01 | Overview of Vertex

Organization Structure

Each Fund managed separately by respective GPs

- SEA & India
- Israel
- US
- China

Largest LP Commitment & Platform Coordination

- New initiative with the support of Temasek
- Fund size - USD 250M including external investors
01 | Overview of Vertex

Global platform with strategic presence

- Global VC franchise comprising 5 early-stage focused funds and 1 growth-stage focused fund
- Investing in technology and healthcare opportunities in the most important innovation hubs globally
- 43 VC professionals with in-depth local knowledge and relationship networks

Selected Vertex Partners & Investment Professionals
01 | Overview of Vertex

Investment highlights – outsized exits

Outsized exits: Demonstrated track record of investing into disruptive startups and delivering substantial returns
01 | Overview of Vertex

*Investment highlights – one of the global lead VCs*

Recognized as one of the most active global VC lead investors

**Active lead investors in Q3 2018**

*Global deal count*

- IDG Capital: 21
- Matrix Partners China: 18
- Shunwei Capital: 17
- Sequoia Capital China: 16
- Accel: 16
- Y Combinator: 16
- GV: 12
- Eight Roads Ventures: 11
- Qiming Venture Partners: 11
- GGV Capital: 11
- **Vertex Ventures**: 11
- Andreessen Horowitz: 11
- Bessemer Venture Partners: 10
- K2VC: 10
- F-Prime Capital Partners: 10
- Morningside Venture Capital: 10
- Omidyar Network: 10

Source: CrunchBase
01 | Overview of Vertex

02 | Key Trends

03 | Investment Approach

04 | Policy Considerations
The pace of technological change is accelerating with new technologies introduced in shorter time(s)
02 | Key Trends

This is driving the rapid cost decline for various emerging technologies

<table>
<thead>
<tr>
<th>Drones (Cost per Unit)</th>
<th>3D Printing (Average Cost)</th>
<th>Industrial Robots</th>
<th>DNA Sequencing</th>
<th>Solar Power (Cost per kWh)</th>
<th>Sensors (3D LiDAR)</th>
<th>Smartphones</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013: <strong>USD 700</strong></td>
<td>2014: <strong>USD 100</strong></td>
<td>2014: <strong>USD 20K</strong></td>
<td>2014: <strong>USD 1K</strong></td>
<td>2014: <strong>USD 0.16</strong></td>
<td>2014: <strong>USD 80</strong></td>
<td>2015: <strong>USD 100</strong></td>
</tr>
</tbody>
</table>

Source: Digital Transformation of Industries: Digital Enterprise by World Economic Forum
02 | Key Trends
Pointing to industry convergence as the world becomes increasingly digitized and connected
02 | Key Trends

Reshaping conventional notions about how businesses are structured

- the world’s largest ride hailing company, **owns no vehicles**

- the world’s most popular media owner, **creates no content**

- the most valuable retailer, **has no inventory**

- the world’s largest accommodation provider, **owns no real estate**
For instance, AirBnB has a **higher revenue growth rate** than its publicly listed peers.

It is the **largest lodging company** by rooms, with more rooms than Marriott, Starwood and Hilton Worldwide *combined*.

Sporting **higher valuations** than its public competitors.
02 | Key Trends
....and becoming unicorns faster than the typical Fortune 500 company. An investment opportunity?

Source: C World Economic Forum | Accenture
01 | Overview of Vertex

02 | Key Trends

03 | Investment Approach

04 | Policy Considerations
03 | Investment Approach
An Overview

We seek to invest in **disruptive, transformational enterprises** with potential to become **global leaders**

<table>
<thead>
<tr>
<th>Stage Focus</th>
<th>Series</th>
<th>• Primarily Series A, typically with follow-on and some capital deployed at Series B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>• USD 1M – USD 8M</td>
<td></td>
</tr>
</tbody>
</table>

