Though, to date, we have not engaged in significant currency hedging transactions, we do periodically engage in certain economic hedging in order to help protect against fluctuation in foreign currency exchange rates. Instruments that we use to manage currency exchange risks may include foreign currency forward contracts. The purpose of our foreign currency hedging activities is to reduce our exposure, from the perspective of our profitability, to the risks that arise from the adverse impact that exchange rates bear on our revenues and expenses that are denominated in non-U.S. currencies. Instruments are used selectively to manage risks, but there can be no assurance that we will be fully protected against material foreign currency fluctuations. We do not use these instruments for speculative or trading purposes. In the future, we may enter into more or larger currency hedging transactions to decrease the risk of financial exposure from fluctuations in the exchange rate of the NIS, Euro, Japanese yen or British pound against the dollar, and from increases in the Israeli inflation rate. However, we cannot assure you that these measures will adequately protect us from the adverse effects of those fluctuations.

Following is a summary of the most relevant monetary indicators for the reported periods:

For the year ended December 31,	**Inflation rate in Israel %**	**Devaluation (appreciation) of NIS against the US$* %**	**Devaluation (appreciation) of Euro against the US$* %**
2017	0.4	(9.8)	(12.2)
2018	0.8	8.1	4.6
2019	0.6	(7.7)	2.0

*Reflects the change in the daily exchange rate from the start of such year until the end of such year rather than the change in the average daily exchange rate over the course of that year relative to the previous year.

Effective Corporate Tax Rates in Israel

Tax regulations have a material impact on our business, particularly in Israel where we have our headquarters. The following is a summary of some of the current tax law applicable to companies in Israel, with special reference to its effect on us. The following also contains a discussion of specified Israeli tax consequences to our shareholders and government programs benefiting us. To the extent that the discussion is based on tax legislation that has not been subject to judicial or administrative interpretation, there can be no assurance that the views expressed in the discussion will be accepted by the tax authorities in question. The discussion is not intended, and should not be construed, as legal or professional tax advice and is not exhaustive of all possible tax considerations.

Corporate Tax

Generally, Israeli companies are subject to corporate tax on their taxable income. As of 2018 the corporate tax rate is 23%. However, the effective tax rate payable by a company that derives income from an AE, BE, PFE or a PTE, in each case, as defined and further discussed below, may be considerably lower. See “Law for the Encouragement of Capital Investments” in this Item 5.A below. In addition, Israeli companies are currently subject to regular corporate tax rate on their capital gains.

Besides being subject to the general corporate tax rules in Israel, certain of our Israeli subsidiaries have also, from time to time, applied for and received certain grants and tax benefits from, and participate in, programs sponsored by the Government of Israel, as described below.

Taxation of Non-Israeli Subsidiaries Held by an Israeli Parent Company

Non-Israeli subsidiaries of an Israeli parent company are generally subject to tax in their countries of residence under tax laws applicable to them in such countries. Such subsidiaries could also be subject to Israeli corporate tax on their income if they were to be managed and controlled from Israel. In such case, double taxation could ensue unless an applicable tax treaty provides applicable rules for relief from double taxation or such relief is available under internal law.

An Israeli parent company may also be required to include in its income on a current basis, as a deemed dividend, certain income derived by its subsidiaries under the Israeli Controlled Foreign Corporation rules, or CFC, regardless of whether such income is distributed or not. Under these rules, a non-Israeli subsidiary is considered to be a CFC, if, among other things, (i) a majority of the subsidiary's means of control are held by Israeli residents, (ii) most of its revenues or income is passive (such as interest, dividends, royalties, rental income or income from capital gains) and (iii) such income is taxed at a rate that does not exceed 15%. An Israeli parent company that is subject to Israeli taxes on such deemed dividend income, may generally receive a credit for foreign taxes paid by its subsidiaries in their country of residence and for deemed foreign taxes to be withheld upon the actual distribution of such income.

Law for the Encouragement of Industry (Taxes), 5729-1969

The Law for the Encouragement of Industry (Taxes), 5729-1969 (the "**Industry Encouragement Law**") provides several tax benefits for an "Industrial Company." Pursuant to the Industry Encouragement Law, a company qualifies as an Industrial Company if it is an Israeli resident company which was incorporated in Israel and at least 90% of its income in any tax year (other than income from certain government loans) is generated from an "Industrial Enterprise" that it owns and is located in Israel or in the "Area," in accordance with the definition under Section 3A of the Israeli Income Tax Ordinance (New Version) 1961, or the Ordinance. An "Industrial Enterprise" is defined as an enterprise whose major activity, in a given tax year, is industrial production.

An Industrial Company is entitled to certain tax benefits, including:

- amortization of the cost of the purchases of patents, or the right to use a patent or know-how used for the development or promotion of the Industrial Enterprise, over an eight-year period commencing on the year in which such rights were first exercised;

- the right to elect, under certain conditions, to file a consolidated tax return together with Israeli Industrial Companies controlled by it; and

- the expenses related to a public offering are deductible in equal amounts over three years beginning from the year of the offering.

Eligibility for benefits under the Industry Encouragement Law is not subject to receipt of prior approval from any governmental authority.

We believe that certain of our Israeli subsidiaries and affiliate currently qualify as Industrial Companies within the definition under the Industry Encouragement Law. We cannot assure you that they will continue to qualify as Industrial Companies or that the benefits described above will be available in the future.

Law for the Encouragement of Capital Investments, 5719-1959

The Law for the Encouragement of Capital Investments, 5719-1959, or the Investment Law, provides certain incentives for capital investments in a production facility (or other eligible assets). Generally, an investment program that is implemented in accordance with the provisions of the Investment Law, referred to as an Approved Enterprise, or AE, a Benefitted Enterprise, or BE, or a Preferred Enterprise, or PFE, or a Preferred Technological Enterprise, or PTE, or a Special Preferred Technological Enterprise, or SPFE is entitled to benefits as discussed below. These benefits may include cash grants from the Israeli government and tax benefits, based upon, among other things, the geographic location in Israel of the facility in which the investment is made. In order to qualify for these incentives, an AE, BE, PFE, PTE or SPFE is required to comply with the requirements of the Investment Law.

