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PRESENTATION

Matthew E. Smith *- Amdocs Limited - Secretary & Head of IR*

Well, good afternoon, everybody. My name is Matt Smith. I'm the Head of Investor Relations for Amdocs. And I would like to welcome everybody here today to the NASDAQ and to the 2018 Analyst and Investor Briefing.

It's been about 2 years since our last Investor Briefing. So a lot's happened in our industry over that time, particularly when it comes to the convergence of the communications and media industries. But also with respect to the needs for service providers to invest in next-generation networks.

So with that in mind, we've put together what we think is a pretty interesting agenda for you today. We're going to kick it off with Shuky Sheffer who is our brand-new CEO. He is the President and Chief Executive Officer. And he's going to be here to go over the achievements and executions over the last 2 years. And also, of course, to talk about the market dynamics and the growth initiatives that we have in front of us to drive our growth over the next few years.

We're then going to hand it over to Anthony Goonetilleke, Group President of Media Network and Technology, and Anthony is going to talk about our technology leadership in the industry, and how we are powering through in terms of the offerings of tomorrow, and including some discussion around 5G as well as some other interesting things.

After a quick break, we're going to invite back Oren Marmur, who you may remember from 2 years ago. Oren is the head of NFV, and he is going to come talk about NFV. But also the broader picture around service-driven networks and the various solutions that Amdocs offers that will help to facilitate next-generation investments in the network.

We're then going to change pace a little bit and go to Hollywood. And we're introducing here Darcy Antonellis, who is the head of Amdocs Media. Darcy came to us from Vubiquity not so long ago. And this is a very interesting new dimension of Amdocs that we're delighted to bring to you today and help to educate you on.

From there, we're going to go into the first of 2 customer presentations: The first one is a fireside chat that will be hosted by Anthony Goonetilleke. And this is going to be with Joshua Axelrod, who is the Director of Product with BBC Worldwide. And this will be centered around the subject of OTT, and a very interesting new -- relatively new OTT offering, called BritBox, which Joshua has been sort of driving.

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After another quick break, we'll come back for the second of our 2 customer presentations. This one around Digital Modernization and Services -- and we're very glad to welcome Jerry Brace, who is Chief Information Officer -- Chief Information Adviser of PLDT, who has flown all the way from the Philippines to be with us today. Delighted to have him here, and that's going to be hosted by our very own Gary Miles, who is the Chief Marketing Officer of Amdocs.

And then finally, we'll wrap it up with somebody that, I think, you all know, Tamar, who is going to come and talk about the financial outlook, and also talk to some extent about the service offerings at Amdocs as well as the 3-year outlook and the investment thesis.

So with that, I just have a couple of housekeeping items. Investor Relations has gone digital this year. So you can see in front of you the Wi-Fi codes and also some instructions on how to access the materials for the day. If you do have any issues, Jill and Joanna are at the back to help. There's also a survey there. We would appreciate any quick feedback that you can provide to us. It always helps us to get better.

And there will be some videos sporadically through the day, sometimes ahead of the different presentations. People on the webcast, unfortunately, won't be able to seem them, but they will be able to hear them, and we will provide the web links for those videos later on, if anybody cares to go back and have a look.

And then finally, we will be making forward-looking statements. This is the only time I don't have to read the forward-looking statement as it is Analyst Day, so I appreciate that. And we have filed Shuky's presentation on Form 6-K with the SEC.

So with that, I'll invite Shuky up and he can get going.

Joshua Sheffer - *Amdocs Limited - President & CEO*

Thank you, Matt. Good afternoon, everyone, and happy to be here. This is my first Analyst Day as the new Amdocs CEO. As you know, I was appointed on October 1.

In my presentation, I will talk about the market trends, what is our strategy, how we are going and why we believe we are very ready with everything going -- happening around us. And I may -- like we always do, I'm going to give us a report card. I was here also in 2016 at the time Eli was leading and I'm going to give us -- ourselves a report card comparing what we presented 2 years ago, and how we think and how well we did comparing this what we presented 2 years ago. And I will finish out with the outlook, financial outlook, and the overall strategy of the company.

