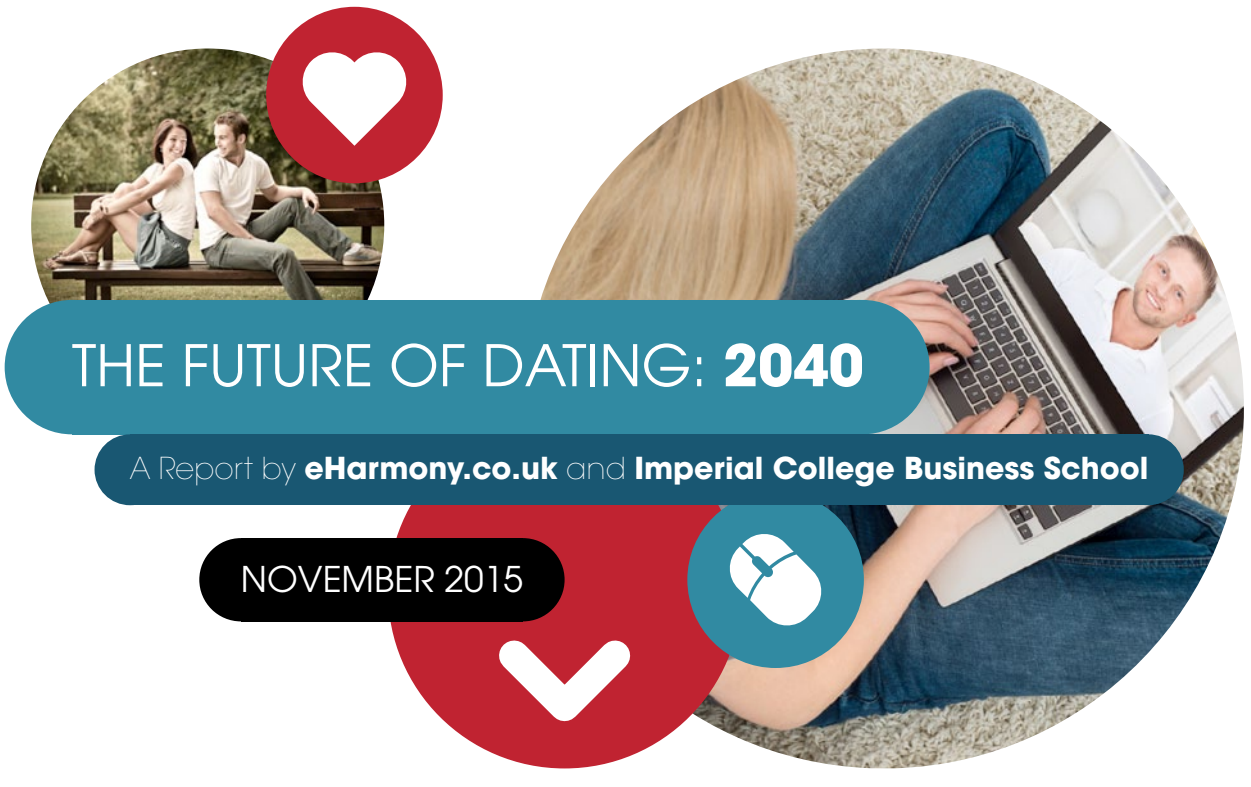
THE FUTURE OF DATING: **2040**

A Report by **eHarmony.co.uk** and **Imperial College Business School**

NOVEMBER 2015



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01 FOREWORD

The Internet revolutionised the way people meet and interact with each other. When we launched in the UK in 2008, people were shy about online dating. It took time for singles to realise the huge benefits it could bring, unlocking a world of like-minded people to meet at the touch of a button.

Today, online dating is ingrained in our everyday lives. People openly share their stories with friends in the pub, celebrities talk about their experiences in media interviews, and subscription to a dating service is even included in the government's 'basket of goods' used to measure inflation. This is all because science and technology have made finding love quicker, easier and more accurate than ever before, and that trend is set to continue.

This is something we explored in 2013, in our first Future of Dating report. The in-depth study uncovered that by 2040 seven in 10 relationships (70 per cent) will attribute their meeting to online communication.

For us though, it's not about just meeting people, it's about meeting the right people. **eHarmony.co.uk** matches members on 29 Dimensions of Compatibility – factoring in their beliefs, core values and key personality characteristics. This creates better matches and as a result relationships that will stand the test of time.

