Technology Brief...

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Research, Analysis, Strategy, Insight

Citrix Enables Task Management

INSIDE THIS ISSUE

Citrix has spent the past several years building out its story as a leading supplier of Modern Workspaces, having leveraged its decades of work on effectively enabling DVI and thin client computing in mission critical enterprise installations and its large installed base of major corporations and many SMBs. Indeed, its ability to deliver virtually any corporate app to any device at any location in one unified experience, and do so securely and with minimal IT intervention has enabled it to power many "work from anywhere" organizations. Enhanced with a high level of security and built in analytics, and it's "microapps" app integration capability has put it at the forefront of the modern workspace environment. Citrix now plans to expand that capability even further by acquiring Wrike, a collaborative work management platform that can extend the Citrix platform capabilities to the fast emerging workflow management functions necessary to keep the modern organizations running efficiently.

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Currently many companies are running a diverse set of products to make sure that all of their apps and workflow management requirements are met. This preponderance of apps (e.g., Slack, Zoom, Microsoft Teams, Box, Marketo, SAP, Salesforce, Adobe, etc.) in many organizations has required users to learn many different app UIs and caused IT stress in managing diverse apps and installations. What's needed by most organizations is a comprehensive workspace strategy that encompasses team based collaboration and streamlined work execution that includes structured, unstructured and document based data. Wrike will add that capability to the current Citrix Workspace product.

Once Wrike is acquired by Citrix, it will initially operate as a standalone entity supporting its existing customer base. But we expect that Wrike will be integrated into the Citrix Workspace platform over the next 12-18 months. That gives Citrix the ability to cross-sell the Wrike capability to its existing workspace customers, while also providing an upgrade path for current Wrike customers to implement a workspace approach. Further, the two companies are complimentary in go to market, as Citrix is strong in selling to enterprise IT while Wrike is strong in selling to LOB in enterprise and mid-market. Supporting both constituencies will be critical in future sales efforts in nearly all industries.

Citrix faces a good deal of competition in the modern workspace environment from the likes of Microsoft, Google, AWS, and in particular from VMware WorkspaceOne. But with Wrike, Citrix obtains the capability to add a level of workflow management that its competitors currently do not have, although with many relatively small players in the workflow management space, it's quite likely

acquisitions Citrix's competitors (and others) will take place. With an increasingly diverse workplace, and teams needing to remain productive from across non-traditional boundaries outside of brick and mortar buildings, such capability is a mandatory requirement if organizations want to remain competitive.

Beyond simple workflow management, Wrike will also have an ability to make Citrix analytics products even more compelling, by offering an ability to support security and compliance issues in regulated industries and sensitive installations. The ability to track all interactions and understand the information flow will extend Citrix analytics to not just monitor app and network interactions but also document and work-centric flows, and potentially user behaviors.

Modern Workspaces are moving strongly towards a SaaS model, with the majority of new installations choosing such an approach. With Wrike's SaaS model and Citrix's move to the same cloud enabled model, this is an attractive pairing that can help migrate a sometimes reluctant customer base away for on-premises installations and to a more modern approach.

Bottom Line: Citrix's acquisition of Wrike fills a gap in its modern workspaces strategy by offering a way to not only manage apps but also mange workflow and data movement for various teams. Being able to extend Citrix Workspace to encompass a broader set of organizational work patterns and needs, managing teams and task work, and having an ability to integrate with preferred tool sets while maintaining a "one pane of glass" approach, should do well in the market and put Citrix ahead of most competitors.

Intel MobilEye's Improved Sensors

"…By being a part of Intel, Mobileye has the ability to create a new class of Radar/Lidar components that advance the capabilities needed to achieve Level 4/5 autonomous driving performance while also reducing the overall cost… We believe Intel/Mobileye has a unique advantage and will likely create the best-in-class sensors… This should give Mobileye a big competitive boost in the autonomous vehicle market…."

Intel acquired Mobileye to create an advanced platform for autonomous driving systems. While Mobileye's current focus has been primarily working on camera-based visual analysis systems for their Level 2/3 assisted driving platform (ADAP), they fully understand that camera-based systems alone do not provide enough redundancy to achieve fully autonomous vehicle systems (Level 4/5) that their upcoming Mobile as a Service offering (through the acquisition of Moovit) will require. Indeed, the goal of achieving accident rates 10-100 times better than typical human drivers requires both massive amounts of computational ability, primarily achieved through an advanced AI based approach, detailed granular maps of the immediate vicinity (Mobileye's unique REM crowd-sourced semantic maps), and an array of sensors that can provide a full 360 degree view in all types of conditions (RADAR and LIDAR).

While relatively inexpensive and easy to deploy, camera-based visual systems have major challenges when dealing with range and velocity measurements, bad weather or no-light and similarly visually impaired conditions. What's needed is a RADAR and/or LIDAR based system that can "see in the dark" to supplement the camera-based visual systems, as well as add feature definitions not easily obtained by visual processing alone. RADAR systems are relatively inexpensive to build, but they include challenges due to limited resolution and the RF nature of their components. LIDAR is emerging as a primary choice for its inherent benefits but is also currently relatively expensive and doesn't provide velocity information.

Mobileye, using the inherent capabilities available from Intel's ability to build active and passive components on the same chip substrate, plans to re-invent the RADAR/LIDAR sensor. As an example, Intel has been building silicon photonics devices for several years. Indeed, it offers a wide assortment of devices for high

speed networking over optical links. One advantage that Intel has is that the silicon photonics works on the same silicon chips as its computational devices, making it possible to do post and pre-processing with high amounts of local computational power integrated on the same chip.