The Investment Law has been amended several times over the recent years, with the three most significant changes effective as of April 1, 2005 (referred to as the 2005 Amendment), as of January 1, 2011 (referred to as the 2011 Amendment) and as of January 1, 2017 (referred to as the 2017 Amendment). Pursuant to the 2005 Amendment, tax benefits granted in accordance with the provisions of the Investment Law prior to its revision by the 2005 Amendment remain in force but any benefits granted subsequently are subject to the provisions of the amended Investment Law. Similarly, the 2011 Amendment introduced new benefits instead of the benefits granted in accordance with the provisions of the Investment Law prior to the 2011 Amendment. However, companies entitled to benefits under the Investment Law as in effect up to January 1, 2011 were entitled to choose to continue to enjoy such benefits, provided that certain conditions are met, or elect instead, irrevocably, to forego such benefits and elect the benefits of the 2011 Amendment. The 2017 Amendment introduces new benefits for Technological Enterprises, alongside the existing tax benefits.

Tax benefits under the 2011 Amendment that became effective on January 1, 2011.

The 2011 Amendment canceled the availability of the benefits granted in accordance with the provisions of the Investment Law prior to 2011 and, instead, introduced new benefits for income generated by a “Preferred Company” through its PFE (as such terms are defined in the Investment Law) as of January 1, 2011. A Preferred Company is defined as either (i) a company incorporated in Israel which is not wholly owned by a governmental entity or (ii) a limited partnership that (a) was registered under the Israeli Partnerships Ordinance and (b) all of its limited partners are companies incorporated in Israel, but not all of them are governmental entities; which has, among other things, PFE status and is controlled and managed from Israel. Pursuant to the 2011 Amendment, a Preferred Company is entitled to a reduced corporate tax rate of 15% with respect to its preferred income, or PFI, attributed to its PFE in 2011 and 2012, unless the PFE is located in a certain development zone, in which case the rate will be 10%. Such corporate tax rate was reduced to 12.5% and 7%, respectively, in 2013 and was increased to 16% and 9%, respectively, in 2014 until 2016. Pursuant to the 2017 Amendment, in 2017 and thereafter, the corporate tax rate for a PFE that is located in a specified development zone was decreased to 7.5%, while the reduced corporate tax rate for other development zones remains 16%. Income derived by a Preferred Company from a Special PFE (as such term is defined in the Investment Law) would be entitled, during a benefits period of 10 years, to further reduced tax rates of 8%, or 5% if the Special PFE is located in a certain development zone. As of January 1, 2017, the definition for Special PFE includes less stringent conditions.

The classification of income generated from the provision of usage rights in know-how or software that were developed in a PFE, as well as royalty income received with respect to such usage, is subject, as PFE income, to the issuance of a pre-ruling from the Israel Tax Authority that stipulates that such income is associated with the productive activity of the PFE in Israel.

Dividends paid out of PFI attributed to a PFE or to a Special PFE are generally subject to withholding tax at source at the rate of 20% or such lower rate as may be provided in an applicable tax treaty (subject to the receipt in advance of a valid certificate from the Israel Tax Authority allowing for a reduced tax rate). However, if such dividends are paid to an Israeli company, no tax is required to be withheld (although, if such dividends are subsequently distributed to individuals or a non-Israeli company, withholding tax at a rate of 20% or such lower rate as may be provided in an applicable tax treaty will apply). From 2017 to 2019, dividends paid out of PFI attributed to a PFE, directly to a foreign parent company, were subject to withholding tax at source at the rate of 5% (temporary provisions).

The 2011 Amendment also provided transitional provisions to address companies already enjoying current benefits under the Investment Law. These transitional provisions provide, among other things, that unless an irrevocable request is made to apply the provisions of the Investment Law as amended in 2011 with respect to income to be derived as of January 1, 2011: (i) the terms and benefits included in any certificate of approval that was granted to an AE, which chose to receive grants, before the 2011 Amendment became effective, will remain subject to the provisions of the Investment Law as in effect on the date of such approval, and subject to certain conditions; and (ii) the terms and benefits included in any certificate of approval that was granted to an AE, that had participated in an alternative benefits program, before the 2011 Amendment became effective, will remain subject to the provisions of the Investment Law as in effect on the date of such approval, provided that certain conditions are met.

In 2011, Magic and one of its Israeli subsidiaries filed a notice to the Israeli tax authorities to apply for the new benefits under the 2011 Amendment, and therefore were subject to the amended tax rate of 16% for the tax years 2011-2016.

In 2015, certain of Sapiens’ Israeli subsidiaries filed a notice to the Israeli tax authorities to apply for the new benefits under the 2011 Amendment, and therefore were subject to the amended tax rate of 16% for the tax years 2014-2016.

New Tax benefits under the 2017 Amendment that became effective on January 1, 2017

The 2017 Amendment was enacted as part of the Economic Efficiency Law that was published on December 29, 2016, and is effective as of January 1, 2017. The 2017 Amendment provides new tax benefits for two types of Technology Enterprises, as described below, and is in addition to the other existing tax beneficial programs under the Investment Law.

The 2017 Amendment provides that a technology company satisfying certain conditions will qualify as a PTE, and will thereby enjoy a reduced corporate tax rate of 12% on income that qualifies as Preferred Technology Income, or PTI, as defined in the Investment Law. The tax rate is further reduced to 7.5% for a PTE located in development zone A. In addition, a Preferred Technology Company will enjoy a reduced corporate tax rate of 12% on capital gain derived from the sale of certain Benefited Intangible Assets (as defined in the Investment Law) to a related foreign company if the Benefited Intangible Assets were acquired from a foreign company on or after January 1, 2017 for at least NIS 200 million, and the sale receives prior approval from the National Authority for Technological Innovation (previously known as the Israeli Office of the Chief Scientist) (referred to as IIA).

The 2017 Amendment further provides that a technology company satisfying certain conditions will qualify as a Special PTE (an enterprise for which, among others, total consolidated revenues of its parent company and all subsidiaries is at least NIS 10 billion) and will thereby enjoy a reduced corporate tax rate of 6% on PTI regardless of the company's geographic location within Israel. In addition, a Special PTE will enjoy a reduced corporate tax rate of 6% on capital gain derived from the sale of certain "Benefited Intangible Assets" to a related foreign company if the Benefited Intangible Assets were either developed by the Special Preferred Technology Enterprise or acquired from a foreign company on or after January 1, 2017, and the sale received prior approval from IIA. A Special PTE that acquires Benefited Intangible Assets from a foreign company for more than NIS 500 million will be eligible for these benefits for at least ten years, subject to certain approvals as specified in the Investment Law.