And it doesn't stop there. Our own products and algorithms continue to evolve, and looking to the future we know that the way people meet, interact, and ultimately fall in love will continue to be redefined by advances in everyday consumer technology.

This is why we worked with some of the future's brightest minds from Imperial College Business School, bringing together our experts in Matching and product developers with their expertise in business, including marketing, strategy and innovation. The project also drew on additional input from experts in the fields of anthropology, sociology, technology and biomedicine, to examine what the relationships of the future could look like by 2040. If you want to take a glance at some of the advances, see **eHarmony's interactive timeline** which explores the evolving relationship between dating and technology.

From making matches between singles even more accurate based on deep machine learning, saving time with virtual reality dates, helping couples learn more about each other through artificial intelligence, and even Matching people based on their DNA, finding love will be easier and more accurate than ever in 2040, and I look forward to being part of it.

Romain Bertrand, UK Country Manager, eHarmony.co.uk
November 2015

02

INTRODUCTION

This report is a collaboration between online relationship site **eHarmony.co.uk** and Imperial College Business School. It has been compiled by MSc Management students from extensive literature reviews, detailed analysis and extrapolation of more than 100 years of data. These finding are supported by interviews with experts in the fields of anthropology, sociology, technology and biomedicine. The aim is to answer the following question:

What will dating and relationships be like by the year 2040?

The findings reveal a 'super-charged' continuation of what we are already seeing in the online dating industry – that people want to be matched, and ultimately form relationships with, like-minded people in the most efficient way possible. What's different is how people will go about it, redefined by advances in science and everyday consumer technology.

These developments will save singles time and energy, deliver more accurate matches, and even provide insight and real-time assistance. From artificial intelligence to deep machine learning, virtual reality and even DNA based Matching, the findings of this report may seem futuristic, but in reality are on our doorstep.

The report has been divided into the following four categories:

'VIRTUAL REALITY' DATING

The increasing speeds at which we will be able to transfer digital data will make 'virtual reality' dating a possibility. We explore how this will allow people to share real time date experiences across the globe, all from the comfort of their own home.

BIOTECHNOLOGY AND DNA SEQUENCING

Our DNA has the potential to unlock the secrets of attraction. This section considers how analysis of our genetic make-up could streamline the Matching process and help people better understand their relationship needs.

BEHAVIOUR-BASED MATCHING

In this section, we discover how 'The Internet of Things' will provide people with behaviour-based insights into their core personality traits and make matches even more accurate by analysing their everyday actions.

ARTIFICIAL INTELLIGENCE AND LOVE

Finally, we will uncover how deep learning systems will lead to highly reactive artificial intelligence, providing singles and couples with real time feedback on their actions and suggestions on what to do next.

