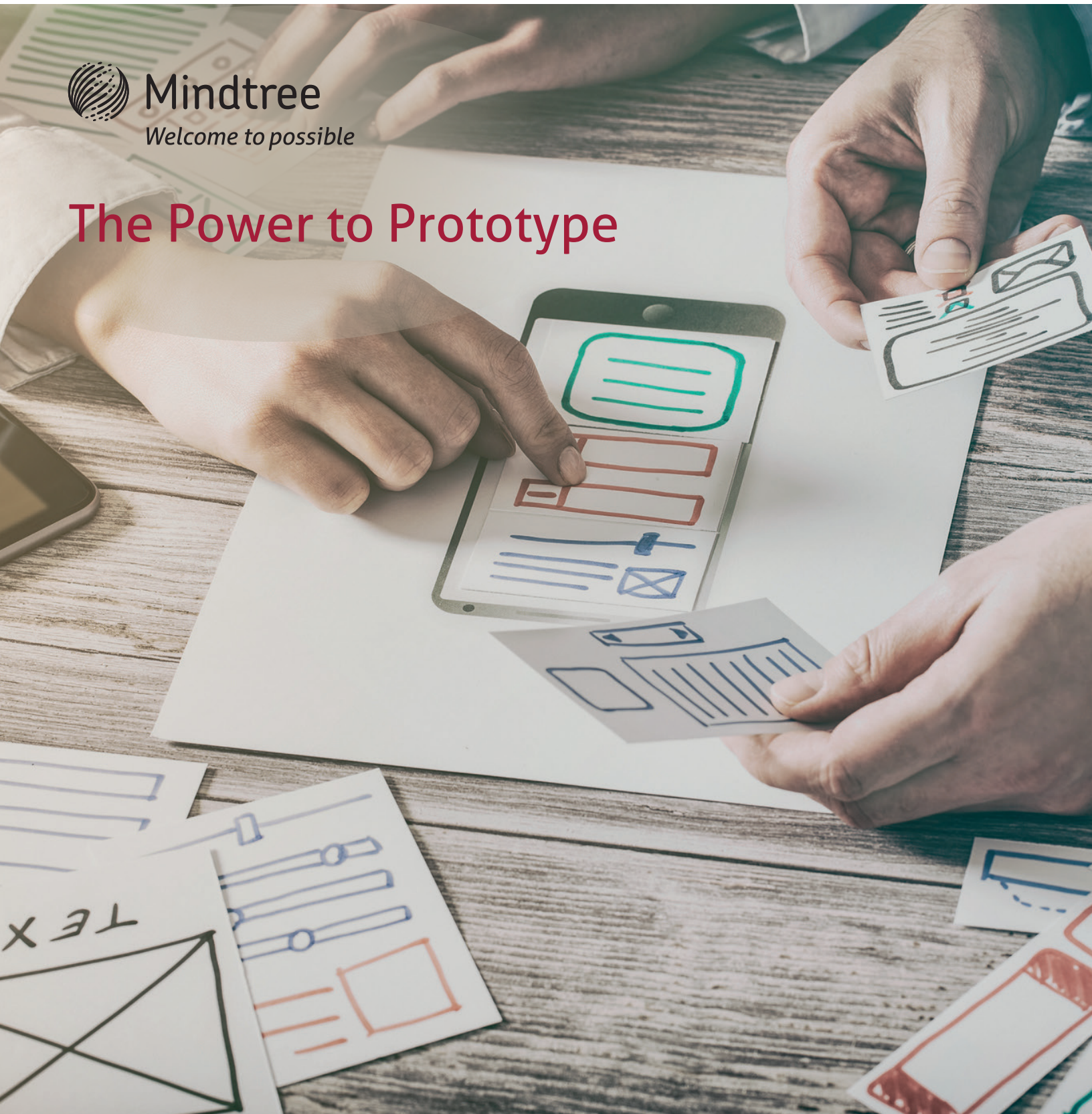# Mindtree

Welcome to possible

The Power to Prototype

The art and science of prototyping is observed across different industries. Many professionals across diverse domains love to associate themselves with the know-how of prototyping. In this whitepaper, I will focus on not just what prototyping is all about, but also how prototyping has evolved around UX designers and become a powerful approach in creating mind-blowing experiences. However, before we deep dive into the subject, let's examine some insights on how prototypes have influenced us in the past.