**Value Creation**

- Active investor with board representation
- Provide operational support in talent recruitment & business development
- Support fundraising for Vertex portfolio companies via follow-on investments from our network of co-investors
- Leverage Vertex & Temasek network to drive global expansion, partnerships & exits
## Sector Focus

<table>
<thead>
<tr>
<th>Consumer Internet</th>
<th>Fintech</th>
<th>Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• SEA: ~300M <strong>monthly active users</strong> with the economy expected to <strong>exceed USD 200B by 2025</strong></td>
<td>• SEA: Rising need to serve the <strong>underbanked</strong>, 73% of 650M total population</td>
<td>• SEA: Enterprise tech spending is expected to total ~<strong>USD 62B</strong> in 2018</td>
</tr>
<tr>
<td>• India: ~450M <strong>internet users</strong> with the economy expected to reach <strong>USD 250B by 2020</strong></td>
<td>• India: digital payment transactions grew to <strong>INR 2,295T</strong> in 2017 with encouragement from government initiatives</td>
<td>• India: Enterprise deep tech was the only theme that saw <strong>increase in investment activity from 12 in 2016 to 23 in 2017</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Selected Portfolio Companies</strong></th>
<th><strong>firstcry (India)</strong></th>
<th><strong>INSTAREM</strong></th>
<th><strong>CC CloudCherry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct-to-consumer e-commerce</td>
<td>India’s largest mother and child omni-channel commerce company</td>
<td>Provides lower cost remittance services than traditional banks</td>
<td>Provides customer experience management, creates customizable omni-channel surveys in time</td>
</tr>
<tr>
<td><strong>Grab</strong></td>
<td>Mobile app that offers a wide range of transport, logistics and payment solutions</td>
<td><strong>VALIDUS</strong></td>
<td><strong>patsnap</strong></td>
</tr>
<tr>
<td><strong>Qnecit</strong></td>
<td>Social and community platform for events ticketing and merchandise</td>
<td>Online financing marketplace to help SMEs to secure financing from accredited investors</td>
<td><strong>Motive.AI</strong></td>
</tr>
<tr>
<td><strong>cilic</strong></td>
<td>Leverages proprietary credit scoring to provide consumer loans to university students</td>
<td><strong>Leading data platform for intellectual property analysis &amp; management</strong></td>
<td><strong>AI platform for conversational banking and virtual personal assistants</strong></td>
</tr>
</tbody>
</table>

Source: e-Conomy SEA Spotlight 2017 by Google & Temasek | Ecommerce by IBEF | Venture Intelligence | Gartner | Vertex
# 03 | Investment Approach

## China - IT

<table>
<thead>
<tr>
<th>Sector Focus</th>
<th>Consumption Upgrade</th>
<th>Artificial Intelligence</th>
<th>Deep Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td>• Household consumption is estimated to reach RMB 56T within the decade, powered by a growing middle class that will represent ~65% of households</td>
<td>• AI positioned as a strategic priority and the Chinese government plans to create a USD 150B AI industry by 2030</td>
<td>• Shenzhen is electronics manufacturing hub of the world, making 90% of world's electronics</td>
</tr>
<tr>
<td><strong>Selected Portfolio Companies</strong></td>
<td><strong>LOHO</strong>&lt;br&gt;O2O spectacles brand owner &amp; distributor</td>
<td><strong>Hoven Robotics</strong>&lt;br&gt;Integrated and open embedded AI solutions</td>
<td><strong>solid energy</strong>&lt;br&gt;Design &amp; manufacture next gen lithium batteries</td>
</tr>
<tr>
<td></td>
<td><strong>Designs and sells entry level high heels</strong></td>
<td><strong>Geek+</strong>&lt;br&gt;Online solution to assist K12 students in their work using deep learning technologies</td>
<td><strong>Designs &amp; manufactures robots or logistics automation</strong></td>
</tr>
</tbody>
</table>

Source: Globe Newswire | CNN | WEF 2017 | Vertex
# 03 Investment Approach
## Israel - IT