Before that, since I'm new, I thought it's a good opportunity to introduce myself a little bit to those of you who don't know me. So I'm a software engineer. I joined Amdocs in the '90s. I have done many things at Amdocs. I was in many customer sites. I spent 4 years in Stockholm. I was 12 years in Dallas, Texas, mainly in customer site and customer management position. So I'm a Cowboy's fan to everyone who want to get it.

And in year 2000, then I started to get leadership role in the company. At that time, I was managing our emerging markets, mainly the APAC markets. It was a very small business for us at that time. Now we are very proud to it grow to be a really double-digit growth engine for us, and a really big business for us. So I was doing it at that time. In 2010, I left Amdocs for Retalix, and I was the CEO of a public company, doing similar to what Amdocs is doing, but for the retail industry. It was very interesting and very successful journey. The company did very well. We became a market leader. Also I think it's very relevant information because, if you think of it, all of our customers in one way or the other are retailers of content, communication, everything is pretty much retail. And Eli asked me to come back to Amdocs. So I joined Amdocs back in 2013. Since then, in last 5 years, I'm managing all the P&L in Amdocs. In the last couple of years, I'm also managing the delivery of Amdocs. And I will say a couple of years ago, I actually presented our strategy regarding the Pay TV industry that we thought at that time are going to transform which has been a very successful growth engine for us for the last couple of years, and will continue to be a growth engine for us.

And as I mentioned, I was appointed on October 1. I think we had very good transition. Thank you, Eli for that. Eli is still in our board. So this is a really short presentation of my background in the industry and within also in retail.

This is what I'm going to cover this morning -- this afternoon, sorry. I'm going to talk about Amdocs at a glance to those of you who don't know exactly what we do. And then I think even if you do, I think, the company is changing so much so what you think about Amdocs pretty much changed. We are going to give, as I mentioned before, for ourselves a scorecard for the last couple of years. And I'm going to talk about the market dynamics, and what we see the market forces around us. And talk about our future growth drivers for the next 3 years. And finish with the outlook and the Amdocs investment thesis.

So let's talk about Amdocs. So first of all, Amdocs in the numbers. So we are a $4 billion company. We have 25,000 employees in 85 countries. Every day about 3 billion people in the world are touching our systems. We're managing about 1.5 billion digital journeys every day. We have roughly 350 customers around the world. And since the acquisition of Vubiquity, now we have a relationship with more than 600 media content creators that we didn't have before.

If I need to explain what Amdocs does and what is unique, I'll start with the last line. I think that we bring -- we bought to the market, by the way the company is 36 years old. And since the beginning of the days of the company, we bought very unique model that none of our competitors have. The fact that we are bringing enterprise carrier grade products, coupled with delivery, meaning we are delivering the products that we create, and also with Managed Services, this business model is unique. It creates full accountability, no one else in the market have it, and this is a major differential to Amdocs.

We continue to innovate all the time. We believe that we have the best tool in the markets and the best talent in the market in this domain. We are, every quarter, we take 80 projects to production. Think about this, this is more than 300 projects a year. You're talking about machine-critical system for our customers. This is something that, I don't know, if any can claim at all. We're obviously -- we developed a very good partner system, and we continue to invest all the time to make sure that we are ahead of the market.

I want to share with you, and I thought what is the best way to share with you the variety of the customers that we have, and then we felt that the best way to do it is to classify them to different groups. I think it will be a better view of the different customers that we have worldwide.

We'll start with the first group. This is what we call multinational big customers, these are the behemoths of the market. These are the guys that are all the time consolidating and are the winner of the markets. We are working with all the large groups in the world. Now AT&T, with their presence in Latin America, become also in a way, it used to be a local customer, now a multinational customer. So if I go from left to right, so we are working in AT&T, definitely, including in Mexico. As you know, we are working with all of the Latin America with the Carlos Slim, with the América Móvil group. We are working with the Telefónica group in 4 countries, the big one is Brazil, Chile, Argentina, Peru. So these are the 3 groups that we are working with in this part of the world.

In the other part of the world, we are working with Vodafone. Of course, all the Vodafone properties in Europe and also in India. We are working with SingTel Group. SingTel Group is the most powerful group in APAC. SingTel Group owns Globe and Telkomsel, Malaysia, Indonesia. So in the old part of Airtel India and Singapore, Telecom Singapore, and Optus Australia, this is by far the powerful multinational company in APAC. And we are working in all the countries, as I mentioned, and we are working with them.