Dividends distributed by a PTE or a Special PTE, paid out of PTI, are generally subject to withholding tax at source at the rate of 20% or such lower rate as may be provided in an applicable tax treaty (subject to the receipt in advance of a valid certificate from the Israel Tax Authority allowing for a reduced tax rate). However, if such dividends are paid to an Israeli company, no tax is required to be withheld (although, if such dividends are subsequently distributed from such Israeli company to individuals or a non-Israeli company, withholding tax at a rate of 20% or such lower rate as may be provided in an applicable tax treaty will apply). If such dividends are distributed to a foreign company that holds solely or together with other foreign companies 90% or more in the Israeli company and other conditions are met, the withholding tax rate will be 4% (or a lower rate under a tax treaty, if applicable, subject to the receipt in advance of a valid certificate from the Israel Tax Authority allowing for a reduced tax rate).

We examined the impact of the 2017 Amendment and the degree to which we will qualify as a PTE or Special PTE, and the amount of PTI that we may have, or other benefits that we may receive, from the 2017 Amendment. Beginning in 2017, part of the Group's taxable income in Israel is entitled to a preferred 12% tax rate under the 2017 Amendment.

Tax Benefits for Research and Development

Israeli tax law allows, under certain conditions, a tax deduction for research and development expenditures, including capital expenditures, for the year in which they are incurred. Such expenditures must relate to scientific research and development projects, and must be approved by the relevant Israeli government ministry, determined by the field of research. Furthermore, the research and development must be for the promotion of the company's business and carried out by or on behalf of the company seeking such tax deduction. However, the amount of such deductible expenses is reduced by the sum of any funds received through government grants for the finance of such scientific research and development projects. Expenditures not so approved by the relevant Israeli government ministry, but otherwise qualifying for deduction, are deductible over a three-year period.

B. Liquidity and Capital Resources

Since inception, we have financed our growth and business primarily through cash provided by operations and through public debt and equity offerings, as well as through private and public debt and equity offerings of our subsidiaries. In addition, we finance our business operations through short-term and long-term loans and borrowings available under our credit facilities.

Current Outlook

We had cash and cash equivalents and short-term investments (including marketable securities) of $295.3 million and $405.2 million as of December 31, 2018 and 2019, respectively. At December 31, 2018 and 2019, we had indebtedness to banks and others, including debentures, of $381.4 million and $494.1 million, respectively, of which $127.0 million and $156.7 million were current liabilities and $254.4 million and $337.4 million were long-term liabilities as of those respective dates. Included in the balance of our indebtedness to banks and others as of December 31, 2019, Formula standalone had indebtedness of $12.8 million outstanding to an Israeli institutional investor, and $50.7 million and $86.2 million, in the aggregate, outstanding under Formula's secured debentures (Series A and Series C, respectively) which Formula sold in public offerings in Israel in September 2015 and March 2019, in each case, as described below.

We had cash and cash equivalents that were held outside of Israel and that would have been subject to income taxes if distributed as a dividend as of December 31, 2018 and 2019 in amounts of $50.8 million and $54.4 million, respectively.

Sources of Financing

Institutional Investor Loan

In January 2014, Formula received an NIS 200 million loan (approximately $57.6 million) from a leading Israeli institutional investor. The loan is secured by certain of the shares of each of our publicly held subsidiary and affiliated companies. The loan's average duration from inception is approximately four years (paid over a period of six years, with the first payment made in January 2016) and carries a fixed annual interest rate of 5.5%.

Under the terms of the loan with the Israeli institutional investor, Formula has undertaken to maintain the following financial covenants, as they will be expressed in its financial statements:

1. Formula's equity shall not be lower than $160 million at all times.

2. The ratio of Formula's equity to total assets will not be less than 20%.

3. The ratio of Formula's total financial debts less cash, short-term deposits and short-term marketable securities to the annual EBITDA will not exceed 3.5 to 1.

4. The ratio of Formula's total financial debts less cash, short-term deposits and short-term marketable securities to the total assets will not exceed 30%.

5. Formula's liabilities to banks and other financial institutions in its stand-alone balance sheet shall not be higher than NIS 700 million (approximately $186.8 million).

6. Formula will not create any pledge on all or part of its property and assets in favor of any third party and will not provide any guarantee to secure any third party's debts as they are today and as they will be without the financial institution's consent.

7. Formula will not sell and/or transfer all or part of its assets to others in any manner whatsoever without the financial institution's advance written consent, unless it is done in the ordinary course of business.

In January 2020, meeting all the above-mentioned financial covenants, we repaid the last and final installment of our loan, pursuant to which the credit agreement was fully matured, and the related collaterals were released.

Israeli Debenture Offerings

September 2015 Public Offering

In September 2015, Formula consummated a public offering of debentures in Israel. The two series of debentures issued by Formula in the public offering consisted of one series of debentures— the Series A Secured Debentures— that is secured by liens on the shares of Formula's subsidiaries (Matrix, Sapiens and Magic Software), and a second series— the Series B Convertible Debentures— that was convertible into ordinary shares of Formula. Both series of debentures were listed for trading only on the TASE.

In the public offering, Formula issued and sold a total amount of NIS 227,260,000 ($58.2 million) par value of the debentures, which were subdivided into the following respective amounts of Series A Secured Debentures and Series B Convertible Debentures that were subject to the following terms:

- NIS 102,260,000 ($26.3 million) par value of Series A Secured Debentures were sold, which bear interest on the unpaid principal at a fixed annual rate equal to 2.8% (which may vary based on the credit rating of the debentures), which is paid on a semi-annual basis through July 2024. The principal is payable in eight equal annual installments beginning in July 2017 and ending in July 2024. The interest rate varies based on the credit rating of the Series A Secured Debentures. The net proceeds received by Formula from the issuance of the Series A Secured Debentures in September 2015 amounted to $25.9 million (net of issuance expenses).

