

Planning for AI Evolution

in the Short and Long Term



Introduction



Can you picture a rabbit detective, sitting on a park bench and reading a newspaper, in a Victorian setting? Does the picture in your head look something like this?

At this point you're probably wondering what on earth this has to do with planning for AI. Well, if you couldn't tell by the various small mistakes in the image, this was created by the **AI DALL·E 2**, an image generation system from OpenAI, who also created the GPT series of language models.

It's an exciting time for developments in AI and machine learning. Aside from DALL·E, **Google unveiled PaLM**, a new language model that supersedes the already impressive performance shown by GPT-3. For those unfamiliar, language models attempt to produce convincing, human-like text, working from prompts, questions or completing other work. GPT-3 already impressed, but PaLM goes beyond "human-like" to demonstrate active reasoning, much of which is probably beyond many humans:

INPUT:

When I found out my grandma was in the hospital I felt a particular color. When someone cut me off in traffic I felt a different color. What is the most likely color I would see if I combined these two colors?

MODEL OUTPUT:

The color that I felt when I found out my grandma was in the hospital was likely a sad color, like blue. The color that I felt when someone cut me off in the traffic was likely an angry color, like red. If I combined these two colors, I would likely see purple. The answer is "purple".



INPUT:

Michael is at that really famous museum in France looking at its most famous painting. However, the artist who made this painting just makes Michael think of his favorite cartoon character from his childhood. What was the country of origin of the thing that the cartoon character usually holds in his hand?

MODEL OUTPUT:

The most famous painting in the Louvre is the Mona Lisa. The artist who made the Mona Lisa is Leonardo da Vinci. Leonardo da Vinci is also the name of the main character in the cartoon Teenage Mutant Ninja Turtles. Leonardo da Vinci is from Italy. The thing that Leonardo da Vinci usually holds in his hand is a katana. The country of origin of the katana is Japan. The answer is "Japan".

INPUT:

Guido was writing a Python program. He keeps getting confused by variable scope and looking it up on StackOverflow. Is it possible that the Guido in the prompt refers to Guido van Rossum?

MODEL OUTPUT:

Guido van Rossum is the creator of Python. He would not need to look up variable scope on StackOverflow. The answer is "no".

INPUT:

Trevor has wanted to see the mountain with all of the heads on it for a long time, so he finally drove out to see it. What is the capital of the state that is directly east of the state that Trevor is currently in?

MODEL OUTPUT:


The mountain with all of the heads on it is Mount Rushmore. Mount Rushmore is in South Dakota. The state directly east of South Dakota is Minnesota. The capital of Minnesota is St. Paul. The answer is "St. Paul".

INPUT:

Jennifer looked out of her window and sees a really cool cloud below her. She unbuckles her seatbelt and heads to the bathroom. Is Jennifer probably traveling more than 300 miles per hour relative to the earth?

MODEL OUTPUT:

300 miles per hour is about 480 km/h. This is about the speed of commercial airplane. Clouds are usually below airplanes, so Jennifer is probably on an airplane. The answer is "yes".




Elsewhere, GoogleAI researchers showed off two other impressive applications for general purpose artificial intelligence. **Karol Hausman demonstrated SayCan**, which uses language models like PaLM and GPT-3 to produce instructions for robots, such that they can follow generic instructions given by humans. And **Andy Zeng** showed how multiple single-purpose intelligences could be combined to take on complicated, multi-domain tasks.

The capabilities demonstrated in these announcements could have incredible implications over the long term. Enterprises need to start thinking about how a paradigm shift in general AI capabilities could impact on their operations and business models. Will DALL-E eliminate the need for stock imagery, for PowerPoint, for graphic design? How close are we to serving robots? Are we going to be capable of largely automating all low-level work tasks?

The problem with planning for long term evolution like this is that developments remain uncertain. Certainly, language models have taken a huge leap forward, but who's to say if other domains will advance at similar rates, or if these advances are part of a trend or a one-off. Businesses can't start making plans for fully automated workforces just yet.

On the other side, organizations need to think about their AI capabilities and possibilities right now, for the short term. While long term AI developments could completely change the business landscape, the uncertainty and timescales mean that until it happens, businesses still need to innovate, to compete and to develop new technologies that will help them within the next 5 years. For business, the current and near future uses of AI are far less ambitious than general, human level intelligences, but they could still have big impacts on competitiveness and efficiency. For example, AI could be used to assist humans in decision making until the technology catches up to be able to replace them completely.



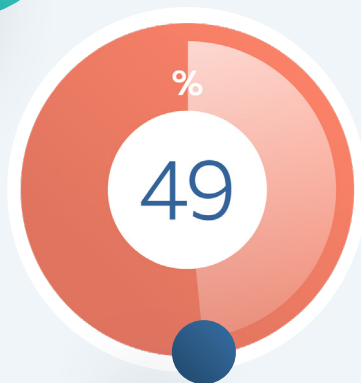
CIOs, CTOs and other decision makers thus face something of a dilemma. No one can ignore the potential for artificial general intelligence (AGI) which fully mimics human intelligence, but until it arrives business leaders need to maintain or develop their narrow AI capabilities focusing on specialized tasks. Let's explore how you can prepare for both the long and short term when it comes to AI planning.