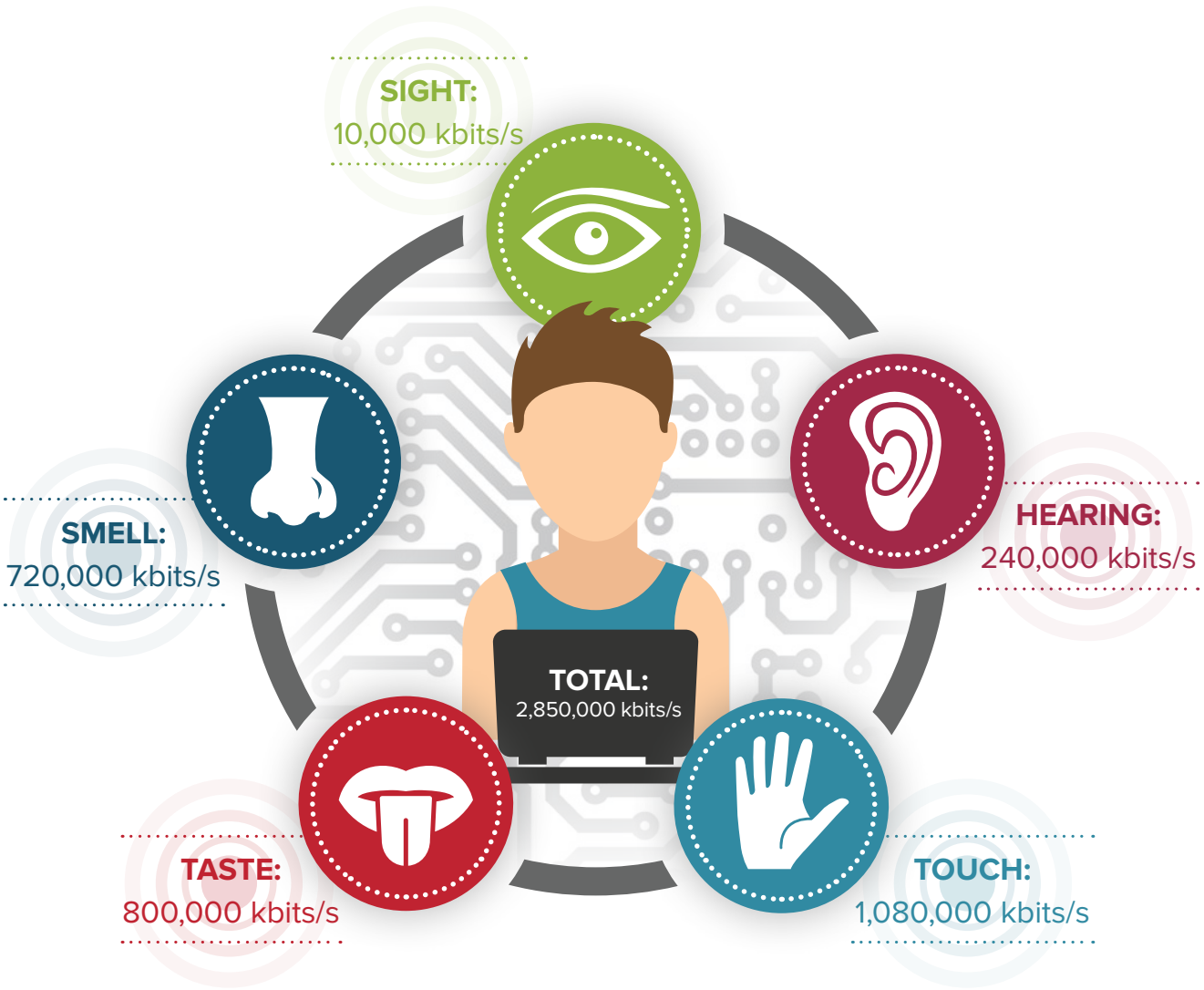
03 FULL-SENSORY VIRTUAL DATING

Currently we're used to digital photographs and video providing a representation of the real world, relying on 2D still images to assess if we find someone attractive to meet, and voice or video calls to stay in touch with loved ones who are a distance away.

This will be very different by 2040. Computer systems experts at Imperial College estimate that the rate at which we will be able to transfer data digitally will be so fast that as well as having visual and audio virtual reality, this VR will be 'full-sensory' – meaning it will also be able to transfer digital simulations to smell, taste and even touch.

This was calculated by extrapolating data sets from before 1800 on data transfer speeds, and predicts that by 2040 the rate at which data can be transferred will be 952,000,000,000 bits per second – which is considerably higher than the rate scientists believe is necessary to create virtual reality that simulates all the senses (2,850,000 bits per second), based on the number of neurons connected to each sensory organ and the maximum rate at which a neuron can fire.

Figure 1: Human Sensory Data Transfer rates in kilobits per second



This means that in just 25 years the full range of sensory experiences will no longer be limited to human interactions, potentially redefining what we think of as an online date.

A full-sensory virtual date would be exactly like a real one – you could hold someone's hand even smell their fragrance – but all from the comfort of your own home. This would mean you could fully 'meet' someone online, before you actually meet him or her in the real world. This would help people save valuable time and make the dating process even more efficient. You could simply log in from anywhere, get to know somebody, share an experience, and once the date is complete you could simply log off – without having to worry about getting home. When combined with advances in wearable technology, you could even have date experiences on-the-go, enabling you to meet and share moments with people all over the world from anywhere.

For couples, virtual reality would completely change what we think of as long-distance relationships, and would mean singles are no longer limited to dating people who are geographically close to them – opening up a global dating pool.