- NIS 125,000,000 ($31.9 million) par value of Series B Convertible Debentures were sold at a price per debenture unit (each unit comprised of NIS 1,000 par value of debentures) of NIS 1,020. The Series B Convertible Debentures bore interest at a fixed annual rate equal to 2.74% (which was subject to adjustment based on the credit rating of the debentures). Interest was payable in one payment upon maturity of the Series B Convertible Debentures on March 26, 2019 (at which time the accrued interest constituted 10% of the principal amount of the debentures, in the aggregate). The Series B Convertible Debentures were convertible into Formula's ordinary shares at a rate of NIS 157 ($40.03) par value of Series B Convertible Debentures per one share. The conversion rate was subject to adjustment for the issuance of bonus shares, rights and dividends. The principal amount of and interest on the Series B Convertible Debentures was subject to adjustment based on changes in the exchange rate between the NIS and the U.S. dollar relative to the exchange rate on September 8, 2015. The net proceeds received by Formula from the issuance of Series B Convertible Debentures amounted to $32.1 million (net of issuance expenses).

The gross proceeds received by Formula from the issuance of all debentures in September 2015 were approximately NIS 229.8 million ($58.6 million), in the aggregate.

As a result of conversions that were effected during 2018 and 2019, prior to the maturity of the Series B Convertible Debentures in March 2019, holders of Series B Convertible Debentures converted an aggregate principal (par value) amount of NIS 80.5 million (of which NIS 231,700,000 were converted in 2018) into 545,485 ordinary shares, (of which 1,556 ordinary shares were issued in 2018), constituting 3.57% of Formula's issued and outstanding share capital (following those conversions). The remaining outstanding Series B Convertible Debentures matured on March 26, 2019, and the remaining outstanding principal of NIS 44.5 million ($11.4 million) and interest on those debentures of $1.1 million were paid on that date. No Series B Convertible Debentures are outstanding as of the date of this annual report.

January 2018 Private Placement

On January 31, 2018, Formula consummated a private placement to qualified investors in Israel, of an additional, aggregate NIS 150 million par value of Series A Secured Debentures at a price of NIS 1,034.7 for each NIS 1,000 principal amount. The aggregate gross proceeds totaled NIS 155.2 million (approximately $45.6 million), excluding issuance costs of $0.2 million. As a result of the private placement, the total outstanding principal amount of the Series A Secured Debentures increased to approximately NIS 239.5 million (approximately $69.1 million) as of that time. The terms of the Series A Secured Debentures sold in the private placement are identical in all respects to those of the Series A Secured Debentures sold in Formula's September 2015 public offering.

March 2019 Public Offering

On March 31, 2019, Formula consummated a public offering in Israel of a new series of secured debentures—Series C Secured Debentures— in an aggregate NIS 300.0 million par value amount, at a price of NIS 1,000 for each unit of NIS 1,000 principal amount. The aggregate gross proceeds from the public offering totaled NIS 300.0 million (approximately $82.6 million) excluding issuance costs of $0.9 million. The Series C Secured Debentures are secured by liens on the shares of Formula's subsidiaries and are listed for trading only on the TASE. Each Series C Debenture unit bears interest at a fixed annual rate equal to 2.29%, which interest will be paid out on a semi-annual basis. The principal amount of the Series C Debentures will be payable by Formula in seven annual installments from December 1, 2020 through December 1, 2026, the first five of which will each constitute 11% of the principal, and the final two of which will each constitute 22.5% of the principal.

As a result of the public offering and following the retirement of the remaining Series B Convertible Debentures, the total principal amount of all debentures—including Series A Secured Debentures and Series C Secured Debentures—issued by Formula that remain outstanding as of March 31, 2019 constituted NIS 505.3 million (approximately $139.1 million). The terms of the Series C Secured Debentures sold in the March 2019 public offering are substantially similar to those of the Series A Secured Debentures sold in Formula's September 2015 public offering and January 2018 private placement.

General Terms of Outstanding Debentures

The Series A Secured Debentures and Series C Secured Debentures contain, in addition to standard terms and obligations, the following obligations on our part:

- a negative pledge, subject to certain exceptions;

- a covenant not to distribute dividends unless: (i) shareholders' equity (not including minority interests) is at least $290 million (for the Series C Secured Debentures) or $250 million (for the Series A Secured Debentures); (ii) Formula's consolidated net financial indebtedness (financial indebtedness net of cash, marketable securities, deposits and other liquid financial instruments) does not exceed 50% (for the Series C Secured Debentures) or 65% (for the Series A Secured Debentures) of net CAP (which is defined as financial indebtedness, net, plus shareholders equity); (iii) the amount of the distributions (including, in the case of the Series C Secured Debentures, any previous distribution starting from January 1, 2016) does not exceed that aggregated amount of the profit accrued for 2015 and 75% of profits accrued from January 1, 2016 until the distribution; (iv) no event of default shall have occurred; and (v) no material breach of obligations under the debentures shall have occurred; and

- Financial covenants, including: (i) the equity attributable to the shareholders of Formula, as reported in Formula's annual or quarterly financial statements, will not be less than $160 million (for the Series A Secured Debentures) or $215 million (for the Series C Secured Debentures); (ii) Formula's consolidated net financial indebtedness (financial indebtedness net of cash, marketable securities, deposits and other liquid financial instruments) shall not exceed 65% of net CAP (which is defined as financial indebtedness, net, plus shareholders equity); (iii) for the Series C Secured Debentures, Formula's consolidated net financial indebtedness shall not exceed five times EBITDA (which is defined as the consolidated net profit plus taxes, net financing expenses, depreciation and amortization and without expenses for employee stock option, expenses for transactions and on-time income/expenses); and (iv) at all times, Formula's cash balance will not be less than the annual interest payment (compounded) for the unpaid principal amount of the Series C Secured Debentures or the Series A Convertible Debentures (as applicable).

