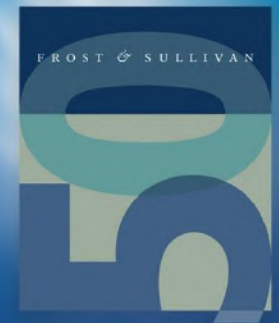


“Going Cashless” as catalyst for the Asia-Pacific Mobile Payments Market

Presented by
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September 2017

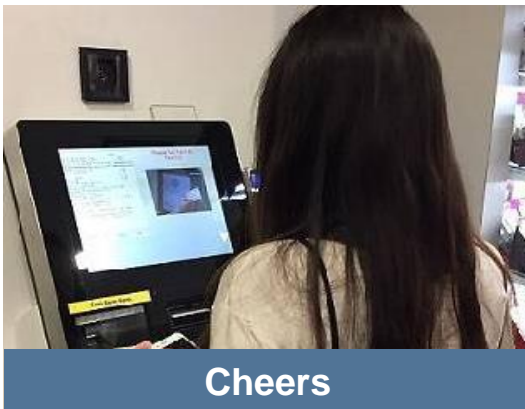
Digitalization of the Industry Ecosystem is Creating Opportunities for Payments Providers

Payments integration into everyday life is only starting to scratch the surface

Retail – Unmanned Stores



- ✓ Integration of online technology with offline demand can reduce labor costs and therefore lower retail prices for customers.



Transportation – Unmanned Taxis



- ✓ A future of driverless cars will lead to driverless taxis, which will benefit from lower labor and fuel costs.

Source: <http://technode.com/2017/07/31/we-tested-china-unmanned-convenience-stores-bingobox/>, <http://www.channelnewsasia.com/news/singapore/cheers-launches-first-unmanned-cashless-store-in-singapore-9072076>, <http://www.telegraph.co.uk/technology/2017/02/14/self-flying-taxi-transport-passengers-dubai/>, <http://www.straitstimes.com/singapore/transport/worlds-first-driverless-taxi-trial-kicks-off-in-singapore>, <https://www.openkey.co/>, <http://www.hongkiat.com/blog/mobile-loyalty-platforms/>

Digitalization of the Industry Ecosystem Will Transform Future Payments

Mobiles will be at the centre of this transformation spurring a host of opportunities for mobile payments

F&B – Unmanned Reservation Systems

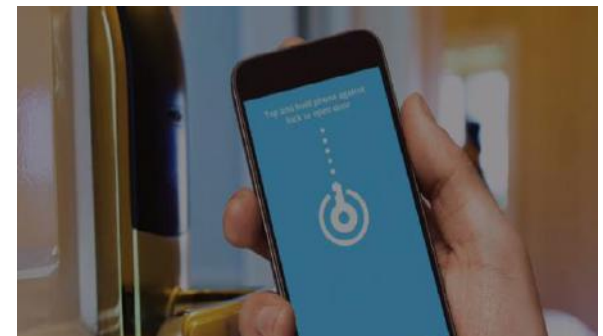


- ✓ Online reservations make restaurants more efficient.
- ✓ Payment via app would lead to increased sales, especially amongst millennials.



- ✓ Conversational commerce experiences that **are** able to integrate customer service, access to information and sales into a seamless and consistent user experience.