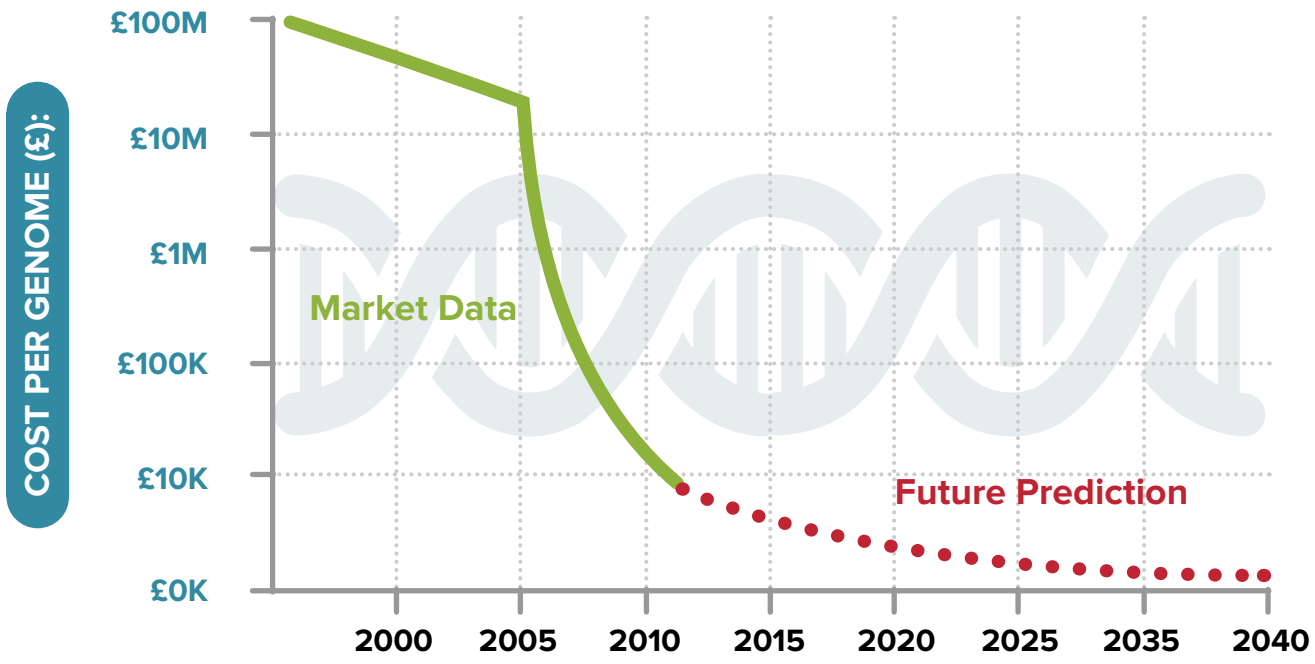
04 BIOTECHNOLOGY

Our individual DNA sequencing could be the key to unlocking what we find attractive.

Biologically, all animals – including humans – are programmed with the desire to produce the strongest possible offspring, and therefore we are attracted to people with the optimum amount of genetic variation compared to us. Understanding more about our DNA could help us to uncover why we are attracted to certain kinds of people, completely unbeknownst to ourselves.

Up until now extensive DNA research has been cost prohibitive – but with the cost of sequencing DNA from a cell falling from around £52million in 2003 to £650 by 2040, we can expect more and more ground-breaking studies and with them a greater understanding of the role of genetics and attraction.

Figure 2: DNA Sequencing Cost per Genome



Once this data has been collated, it could be fed into the algorithms of online relationship sites, helping provide people with even better matches.

Further advances in biotechnology will also provide the ability to better read chemical and electrical signals from the human body, potentially giving us the opportunity to better understand people's preferences. This would improve the success rate of matches but also aid couples in identifying potential points of contention.

