PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Public Investment Memorandum

Valar Velocity Fund 2 LP

Venture Capital Fund Commitment

Patrick G. Knapp, CFA
Manager, Private Equity

Luke M. Jacobs, CFA, CAIA
Manager, Private Equity

November 16, 2020

Executive Summary:

PSERS' Investment Office Professionals ("IOP"), together with Hamilton Lane Advisors, L.L.C. ("Hamilton Lane"), recommend to the Board a commitment of up to $30 million to Valar Velocity Fund 2 LP ("Valar Velocity 2" or the "Fund").

Valar Ventures LLC ("Valar" or the "Firm") is raising their second fund to invest in later rounds of their most promising financial technology companies that were incubated in their early stage strategy.

Fund Name	Valar Velocity Fund 2 LP
Firm Name	Valar Ventures LLC
Target Fund Size / Hard Cap	$200 million / $250 million
Recommended Commitment Amount	$30 million
Existing Relationship	No
Source of Funds	Cash
Asset Class / Sub Asset Class	Private Equity / Venture Capital
Investment Office Oversight	Charles J. Spiller, Deputy CIO / Non-Traditional Investments Darren C. Foreman, Director Patrick G. Knapp, Portfolio Manager
External Consultant Oversight	Hamilton Lane Advisors, L.L.C.

Firm Overview:

Valar is a venture capital firm focused on identifying and investing in high-growth, early stage technology companies that have the potential to become multi-billion-dollar enterprises within five to seven years of initial investment. The Firm is based in New York City and has one of the strongest brand names and one of the deepest networks in the early stage fintech space. Valar is uniquely positioned to identify and access exceptional early stage investment opportunities across North America and Europe. Andrew McCormack and James Fitzgerald, the two Managing Partners, formed Valar in 2010 while working at Thiel Capital, which is Peter Thiel's family office. Valar spun-out of Thiel Capital in 2013 and is now backed by a broad range of endowments, foundations, institutional wealth managers, family offices, and high net worth individuals.

McCormack and Fitzgerald are the sole members of the Firm's Investment Committee and are responsible for all the Firm's day-to-day operations. Peter Thiel retains an economic stake in Valar and, at his sole discretion, may from time-to-time personally invest in funds managed by Valar.

Market Opportunity:

The financial services sector is a large and diverse universe encompassing approximately 12.5% of worldwide public market cap or over $7 trillion as of 9/30/20.[1] Despite serving as the global engine for money flows, capital formation and risk transfer, financial services firms suffer from a number of embedded

[1] Based on MSCI ACWI IMI Index

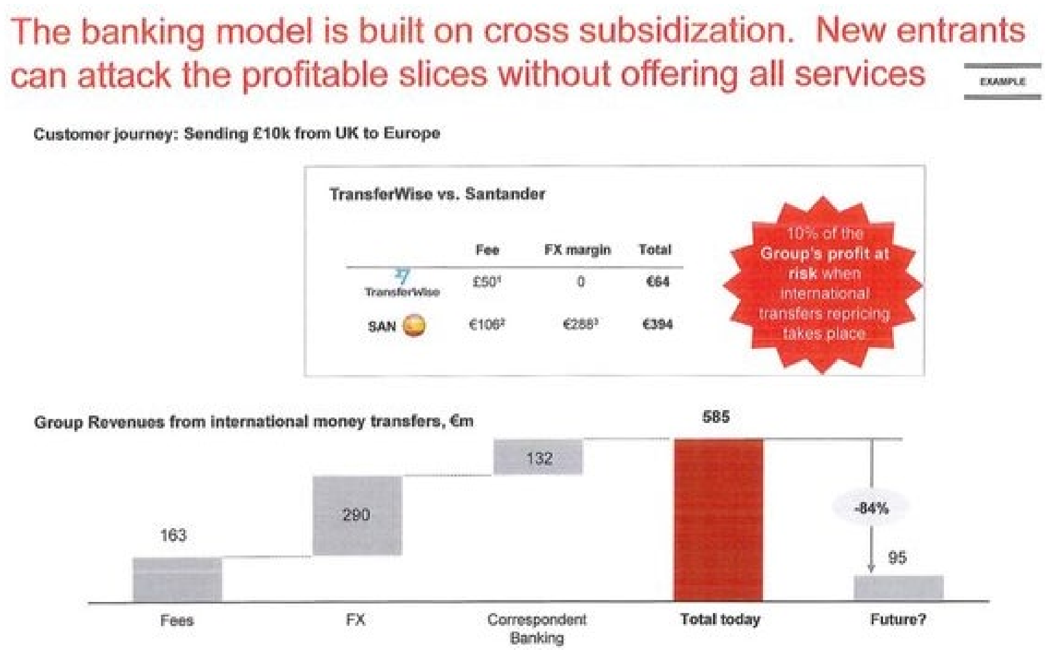
issues. These issues, a few of which are described below, have spawned a new and growing set of competitors, collectively referred to as "fintech", relying on fresh technology, innovative business solutions, and new modes of delivery and customer engagement.

