RBEI

CONNECT

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Foreword

The word 'Unprecedented' was named People's Choice 2020 Word of the Year by Dictionary.com, so much so it almost became a cliché. But that is exactly how our situation was.

With the second wave of Covid-19 a few months ago, stories of unimaginable losses echoed not just in media but also in our neighbourhoods and homes. But these stories also started giving way to tales of good Samaritans – common people from across the country who extended support in uncommon ways. From donating generously to Covid-19 funds, to volunteering as support staff for frontline workers, to facilitating delivery of basic necessities, many citizens selflessly took up the task of serving those in need. These stories re-instill our faith in the power of solidarity and oneness shared by the human race.

Despite all the challenges that recent times have presented us with, Boschlers have stood up to all kinds of uncertainties and have worked on solutions that not only fuel organizational growth but have a huge potential of societal impact. Our mantra of #FitforFuture serves as a beacon for us to grow as a learning organization and to evolve with changing times.

Speaking of changing times, I pass on the baton of editorship of RBEI Connect to Akshayita Saxena from 1st August onwards, as I move on to another role within Bosch. Please join me in welcoming her as she will continue to bring you stories of RBEI from across the world.

On that note, I hope you enjoy reading the stories of technology, thought leadership, and impact presented to you in this newsletter.

Stay Safe - Stay Healthy - Stay Motivated!

Raghunandan Rao,
Head – Marketing and Communications

DNA NXT

The 5th Edition of Bosch India's Startup Alliance Program- DNANxt- is here!

The accelerator program enables startups to leverage RBEI's support through co-creation, strategy, and go-to-market opportunities.

Discover the startups in Bosch's interest areas

Nurture startups Business and technical Mentorship for a period of 16 weeks

Align selected startups with Bosch business units

Find out more about the program here

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CES INNOVATION AWARDS

2021 HONOREE

Innovations Today, Revolutions Tomorrow

Leveraging new-age tech for impactful and sustainable solutions

The past few years have made us awfully aware of the burning problems of climate change and its possible repercussions in the near future. In recent times, we've also been forced to think of several healthcare issues that got unearthed as the pandemic stared at us questioning various underlying challenges.

Issues of sustainability and healthcare no longer remain macroscopic societal problems to be dealt with only by the Government. The onus is on responsible corporate entities to come up with innovative solutions that address the challenges of today and tomorrow. We, at RBEI, understand this and are constantly innovating in line with Bosch's guiding philosophy of *Invented for life*. Here are the stories of two such solutions that are set to define the future in their respective domains.

Battling Anemia with Rapid Hemoglobin Testing

A major reason for late detection of anemia is that it often escapes the radar of the physician until an emergency or a major life-threatening condition is diagnosed. Though the disease is easily treatable, there is limited early detection and a lack of monitoring solutions. The invasive and time-taking procedures for hemoglobin level measurement don't help the cause either. Bosch has developed a portable Hemoglobin Monitor Solution (HMS) especially for regions where routine access to medical care tends to be difficult. This non-invasive AI powered HMS enables rapid point-of-care hemoglobin testing. Users simply place their finger on the device and receive results within 30 seconds. The device's algorithm monitors the wavelength of the light and uses 27 different characteristics to determine and classify the hemoglobin value. A laboratory analysis is not necessary and there is no risk of infection from contaminated needles. The intelligent, rapid, and non-invasive solution has the potential to bring a paradigm shift in hemoglobin screening and management and can play a major role in reducing the global anemia burden. The solution has been named a CES Innovation Award Honoree in the "Health and Wellness" category.

A Connected Riding Experience with Nyon

For Boschler Shahul Hameed, Saturdays are perfect to get away from the sights and sounds of the bustling city. His weekend usually comprises of long rides on the Bosch eBike with Nyon - an on-board display computer for a smarter, more intuitive and connected biking experience. Shahul is also a part of RBEI's Car Multimedia team based out of Coimbatore. Sustainable urban mobility is the need of the hour and the team has been pivotal in driving the design and development for Nyon. They have also introduced innovative ways of testing, including fully automated continuous testing setups and use of Artificial Intelligence for a more intuitive testing. The testing for touch screens were done without any manual intervention using a Robotic arm.