We're also working with the Veon group, which is the biggest group in Europe and Russia, in East Russia. So as you see, we have very good coverage. These are the biggest multinational customer in the world, and we are working with all of them.

The second class is what we call a local powerhouse. Still very big companies, but they're not multinational. Again, from left to right, we are working with Bell Canada, one of our big -- top big customer for us. We are working with Sprint in the Managed Services model. We are empowering everything that T-Mobile is doing today, in the Magenta, on the mentor brand. U.S. Cellular is a customer of ours, also in the Managed Services engagement. So all in Latin America. And in Europe, we are working with some of the biggest powerhouses, like British Telecom, Telecom Italia. And if you go to APAC, you have Korea Telecom; Airtel, which is the largest company in India; and Maxis in Malaysia; PLDT in the Philippines. So we see we have a very good coverage around the world, what we call local powerhouses.

Another set of customers is what we call mid-sized customers. With the acquisition of Converse, that turned to be very successful, we gained a lot of customers, which are mid-sized. But we found out, by the way, that the fact that they're small or mid-sized does not mean that they need to get

4

themselves to be digitized and to do everything that all the big guys are doing. And as you can see, we are -- across the world, we have more than 100 customers -- mid-sized customers. And I believe that we have all the relevant products to address also these type of customers.

They're not spending like the big ones, but they still spend, and I think that we have the relevant products for them.

So this is the mid-sized customer. And Cable Media. As I mentioned before, I presented this couple of years ago. We anticipated that the Pay TV industry will have to transform. These guys are running on 30, 40 old years system. Most of them are still address based. And if they want to go multiply, they want to go to mobile, they want to be digital, they have to transform. We anticipate this trend. We did very well in the last couple of years. And we pretty much captured most of the market. You'll see some of the names, from Rogers to Dish, Altice, Comcast, Sky in Italy, Globe in Europe. So we had a very good success. It was a major growth engine for us for the last couple of years. And we believe this will continue to be a growth engine for us in the future.

The next set of customers, these come with the Vubiquity acquisition. So traditionally, as you remember, we are the one that give a lot of services to what we call the content distributors. The AT&Ts of the world, the Comcasts of the world. With the acquisition of Vubiquity, now we have a lot of relationship with the people who actually create the content. So suddenly we have customer in Amdocs like Netflix is customer of us. Amazon Prime is another one for us, iTune, so all these content creators become customer of us, and we talk about in detail about the opportunity in the overall Amdocs media in a separate session later on that Darcy will lead.

All of these -- these are all the customers that we serve worldwide. If we bring all of this together, you can see some pretty extensive map of customer around the world from mid-sized customer to biggest customer to the multinational to media customers. I can tell you, I know it's in the news. We're not working almost, we have nothing in China. So we don't experience any issues in China. But other than this, we have pretty much good coverage around the world.

So this is Amdocs in a glance. But we got comments before that people not understand when they do touch Amdocs. And now that we're in the media business, so we thought that we prepare a short movie that will explain to you, when and how you touch Amdocs.

(presentation)

Joshua Sheffer - *Amdocs Limited - President & CEO*

Okay. So I hope now you better understand what we are doing. And by the way, even my kids sometime asking besides talking on the phone and sending e-mails they don't really understand what I'm doing.

I will talk a little bit about the scorecard to -- in comparing to what we presented to you in 2016. And we split it to 3 areas: What we call core leadership, the area of our core business, additional growth pillars and adjacent moves. In the core leadership, I think, we did really well. I think, we established ourselves as the #1 service provider that can give offering and product and services to everyone who wants to go digital. And by the way, we'll talk about digital today a lot. Going digital in today's market forces, this is not something which is discretionary. It is something that you must do.

So I think we established ourselves as the enabler of digital journey. Another thing that we established ourselves, if you mentioned -- many years ago, we thought we told we -- that the industry is going to converge. So you're not going to have more like a wireless player, a fixed line player, everything is going to be converged. Everyone is going to sell everything. This is happening. And I think that we call it integrated carrier. And I think it is the right system and solution, we came with the best product to all the customers that transformed themselves to be integrated carriers.