The ability to build silicon-based photo emitters, photo diodes, and RF components means that Intel has a unique capability to create high performance sensors with high amounts of analytical capabilities necessary to power future autonomous systems, and do it at a reasonable cost and at scale. Further, due to the ability to integrate sensors and processors, a software defined sensor module can be programmed for specific tasks and much like in Software Defined Network (SDN), it creates a common platform that can address many functions.

One of the areas Mobileye is working on is an advanced LIDAR system. Current LIDAR based systems work by sending out pings and looking for reflections. The time of return determines the distance to the object. Mobileye is creating a Frequency Modulated Continuous Wave LIDAR system that not only measures distance, but also uses the Doppler-effect to measure velocity. This enables a much more accurate determination of approaching objects with less computational processing needed. Mobileye believes it can create this capability in the next 2-3 years and well ahead of others by leveraging Intel's advanced silicon photonics capabilities to create a new class of devices.

Bottom Line: By being a part of Intel, Mobileye has the ability to create a new class of Radar/Lidar components that advance the capabilities needed to achieve Level 4/5 autonomous driving performance while also reducing the overall cost. There are other photonics companies supplying this market as well as several startups. It remains to be seen if Intel can achieve superior products, but they do have a massive R&D budget and a large organization they can leverage. We believe Intel/Mobileye has a unique advantage and will likely create the best-in-class sensors. It remains to be seen if these devices will be made available to the general market, but we suspect, at least in the early stages, they will remain proprietary to Mobileye-built platforms. This should give Mobileye a big competitive boost in the autonomous vehicle market.

AMD "Ryzen's" the Bar in Mobile PCs

"…While it would be wrong to diminish the ability of Intel to compete, we believe that AMD chips are now more than pulling their own weight when it comes to performance… Unless you're a company that specifically requires an Intel processor as part of a critical app, we see no reason not to recommend AMD Ryzen as a quality alternative to Intel Core ....."

The pandemic has altered the course of the PC trajectory over the past several quarters as work from home, remote learning and other similar remote initiatives have come to define the new normal. Further, even consumers have jumped on this trend, replacing aging older systems with new devices to obtain more functionality and performance as they use them more often and for more complex tasks. Once seen as a slow or even declining market, PCs have grown for the past several quarters. According to IDC, PC shipments accounted for 302.6 million units in 2020, with a 13.1% growth year over year. And while the overall PC market grew, the market for laptop devices, particularly in the US, grew even faster and comprised well over 50% of worldwide sales. One major area of growth was high performance gaming focused laptops, where maximum performance is mandatory, and prices are often in the $1000 or more range after all the upgrades.

AMD with its Ryzen chips have made great strides in the past 2-3 years becoming a premium device choice. For many years, consumers choosing AMD based laptops did so based on price, with Intel processors remaining the gold standard. But recent families of AMD Ryzen devices, even though they may still be more cost competitive than Intel powered devices, are no longer seen as inferior. Indeed, AMD has picked

up significant market share in the past couple of years, especially through focusing on competing at the higher end of the market.

Recently AMD announced the Ryzen 5000 series, aimed at powering premium laptops that in the past were potentially underpowered for the workloads users now want to do (e.g., casual gaming, video editing, creative tasks). It includes 8 cores in a thin and light version (12 watt U series) for increased multi-threaded workloads, including gaming, video and similar creative tasks, and ML/AI workloads. There is also a higher capability 35 Watt H series for machines that are more mainstream and of higher performance, and which will now provide enhanced multi-threading.

The Zen 3 architecture in this new 5000 series device increases battery life by about 2 hours, has faster DDR4 memory connectivity, and includes each core having its own independent power and frequency controls for further power savings. And for the extreme performance class of users, AMD offers the newly branded HX devices that can be overclocked for gamers who want to get every last ounce of performance.

The real test of whether or not Ryzen is competitive is how many PC OEMs offer products and what class of products they offer. In the pre-Ryzen world, most AMD machines were offered as a price savings option in consumer and some commercial systems. Clearly that has changed, as vendors like Dell, HP and Lenovo among others, offer premium class machines that are Ryzen powered and promotew then agressively. Further, many higher end PCs that can include a companion discrete graphics capability from AMD, are the preferred device for gaming and many creative functions.

Bottom Line: AMD's new Ryzen has made a major impact on performance and functionality of laptops in particular, but also in desktops. Indeed, it's now become a game of "leap frog" as it vies from one generation to another to outdo Intel Core processors. While it would be wrong to diminish the ability of Intel to compete, we believe that AMD chips are now more than pulling their own weight when it comes to performance and with this increased credibility, AMD should continue to expand market share. We should no longer think of AMD as a low price entry product. Unless you're a company that specifically requires an Intel processor as part of a critical app, we see no reason not to recommend AMD Ryzen as a quality alternative to Intel Core.

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About J.Gold Associates, LLC.

J.Gold Associates provides advisory services, syndicated research, strategic consulting and in-context analysis to help its clients make important technology choices and to enable improved product deployment decisions and go to market strategies. We work with our clients to produce successful new product strategies and deployments through workshops and reviews, business and strategic plan coaching and reviews, assistance in product selection and vendor evaluations, needs analysis, competitive analysis, and ongoing expertise transfer.

J.Gold Associates provides its clients with insightful, meaningful and actionable analysis of trends in the computer and technology industries. We have acquired a broad based knowledge of the technology landscape and business deployment requirements, and bring that expertise to bear in our work. We cover the needs of business users in enterprise and SMB markets, plus focus on emerging consumer technologies that will quickly be re-purposed to business use.

We can provide your company with a trusted and expert resource to maximize your investments and minimize your risk. Please contact us to see how we can help you.