Nyon enables the bike to have different biking modes, tracking and tracing capabilities and a more interactive experience for the user. In the last few months, the Bosch eBike team has picked up numerous awards: Red Dot Design Award, Finalist to Euro Bike Award 2020, CES 2021 Innovation Award Honoree and Best Navigation Device 2021 for E-MTB by e-mountainbike magazine

Discover the World of AIoT

⚡ **THE INNOVATION STREAK**

Better Measurement.
Better Optimization.

Powered by AIoT, Bosch Phantom Edge enables an energy efficient ecosystem

The UN development program defines clean energy as one of its key sustainability goals for 2030. 40% of this goal can be achieved by simply leveraging better energy efficiency and monitoring solutions. At Bosch, we are committed towards this goal.

Bosch recently announced the launch of Phantom Edge- a non-intrusive, AI @ edge monitoring solution for energy monitoring and equipment status monitoring in real time. Talking about the details that enable Phantom to be a new-age convenient and intelligent product, Kaushik Sarkar, CFO & Head of Software & Digital Solutions, RBEI elaborates, "Phantom is enabled with APIs that can further be integrated with third party control mechanism or software to not only generate alerts but take pro-active actions. This cloud-based offering does not just operate on connected devices but can easily bring your legacy devices online."

The Idea Behind Phantom Edge

• Can we know how much energy a product consumes? Yes.
• Can we know how the energy is being consumed? Yes.
• Can we then do something about optimizing the energy footprint by looking at asset performance insights? The answer is, a resounding "Yes!"

And with this idea, our sustainable asset monitoring solution was born.

Phantom Edge combines the power of AI and IoT to provide meaningful insights for a user to take corrective actions related to sustainability and productivity of the assets.

How does it work?

Till now we have been limited by the way we measure energy. What phantom brings in with AI at edge is the ability to go further deep down and understand how an individual appliance is consuming energy. This information is key to making energy optimization decisions at asset level because then you don't pay for total energy that the asset consumes; you pay for the energy consumed for the active time.

The device non-intrusively gets attached to the source of supply and gathers energy signature like meters and submeters. Intelligent algorithms are used to understand the energy signature or the pattern of the load side appliance consumption. Phantom Edge, thus provides a hassle-free experience for meeting sustainability, energy conversion and cost reduction goals.

With Phantom, we are bridging the gap between data availability and data action.

The Sweet Truth

Sugarcane yield improves with the help of Bosch Genesis

In Veracruz, Mexico, our customer grew some of the finest varieties of sugarcane for the sugar mill of Central Energética de Atoyac. The farm was divided into 14 blocks.

However, the yield was not uniform and the variation between various blocks was significant.
Manpower kept changing and it was challenging to know the exact opportunity areas to tap into for improving production.

How did Bosch Help?

Bosch, with its proprietary product GENESIS, created a FarmBook - a field study report covering different key parameters of all 14 blocks, with recommendations and comparisons.

GENESIS is a tool for generating predictive yield studies by analyzing weather and crop conditions. Combined with precision field sensors and calibration processes, it uses microwave remote sensing that can penetrate through clouds, offering remote monitoring to farmers. This precision supervision improves yields and productivity, reduces water and heat stress, and provides field workers with resources for better decision making.

The report was created for a period ranging from 2008 to 2020 - showing year-wise and block-wise details on aspects like soil moisture, optimum levels of irrigation, and other insights necessary for maximizing sugarcane growth. GENESIS helped identify the blocks which could potentially improve the yield.

The customer also received a dashboard to access different data points and information going forward, such as growth index, soil moisture level and elevation. It also helped the customer in forecasting block-level harvest time and real-time crop growth maturity analysis. This eventually helped the customer in forward booking and smoother logistics management.

The Impact

The return of investment was divided in two categories:

■ Yield improvement

10%

For the yield estimation, an estimated **10% increase** in production could be noted through followed suggestions

■ Savings

9%

An estimated **8% production cost saving** could be achieved through followed recommedations. This transforms into total savings of 427.88 USD per ha per cycle, With a conservative estimate, we can say that all savings can be at least of **20%** of this total savings, which comes to around 86.00 USD per ha per cycle.

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MAKING AN IMPACT

What's Your <CODE> Word?