The journey of prototypes

Prototyping used to be known as 'pilot', before it evolved in the digital design industry. Awareness about prototyping has been traced back to the time of Leonardo da Vinci and his engineering concepts. It involved design thinking and how to transform ideations into real time working models. Some of these were successfully prototyped before they were developed as a full scale artifact. The images such as an Ariel screw (image 1a) and Tank/Armored Vehicle (image 1b) in the early days, display some of da Vinci's concept work.
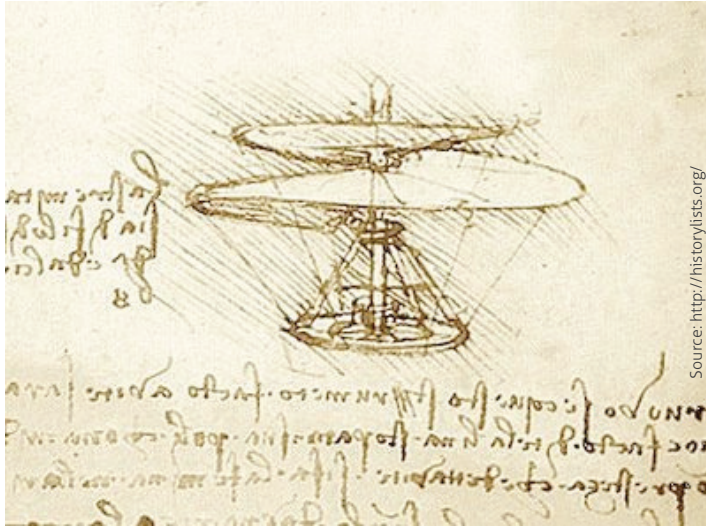

Source: http://historylists.org/

Image 1a (above): Ariel Screw,
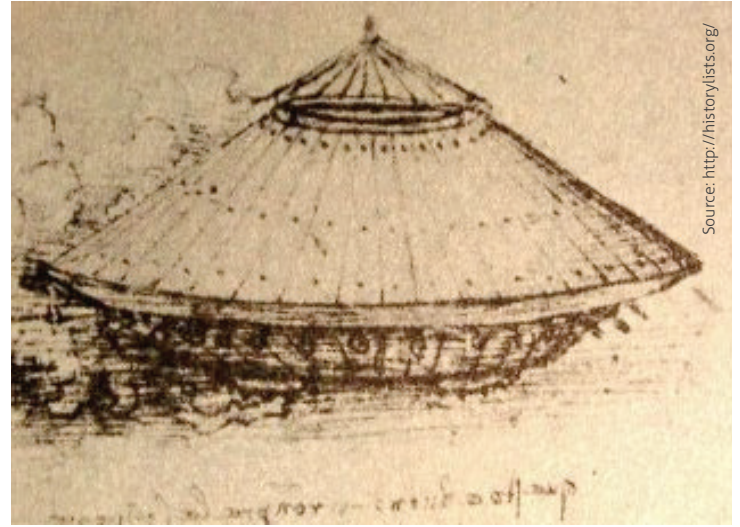

Source: http://historylists.org/

Image 1b (below): Tank/armoured vehicle

"Prototypes are one of the most important steps in the design process."

.

Yet another example of prototyping dates back to the Moguls. Humanyun's Tomb, a historical structure that exists even today in Delhi, was the brain child of Humayun's principle wife and their son Akbar. According to historians, the Persian architect, Mirak Mirza Ghiyas presented a 3D model of the actual structure that stands today, down to its smallest detail as part of the approval process for the design proposition

Likewise, today we see a variety of prototypes across different domains, digital or non-digital, technical or non-technical. Coming back to how prototypes have evolved and matured in the domain of UX / UI designers, read on...

What a prototype isn't?

According to Wikipedia, the word prototype comes from the Latin words proto (original) and typus (model). A prototype is an early sample, working model, or release of a product or system built to test a concept or assumption of inter-dependent components to simulate the final product but not completely build the actual product. In other words, a prototype helps build a user-centric Proof of Concept.