Hotel – Mobile Check-In & Digital Keyless Entry



OpenKey

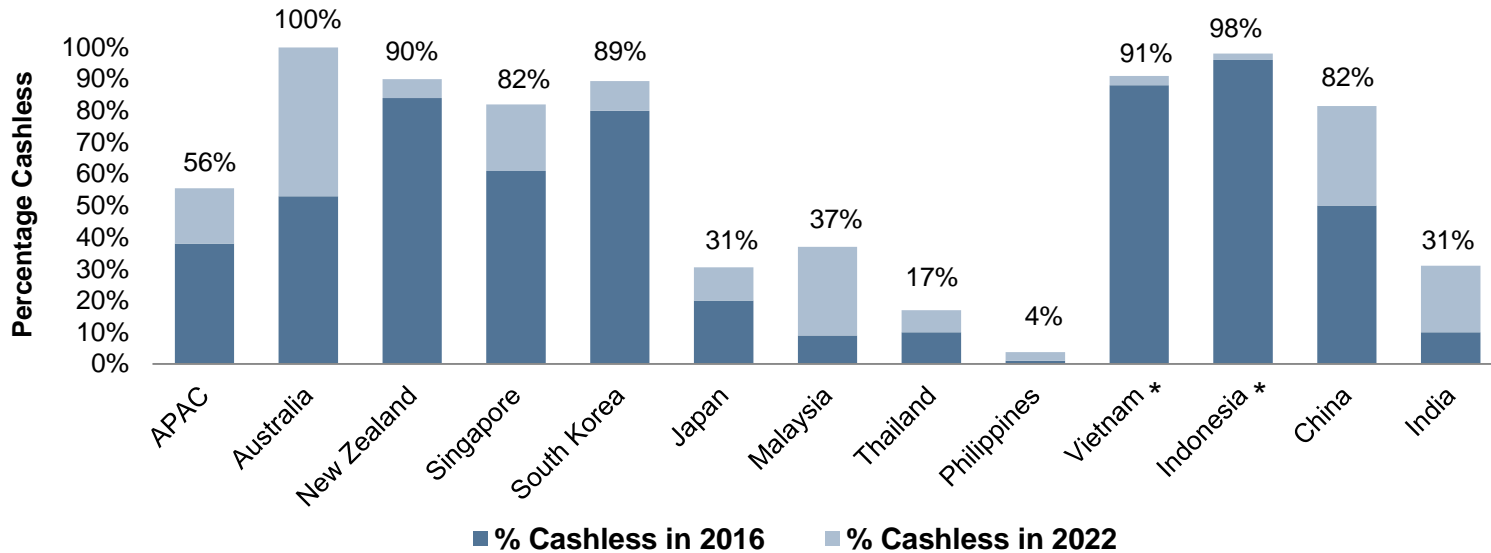
- ✓ Keyless entry, seamless check-in, and remote check-out following online booking equal a quantum leap for the guest experience.

Source: <https://www.openkey.co/>, <https://www.techinasia.com/four-up-and-coming-trends-in-the-restaurant-business>, <https://newsroom.mastercard.com/press-releases/mastercard-powers-first-commerce-application-within-softbank-robotics-humanoid-robot-pepper/>

Within Asia-Pacific, there is a shift towards “Going Cashless”

Market demand and regulatory push may result in “Cashless Societies” appearing from 2022

Growth in % Cashless Across Asia-Pacific



Australia may be the 1st country in Asia-Pacific to achieve a true “Cashless Society”

Bold policy moves in populous countries such as China and India, will result in **Asia-Pacific 56% cashless by 2022**

High Income Nations are leading along with some middle income economies such as China and Malaysia

Note: * Percentages are based on volume with exception of Vietnam and Indonesia which is based on value

Source: Frost & Sullivan

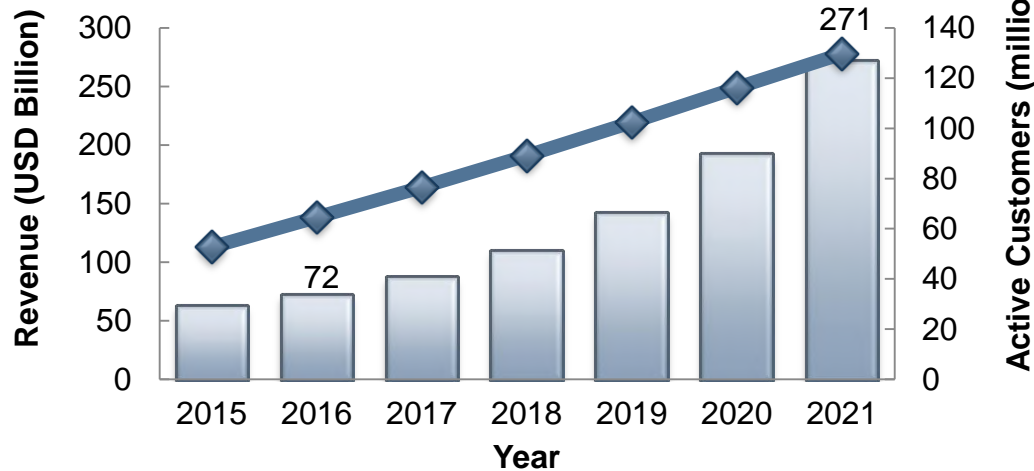
Asia-Pacific “Going Cashless” is acting as Catalyst for Mobile Payments