All the other places, I think, we did well. In B2B, we didn't give us a like full success. Not because we didn't do well, because we think we can do even better. This is a growth engine for our customer that we are very successful and we believe it presents a lot of opportunity.

Additional growth areas. Network software, NFV, we are going to talk about this later today. You will see that we have a very broad portfolio in the -- what we call, Amdocs Open Network Services. NFV, where we are, I believe have the best solution in the market, also the market did not evolve

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as fast or the adoption is not as fast as we thought. This is why we didn't give us a full success. And in the adjacent move, I think that, in the IoT, in advertising, like many other people, we didn't figure out yet what is the motivation model, and this is something we're going to think -- continue to think of. But in the media, this is an area, it's a good example of good execution. Suddenly, with the acquisition of Vubiquity, we have a great portfolio in Amdocs Media, and we're going to talk in details later on.

So this is the scorecard. Pretty much we see, we met most of the goals. You see all the list of logos on the right side that we got in the last couple of years. You can see it's a very extensive list of new logos, in new geographies and more.

All of this translate to a -- to the financial results. So in the last 2 year, we continued the momentum, both in the revenue growth and also in improving our operating margin. Everything this reflects pretty much by the numbers of what we have done in the last couple of years.

For me, I want to share with you a little bit what we see and what is happening around us in the market forces. And by the way, why I believe, it played to our sweet spot, because I believe we are ready with the right solution offering for this market.

Let's start with the consumer. Consumer is us. Consumer is expecting everything be done in one click. Channel of choice. Some of you want to be connected through their mobile app, through a web application, on the TV. So everyone wants to be connected in a different way. We have on-demand economy. Everyone wants everything right now. Not just in Pay TV. Personalization gives you conceptual and targeted service. This is something that will become a base. Everyone wants that we'll keep their privacy, and as you know, this has become a major issue. So this is another area. Everyone to be connected all the time. And at the same time, that people really want is good value, everyone is looking for best value for their money. So this is from the consumer side.

What are the market forces that are happening around us. So as I said, digital everyone needs to be digital. This is happening all over and this is something which is mandatory today to be able to compete. There are new entrants to the market. So suddenly our customer are competing with Amazon and with Facebook and Google and Netflix. These entrants are getting more and more stronger. There is fierce competition. We look at what happened in North America market, in cable, in mobile, et cetera.

5G online is a major issue. Between the investment in the spectrum and the investment in the new radio equipment, it's a major investment and everyone is looking for way how they're going to monetize this investment, and Anthony is going to share a little bit our view and how we think our customer can monetize from this.

Everyone is looking for a way to differentiate themselves, which is not easy. In North America, between T-Mobile and Sprint and AT&T, you can get pretty much the same price. All-you-can-eat data, and it's very difficult to differentiate yourself. Everyone is looking for growth, obviously. One of the way that they're dealing with it, we see a lot of consolidation. Some of them, as you know, between -- potentially between T-Mobile and Sprint, which is pretty much the same line of business. Comcast bought Sky. Obviously, AT&T and Time Warner. Vodafone, both in the process of buying Liberty Global in Europe. So you can see that all these consolidation was by the way one of the way for them to deal with this fierce competition and the ability to differentiate themselves. And it also plays to what I said before, everyone wants to be what we call Integrated Carrier. They want to sell all the services, including content and connectivity and consumer goods and everything.

On top of it, there is an IT and technology trend. So in today's world, and this also applied to ourselves. So there is no -- if you could historically can deliver projects that will deliver value in 12 months. Today, in most of our customers, we need to deliver value almost on a weekly basis. The competition is so fierce and so fast, all the time we need to be agile and deliver things much faster. So agility, flexibility and automation this is something that has to be part of your services.

Moving to the cloud is happening. Obviously, we are leading in this domain. So moving platform to the cloud. By the way, this is not just the new platform. People want also to move the legacy platform to the cloud. And we're going to talk because, I think, it represents for us a lot of opportunity.

Open source is there. We are using open source. Open source in one way its opportunity. But on the other hand, it's something that in what we call Carrier Grade System, we need to know how to deal with, because if you are using an open source, and you have a problem, you're not going

to call -- dial 1 (800) open source and get someone to help you. This is still -- while using open source, you need to maintain, what we call carrier grade level of service.