Let's get back to our present context to reflect on how, what, and why are prototypes an important tool in a digital engagement cycle, and how it's outcome can completely alter the way we deliver human-centered experiences. Prototypes are one of the most important steps in the design process. We often listen, read and come across terms such as sketches, mockups, designs, UI wireframes, workflows, flowcharts, as a part of delivering user-centered digital solutions. Although these are important reference artifacts, but these are not prototypes. So, then, what exactly is a prototype and how do we build one?
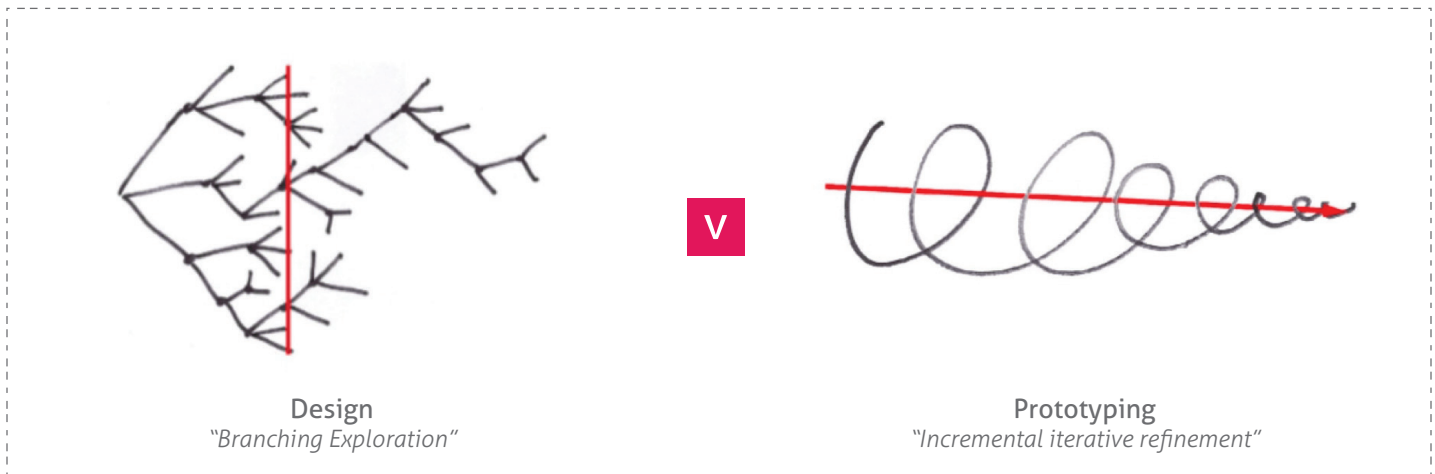
Design
"Branching Exploration"

V

Prototyping
"Incremental iterative refinement"

Image 2 credit: bill buxton, sketching user experiences

"A quick prototype from roughly sketched out set of screens can help the team capture the need of the hour and identify important aspects of the requirement."

How do we reach a prototyping stage?

The key question that might arise in many of us, is why do we need a prototype and why should one spend time and money on prototyping when we can use wireframes or sketches to build the product / application. The advantage of using prototyping, is to deeply understand the behavior of a scenario in the application and how it reacts to a chosen interaction on a page or screen. This gives a deeper understanding to the stakeholders and audience on key insights to identify gaps and improvement areas in comprehending business and user needs, faster and more efficiently.

This can be challenging to achieve single handedly using static wireframes or visual mockups. Image 2 by Bill Buxton, shows how a typical discovery and research process happens, and how it usually ends up as a divergence of scope and project require-ments. On the flip side, prototyping helps in managing such divergent requirements to motivates and synergise the team in managing a streamlined cycle of changes and improvements.

What we see below in Image 3 is a UX design process followed by the UX practice at Mindtree which is an integral part of our digital engagement process. Prototyping is an iterative process practiced more in the definition phase of the design process. However, in order to achieve a feasible simulation of your workflow, it also requires a guide to deliver a user-centric thought process using thought provoking reviews and refinements. Of course, these iterations depend on the fidelity of the prototype you choose. These could range from using a series of papers having sketches of the user interface screens or prototypes which have been created using rich animation and interaction tools such as Marvelapp, Flinto, JustinMind, Invision, Adobe XD or Axure.