We have agreed to standard events of default under the Series A Secured Debentures and Series C Secured Debentures, together with the following additional events of default due to any of the following:

- cross default, excluding following an immediate repayment initiated in relation to the other series of debentures or other indebtedness (other than non-recourse debt) over NIS 75 million ($21.6 million);

- suspension of trading of the debentures on the TASE over a period of 60 days;

- failure to have the debentures rated over a period of 60 days;

- if the rating of the debentures is less than BBB- by Standard and Poors Maalot or equivalent rating of other rating agencies;

- if there is a change in control without consent of the rating agency;

- if Formula fails to provide additional security when the loan-to-value of the securities securing the Series A Secured Debentures or Series C Secured Debentures (as applicable) falls below the required ratio;

- the existence of a real concern that Formula will not meet its material undertakings towards the debenture holders;

- the inclusion in Formula's financial statements of a note regarding the existence of significant doubt as to Formula's ability to continue as a going concern;

- breach of Formula's undertakings regarding the issuance of additional debentures;

- Formula's failure to continue to control any of its subsidiaries; and

- failure to comply with the negative pledge covenant.

Subsidiary and Affiliate Financing Activities

From time to time, our subsidiaries and affiliated companies also maintain credit facilities with banks and other financial institutions and issue debt instruments such as debentures in accordance with their cash requirements. These credit facilities and debentures include, inter alia, certain standard events of defaults related to our subsidiaries' operations, which restrict their ability to: (i) undergo a change of control, (ii) distribute dividends, (iii) incur debt or apply a floating charge on their assets, or (iv) undergo an asset sale or other change that would result in a fundamental change in their operations. The subsidiaries' and affiliated companies' indebtedness also requires that they comply with certain financial covenants, including maintenance of certain financial ratios related to their shareholders' equity, total rate of debt and liabilities, minimum outstanding balance of total cash and short-term investments and operating results that are customary for companies of their comparable size and the risk. Some of our subsidiaries' assets are pledged to the lender banks and debenture holders. If we or any of our subsidiaries do not meet the covenants specified in our credit agreements or indentures (or equivalent agreement with the debenture holders), and a waiver with respect to the fulfillment of such covenants has not been received from the lender bank or representative of the debenture holders, the lender bank or debenture holders (via the action of their representative) may foreclose on the pledged assets to satisfy a debt.

Currently, Matrix, Sapiens, Magic Software and Formula have such material credit facilities and/or debentures outstanding. The long-term debt obligations of Matrix bear fixed interest at an average annual rate of 2.06%-3.6% and floating interest at a rate of LIBOR + 2.2%. The long-term debt obligations of Magic Software bear fixed interest at an annual rate of 2.6%-3.0% and floating interest at a rate of PRIME + 0.2%-PRIME + 0.8%. The long-term debt obligations of Sapiens bear fixed interest at an annual rate of 3.37%. These credit facilities and/or debentures expire over a period of time that ranges from one to seven years.

As of December 31, 2019, Matrix had aggregate short-term obligations to banks and others of NIS 362.9 million (approximately $105.0 million) and aggregate long-term obligations to banks of NIS 506.8 million (approximately $146.6 million) under its credit facilities. As of December 31, 2019, Magic Software had aggregate short-term obligations to banks and others of $7.1 million and aggregate long-term obligations to banks and others of $15.5 million under its credit facilities.

In November 2016, Magic Software obtained an NIS 120 million (approximately $31.4 million) loan linked to the NIS from an Israeli institution. Magic Software intended to use the proceeds from this loan for its general corporate purposes, which may include the funding of its working capital needs and the funding of potential acquisitions. The principal amount of the loan is payable in seven equal annual payments with the final payment due on November 2, 2023 and bears a fixed interest rate of 2.60% per annum, payable in two semi-annually payments. The loan, which may be prepaid under certain circumstances, is subject to various financial covenants, which mainly consist of the following:

1. Magic Software equity will not be lower than $100 million (one hundred million U.S. dollars) at all times.

2. Magic Software cash and cash equivalent and marketable securities available for sales will not be less than $10 million (ten million U.S. dollars).

3. The ratio of Magic Software total financial debts to total assets will not exceed 50%.

4. The ratio of Magic Software total financial debts less cash, short-term deposits and short-term marketable securities to the annual EBITDA will not exceed 3.25 to 1.

5. Magic Software will not create any pledge on all of its property and assets in favor of any third party without the financial institution's consent

In September 2017, Sapiens issued NIS 280 million (approximately $78.3 million, net of $0.96 million of debt discount and issuance costs) principal amount of Series B unsecured, non-convertible debentures, in a public offering and private placement in Israel. Proceeds of such offering were utilized to repay the entire outstanding loan amount (including accrued interest) under a $40 million credit agreement to which Sapiens had been party with HSBC Bank USA, National Association as financing for Sapiens' acquisition of StoneRiver. The outstanding principal amount of the Sapiens Series B debentures is linked to the US dollar and bears interest at an annual rate of 3.37%, to be paid on a semi-annual basis (on January 1 and July 1 of 2018 through 2025, with one final interest payment on January 1, 2026). The principal of the Sapiens Series B debentures is payable in eight equal annual payments beginning on January 1, 2019, with the final payment due on January 1, 2026. The first two installments, in amounts of $9.9 million each, were paid on January 1, 2019 and 2020.

In June 2020, Sapiens issued additional Series B Debentures in an aggregate principle amount of NIS 210 million (approximately $60.4 million) through a public offering in Israel. The gross proceeds received for the issuance of Sapiens' Series B Debentures in June 2020 were NIS 210.8 million (approximately $60.6 million), out of which approximately NIS 3.0 million was attributed to interest that is payable (approximately $0.9 million). Debt discount of NIS 2.2 million (approximately $0.6 million) and issuance costs of NIS 2.3 million (approximately $0.7 million) were allocated to Sapiens' Series B Debentures and are amortized as financial expenses over the remaining term of the Series B Debentures due in 2026.

In the deed of trust entered into by Sapiens with the trustee for the holders of its Series B debentures, Sapiens undertook to maintain a number of conditions and limitations on the manner in which it can operate its business, including limitations on its ability to undergo a change of control, distribute dividends, incur a floating charge on its assets, or undergo an asset sale or other change that results in a fundamental change in its operations. The deed of trust also requires Sapiens to comply with certain financial covenants, including maintenance of a minimum shareholders' equity level and a maximum ratio of financial indebtedness to shareholders' equity, at levels that are customary for companies of comparable size. The deed of trust furthermore provides for an upwards adjustment in the interest rate payable under the debentures in the event that the debentures' rating is downgraded below a certain level. A breach of the financial covenants for more than two successive quarters or a substantial downgrade in the rating of the debentures (below BBB-) could result in the acceleration of Sapiens' obligation to repay the debentures.