AI for the Short Term

What kind of capabilities will AI bring to different enterprises over the next few years? This is a difficult question because it depends so much on individual businesses and industries.

For technology firms, AI will almost certainly form a key part of operations and product offerings. For FMCG, they might use AI from third party software vendors but it won't have the same kind of impact. In fact, every business is already using AI, even if they don't realize it. After all, even Google search can be considered a form of artificial intelligence. If you use Outlook or Gmail, you'll probably have seen the auto-complete suggestions for emails – essentially a simpler version of the GPT and PaLM language models.

One thing this should show is that AI does not need to mean a massive machine learning project. Any enterprise with a capable development team can produce artificial intelligence tools if given the time and other resources, especially if there is an obvious business case to justify funding it. One use we have observed across many large enterprises is the development of AI to understand trends in specific internal and external data to provide recommendations. Relatively simple uses for AI like this could be enough to give an organization a competitive edge over their competition.



The important question in the short term will be how AI is integrated into the rest of your technology landscape. If you are utilizing third party AI services, then the IT division will need to ensure it deliver value – consider that **almost half (49%) of consumers** rate the value they derive from AI-enabled digital touchpoints as non-existent or less than expected. There is undoubtedly a trend of AI hype leading to wasted investments that enterprises will need to be aware of. Application Portfolio Management and Technology Road Mapping exist for a reason, often to prevent overreactions like this and to ensure that investments are made wisely to support business needs.

For internal AI capabilities, there is both the question of how you build out an AI department and how the results are incorporated into the wider business. This is where a cross-functional team will really shine. Placing product people in the AI team will ensure that customer facing AI is actually aligned with the needs of customers and can deliver value. Solution and Enterprise Architects will be able to align new AI technologies with the wider IT portfolio as well as with business capabilities.

AI for the Long Term

Economist John Maynard Keynes once said: “In the long run, we are all dead.” Hopefully, the safest prediction for what could happen, given that AI scenarios range from *supercomputers taking over the world* to *some software is slightly better*.

That being said, the developments listed at the beginning of this white paper will almost certainly have some concrete impacts.

Russell Kaplan

@russelljkaplan

Russell Kaplan of Scale AI illustrated some second order effects in a Twitter thread:

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Soon, all products for creators will have embedded intelligence from massive language models (think Copilot in VSCode, DALL-E 2 in Photoshop, GPT-3 in GDocs). Companies making these products will need to roll their own massive language models or pay a tax to OpenAI/Google/etc.



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The most serious Compute Rich companies will aggressively secure their compute supply chains: their access to chips. Like how Tesla is buying lithium mining rights, the Compute Rich companies must also ensure they can feed the ever growing hunger of their largest models.



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This is also why most serious AI companies are now designing their own training chips. You can either pay NVIDIA their 65% gross margins, or have each marginal dollar go ~3x as far on your inevitable billions in capex by using in-house training chips.



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We will also see Sponsored Outputs for language models. Advertisers will be able to pay to condition model outputs on their products. Significant research effort will one day go into v2 AdWords, now paying for likelihood that your ad is generated instead of search placement.