There are other factors too that can affect the outcome of a prototype, such as empathy and alignment of business needs and user goals, with appropriate data supporting user research, information architecture, task analysis and having a good under-standing of use cases and workflows. But the question which arises is, am I the right person to do this?
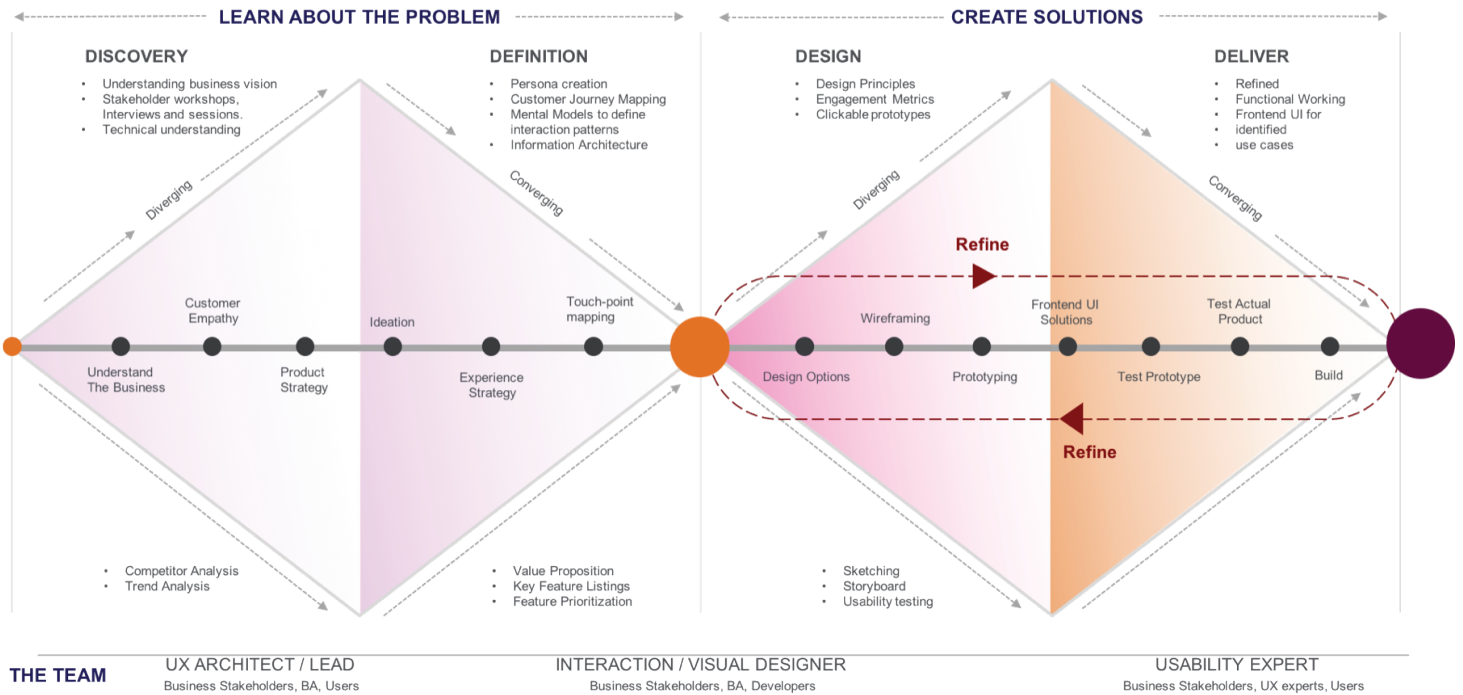
Image 3: Double Diamond UX approach model

I'm not a designer to use a prototype tool

Prototyping tools in the market today are not just built for designers since you don't need to be an artist to build one. It is a thought process or approach that can be explored by diverse professionals. Of course, a designer has a higher advantage in churning prototypes faster by using complex tools. But the charter is not about designing user interfaces. It is to build a platform and market ideas. It's about sharing thoughts, concepts, use cases across a multi-disciplinary audience / team.