On the flip side, Mobile Payments will be a key enabler of “Cashless Societies”

The market excluding China and India will grow exponentially from \$72 billion in 2016 to reach \$271 billion & active customers will double to 130 million by 2021



Total Mobile Payments Market: Asia-Pacific, 2015–2021



- Smartphone penetration **was** the highest in the world at 45% in 2015.
- Consistent progress by local governments toward Cashless Societies.
- Going cashless is seen as a catalyst for the mobile payments market. Mobile payments will be a key enabler of Cashless Societies.
- Populous countries lacking the necessary digital infrastructure in place to move toward cashless.
- Alipay/WeChat in China and Paytm in India saw this as an opportunity and capitalized on it.



\$3.3 Trillion
in 2016

CHINA



\$50 billion
in 2016

INDIA

Note: As benchmark, mobile payments in the US was estimated at \$27 billion in 2016

Source: Frost & Sullivan

Key Drivers of Mobile Payments in Asia-Pacific

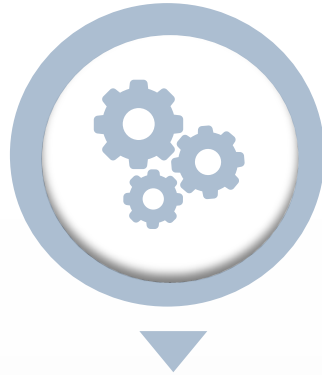
Supportive climate for growth is a key element



Supportive Regulations



- Regulation can play a key role in the adoption of mobile payments as a payment method.
- Bold policy moves can result in drastic changes.



Infrastructure and Payment Solutions Readiness



- Increasing proportion NFC enabled smartphones with biometrics capabilities.
- Increasing adoption of EMV, QR code and Contactless Technology.



High Smartphone Penetration



- The proliferation of smartphones with Internet connectivity is a key driver for mobile payments.



Growth in Online Commerce and Remittance



- Mobile phones are the most popular and most often used device used to go online.
- **About 70%** of Groupon transactions are already on their mobile app.



Awareness and Familiarity



- Awareness and familiarity with mobile payments drives increase in traction and hence adoption of mobile payments amongst mobile phone customers.

Source: Frost & Sullivan

Key Developments in Asia-Pacific

Slowly gaining traction. Mobile payments is still only 1% of POS payments in Australia and 10% of total payments in China

Australia	Singapore	Malaysia
<ul style="list-style-type: none">• Contactless technology has been embedded in nearly all cards issued and POS terminals have the latest mobile payment methods.• Concerns over security have eased with only residual concerns left in the market.• 3rd party card based wallets are facing resistance in partnering with pillar banks to enter the market. Only ANZ has entered the market.• Australia is looking into removal of higher value currency notes i.e. \$50 and \$100., This will aid mobile payments capped below \$100.• About 1% of POS transactions were done on Mobile.	<ul style="list-style-type: none">• UOB in Singapore removed the SGD100 limit from NFC terminals and will completely remove it from all 10,000 NFC terminals by the end of 2017.• 3rd party consolidators have entered the market securing partnerships with up to 80% of banks.• LTA is running an account based ticketing system pilot that accepts contactless cards on public transportation.• Singapore is funding cashless payment acceptance at small merchants. Take up is still slow despite wide acceptance via NETS of all cashless/mobile payment methods in Singapore. It has just announced "PayNow".	<ul style="list-style-type: none">• BNM's Payment Card Reform Framework has triggered a significant change in the payments landscape.• The debit card is being leveraged as a key enabler in Malaysia going cashless.• Per capita debit card transaction is still only 3.5, and the impact of the government's national target to increase per capita transaction of debit cards to 30 by 2020 is yet to be felt.• Samsung Pay has entered the market• Malaysian tolls are going 100% cashless through use of Touch 'n Go but Credit/Debit cards are being tested at tolls.