Legacy Business Systems: Financial services firms tend to operate with outdated technology and systems leading to higher costs, inefficiency, and inflexibility. An obvious example of this are the core systems that make up the backbone of our banking system. Banks today typically operate on mainframe computers often utilizing COBOL, a 60-year-old programming language which has an increasingly limited number of capable programmers to support it. Switching away from these legacy systems is easier said than done. Commonwealth Bank of Australia, for example, reportedly spent $750 million and took five years to do so in 2012.[2]

Financial firms also contend with legacy delivery methods for their products, with many still relying on commission-based agents. This can lead to elevated customer acquisition cost (CAC). Insurance agents typically receive 40%+ of the year one premium for a life insurance contract and a lower percentage of renewal premiums thereafter. It's easy to spot the potential for increased corporate margins by eliminating the middleman through a more efficient customer engagement channel. However, movement toward this model would obviously disenfranchise the salesforce an insurer is dependent on for current distribution.

This inefficiency in CAC is exemplified in a slide from a 2017 internal Santander report leaked to The Guardian comparing its international money transfer group to a startup fintech competitor, TransferWise. The title of the slide is key as it specifically calls out the customer acquisition strategy of cross subsidization. Cross subsidization is a sales strategy where low margin (or even negative margin) products or services are used to attract customers with the intent to sell them higher margin offerings, in this case international money transfers. Alternatively, the TransferWise model pursues the high margin international money transfer business directly, engages customers in a more cost-efficient manner, and is able to significantly lower their fee as a result.

[2] https://www.reuters.com/article/us-usa-banks-cobol/banks-scramble-to-fix-old-systems-as-it-cowboys-ride-into-sunset-idUSKBN17C0D8



Source: The Guardian, leaked internal 2017 Santander report

Public Perception: The financial services industry has been rocked with scandals and controversy over the last 15 years, including the role banks and credit ratings agencies played in the 2008 financial crisis, the Wells Fargo account fraud scandal, and even more recently, Goldman Sachs receiving a $2 billion fine over foreign corruption and bribery. It's no surprise the financial services industry consistently ranks below other industries in public perception.