Building a prototype can be more than just simulating a workflow. These artifacts can serve a much higher purpose. A few of other major paybacks as mentioned in image 4 talks about how can prototypes be utilized to market an idea to a prospect, or test a user scenario with a given business logic and much more.

A quick prototype created from roughly sketched out set of screens, can help the team capture the need of the hour and identify important aspects of the requirement. This will greatly reduce feedback cycles and delivery turnaround time to bring out a highly valuable product. Refer Image 5 to see what tools could suit you and start using them.
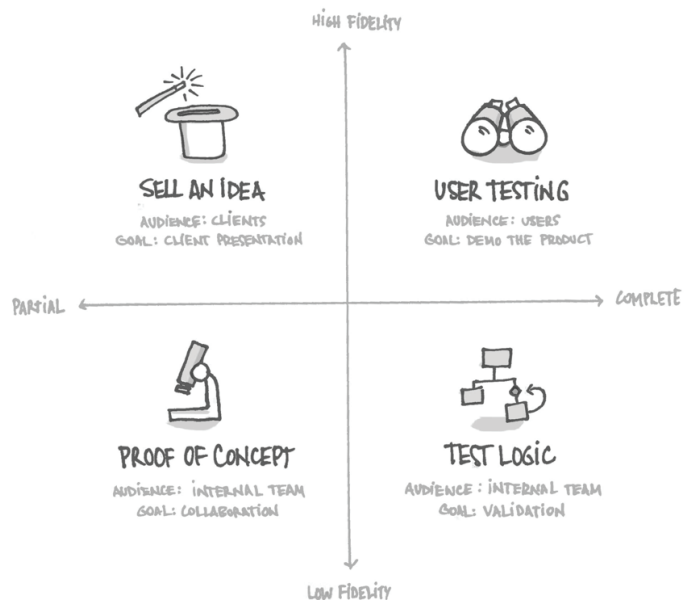

Image 4 Source: https://uxdesign.cc

How do I know what tool suits me?

Prototype tools that exists today, focus on solutions across distinct business needs. You can create a prototype for a workflow that you designed for an Apple Watch to an Android mobile platform to an enterprise desktop application. Image 5 below, gives a detailed view on the complexity and fidelity of what tools exists today in the market and what could fit you or your company's budget for your projects and engagements. Image 6 gives a quick comparison of what tools are more popular among users both in terms of learning curve and delivery turnaround.