<table>
<thead>
<tr>
<th>Sector Focus</th>
<th>Cybersecurity</th>
<th>Automotive</th>
<th>Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td>• Created 300+ cybersecurity startups</td>
<td>• With more than 500 startups working in the automotive industry, Israel is at the forefront of driverless vehicle innovation</td>
<td>• Continued development of the cloud ecosystem with emergence of new approaches and services has seen a wave of Israeli companies tackling issues in this space</td>
</tr>
<tr>
<td><strong>Selected Portfolio Companies</strong></td>
<td>Railway cybersecurity solutions to protect critical infrastructure</td>
<td>Cutting edge LiDAR remote sensing solution</td>
<td>SaaS company delivering end-to-end platform for personalization</td>
</tr>
<tr>
<td></td>
<td>Indegy: Industrial cybersecurity company which helps companies protect their SCADA networks</td>
<td>Fleetonomy: AI-based solutions to plan, manage and optimize smart mobility services and autonomous vehicles</td>
<td>spotinst: Cloud workload management software</td>
</tr>
<tr>
<td></td>
<td>CYLUS: Railway cybersecurity solutions to protect critical infrastructure</td>
<td>INNOVIZ TECHNOLOGIES: Cutting edge LiDAR remote sensing solution</td>
<td>DYNAMIC YIELD: SaaS company delivering end-to-end platform for personalization</td>
</tr>
<tr>
<td></td>
<td>spotinst: Cloud workload management software</td>
<td></td>
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</tr>
</tbody>
</table>

Source: Ctech by Calcalist | Reuters | Vertex
03 | Investment Approach
*United States - IT*

<table>
<thead>
<tr>
<th>Sector Focus</th>
<th>Intelligent Applications</th>
<th>Enterprise</th>
<th>Industry 4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• This market is predicted to reach <strong>USD 123B by 2023</strong>, with North America leading the way</td>
<td>• <strong>North America is expected to lead</strong> the world in the growth of digital assets and enterprise data management markets in next 5 years</td>
<td>• Seen as the way to revitalize the US manufacturing sector, which is the second largest in the world</td>
</tr>
<tr>
<td></td>
<td>• By 2030, <strong>up to 73M jobs</strong> in US could be automated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selected Portfolio Companies</th>
<th>Offline traffic retail analytics solution</th>
<th>Prevents automated attacks by detecting and protecting against malicious web behavior</th>
<th>3D metal printing systems which cover the full product life cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>dôr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LaunchDarkly</td>
<td>Feature management platform to help software teams build better software, faster</td>
<td>Customize data storage in the cloud</td>
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<tr>
<td>perimeterx</td>
<td></td>
<td></td>
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<tr>
<td>Desktop Metal</td>
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<tr>
<td>Hedvig</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Forbes | Newswire | Vertex
## 03 | Investment Approach

### Global - Healthcare

<table>
<thead>
<tr>
<th>Sector Focus</th>
<th>Biotech</th>
<th>Medical Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Median deal size from new investment round from active investors has <strong>increased 40% over 2015</strong></td>
<td></td>
<td>• <strong>Cardiovascular</strong> was ranked the top indication for device exits</td>
</tr>
<tr>
<td>• <strong>Immuno-oncology</strong> investing comprises 1/3 of series A funding</td>
<td></td>
<td>• 19 M&amp;As and 1 IPO between 2013 and 2017</td>
</tr>
</tbody>
</table>

### Selected Portfolio Companies

- **bicycle therapeutics**: Development of first-in-class medicines to treat cancer and other debilitating diseases
- **Palleon Pharmaceuticals**: Development of first-in-class antibodies targeting the innate immune system
- **IVANTIS**: Development of new and innovative solutions for glaucoma
- **NUVaira**: Development of novel catheter-based system for COPD

Source: Silicon Valley Bank | Vertex
01 | Overview of Vertex
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04 | Policy Considerations
04 | Policy Considerations
Encourage committed, long-term investors