Percent trust in each sector

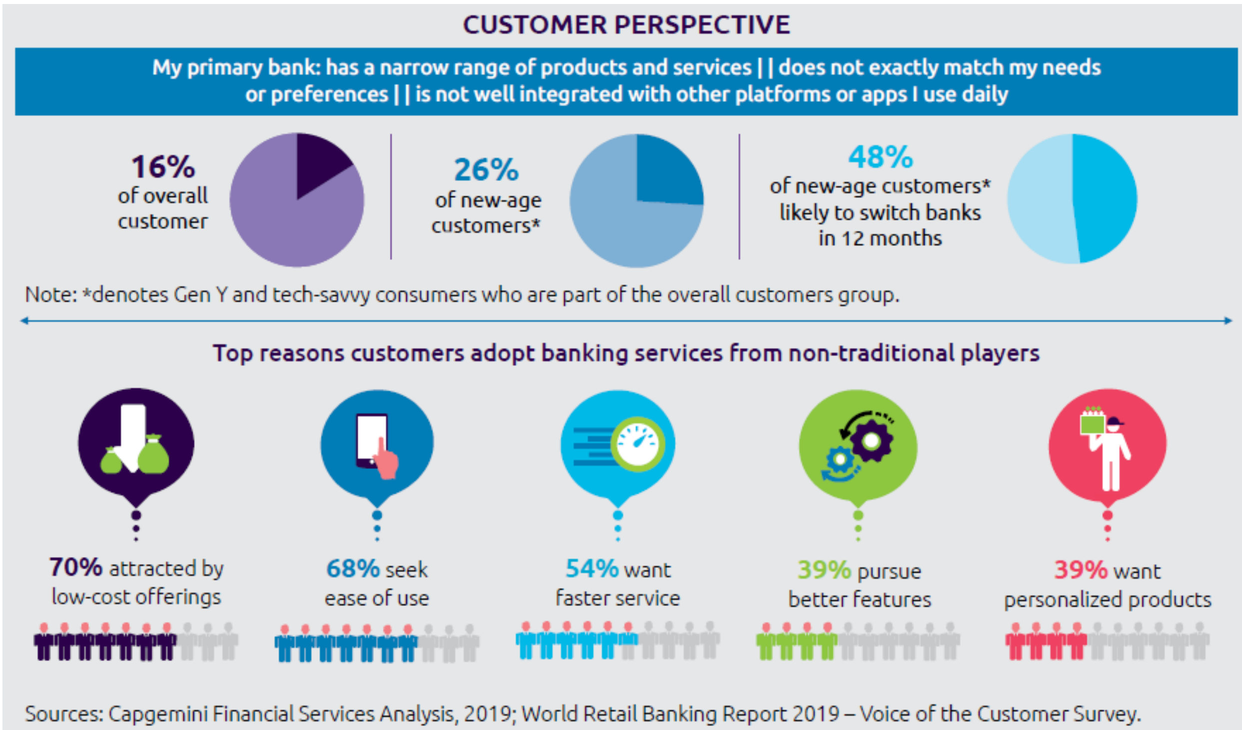
Change, 2012 to 2020 | Distrust Neutral Trust

Industry	2012	2013	2014	2015	2016	2017	2018	2019	2020	8yr. Trend
Technology	77	74	77	74	75	76	75	78	75	-2
Automotive	63	66	70	67	61	66	62	69	67	+4
Food and beverage	64	65	66	64	65	68	64	68	67	+3
Healthcare	-	-	-	-	64	67	65	68	67	n/a
Telecommunications	59	62	62	60	61	64	64	67	65	+6
Entertainment	-	63	66	64	65	65	63	68	64	n/a
Energy	54	58	58	57	59	63	63	65	63	+9
Consumer packaged goods	58	61	62	61	62	64	61	65	62	+4
Financial services	44	48	49	49	53	55	55	57	56	+12

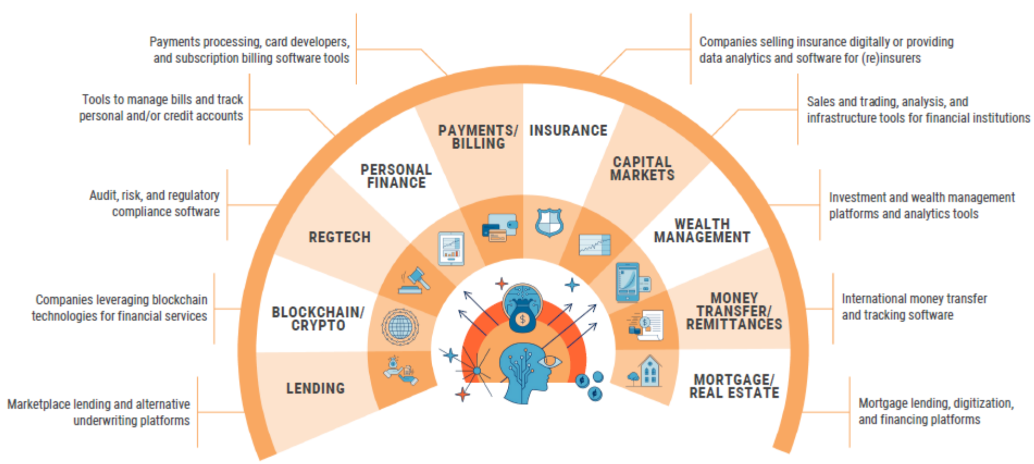
Source: 2020 Edelman Trust Barometer

Meanwhile, the technology industry ranks significantly higher creating the opportunity to leverage higher trust and growing tech adoption to introduce digitally native products and services.