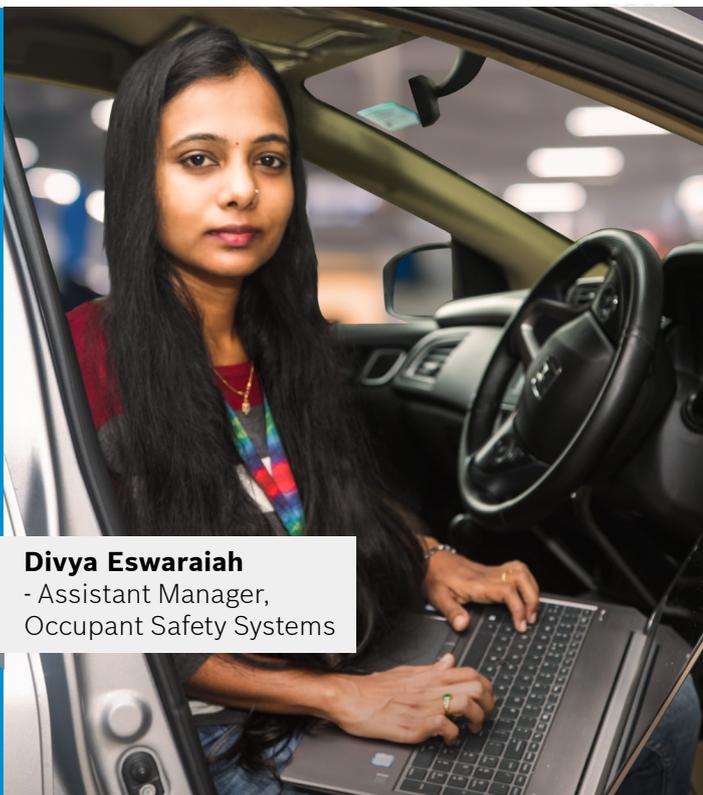Boschlers talk about how simple lines of code lead to great impact.

Driven by the vision to simplify lives, Boschlers are building a world where technology empowers day-to-day life through its innovative and intuitive application. Here are a few stories that bring out the passion of coders at RBEI to solve problems through simple lines of codes, their team's impact on RBEI's transformation journey, and RBEI's approach to face the challenges in industry.

What's Your <CODE> word? | SAFETY

'My code saves lives"

"There is no greater motivation than knowing my codes save lives. I work with the software which is the brain of the Airbag Control Unit that detonates the airbag in case of an accident. The code we write has just 10 milliseconds to kick in - 10 times faster than the blink of an eye. The trigger algorithm has to decipher between sensor data for the driver hitting breaks, jumping over a speed breaker and having a collision within a matter of 5-45 milliseconds. It's a highly complex task and one that brings me a lot of pride. So far, the team has helped save around 90,000 lives worldwide."

Divya Eswaraiah
- Assistant Manager, Occupant Safety Systems

What's Your <CODE> word? | CONVENIENCE

'I transform intelligence into convenience'

Our job is to transform regular physical tools into smart tools. While basic necessities like controlling speed, torque and handling safety are a must for any power tool, we add another layer of connected experience on top of that for the users. I have been working on a project involving heavy duty drilling machines and hammers, the kinds used by professional power tool users in varied industries. What fascinates me the most is that I get to be hands-on with these products and get my hands dirty. Although, one cannot physically "see the code" which fuels the product, it brings immense satisfaction and joy to me to be hands-on with the product to realize and witness the working of my software in the products we build.

Sharan Raghu Venkatachalam
Software engineer, Consumer electronics and power tools

What's Your <CODE> word? | EFFICIENCY

'If gaining efficiency and saving time is your plan, let my bot be the showman'

My team and I work towards automating and simplifying complex business processes through digital solutions. Using RPA we have been able to reduce tasks that once took long working hours and manual labour to merely minutes, with limited or zero human intervention. The time and resources our customers saved due to our codes were often utilised in upskilling the task force or enhancing the decision-making process. Automation is more than just a word. For us, it's a motivation to think innovatively and offer our customers solutions that help them save time and energy. Their satisfaction is the ultimate remuneration for our hard work.