We believe that our current cash reserves, together with cash that may be distributed to us from the ongoing operations of our subsidiaries and any credit that we may choose to draw upon that is available under our (and our subsidiaries' and affiliated company's) existing credit facilities should be sufficient for our present working capital requirements for at least the next 12 months at our current level of operations. We may consider in the future additional equity issuances, debt issuances or borrowings from banks if necessary to meet cash needs for our growth, including if needed to consummate one or more acquisitions for consideration consisting of all or a substantial portion of our available cash. Should we require additional financing in the future, we cannot assure you that such financing will be available on favorable terms or at all.

On December 31, 2019, Formula reported publicly to the TASE and Israeli Securities Authority that Midroog (established in affiliation with the worldwide rating company, Moody's Corporation which maintains a 51% share capital interest), had upgraded its credit rating from A1+.il (issued on January 2019) to Aa3.il with stable outlook for Formula's current series of secured debentures (Series A Secured Debentures and Series C Secured Debentures) that are traded on the TASE and for Formula as an issuer.

On March 10, 2019, Formula reported publicly to the TASE and Israeli Securities Authority that Standard & Poor's Maalot, or S&P (a subsidiary of S&P Global), had issued a credit rating of ilAA- for the new Series C Secured Debentures, for an aggregate principal amount of up to NIS 300.0 million (par value) that was subsequently issued and sold on March 31, 2019. That credit rating echoes the credit rating (ilAA-) for Formula's other current series of secured debentures (Series A Secured Debentures) that are traded on the TASE. S&P's credit rating for Formula as an issuer remained ilA+/stable as of that report. The credit ratings are based on a number of factors and considerations.

In connection with Sapiens' offering of its Series B Debentures, Sapiens received from S&P a corporate credit rating and a rating for the Series B Debentures, which S&P affirmed, as of June 2020, July 2019 and 2018, as ilA+, with stable outlook.

As of the date of the financial statements included in this annual report, each of Formula, Sapiens, Magic Software and Matrix were in compliance with each of their respective financial covenants.

Cash Provided by Operating Activities

Cash flow provided by our operating activities increased from $82.6 million in 2018 to $196.1 million in 2019.

Net cash provided by operating activities in 2019 consisted primarily of the cash generated by our subsidiaries' ongoing operating activities and of net income stemming therefrom, as adjusted for non-cash activity, including changes in operating assets and liabilities. The material upwards adjustments in cash flow reflecting non-cash activity included adjustments due to: (i) depreciation and amortization of capitalized research and development assets, other intangible assets (mainly customer relations), property, plants and equipment and operating right-of-use assets in an aggregate amount of $86.9 million; (ii) a decrease in trade receivables in an amount of $16.3 million; (iii) a decrease in other current and long-term accounts receivable in an amount of $12.7 million; (iv) an increase in other accounts payable and employees and payroll accrual and in deferred revenues in an aggregate amount of $11.6 million; (v) changes in value of short-term and long term loans from banks and others and deposits in an amount of $5.6 million; (vi) stock based compensation expenses in an amount of $3.9 million; and (vii) an increase in liabilities in respect of business combinations in an amount of $0.5 million. Material downwards adjustments in cash flow for non-cash activity, including changes in operating assets and liabilities, consisted of adjustments of: (i) an increase in trade payables in an amount of $18.0 million; (ii) change in deferred taxes net in an amount of $13.2 million; (iii) changes in value of debentures, net in an amount of $2.1 million; (iii) share of profits of companies accounted for at equity in an amount of $1.8 million; and (iv) an increase in inventory of $0.9 million.

Cash flow provided by operating activities in 2019 was primarily comprised of NIS 263.4 million (approximately $74.0 million) provided by Matrix, $74.0 million provided by Sapiens, $49.7 million provided by Magic Software and approximately $6.2 million provided by Insync and Michpal, offset by $7.8 million used by Formula.

Net cash provided by operating activities in 2018 consisted primarily of the cash generated by our subsidiaries' ongoing operating activities and of net income stemming therefrom, as adjusted for non-cash activity, including changes in operating assets and liabilities. The material upwards adjustments in cash flow reflecting non-cash activity included adjustments due to: (i) depreciation and amortization of capitalized research and development assets, other intangible assets (mainly customer relations) and property, plants and equipment, in an aggregate amount of $48.7 million; (ii) an increase in trade payables and in other accounts payable and employees and payroll accrual, in an aggregate amount of $32.7 million; (iii) stock-based compensation expenses, in an amount of $4.0 million; (iv) an increase in deferred revenues, in an amount of $3.0 million; (v) an increase in liabilities in respect of business combinations, in an amount of $0.7 million; and (vi) an increase in employees benefit liabilities, in an amount of $0.6 million. Material downwards adjustments in cash flow for non-cash activity, including changes in operating assets and liabilities, consisted of adjustments of: (a) an increase in trade receivables in an amount of $66.1 million; (b) an increase in other current and long-term accounts receivable, in an amount of $5.8 million; (c) change in deferred taxes, net, in an amount of $5.7 million; (d) change in value of debentures, in an amount of $3.0 million; (e) change in value of short-term and long term loans from banks and others and deposits, net, in an amount of $2.3 million,(f) an increase in inventories, in an amount of $1.0 million; and (g) share of profit of companies accounted for at equity, net, in an amount of $0.4 million.

Cash flow provided by operating activities in 2018 was primarily comprised of NIS 124.5 million (approximately $37.2 million) provided by Matrix, $27.7 million provided by Sapiens, $24.1 million provided by Magic Software and approximately $1.1 million provided by Insync, Michpal and Effective Solutions, offset by $7.5 million used by Formula.

Cash Provided by Financing Activities

Cash provided by financing activities was $6.0 million in 2019 compared to $41.0 million in 2018, mainly reflecting the cumulative effect of the following financing-related transactions that occurred over the course of those years:

Year Ended December 31, 2019

In March 2019, Magic Software declared a dividend distribution to its shareholders of $0.15 per share (or $7.3 million in the aggregate), which was paid in March 2019, of which $4.0 million was paid to non-controlling interests.

In August 2019, Magic Software declared a dividend distribution to its shareholders of $0.156 per share (or $7.6 million in the aggregate), which was paid in September 2019, of which $4.2 million was paid to non-controlling interests.