Source: Frost & Sullivan

Solutions That Disrupted the Market

3rd party card based wallet providers account for over 40% of global mobile payments transactions

45 million

- Works on the latest Apple devices
- Added 1 million new customers every week in the 7 markets in 2016
- Is now available in 15 countries at 20 million locations worldwide, including 4.5 million in the United States



450 million

- Taps on Alibaba's e-commerce base and is the world's no.1 e-wallet
- Interfaces to daily activities. Stores e-coupons and loyalty cards
- Has tied up with Samsung Pay in May 2016 to access more physical stores/businesses

18 million

- Works on the latest Samsung phones models
- Its Knox security software is one of the best security systems for mobile devices. It now also offers iris scanning authentication
- Has tied up with Alipay in May 2016



846 million

- Taps on its social networking base as a powerful "lifestyle app"
- Allows customers to pay for products and utility bills through the social media platform without having to exit the WeChat app
- Offers a card payment option that is funded via the WeChat Wallet or a bank ATM card

12 million

- Works on all android phones, which run KitKat 4.4 or later that are NFC and HCE-enabled i.e. 70% of android phones
- Collaborates with PSPs such as Braintree and Stripe, to support online mobile payments
- Offers loyalty and gift cards



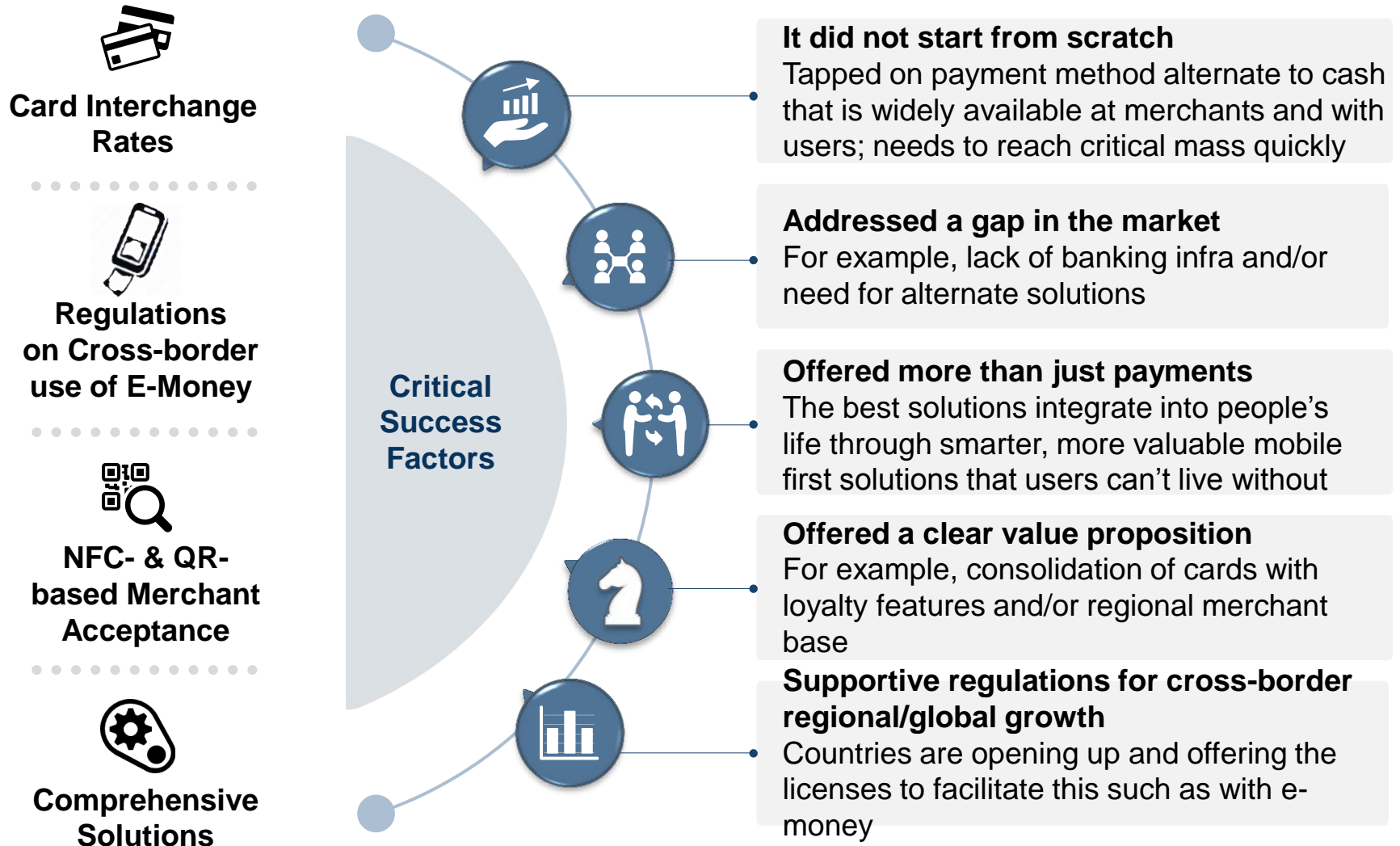
147 million

- Taps on India's demonetization and promotion of a cashless and digital economy
- Plans to merge its wallet business with its payments bank in 2017
- Offers diversity e.g. ticketing covers movies, airlines, train, events and also hotel bookings

Source: Frost & Sullivan

Critical Success Factors

Getting the product strategy right is key to achieving scale and achieving scale is critical to ensuring viability of a payments business model. Regulations and user behavior will fall into place from there



Source: Frost & Sullivan

Mobile Payment Solution of Today

Ideally a seamless, comprehensive solution but not all solutions today have similar components

Payment for Offline & Online



Loyalty & Value Added Services



Document Authentication & Identity Verification Software



1. CAPTURE: Scan front & back of credential using mobile device or scanner
 2. PROCESS: Images & data are processed instantly & securely in the cloud
 3. AUTO-FILL: Accurate information populates your application within seconds
 4. AUTHENTICATE: 50+ forensic tests performed on credentials in real time
 5. VERIFY: Optional facial recognition match, manual review & database check

Financial Services



