- Mapping out customer interaction points.
- Sketching (yes, sketching – the first prototype should be a doodle).
- Understanding of human to digital interactions.
- Visual design chops, i.e. gets design principles.

6.3.4. Prototyper/developer

Again, select from across your company. There are many digital prototyping tools (such as Axure, InVision and Pop), with more coming out every day (Product Hunt). Get your prototypers young enough, and with some technical noise, to just pick one up and learn one of them. Their key skills include:

- Understanding of human to digital interactions
- Visual design chops
- Basic coding know-how (these people are there in your company and you'll be surprised where – just put the call out)
- Expect them to be a researcher too

6.3.5. Project manager

When your project is of a certain scale – with tight timescales and lots of work to be completed – a project manager can really help. They support your Project Lead to stay on track and break down barriers and access to systems and people.

Key skills include:

- Typical project management skill-set
- Understands research
- Believes in momentum as dictated by the project lead
- Supports the project lead

That's it. There are variations of these roles. But just remember to keep the team small and autonomous. And get your high-level sponsor to open doors.

6.4. Get backing

If you want the freedom to investigate and redesign your customer touchpoints for your omnichannel future, you are going to need high-level support. As stated at the beginning, "*the (Skunk Works) manager must be given practically complete control of his programme. He should only report to a division president or higher*", the first of 14 rules as stated by Kelly Johnson, inventor of the Skunk Works approach.[36] High-level buy-in is required across your project for the following reasons:

- Getting your project signed off and allocating budget to do R&D work (across existing operational processes).
- Freedom to skirt the normal company rules (remember these are designed around your current practices. You're going to change these practices).
- Opening doors to all that data you will need access to and remove obstacles so that you can move fast.
- Same with the stakeholders you will need to coral into workshops.
- Your solutions should offer a serious step change in your existing processes. They should surprise and scare people in equal measures. Senior management buy-in will be required to see your project through.

The higher the level sponsorship you get, the more freedom to manoeuvre you will get. It's that simple. Great customer experience design across (all your channel) touchpoints will impact on almost all areas of your business. That's what can make this so difficult to engage with and implement.

However, taking the time to understand what's really going on will empower your company's leadership. A working prototype you believe in will demonstrate for your business a possible future. A prototype of a future which customers get and company stakeholders can rally behind.

[36] http://www.lockheedmartin.co.uk/us/aeronautics/skunkworks/14rules.html

7. Additional References

We have included additional information for some of the areas covered in the report. These links are correct at the time of writing this document (September 2014).

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[i] SaaS definition: *"Software-as-a-Service is software which is deployed over the internet and used by someone on a personal computer or local area network. Customers can often use software 'pay-as-you-go' by using the cloud provider's licences, rather than buying licences themselves – which is why Software-as-a-Service is sometimes called 'software on demand'. As well as removing the need to buy, install and manage software at the user's end, it also has the advantage of the software being accessible from anywhere with an internet connection."* http://www.cloudpro.co.uk/saas

[ii] For more info on A/B and multivariate testing:

- A/B testing at 37 Signals & results for their Highrise and Basecamp products – https://signalvnoise.com/posts/2991-behind-the-scenes-ab-testing-part-3-final
- Multivariate testing – http://en.wikipedia.org/wiki/Multivariate_analysis

[iii] Regarding running agile sprints across the design phase of the work, there's a lot written on the Agile project methodology, recommend starting here:

- Agile project methodology: http://en.wikipedia.org/wiki/Agile_software_development
- Agile project methodologies: https://www.youtube.com/watch?v=MJR-EgHTA4E (video)
- The Agile Manifesto: http://agilemanifesto.org/

[iv] Confirmation Bias is where "we see and hear what fits our expectations". For more info:

- http://en.wikipedia.org/wiki/Confirmation_bias
- https://www.youtube.com/watch?v=DezMLOQKoGM

[v] Chris Cyvetos explains Sneakerboy's approach:
https://www.youtube.com/watch?v=NaCYDhUHiD8#t=229 (video)

[vi] 'Just enough' is key to the agile project methodology and a key concept of lean UX with Minimum Viable Product (MVP)

- Agile project methodology – http://en.wikipedia.org/wiki/Agile_Modeling
- Minimum Viable Product (MVP) – https://www.youtube.com/watch?v=xxjbxk8dUqI