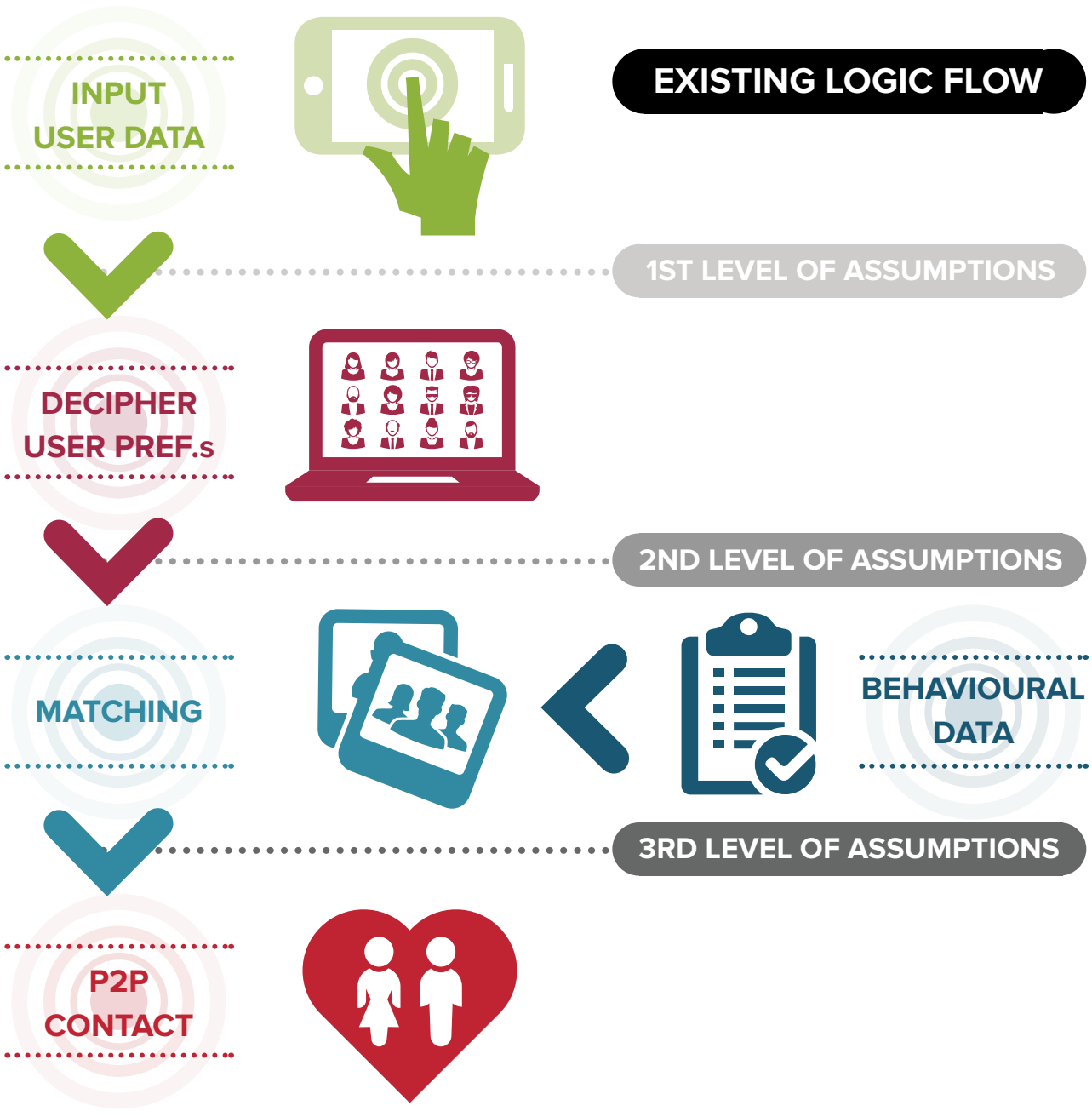
05 BEHAVIOUR-BASED MATCHING

One of the biggest challenges for the users of online dating services is knowing what they want from a relationship. This can cause issues when being asked to input information about yourself and the kind of person you'd like to meet, which can then lead to poor matches.

The solution to this would be to match people based on how they actually behave. For example, what a person does everyday, where they spend their time, how their body reacts to specific events or their social patterns, rather than what they 'think' they want.

The report proposes that the growing hyper-connectivity between our everyday devices – the Internet of Things – and the growing prominence of wearable technology could completely change how we're matched with people by 2040. Instead of 'inputs' the focus will be on 'actions'.

Figure 3: Behaviour-based Matching Workflow



Devices – both wearable and implants – could track your day-to-day actions and find other singles that have a similar lifestyle pattern and enjoy the same physical activities. These could be simple things, like the hobbies you do, how often you socialise, or even how frequently you go to the pub. When it comes to physical attraction, a product such as Smart Contact Lenses could record the type of people you look at most frequently when your body produces the signs of attraction, measured by hormone levels, pheromone production and other reactive signals, and then match you accordingly.