- Encourage institutional investors to invest in VC funds
  - Consider matching investments with private money into VCs to plug the growth stage funding gap

**Case study: Funding Gap (Singapore)**

- (Corporate Ventures)
- TEMASEK
- (Angel Investors)
- vertex

**Case study: Successful Enterprise Ecosystem (US)**

With each cycle, the industry shows greater strengthening with this interconnectivity

- Capital commitments are accounted for by
  - (Largely) Endowments, foundations and pension funds
  - Financial and insurance funds

- Venture Capital Funds

- Startups

- Successful entrepreneurs become HNWIs who may establish foundation and endowment funds
04 | Policy Considerations

Open new markets and facilitate business development opportunities for innovative startups

Adopt a pro-innovation regulatory stance to develop a market for solutions from innovative startups

Government Tenders

Governments should be prepared to boldly consider innovative ideas or products on their merits when offered for procurement or identify several strategic areas to provide more opportunities for promising startups to build competencies.

The US public sector purchases approximately half a trillion dollar’s worth of products and services annually.

Procurement by the US Government drove new developments in technology that became innovative products of many entrepreneurial growth companies.

Public sector procurement examples to consider include:

- **Program in Thailand** where 2-3% of public sector procurement is made from local technology startup/ SMEs

- **Scheme in Korea** to award good design products with a Good Design mark. Since 2002, Korean Government’s procurement policy has been revised to offer preferential treatment to such products

Examples of the roles that VCs adopt in assisting startups in their growth journey

**New market entry**

- Aid in Singapore re-incorporation & operations setup.
- Facilitate connection to Government agencies, taxi operators & mobile operators
- Introduced to other investors for follow-on funding

**“Door Opening” Connections**

- Introduced to several Temasek Portfolio Companies including Keppel, ST Marine, ST Aerospace & Sembcorp, PSA Singapore, Singapore Power
- Flutura chosen as ST Marine’s vendor for the implementation of “Diagnostics and Prognostics for Propulsion systems”.
### 04 | Policy Considerations

**Providing IP funding support**

Funding support for startups in IP strategy implementation via various mechanisms like IP defence funding, IP prosecution funding, sovereign patent funds, and legislative support.

#### Funding Support

<table>
<thead>
<tr>
<th>IP Prosecution Funding</th>
<th>IP Defence Funding</th>
<th>Sovereign Patent Funds (SPFs)</th>
</tr>
</thead>
</table>
| Australia’s Accelerating Commercialisation programme provides grants of up to AUD 1M that can be put towards "IP protection expenditure - reasonable costs that protect IP". These costs include fees to a patent office for the cost of filing a patent application, patent search and examination fees, freedom to operate review costs, and annual patent maintenance fees. | Japanese Patent Office (JPO) has announced a program whereby half of the premiums for IP infringement insurance will be covered. The program is a partnership between the JPO, the Japan Chamber of Commerce and Industry, The National Federation of Small Business Associations, and three insurance companies. Specifically, the subsidy is directed at making affordable IP infringement litigation insurance for SMEs that are operating in countries outside of Japan. The program covers both the need for the SME to fund IP infringement litigation against alleged infringers and to defend litigation. | Emerging in the last five years in a small handful of countries like Japan, South Korea, and France. SPFs can be broadly defined as state-backed investment vehicles that acquire intellectual property right (IPR) assets from third parties in service of national economic objectives which include:  
- Defensive objectives  
- Commercialization objectives  
- The provision of high-quality IP expertise to high-potential startup and scale-up firms that might not otherwise be able to access it.  
- International trade objectives |

#### Legislative Support

The Scottish Government published its Legislative Programme for 2016-17 which includes the Expenses and Funding of Civil Litigation Bill. If the Bill delivers improved access to litigation in Scotland as intended, this may help reassure SMEs and startups that they can take on large corporations should their IP rights in Scotland be infringed.
For more information, please contact:

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