820,000+ customers in four days

Source: Frost & Sullivan

Source: <https://www.acuantcorp.com/identity-verification-software/>, <https://mobilepassport.us/>, <http://www.bankingtech.com/929062/kakao-bank-attracts-820000-clients-in-four-days-since-launch/>, <http://adage.com/article/digital/wechat-s-hot-feature-tricky-marketers-figure/307482/>, <http://walkthechat.com/>, cloudtimes.org

What Mobile Payments in the Future needs to be

Global alignment is key to mobile payments going mainstream

Cash	Mobile Payments Today	Mobile Payments in Future
<ul style="list-style-type: none">• Universal acceptance local and across APAC• Cross-border conversion possible• Customer bares full liability if lost/stolen• No value add but can gain interest if kept in a bank	<ul style="list-style-type: none">• Fragmented acceptance local and across APAC. The poor, rural and so on are not well addressed• Cross-border possible for larger players, near impossible for small players• Has added security through tokenization and biometrics• Needs to offer value add to incentivize top up behaviour. Can gain interest if cash taken from account only during transaction clearing	<ul style="list-style-type: none">• Universal acceptance local, across APAC and even globally• Cross-border possible and work seamless and real time• Has added security through tokenization and biometrics• E-wallet that doesn't need topping up as either cash is taken from account only during transaction clearing or credit/debit card is charged

- ✓ Scale is important. There is need for more larger players or all smaller players to join a platform
- ✓ Mobile Payments may need to offer both NFC and QR for cross-border and universal acceptance
- ✓ **There is need for regulatory and industry alignment across APAC and even globally. With this in place, mobile payments as the future payment method will crystalize (or become certain) and the ecosystem will invest more in a future that clear**

Source: Frost & Sullivan

Mobile payments is the future and solutions will have evolved to be mass market ready by 2020

- a. NFC will be the dominant interface in developed countries as well as some developing countries. Other countries may need a regionally coordinated regulatory push for NFC to succeed or an alternate interface that can travel across the region e.g. QR code will be needed
- b. Mobile wallets will evolve into platforms with payment methods, loyalty/rewards, loans, insurance and memberships added on as apps where customers can add their cards and details to. Mobile wallets will eventually replicate physical wallets and the personal banking experience