In August 2019, Sapiens declared a cash dividend to its shareholders of $0.22 per share (or approximately $11.0 million, in the aggregate), which was paid in September 2019, of which $5.7 million was paid to non-controlling interests.

In March 2019, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 31.0 million (approximately $8.5 million), of which $4.4 million was paid to non-controlling interests.

In June 2019, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 27.3 million (approximately $7.6 million), of which $3.9 million was paid to non-controlling interests.

In August 2019, Matrix declared a cash dividend to its shareholders in an aggregate amount of NIS 26.7 million (approximately $7.6 million), which was paid in September 2019, of which $3.9 million was paid to non-controlling interests.

In November 2019, Matrix declared a cash dividend to its shareholders in an aggregate amount of NIS 31.0 million (approximately $8.9 million), of which $4.6 million was paid to non-controlling interests.

In addition, net cash provided by financing activities in 2019 was attributable to: (i) the issuance of Formula’s Series C Secured Debentures in an amount of NIS 300.0 million (approximately $82.6 million) excluding issuance costs of $0.9 million, in a public offering in March 2019; (ii) an increase in short-term bank credit, net in an amount of $49.1 million, (iii) Receipt of long-term loans in an amount of $73.8 million and (iv) exercise of employees’ stock options in subsidiaries in an amount of $1.0 million, offset in part by (a) repayment of long-term loans from banks and others in an amount of $75.5 million; (b) dividend to Formula’s shareholders in an amount of $13.0 million; (c) dividends paid to redeemable non-controlling interests in subsidiaries in an amount of $7.2 million; (d) repayment of obligations under debentures in an aggregate amount of $30.8 million; (e) repayment of lease liabilities in an amount of $34.5 million; and (f) cash paid in conjunction with exercise of put option by non-controlling interests in an amount of $6.5 million.

Year Ended December 31, 2018

In February 2018, Magic Software declared a dividend distribution to its shareholders of $0.13 per share (or $5.8 million in the aggregate), which was paid in March 2018, of which $3.1 million was paid to non-controlling interests.

In August 2018, Magic Software declared a dividend distribution to its shareholders of $0.155 per share (or $7.6 million in the aggregate), which was paid in September 2018, of which $4.1 million was paid to non-controlling interests.

In September 2018, Sapiens declared a cash dividend to its shareholders of $0.20 per share (or $10.0 million, in the aggregate), which was paid in October 2018, of which $5.2 million was paid to non-controlling interests.

In March 2018, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 29.6 million (approximately $8.5 million), of which $4.3 million was paid to non-controlling interests.

In June 2018, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 25.9 million (approximately $7.2 million), of which $3.6 million was paid to non-controlling interests.

In September 2018, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 24.7 million (approximately $6.8 million), of which $3.5 million was paid to non-controlling interests.

In December 2018, Matrix distributed to its shareholders a cash dividend in an aggregate amount of NIS 22.2 million (approximately $5.9 million), of which $3.0 million was paid to non-controlling interests.

In December 2018, Formula declared a cash dividend to its shareholders of $0.34 per share, which was paid in January 2019. The aggregate amount distributed by Formula was approximately $5.0 million.

In addition, net cash provided by financing activities in 2018 was attributable to: (i) the issuance of Formula's additional Series A Secured Debentures in an amount of NIS 155.2 million (approximately $45.6 million), excluding issuance costs of $0.2 million, in a private placement in January 2018; (ii) receipt of long term loans in an amount of $83.5 million; (iii) the issuance of Magic's ordinary shares in a private placement in July 2018 in an amount of $25.4 million and (iv) exercise of employees' stock options in subsidiaries in an amount of $1.2 million, offset in part by (i) repayment of long term loans from banks and others in an amount of $42.9 million; (ii) a decrease in short-term bank credit, net in an amount of $20.7 million; (iii) repayment of obligations under debentures in an aggregate amount of $9.4 million; (iv) dividends paid to non-controlling interests in indirect subsidiaries in an amount of $7.3 million; and (v) cash paid to purchase non-controlling interests in an amount of $2.0 million.

Cash Used in Investing Activities

Net cash used in our investing activities was $108.2 million in 2019, compared to $90.5 million in 2018.

Net cash used in investing activities in 2019 was attributable to: (i) expenditures (net of cash acquired) with respect to business acquisitions in an aggregate amount of $52.5 million; (ii) purchase of property and equipment in an amount of $22.4 million; (iii) capitalization of software development and other costs in an amount of $9.8 million; (iv) payments to former shareholders of consolidated companies in an amount of $1.0 million; and (v) payments in conjunction with deferred payments and contingent liabilities related to business combinations in an amount of $8.3 million. This cash use was offset in part by the following cash amounts provided by investing activities in 2019: (a) proceeds from maturity and sale of marketable securities, net in an amount of $3.4 million; (b) change in short-term and long-term deposits, net in an amount of $8.2 million; and (c) proceeds from sale of property and equipment in an amount of $1.7 million.

Net cash used in investing activities in 2018 was attributable to: (i) expenditures (net of cash acquired) with respect to business acquisitions in an aggregate amount of $49.1 million; (ii) changes in short-term deposits, net in an amount of $17.3 million, (iii) purchase of property and equipment in an amount of $11.6 million; (iv) capitalization of software development and other costs in an amount of $8.8 million; and (v) cash paid in conjunction with deferred payments and contingent liabilities related to business combinations in an amount of $8.3 million. This cash use was offset in part by the following cash amounts provided by investing activities in 2018: (a) proceeds from maturity and sale of marketable securities, net in an amount of $4.0 million; and (b) proceeds from sale of property, plants and equipment in an amount of $0.4 million.

Company Commitments

In January 2014, Formula agreed to the terms of a NIS 200 million loan (approximately $57.6 million) that was extended to us by a leading Israeli institutional investor. The loan is secured by certain of the shares of each of our publicly held subsidiaries and affiliated company. The loan's average duration is approximately four years (paid over a period of 6 years) and carries a fixed annual interest rate of 5.5%. The loan was fully repaid in January 2020. The terms of the loan are further described above under "Sources of Financing— Institutional Investor Loan" in this Item 5.B ("Liquidity and Capital Resources").