Alina Jamal
Software Engineer, RPA

What's your <CODE> word? | SIMPLIFY

'Easy can be easier.'

Technology is here to help us live better, and it is our job as coders to make it happen. We have to think outside the box and find innovative ways to make life easier, and that gives us a fresh challenge to work with almost every day. Our IoT solution for driver safety monitored all the movements of the vehicles and understood the driver's style, and used this data to estimate the severity of an accident. It was also programmed to take smart action such as notifying respected authorities with accurate information in case of an incident. We had to cover every possibility so that the driver could be carefree. It was a really intensive and complex project and is a source of pride for me and my team.

Duong Thanh Nhan
ETM Architect

Improving Road Safety for Motorcyclists

RBEI Vietnam secures patent for two-wheeler speed control

While the allure of a motorcycle can be irresistible, the risk of riding speedily through traffic can pose a serious danger to the rider's wellbeing. This year, Robert Bosch Engineering and Business Solutions, Vietnam is making the roads safer with its patent in the domain of two-wheeler speed control.

The solution is aimed at leveraging technology to address the foundational cause of road accidents - exceeding speed limits. The inventor, Tran Quoc Cong, assessed that road safety in countries like Vietnam and Southeast Asia is always a burning and painful issue. This useful solution supports the control of the speed limit for the vehicle based on the speed parameters and the opening angle of the throttle valve in real time. The mechanism to control the opening angle that controls vehicle speed is always within the specified limit. This utility solution also suggests new research directions for application in other motorcycles and electric vehicles. Carrying forth the true spirit of innovation, Quoc Cong and his team hold testament to how the more meaningful the objective, the greater the commitment.

REDEFINIG THE USUAL

A Digital Diary for Supply Chain

Bosch Trac 360 enables end-to-end supply chain visibility

Modern-day supply chains are global and complex in their diversity. With multiple businesses connecting with customers to almost every corner of the globe, it becomes essential to optimise the distribution process. In order to guarantee the judicious use of existing resources, businesses require end-to-end visibility and real-time feedback which continues to be a challenge in present-day Supply Chain Management Systems.

Bosch's Trac360, is a connected supply chain tool that enables more efficient supply chain management. Backed by state-of-the-art technologies such as IoT, AI, Blockchain, Big Data, and Analytics, Trac360 produces a real-time "digital travel diary" of shipments, freight carriers, and other details. The insight that is gained from the tool can help companies engage in well-informed, predictive decision-making and employ automation processes to augment the supply chain visibility. By integrating technologies such as GPS, RFID, and IoT, the tool empowers OEMs to keep a real-time track of their parts and shipment.

In the last 2 years, Trac360 has tracked around a million bins of parts and has been used for shipping parts for 30,000 invoices across 45 warehouses, fulfilling 5000 trips per month in India. "It has disrupted the ecosystem ever since it made its debut", stated Chandrasekar R, Delivery Head - Cloud & IoT Practice, RBEI, speaking to Dataquest India. He adds that in these 2 years, the tool has "increased customer satisfaction, reduced inventory carrying costs, fortified returnable bin management, and surged warehouse productivity".

This disruption has persuaded organisations to rethink a possible reconstruction of their supply chain facilities to promote operational effectiveness and transparency in their operations. There is now a growing need for organisations to be more competent, faster, explicit, and excessively granular with a connected supply chain - and Trac360 is a simple, end-to-end solution that can help them with this transformation.

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Read the full coverage of Trac360 by Dataquest India here

Intelligent AMS for Intelligent Businesses.

Gaining efficiency, optimizing costs, and improving agility with AI at core

Applications have become the backbones of today's enterprises. But siloed applications don't help the cause of a transparent integrated business. Even after investing millions of dollars, often businesses fail to leverage the full potential of their ERP solutions. Application Management Services, while necessary could be complicated to manage and run on a daily basis and could add to the baggage of IT infrastructure. AI and Machine learning can come to rescue here. While AMS does what it does best- running the operations, AI and ML can add a wrapper of intelligence for automating repetitive tasks, deriving value-adding insights and continuous improvement with adaptive learning.