The Frost & Sullivan Story

The Journey to Visionary Innovation

Correspondingly, New Business Models are evolving rapidly



Every company is a Technology Company



Everything as a Service



Personalization & customization

In this context, CEOs are facing multiple challenges as well as opportunities*

Frost & Sullivan Survey of Asia-Pacific CEOs 2016

55% believe intelligent data analytics will be most leveraged growth opportunity theme



52% identify highly competitive environment as major external challenge



51% express **dissatisfaction** with their organization's ability to **align innovation** with **customer demands**



51% cite revenue growth as top growth objective



49% perceive their organization to be **weak** in **growth performance**



49% note an **inability** to **recruit** and **retain** talent as major internal challenge



46% plan to **ramp up technology strategies** over the next three years



42% think connectivity and convergence is the Mega Trend with the most disruptive effect on business models



Under such scenarios, Frost & Sullivan is uniquely positioned to enable clients to Accelerate Growth & Achieve Best-in-Class Positions In Growth, Innovation & Leadership

■ Frost & Sullivan at a Glance



40+ offices, 30 Countries

2000+ Consultants

250, 000+ Clients serviced worldwide

Fortune 1000 clients & SMEs

Global Footprint



Corporate & Business Unit

M&A

Organization

Operations

Sales & Marketing

Turnaround

Consulting Services



14 Industries

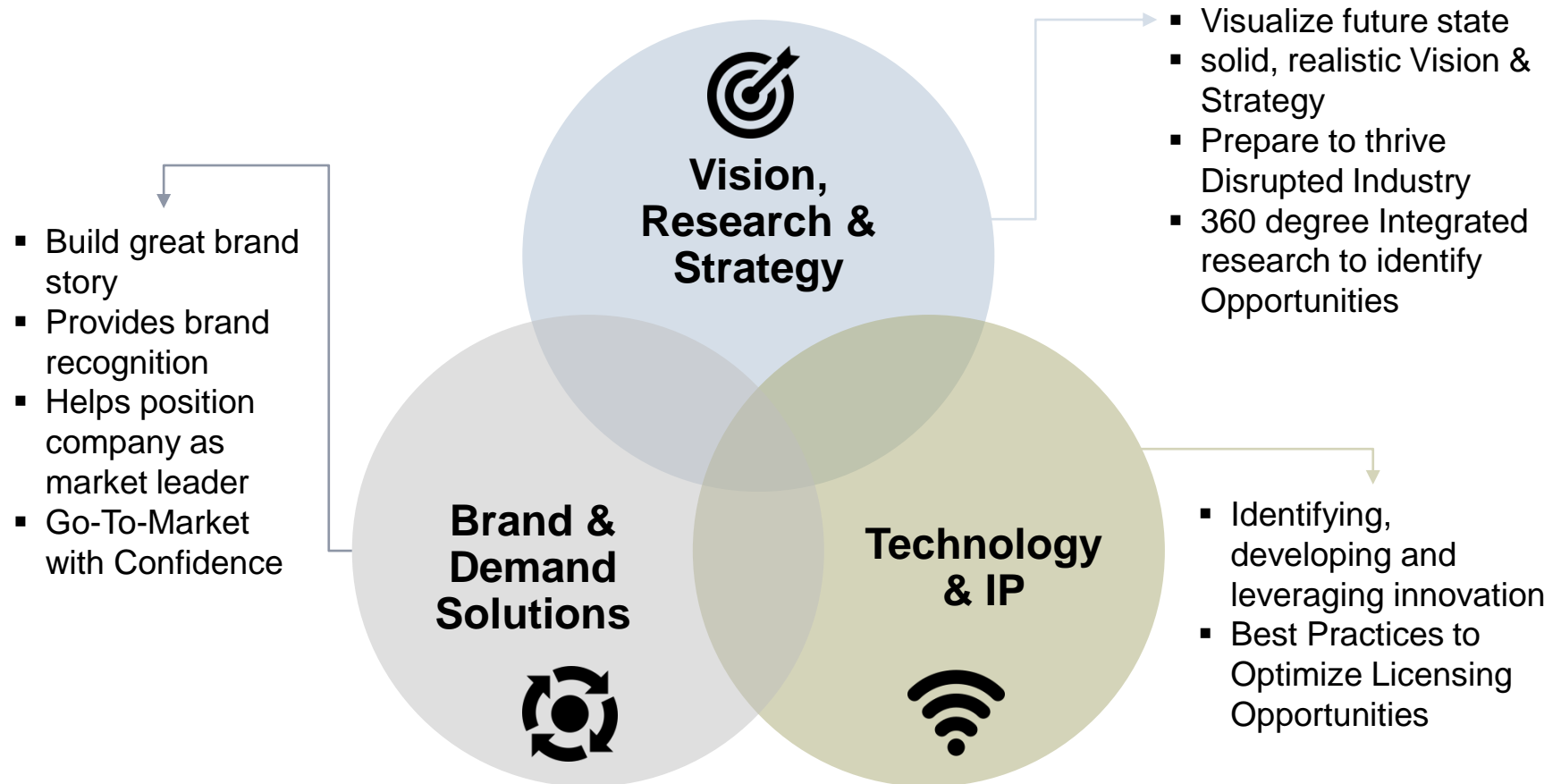
50+ Product Categories