In September 2015, Formula consummated a public offering in Israel of its Series A Secured Debentures and Series B Convertible Debentures. The debentures were listed for trading only on the TASE. In the public offering, Formula issued and sold a total amount of NIS 227,260,000 ($57.8 million) par value of the debentures, which were subdivided into Series A Secured Debentures and Series B Convertible Debentures. In January 2018, Formula issued and sold an additional NIS 150 million par value of Series A Secured Debentures for aggregate gross proceeds totaling NIS 155.2 million (approximately $45.6 million), excluding issuance costs of $0.2 million. In March 2019, Formula issued and sold an aggregate NIS 300 million par value amount of Series C Secured Debentures for aggregate gross proceeds of NIS 300.0 million (approximately $82.6 million) excluding issuance costs of $0.9 million. No Series B Convertible Debentures remain outstanding as of the date of this annual report. For a description of the amounts outstanding under these debenture series and the related covenants and restrictions to which we are subject, please see "Israeli Debenture Offerings" above in this Item 5.B ("Liquidity and Capital Resources").

We do not have material commitments for capital expenditures by Formula as of December 31, 2018 or as of the date of this annual report.

We have entered into an undertaking to indemnify our office holders in specified limited categories of events and in specified amounts, subject to certain limitations. For more information, see “Item 7. Major Shareholders and Related Party Transactions—Related Party Transactions—Indemnification of Office Holders.”

Subsidiary Commitments

Our subsidiaries do not have any material commitments for capital expenditures as of December 31, 2019 or as of the date of this annual report.

As alluded to above (see “Sources of Financing—Subsidiary and Affiliate Financing Activities” in this Item 5.B (“Liquidity and Capital Resources”)), the loan agreements, debentures and indentures to which we are party contain a number of conditions and limitations on the way in which we (Matrix, Sapiens, Magic Software and Formula) can operate our businesses, including limitations on our ability to raise debt and sell or acquire assets not in normal business activity. For example, Matrix’s loan agreement includes a negative pledge with respect to Matrix’s assets, as well as limitations on Matrix’s ability to provide guarantees to third parties and sell or transfer its assets. Matrix’s loan agreements also contain various covenants which require it to maintain certain financial ratios related to shareholders’ equity and operating results that are customary for companies of comparable size.

Our subsidiaries and affiliate as of December 31, 2019 have provided bank guarantees aggregating to approximately $36.0 million as security for the performance of various contracts with customers. If our subsidiaries and affiliates were to breach certain terms of such contracts, the customers could demand that the banks providing the guarantees pay amounts claimed to be due.

Our subsidiaries and affiliate as of December 31, 2019 have also provided additional bank guarantees aggregating to $7.5 million as security for rent to be paid for their offices. If our subsidiary and affiliate were to breach certain terms of their leases, the lessors could demand that the banks providing the guarantees pay amounts claimed to be due.

Pursuant to the credit agreement and the Series A Secured Debentures and Series C Secured Debentures described above, liens have been incurred over a certain portion of our investment in outstanding shares of Matrix, Sapiens and Magic Software, in respect of the amounts shown in the table below:

	As of December 31, 2019 (in U.S. dollars)		
	Financial institution credit agreement(*)	**Formula’s Series A Secured Debentures**	**Formula’s Series C Secured Debentures**
Matrix ordinary shares, par value NIS 1.0 per share	1,569,098	4,128,865	6,031,761
Magic Software ordinary shares, par value NIS 0.1 per share	760,323	5,825,681	2,411,474
Sapiens common shares, par value €0.01 per share	511,920	1,260,266	2,957,590

(*) In January 2020, after meeting all financial covenants related to the loan, we repaid the last and final installment of our loan, pursuant to which the credit agreement was fully matured, and the related collaterals were released.

We and IAI have granted TSG, our jointly controlled affiliate, in equal share, a guarantee of NIS 40 million (approximately $11.6 million) as security against TSG’s bank credit line and bank guarantees issued by TSG for the performance of various contracts with its customers.

C. Research and Development, Patents and Licenses, etc.

The net amounts that we spent on research and development activities in 2018 and 2019 were $41.2 million and $46.7 million, respectively. For more information about our research and development activities, see “Item 4. Information on the Company—Business Overview— Software Development.”

For information concerning our intellectual property rights, see “Item 4. Information on the Company— Business Overview—Intellectual Property Rights.”

D. Trend Information

For trend information, please see the discussion in Item 4. “Information on the Company— Business Overview” and Item 5. “Operating and Financial Review and Prospects— Results of Operations.”

E. Off-Balance Sheet Arrangements

We are not a party to any off-balance sheet arrangements. In addition, we have no unconsolidated special purpose financing or partnership entities that are likely to create material contingent obligations.

F. Tabular Disclosure of Contractual Obligations

The following table summarizes our contractual obligations and commitments as of December 31, 2019.

	Payments due by period				
	Total	**Less than 1 year**	**1-3 years**	**3-5 Years**	**More than 5 years**
	(U.S. dollars, in thousands)				
Long-term debt obligations (1)	301,329	129,902	104,088	39,972	27,367
Lease obligations	127,869	35,797	37,464	25,824	28,784
Liabilities in respect of the acquisitions of operations	22,547	7,557	14,990	-	-
Debentures	458,380	62,349	120,652	115,275	160,104
Liability to the Innovation Authority (2)	223	223	-	-	-
Uncertainties in income taxes (3)	9,396	-	-	-	-
Accrued severance payments, net (4)	14,977	-	-	-	-
Total	934,721	235,828	277,194	181,071	216,255

(1) Includes interest.

(2) Does not include contingent liabilities to the Innovation Authority of approximately $6.1 million as described in Note 20(e) to our consolidated financial statements contained elsewhere in this annual report.

(3) Payment of uncertain tax benefits would result from settlements with taxation authorities. Due to the difficulty in determining the timing of settlements, this information is not included in the above table. We do not expect to make any significant payments for these uncertain tax positions within the next 12 months.

(4) Accrued severance payments, net relate to accrued severance obligations and notice obligations mainly to our Israeli employees as required under Israeli labor law or personal employment agreements. We are legally required to pay severance upon certain circumstances, primarily upon termination of employment by our company, retirement or death of the respective employee. Our liability for all of our Israeli employees is fully provided for by monthly deposits with insurance policies and by an accrual.