With AI at its core, the AMS becomes truly efficient at resolving performance issues, monitoring of transaction metrics and dealing with issues related to API and middleware at all levels of support. From reducing ticket velocity to optimizing business processes, AI led AMS can be programmed to do a lot more than we can imagine. With a smart AMS, you can easily predict errors in SAP process flow without having to wait for it to show up at a later stage. Features such as self-healing in case of process non-compliance make it even more powerful. All you need is the right partner to implement

__Scan the QR Code__ to learn more about how AI can transform AMS from a cost factor to a value factor, in our whitepaper "AI driven AMS: A smarter way to manage business processes"

Shaping the Future Car

Dattatri Salagame talks about how Bosch's India Engineers are revolutionising cars globally

Gone are the days when safety, reliability, and economy were the only factors that determined a good car. Intelligent cars are the need of the hour, and a lot of software that goes into a connected car today emerges from RBEI. In a recent interview with The Times Of India, Dattatri Salagame, MD, RBEI said "I call cars mobility gadgets. We have developed solutions which bring context-relevant information in the car which can be extremely useful for the users. Say, you pass by a shopping mall as you drive, you'll get personalized recommendations as well as parking options on your infotainment screens".

Talking about the futuristic solutions being developed at the R&D center of Bosch in India, he adds, "Products which are conceptualized in India are being used globally. We're working on driver assistance, driver safety, new forms of infotainment, next-gen technologies in electric battery and power management. We are also developing the algorithms for autonomous driving."

Read the full interview

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Challenging Hierarchies

Reverse Mentoring at RBEI

When traditions are challenged, revolutions emerge. Several senior leaders at RBEI are participating in a unique experiment that breaks hierarchical barriers. They are being mentored by young passionate associates from across domains on different topics of interest. This exercise not only bridges the supposed generation gap but also challenges conventional norms of a unidirectional learning flow. Several mentors and mentees have benefitted from this experience and have been able to exchange ideas, thoughts and learnings in different business areas including technology, research, marketing and more.

"I knew as a mentee, I had to have an open mind and willingness to learn. That's how I approached every discussion with my mentor. I have had huge takeaways about the millennial workforce, what motivates them, what ticks them off, what is it that they look for in a leader and how can we become a cool software company.", says Vivek Kadal, who is the Center Head for RBEI in Poland and was mentored by Alina Jamal, a young associate at the organization.

The participants were clubbed not on the basis of their current work domains but on the basis of their interests, which made the interactions engaging and out-of-the-box.

"As this was my first time being a part of the reverse mentoring journey, there were butterflies in my stomach. It turned out to be a mutually beneficial exchange of thoughts and skills -- a win-win situation for both", said Akshay Anand who got the opportunity to mentor Taran Garg - the head of Engineering for EMS department at RBEI.

Reverse mentoring accelerated bi-directional learnings on various domains and allowed the participants to exchange thoughts on technical, digital and social media solutions without any inhibition. By facilitating cross-pollination of ideas across departments and generations, the organization is embracing changes and emerging as a thought-leader with a visionary outlook.

Things and Data Together Driving Business Transformation

Conversations on world of opportunities that AIoT brings

'Bosch Conversations' is RBEI's flagship by-invite industry specific event series that focus on trending and new age topics through examples of live implementations, experiences, and views of industry leaders. Each 'conversation' is curated to enable thought exchange amongst prominent industry leaders and decision makers.

In its first ever virtual event on 'How things and data are together driving business transformation', the conversation was led by speakers who are actively working in this space – Uday Prabhu- Head of IoT Practice, Bosch SDS, Michael Schallehn- Partner, Bain & Company, Prashanth Adiraju- Principal Partner Leader, AWS, and Raghavendra Kulkarni, Business Area Head - Engineering for Digital, Bosch SDS.

These stalwarts shared some thought-provoking insights on AIoT trends and their implications on the whole industrial ecosystem.

"Approximately $520 billion in value is expected to accrue to analytics, apps and service segments in the near future as AIoT starts becoming more prevalent across industries. Several use cases of AIoT are already translating into reality, for example in quality control, smart security, remote monitoring and more.", says Michael Schallehn, Partner, Bain & Company.