On a deeper level, this technology could identify your core character traits based on physical, chemical and neural signals. Devices could measure how your body reacts to situations such as conflict, or while socialising, and then match you with people who have a complimentary behaviour pattern.

06 ARTIFICIAL INTELLIGENCE

As technology continues to develop, the complexity of information that can be processed and the speed at which this takes place will rapidly increase. By 2040, experts believe data processing will be so efficient that we'll be able to create a real-time artificial intelligence, which can analyse incredible amounts of complicated data at high speed, providing users with instant feedback on what they are doing and a suggested course of action.

This speed of analysis – aided through the hyper connectivity of our devices, the so-called Internet of Things – will provide singles with live advice on how their date is going, including everything from the topic of conversation to venue choice, and even which jokes to tell.

It would even analyse how your body was reacting to the surroundings and suggest the appropriate course of action, whether to hold back on alcohol consumption, eat something, or even move somewhere with a lower temperature.

For couples, this data would help improve their relationship by identifying issues and resolutions, and can even calculate the optimum time for life milestones, such as when, or even if, to get married or have children.

07 CONCLUSION

In many ways, the singles of 2040 will be exactly the same as today. People don't necessarily want to meet the person they are going to marry with every online date, but they do want to meet quality people who they have a genuine connection with.

What will be different is how the process will become even more efficient. Singles will save time by having Virtual Reality dates from their own home, and some may even find the idea of wasting time by travelling to and from a venue for a first date unthinkable.

Improved Matching resulting from DNA and behaviour-based analysis being added to existing dating algorithms means that people may never have a bad match again, while real-time feedback from artificial intelligence means we may never have a bad date either.

Some of the findings in this report may seem far-fetched, but products like Google Cardboard means virtual reality technology is already in the hands of consumers, home DNA kits can inform us of our family history and genetic health within weeks, and at eHarmony we already deliver better matches through the use of machine learning, with our Matching and tech teams now looking at other opportunities via social media integration and behavioural Matching.

It's amazing how quickly science fiction turn to science reality, and if just half of the developments explored in this report come to fruition then the future looks bright for singles in the hunt for love in 2040, and who knows what technology advances we'll be discussing then.

About the Report

Methodology

The Future of Dating: 2040 report was created by a team of MSc Management students from Imperial College Business School for their Consulting Project. The team who worked on the project comprised of Evangelia Deli, Clementine Depotter, Nick Lewis, Kyung Min Nam, Natasha Silfanus, Nicolas Voirin and Wei Wen Ng. The aim of the project was to outline the direction of the future of dating from both a technological and social perspective, drawing on the large amount of data from online daters and research produced by experts from different fields of the social sciences. Based on interviews, extensive literature reviews, detailed analysis and extrapolation of historic data, the students created a report that predicted what dating could look like in 2040.

As part of their research, the students consulted with experts from both technological and anthropological fields, including online dating experts and university researchers, such as Dr Aldo Faisal (Senior Lecturer in Neurotechnology at Imperial College London), Professor Christopher Hankin (Director of the Institute of Security Science and Technology at Imperial College London), Thod Nguyen (eHarmony's CTO) and Jonathon Beber (one of eHarmony's Senior Research Analyst for Matching).

About eHarmony.co.uk
eHarmony launched in the UK in 2008 with a clear vision: to create more lasting love in the world. The science based relationship site is committed to helping singles find the best possible match for them via its unique Compatibility Matching System®. Prior to launch, the brand invested in further extensive research into love and relationships, conducted in partnership with Oxford University's Oxford Internet Institute, to develop UK specific compatibility models. Today eHarmony, fondly known as 'the brains behind the butterflies', proudly serves almost 60million members globally, with more than 4m UK members. Find out more at **http://www.eharmony.co.uk/tour/.**

About Imperial College Business School
As part of Imperial College London, a global leader in science and technology, Imperial College Business School aims to develop practical solutions to the key challenges facing businesses and society from big data to digital currency and climate change. Through its world-class research, postgraduate and Executive Education programmes, Imperial College Business School fosters an innovative and entrepreneurial mindset, shaping students to become the business leaders of tomorrow.
http://wwwf.imperial.ac.uk/business-school/