As cited previously, although there are several tools in the market, the above table explains some of the mostly widely used tools by UX @ Mindtree. Adobe already is known for its design software and tools. Adobe Experience Design (XD) has picked up traction among UX designers and being adopted rapidly.
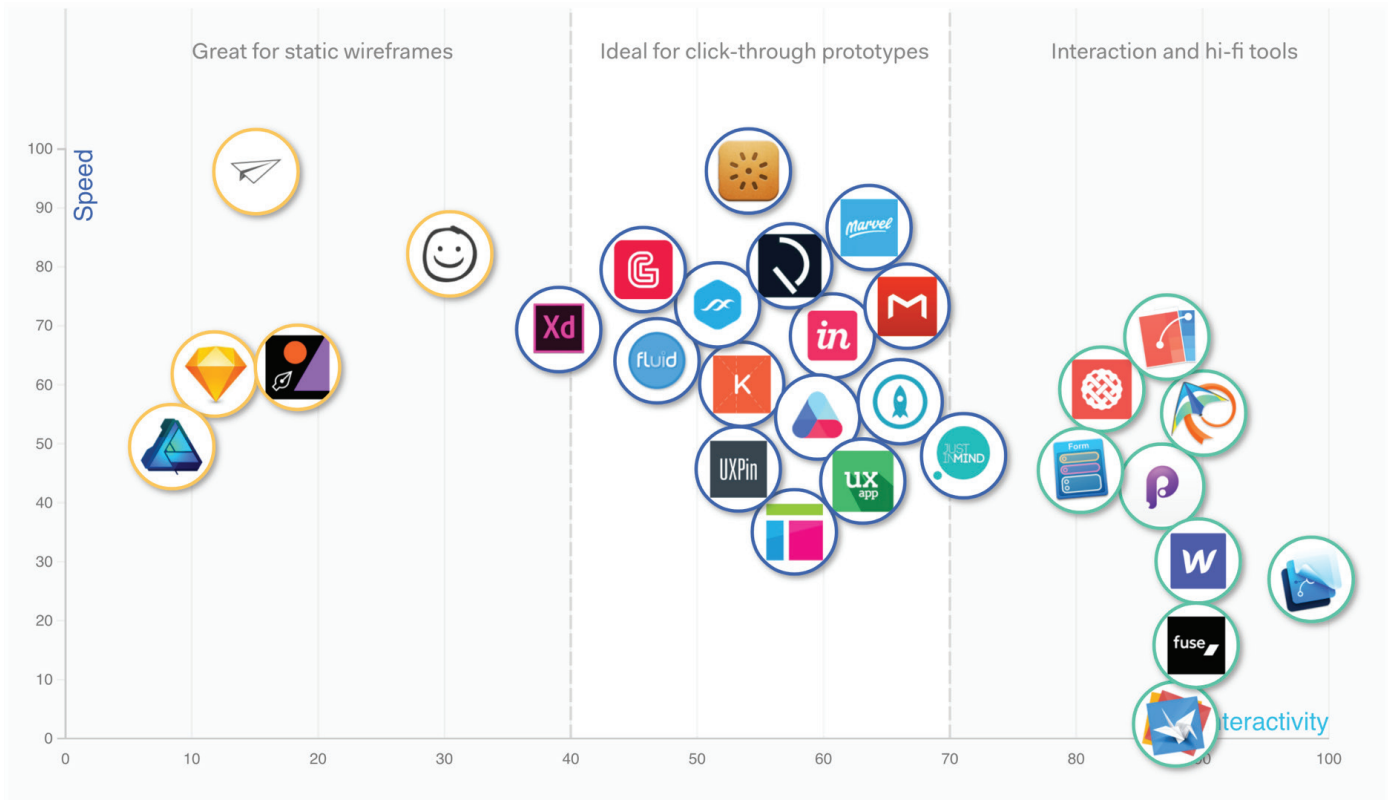

Image 5 Source: https://www.prototypr.io/prototyping-tools/

Tool		Description	Channel	Fidelity	Collaboration	Usage by team
Xd	XD	Adobe's first all-in-one cross platform tool for designing and prototyping websites and mobile apps.	Applicable for responsive design projects.	Lo to Hi	Feedback tool available.	**60% and increasing**
Marvel	Marvelapp	Simple design, prototyping and collaboration. Create screens directly in Marvel or add your images from Sketch or Photoshop, then add gestures and transitions.	Handheld devices , Desktop, Apple tv , Apple Watch and android.	Low to Hi	Clients and colleagues can comment directly on each screen or drop annotations.	80%
FLINTO	FLINTO	Quick learning tool for beginners to experts.	More optional for Handheld device centric projects.	Lo to Hi	Feedback availbale in the tool for full version.	90%
invision	Invision	Upload your design files and animations, gestures, and transitions to transform your static screens into clickable, interactive prototypes.	Faster learning curve and adaptable for multiple channels. Also can be integrated with PM tools such as JIRA.	Lo to Hi	Feedback tool available with user testing.	10%
Justinmind	Justinmind	Can create sophisticated prototypes with great tools, however there is fairly decent learning curve. The free version is very limiting.	Handheld and Desktop.	Lo to Hi	Feedback feature is availbale.	25%
iRise	iRise	Highly complex tool with data driven-prototyping capabilities. Comes with a high license cost and a longer learning curve.	Handheld devices and Desktop projects.	Lo to Hi to very high	Feedback feature is availbale.	<5%

Image 6: Prototyping tools overview

> **"The highlight behind using prototyping is to deeply understand the behavior of a scenario in the application and how it reacts to a chosen interaction on a page or screen."**