Customer Satisfaction: Customers are increasingly demanding speed, accessibility, personalization, and value from their financial institutions. New entrants into financial services have the opportunity to embrace customer-centric business models vs. fitting their offerings and services to entrenched systems.



There are significant opportunities for challengers to legacy financial firms to build modern architecture and delivery systems in a cost-effective, customer-centric manner and thereby build new, trusted brands. Valar pursues these opportunities globally across a variety of potential sub-verticals.



Source: CB Insights

Portfolio Fit:

A commitment to the Fund will be allocated to the Venture Capital bucket of PSERS' Private Equity portfolio. The table below summarizes PSERS' projected Private Equity Portfolio exposure, as of June 30, 2020, inclusive of a recommended $30 million commitment to the Fund:

Investment Type	Market Value[1]	Unfunded[2]	Total Exposure	%[3]	Pending Current Commitments		
					December 2020	Total Exposure	%[3]
Buyout	$ 6,538	$ 5,006	$ 11,544	78.5%	$ -	$ 11,544	78.4%
Growth Equity	582	796	1,378	9.4%	-	1,378	9.4%
Venture Capital	556	301	857	5.8%	30	887	6.0%
Internal Co-Invest	755	163	917	6.2%	-	917	6.2%
Total	**$ 8,431**	**$ 6,265**	**$ 14,696**	**100.0%**	**$ 30**	**$ 14,726**	**100.0%**

1 Market values as of 06/30/2020. 2 Includes commitments approved through December 2020. 3 May not sum to 100% due to rounding.

Investment Strategy:

Valar's core strategy is to use its strong brand name and its execution-oriented team structure to invest in high-growth, early stage technology companies located in North America and Europe. Valar's typical initial investment is generally sized between $5 million and $20 million into a company that has an enterprise valuation of between $20 million and $100 million, which, in general, will be in either the Series A and/or Series B stage of investment.

A small amount of the Fund (but no more than 10% of capital commitments) may be invested into earlier, seed stage companies or other non-lead (or atypical) investments, which are considered non-core to the Fund's strategy, but may develop into major investments or otherwise build the network, reputation, or opportunity set for the Fund and the broader Firm. Prior to the Fund making an initial investment, Valar looks for a company to have achieved some initial product/market fit. This fit can be evidenced by significant customer engagement, early revenue growth, executed partnership agreements (especially in an enterprise sales distribution model), receipt of significant regulatory approvals, or other market validation of the company's vision and execution. The amount of traction required prior to the Fund investing may vary depending on the market a company is focused on. For example, fintech or software companies that are digitizing previously analog or inefficient business processes require fewer proof points, whereas marketplace businesses or companies that are unlocking previously hidden demand require more evidence of traction prior to the Fund investing. Valar also would look to the strength of a company's team (including "founder/market fit") as evidence that it is at an appropriate stage to warrant an investment. Valar is comfortable making sizeable investments at very early stages where the above dynamics are in place.

Valar is focused on backing companies with the potential to become multi-billion-dollar enterprises during the life of the Fund. Valar believes these companies tend to be high-margin businesses focused on massive markets, such as payments/currency transfer, banking/investing, lending/consumer finance, commercial real estate, insurance, and accounting/tax software. Given that the statistical likelihood of success for any individual startup is low, Valar believes that constructing a portfolio of companies that are operating in trillion-dollar industries provides the highest potential to produce at least one significant success. In sourcing and filtering potential investment opportunities, Valar's investment process eliminates companies that do not have a massive Total Addressable Market ("TAM"). When the Firm passes on an investment, it's most often because it failed this TAM test.