Human evolution is governed by making tedious tasks convenient. The role of AI is maturing to do just that. It is not about outsourcing human skills to a machine, but about eliminating mechanical tasks to help people become more human. What matters the most at the end of the day is customer experience. Bosch, AWS and Bain have come together to create delightful customer experiences. The partnership is aimed at merging engineering intelligence, data analytics and business modelling. Read more about how AIoT is transforming industries here.

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Strengthening the Fight Against COVID

■ Initiatives at Bosch India

Even as you read this, Covid-19 continues to impact the lives of thousands of people. It has been a trying time for millions across the country, and at a time like this any support goes a long way.

The welfare of our associate and people around us is a priority for Bosch. Several Covid care initiatives have been implemented over the past few months to help associates battle these tough times.

Bosch India's sports complex was converted into a Covid Care Centre for BBMP. Other Covid care centers and contracted private isolation facilities were also set up across various locations.

4 million medical grade masks were donated to frontline workers

Free vaccination made available for all employees and their dependents

20+ doctors were made available around the clock across locations to support associates and family members.

We are Investing in an in-house oxygen generation unit

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Making Vaccines Accessible for all

'No-one is safe until everyone is safe'. Ensuring vaccination for one and all is the most crucial step towards battling the pandemic. By partnering with leading hospitals in the country, we were able to run vaccination drives across various cities for associates and family members, vendors, outsourced colleagues, and all frontline workers. 13,100+ vaccinations have been administered till date.
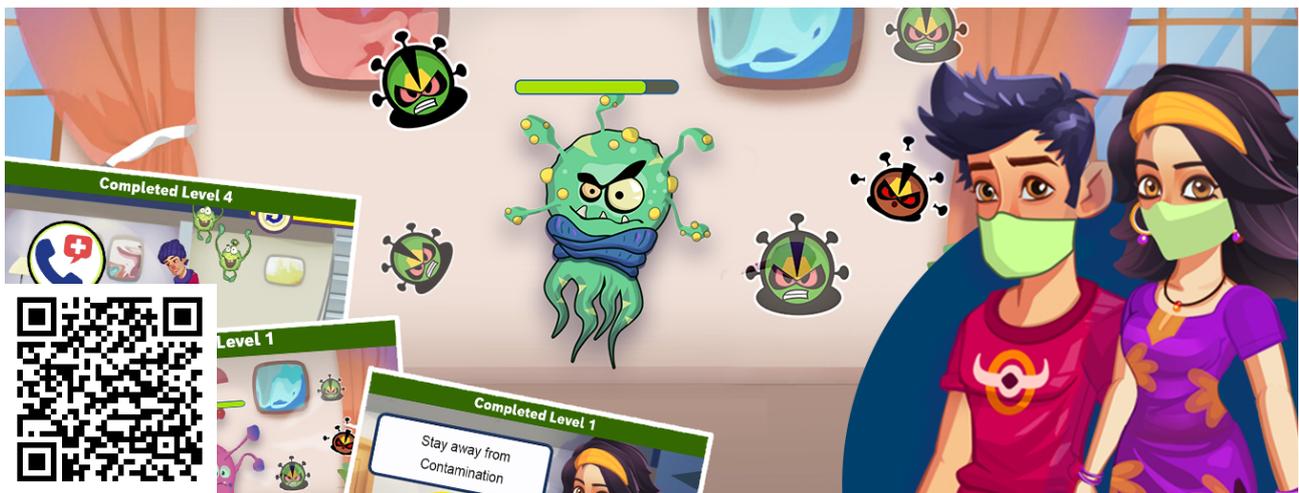

Gamifying Hygiene

Amidst a growing need to prevent the spread of Covid-19, hygiene issues have taken center stage. Societies across the world are relooking at their hygiene practices and are urging people to bring behavioural changes in their daily lives.

With the intention of leveraging technology for social impact, RBEI CSR has launched a gaming app called 'hygNXT'- which stands for Next Generation Hygiene. The game acts as a catalyst to raise awareness about the best practices in health and hygiene. And it does so in a fun and engaging manner.

The gamification covers the themes of general personal hygiene best practices, safe conduct at public spaces, waste segregation, and healthy habits to prevent communicable diseases by simulating real life Using elements of AR, the gamified approach diminishes the difference between the real and the virtual world, make it easier for people to carry forward lessons learnt in the online world to the real one.

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