	Adobe XD	Marvel	Invision	Filnto		Just-in-mind		iRise
				Lite	Mac			
Type	Pc, Mac installable Layer based	Web app- Image based	Web app- Image based	Web app-Image based	Mac - Layer based	PC, Mac instable layer based		Web, PC, Mac app- Layer based
License Plans	Single app installble for business licenses and individual users	Company plan 5 users paid annually	Team plan **5 Users** paid annually	Individual licenses paid annually	One time purchase (Volume pricing 10+ licenses)	One time purchase (per user)	Professional subscription paid annually	CorporatePlan
Learning Curve	**Low**					**Medium**		**High**
Deliverable Turnaround	**High**					**Medium**		**Low**

Image 7: Prototyping tools learning curve and delivery turnaround

My key takeaways

Rich interaction encourages playfulness and user engagement, adding an extra level of focus. The approach of using prototyping as a methodology helps cross functional teams bridge gaps in aspects of form and function. The tools in the market today are getting powerful and collaborative by the day. They are greatly facilitating cross-functional teams collaborate and work together to deliver personalized experiences.

Whilst these developments are augmenting and benefiting UX designers in many ways, we are sure it would inspire and encourage non-designers to explore the art of prototyping as a work trend. Of course, one needs to understand the right permissions and usage rights before installing them for your own testing. Some other takeaways from this article are as follows:

- Prototype is an intuitive way to market an idea or concept to a prospective customer.
- Helps business understand the logic behind a use case or workflow.
- Quickly demonstrates a walkthrough of the system.
- Identifies and addresses problems at early stages.
- Explores ideas and exchanges feedback with the client and end-user.
- Uses different fidelity of prototypes across a project lifecycle to reduce ambiguity.
- Estimates development costs, timescale, skills and potential resource requirements.
- Forms a useful reference point for cross-functional teams.

Overall Comparison	Marvel	Invision	Filnto		Just-in-mind		Proto.io	iRise
			Lite	Mac				
Type	Web app-Image based	Web app-Image based	Web app-Image based	Mac - Layer based	PC, Mac-Layer based		Web app- Layer based	Web, PC, Mac app- Layer based
License Plans	Company plan 5 Users paid annually	Team plan 5 Users paid annually	Individual licenses paid annually	One time purchase (Volume pricing 10+ licenses)	One time purchase (per user)	Professional subscription paid annually	Corporate (10 users) paid annually	Corporate Plan
Plan Pricing	$60/month $12/ additional user	$89/month	$20/month/user	$79/License	$495/user	$19/month/user	$160/month	$160/month
Mobile	✔	✔	✔	✔	✔	✔	✔	✔
Tablet	✔	✔	✔	✔	✔	✔	✔	✔
Desktop	✔	✔	–	–	✔	✔	✔	✔
Collaboration	–	✔	✔	–	✔	✔	–	✔
Asset Management	–	✔	–	–	–	–	–	–
Requirement Management	–	–	–	–	✔	✔	–	✔
Review and comments	✔	✔	–	–	✔	✔	✔	✔
Data driven -prototype	–	–	–	–	✔	✔	✔	✔
Conditional logic	–	–	–	–	✔	✔	✔	✔
UI Animation	–	–	–	✔	✔	✔	✔	✔
Transitions	✔	✔	✔	✔	✔	✔	✔	✔

Details on overall Tool comparison (Prices mentioned are subject to change and for reference only.

Happy Prototyping…

Know more about **User Experience Design.**

To contact our experts, please write to **info@mindtree.com.**

About the author

Kunvarjeet Singh
Senior Architect, Mindtree

Kunvarjeet is a passionate design enthusiast with 18 years of practice in delivering digital experiences across various domains. He is associated as a Senior UX architect with Mindtree and has been a major contributor in offering design consultation whilst specializing in cross-platform design, data visualization, big-data, Enterprise solutions, mobility and UX delivery management. Kunvarjeet envisions to evangelize design methodologies and embed newer technologies in transforming delightful customer experiences.

About Mindtree

Mindtree [NSE: MINDTREE] delivers technology services and accelerates growth for Global 1000 companies by solving complex business challenges with breakthrough technical innovations. Mindtree specializes in e-commerce, mobility, cloud enablement, digital transformation, business intelligence, data analytics, testing, infrastructure, EAI, ERP as well as MMS solutions. We are among the fastest growing technology firms globally with more than 300 clients and offices in 14 countries.

www.mindtree.com
For more information, please write to **info@mindtree.com**