Valar primarily supports companies that are founded in, and focused on, North America and Europe. Valar believes that these first-world geographies have the highest potential to consistently produce the sort of multi-billion-dollar technology companies that Valar seeks to invest in. Valar's headquarters in New York

City affords it a key advantage in accessing opportunities on the U.S. east coast and in Europe, while still being within reasonable distance (in terms of time zones and flight times) to work with its companies that are based in, or ultimately relocate to, the west coast (i.e. San Francisco Bay Area).

Within North American and Europe, Valar believes that certain cities have a significant advantage in terms of affording a startup the best chance of success. While in theory, an internet-based business can be started from anywhere in the world, scaling a technology company into a global champion requires access to a deep network of capital, business partners, and available talent at all stages of the company's lifecycle. Valar believes that in the western world, these dynamics are most prevalent in Silicon Valley, New York City, London, Berlin, and Paris, and to a lesser extent the smaller cities that feed into the larger tech hubs (e.g., Salt Lake City/Provo, Boulder, Portland, Seattle, Los Angeles, and Mexico City, all of which feed into Silicon Valley; Toronto, Montreal, Boston, Dallas, Washington D.C., and Atlanta, which feed into New York City; or Amsterdam, Stockholm, Helsinki, Tallinn, and Munich, which feed into London and Berlin). Valar intends to continue focusing on companies being built in the geographies in North America and Europe where Valar has previously invested and where its brand value, networks, and experience give it a significant competitive advantage in terms of accessing the best opportunities.

Investment Team:

Valar's small size and execution-oriented team has been optimized to allow the Firm to move faster and more efficiently relative to other venture capital firms with which it competes. Andrew McCormack and James Fitzgerald (the two Managing Partners) have led the Firm since its spin out from Thiel Capital in 2013.

The core dynamic of Valar's investment process is its "perpetual-partner-meeting" model, meaning that McCormack and Fitzgerald generally travel and take all calls and meetings together and thus possess nearly symmetric information and are in constant communication about all opportunities available to Valar. The ability to make partnership level decisions in real-time has been a key to Valar's success in securing the best opportunities, even in the face of competition from older, more established venture firms. Valar expects to hire additional personnel as it expands, but all investment decisions and deal sourcing are expected to be made by McCormack and Fitzgerald for the foreseeable future.

Investment Highlights:

- Team Structure
- Focus
- Network
- Portfolio Construction
- Blind Pool Risk
- Progress
- Terms

Investment / Risk Considerations:

- Portfolio Construction
- Tempo
- Key Person
- COVID-19

PSERS History & Performance:

This will be PSERS first investment with Valar.

Investment Committee Disclosure:

Relationship with Hamilton Lane:	Hamilton Lane has committed discretionary capital on behalf one client to Valar. In addition, Hamilton Lane had one client that previously invest with Valar on a non-discretionary basis. .
Introduction Source:	Referral through an industry contact.
Placement Agent:	Valar has not engaged a placement agent in soliciting business from PSERS, and no placement agent will receive any fees in connection with an investment in the Fund by PSERS.
PA Political Contributions:	None Disclosed
PA Presence:	None
Potential Conflicts:	We are not aware of Valar having any material conflicts.
Litigation Disclosure:	Valar receives communications from regulators and is involved in litigation from time to time in the ordinary course of business. PSERS is not currently aware of any litigation which has or may have a material effect on the Fund.
First Time Fund With PSERS:	Yes
PSERS Allocation Implementation Committee Approval:	November 16, 2020

Hamilton Lane

November 9, 2020

Board of Trustees
Commonwealth of Pennsylvania
Public School Employees' Retirement System
5 North 5th Street
Harrisburg, PA 17101

Re: Valar Velocity Fund 2 LP

Dear Trustees:

Valar Ventures LLC ("Valar") was founded as a venture capital firm with a focus on high-growth, early-stage technology companies within the financial technology space. Andrew McCormack and James Fitzgerald founded the firm in 2010 while working at Thiel Capital, Peter Thiel's family office. Valar spun-out of Thiel Capital in 2013 and the firm diversified its commitment base; Mr. Thiel continues to maintain significant commitments to Valar fund products. The Velocity fund line was launched in 2019 to concentrate capital into growth stage follow-on investments of high conviction portfolio companies initially backed by the early-stage funds. The investment team consists of the two partners, Messrs. McCormack and Fitzgerald, who are both experienced investors in the technology space and highly cohesive averaging 20 years in the industry. The General Partner maintains a perpetual-partner-meeting model where Messrs. McCormack and Fitzgerald work on each opportunity together and require unanimous approval to pursue a deal. The firm is wholly owned by Messrs. Fitzgerald, McCormack and Thiel, Messrs. Fitzgerald and McCormack own 40% of the firm each and Mr. Thiel owns 20%. Carried interest is distributed in accordance with ownership. Valar is targeting $200- $250 million in commitments from limited partners for its second fund, Valar Velocity Fund 2 LP (the "Fund"). Valar held interim closes in Q2 and Q3 2020 accumulating $115 million in commitments from limited partners. Valar expects to hold a final close in December 2020.

The General Partner seeks to create a highly concentrated portfolio of primarily pre-determined out-performing companies from its early-stage funds in order to increase its ownership and maximize outsized returns. Valar intends to invest across both late venture and growth equity stage companies to balance its risk adjusted return. Valar is exclusively focused on the financial technology space and will target capital efficient high-margin businesses operating in large addressable markets. Within financial technology, the General Partner has historically focused on payment/currency transfer, banking/investing, lending/consumer finance, commercial real-estate, insurance and accounting/tax. Valar targets financial technology companies that operate in existing sectors where tech enabled businesses are able to take large market share as incumbents have outdated systems. Valar primarily targets North American and European based companies due to the General Partner's location in New York, which allows the firm easy access to premiere east-coast and European assets. The Fund will target approximately 6 equity investments greater than $200 million.

Valar Velocity Fund 2 LP's investment thesis can be summarized as follows:

- Valar is a financial technology focused venture capital firm that has developed deep industry networks in the firm's east-coast and European target markets, which has positioned them to generate attractive deal flow with less competition than businesses headquartered in Silicon Valley
- Valar intends to build a highly concentrate portfolio of outperforming investments in companies that it previously supported out of its early-stage funds. This portfolio provides a pipeline of actionable deal flow for follow-on capital opportunities that are primed for continued growth.

Hamilton Lane

- Valar has generated attractive performance across its early-stage funds and has demonstrated the ability to opportunistically concentrate capital in promising companies to drive outperformance.

Hamilton Lane's recommendation is based upon the following analytical factors and is made within the context of Commonwealth of Pennsylvania, Public School Employees' Retirement System's ("PSERS") investment guidelines.

- Detailed due diligence, including interviews with industry peers and private equity professionals. The initial review was completed on July 7, 2020; the on-site due diligence was conducted on October 28, 2020; the fund was approved by Hamilton Lane's Investment Committee on November 9, 2020 and the recommendation to PSERS was issued on November 9, 2020.

- Evaluation of the composition of the investment team, how they work together, compensation structure and other factors that help determine whether a group is likely to be able to replicate past successes as currently configured.

- Detailed Operational Due Diligence, including interviews with Valar's back office team to review the controls and processes surrounding the firm's finance, fund administration, tax, legal, compliance, IT, HR, and accounting functions.

- Evaluation of the Fund's proposed investment strategy within the context of the current investment environment.

- The strategy proposed for the Fund is appropriate for the Private Equity Partnership component of the portfolio.

The individuals at Hamilton Lane who were involved in the due diligence process for the Fund are:

Miguel Luina – Principal, San Francisco Office
Andrew Rich – Director, San Francisco Office
Meghan Suriano – Analyst, Bala Cynwyd Office

Based on the above, Hamilton Lane recommends that PSERS commit up to $30 million in Valar Velocity Fund 2 LP. Hamilton Lane makes this recommendation considering the General Partner's qualifications and PSERS' overall investment guidelines.

This recommendation is given solely for the benefit of PSERS and cannot be relied upon by other investors, considering an investment in the Fund, since their needs, objectives and circumstances may not be identical to those of PSERS. The scope of this recommendation is limited to the investment merits of the Fund. Hamilton Lane does not provide legal or other non-investment-related advice.

Sincerely,

Michael Koenig, Chief Client Officer	Corina English, Principal