Combination of Market, Technology, Economics & Applications

Industry Expertise

We help our clients growth through the integration of three key value propositions:

Transformational Growth



Our dedicated teams covering 14 diverse industries provides comprehensive industry coverage while sparking innovation opportunities via convergence



Our Consulting Offerings for Private Sector



Value Creation

- Corporate Strategy
- Market Entry Strategy
- New Product development strategy
- Go To Market Strategy
- Business and Financial Planning

- Implementation planning
- M&A advisory
- Partner identification
- Customer Experience enhancement
- Key Account Management



Value Delivery



Value Protection

- Portfolio monitoring
- Regulatory Impact Analysis
- Digital strategy
- Risk Management
- Competitive Intelligence

These offerings along with our Digitalization Center of Excellence , help in exploring new business models using Digital technology

Big Data Analytics

We offer

- Customer Experience Management Solutions
- Digital Brand Strategy
- Open Data-based Solutions
- Citizen or Customer Engagement Platforms
- Predictive Analytics Solutions



We deliver



Acceleration Lab Services



Interactive & design services



Brand communication



Why Us ?

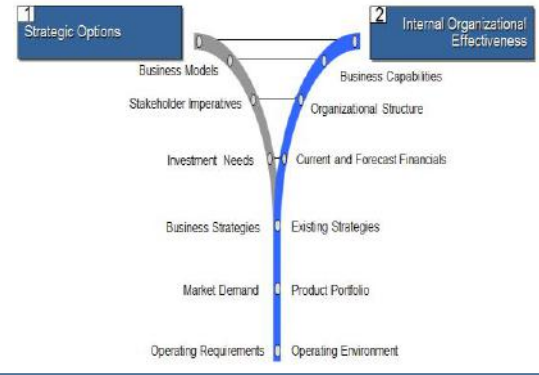
Deep industry-specific expertise to drive data-driven business outcomes for clients

Speed and agility to cater to needs of businesses, and at the right cost

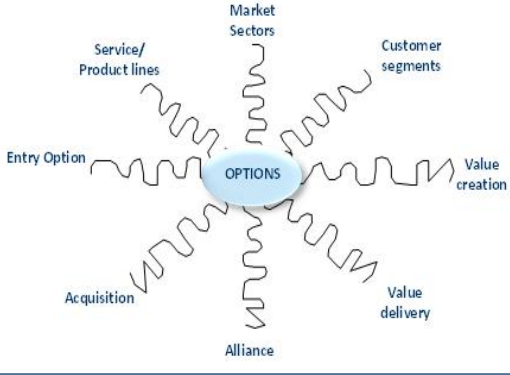
Breadth of Proprietary solutions offered with modular add-ons that scale with client's needs