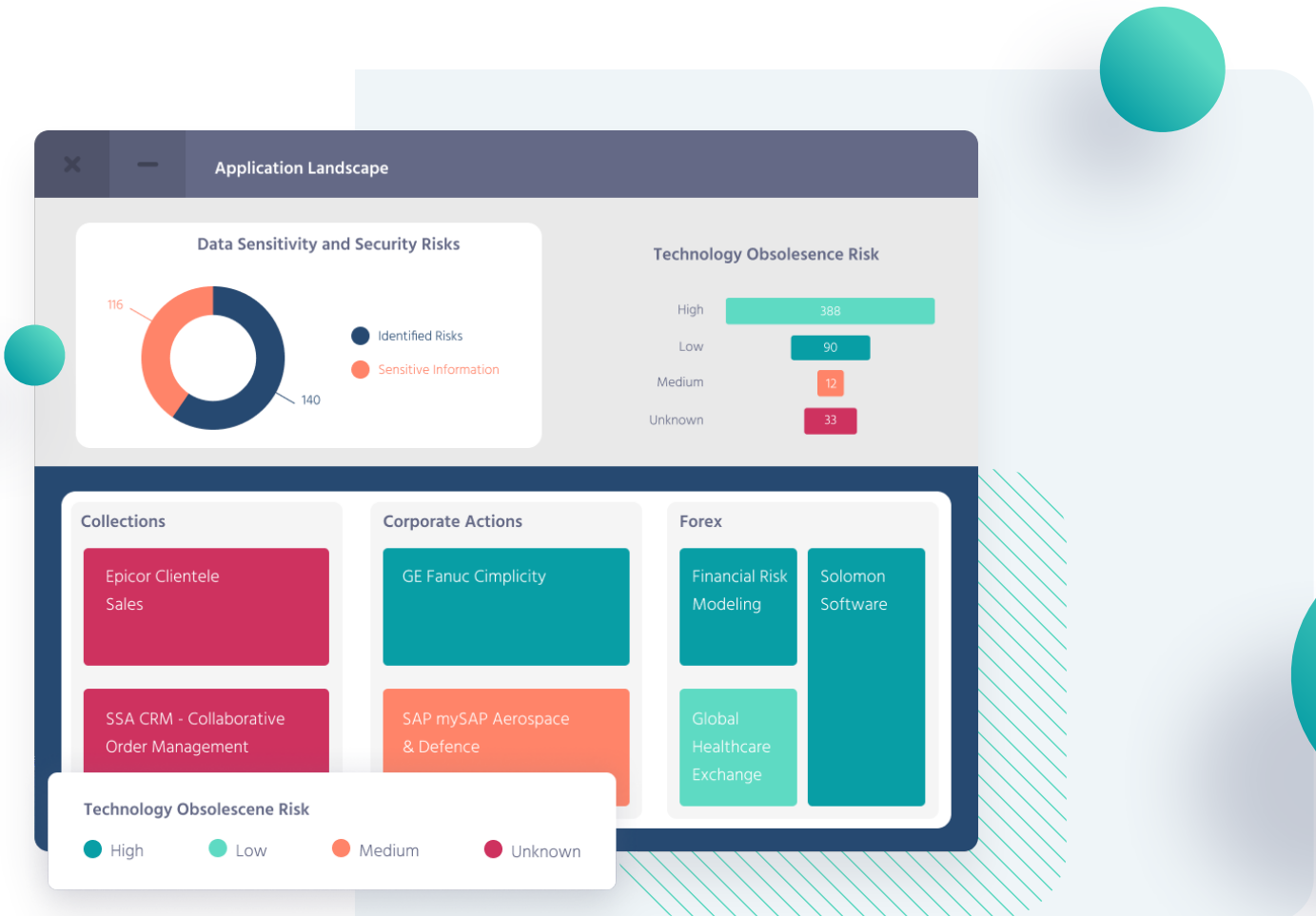


These quotes demonstrate how wide the impacts can be from these technologies. Most could imagine how language models would be deployed to take on copywriting and other creative business writing, but could you foresee this creating a new form of advertising?

Of course, Kaplan's arguments about chip supply chains and vertical integration for manufacturing are unlikely to be widespread – many enterprises will simply not have the resources or the interest to create their own chips (and we won't even get into the issues surrounding semiconductor fabrication). However, it is definitely a point to consider for those enterprises that do intend to create their own machine learning algorithms or other forms of AI.

Indeed, this is the main lesson to take away when it comes to long term planning for AI – where will your enterprise be positioned? Are you going to be a user of AI licensing the technology from a third party, or a producer developing your own intellectual property? Will your AI efforts be internal, to increase employee efficiency, or targeted externally as a new product or service? This goes beyond a mere technology or application roadmap, and will speak to the heart of business strategy.

As an example, consider the SayCan model we talked about in the introduction. Such a technology, providing easy human led robotics, would be an incredible technology to deploy for hospitality, entertainment, fast food and similar industries. But as soon as McDonalds decides they want to make their own, propriety "McSayCan", they will cease to be just a fast-food company, and instead become a technology company, with an attached fast food division.





Summary

That AI is going to be a challenge for businesses is hardly news – **a study from Alix Partners** put AI/Automation/Robotics as the biggest concern for 2022 for CIOs. However, recent developments in general purpose artificial intelligence have exposed the incredible level of risks and opportunities that will arise over the next decade, or possibly even sooner. At the same time, businesses can't bet on robot workforces, particularly if they aren't already developing their own machine learning algorithms. Organizations must strike a balance between long- and short-term AI planning, developing capabilities now that will deliver value to stakeholders while being mindful of the transformative impact that AI will eventually have.

There is no easy way to do this. "Just be agile and ready for anything" – far easier said than done. We've recently **highlighted the value of business resilience** as a key factor that enables firms to survive and thrive in tumultuous, changing environments, but even the most resilient firms won't be able to adapt if they completely fail to address AI.

Orbus Software's iServer365 does offer some solutions to this quandary. Aside from being a great tool to develop resilience, iServer365 helps to align long term business strategy with IT, enabling organizations to prioritize digital changes that will bring the most value and avoid organizational and data silos. We can't promise to turn your AI projects into superintelligences or turn organizations into chip makers, but the first step is to have good plans, and that is what iServer365 will deliver.



Plan for Today, and for Tomorrow

iServer365 is the market leading platform for architecting your digital future. Book a Demo today to take control of your AI destiny

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