.....deploying sophisticated tools, methodologies and frameworks

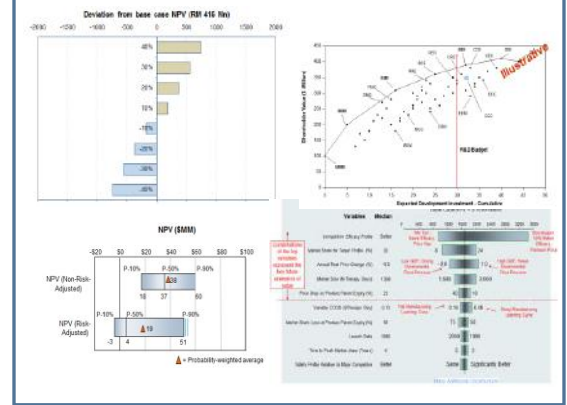
Vision and Mission Workshops



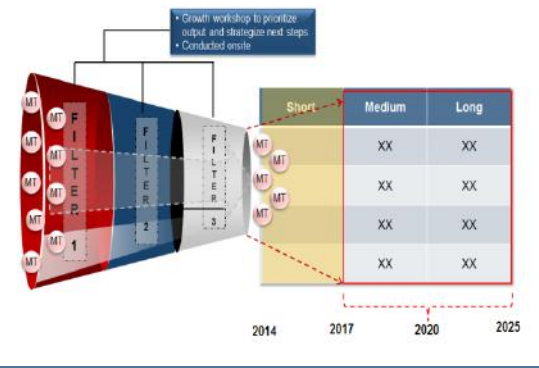
Strategic Option Generation



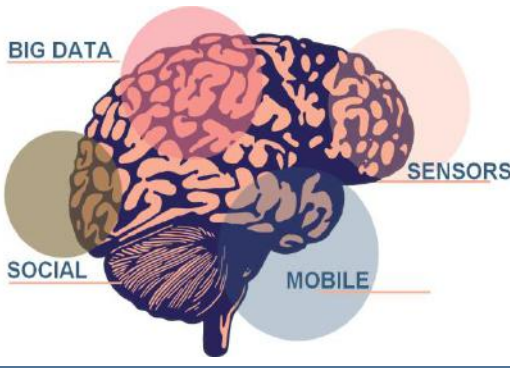
Sensitivity analysis



Megatrends: Macro to Micro Ideation



Analytics Engines



Visualization Tools



.. while strictly adhering to our Consulting Values

Our Growth Consultants' performance is governed by these core values



Client First—We will always put our client's interests ahead of our own in every consulting project.



Quality—We will apply the most robust, lead edge techniques in developing accurate, reliable metrics to support client needs.



Strategic Value—We will always strive to enhance the strategic value and leverage of our work—our goal is to delight our clients, not merely satisfy them.



Innovation—We will strive to apply out of the box thinking to develop solutions creating competitive advantage for our clients.



Confidentiality—We will maintain complete confidentiality of client objectives, opportunities and strategies unless and until they become public knowledge.



Professionalism—We will be completely disciplined, organized and ethical in the way we conduct ourselves during and after every engagement.



Integrity—We will always be truthful and unambiguous in our client recommendations—we will call it as we see it.

Illustrative list of our key Global Clients – Private Sector



What Clients say about us?

"Frost & Sullivan provided us with a very clear picture of the market opportunity we wanted to better understand. They demonstrated excellent knowledge of the end use industry and high standards of professionalism. Their clear recommendations helped us to precisely focus our marketing effort. The continuous dialog with Frost & Sullivan throughout the project enabled us to make best use of our resources. Good value for money!"

DuPont

"Frost & Sullivan played a vital role in helping us to determine whether or not we should expand one of our businesses worldwide. Having become an extension to our team, they approached the assignment with enthusiasm, dedication, and professionalism. We were fortunate to have a Frost & Sullivan team on the ground in three continents to conduct the research. The fact base Frost & Sullivan helped build ultimately saved us \$ millions in a failed market entry attempt into unattractive markets. I look forward to working with Frost & Sullivan again"

Greif Inc.

"Since the kick off meeting, Frost & Sullivan has put our interest and needs of utmost Priority and worked countless days to meet our demands. I am more than happy to say that the research /analysis of frost & Sullivan has been well received by our BoD. The report will be of great deal of help in determining entrance in Malaysian/Indonesian EPC Market. Samsung Engineering cherishes its experience and wishes to continue this relationship ahead."

Samsung Engineering

"Frost & Sullivan is a highly competent and dynamic research firm whose professional expertise has helped further define opportunities to expand our brand presence in Western Europe. Their ability to develop unique and economical research methodologies to capture market needs across many diverse countries is impressive. We would recommend Frost & Sullivan to other firms seeking a clearer picture of existing or future opportunities and markets."

Carhartt



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**Growth, Innovation and
Leadership?**

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