There are new methodologies like DevOps and more that Anthony will share with you more. And obviously, everyone, including us and we're leading it moving to much more modular architecture and using technologies that -- like microservices that are released by Google and others. So this is all the trends and technology that are happening at the same time.

So we're looking at it for a long time. And we thought we wanted to build our portfolio to address this end user needs, market forces and obviously, leverage all these technology changes. And we came up with this. So this is 1 page, you will remember that have all of our portfolio of products and services.

So digital BSS, we are a BSS company that evolved to be a services company, that evolved to be a network services company, and now media company. But still this is our core business, and we keep it, and we believe that we have in this domain the best digital platform that exists today that we can sell to our customers. And we can also build the journey to our customer, and Anthony is going to elaborate this in more.

In services, as I mentioned before, part of the uniqueness of Amdocs is the full end-to-end accountability from products to services to delivery and to managed services. So we continue to develop our services now, with the move to the cloud, with automation, we call it SmartOps. Our delivery service, service assurance, we developed a lot of set of services that actually fits what's the market is looking for.

Media, this is an area which is new for us that we decided that the only way to get there, and get relationship, understanding of this market was through the acquisition, and we are going to talk about because we package a lot of our services from Amdocs and from the acquisition together to be Amdocs Media. One example that I can share with you is everyone wants to go to the OTT including the content providers. So Disney and others and HBO, everyone wants to go directly to what we call, D2C, directly-to-consumer. Now, this represents new opportunities but new complexity. These guys used to be what we call wholesaler. They will sell the content and someone else will distribute. Suddenly, when they need to distribute this content by themselves, it creates -- now they have consumer. Consumer needs billing relationship units, subscription billing, you have customer care. You have service level. It completely changed the way that they are -- they need to do business with. And these companies don't have this pedigree of dealing with consumers. So this is the area, by the way, what we are doing for the last several years. So we believe the whole D2C move represent to us a lot of opportunity.

We are going to deep dive on this domain later on in the day. And the last area is the Network. We have many, many services around the Network. NFV is one of them and you can see we're doing radio optimization, network call out and lot of ideas how to monetize 5G. In our network session today, we're going to focus on our network offering which, I believe, meets what the market needs especially with the move to 5G that everyone is doing and talking about.

So this is the overall portfolio of Amdocs. I think that we believe that there is a great match between all the market forces dynamic that I mentioned. And the capabilities that we develop. Some of these capabilities, like we always do, we develop organically. And some of it we did some bolt-on M&As. And then we went to go to get to the media market, we've done more significant M&A when we brought Vubiquity, which we will see later on how it positioned us in the heart of the media business.

So this is what we saw in the market, and this is how we build ourselves to able to match, as I believe, we're doing very well all the market needs.

So now, I'm going to talk about what is the outlook. What we believe will be the strategy of the company and the core engine for us for the next 3 years. So to make it easy, again, we put everything on one slide. We divided it between 3 sections: The first section is what we call, core engines, accelerators and diversification/adjacent moves.

Let's start with the core engine. So digital transformation, all our customers are doing it in one shape or form, existing customers and also new customers. So this is something which will be -- it will create a lot of project, a lot of activities for us for the next 3 years and even beyond this. Because everyone has to go digital. And as I said, I believe, we have the best products and the best services around this.

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The next one is the managed services, and we're going to talk about the example of PLDT, but we used to do projects delivery a lot, and then we have a lot of managed services agreements that were able to take all the operation and data center operation everything to follow. I think lately and Tamar will show you in more details, we're actually able to combine everything. And many of the deals that we are selling, winning lately are a combination, what you call, managed transformation. So with the same structure of the engagement, we're taking the legacy system, we are modernizing it, and we're doing managed services, both on the legacy system until we transform it. And then to follow to do the managed services on the new system. So this is what we call managed transformation is the new model. We are pushing it hard, and we believe this will continue to be a growth engine for us.

Pay TV, now it become -- 2 years ago, it was something that we will hope will be a growth engine for us. It has been a great growth engine for us in the last 2 years, we believe, it will continue to be there. And now, it becomes our -- part of our growth core engines.

Media and next-generation networks. The nice thing about these 2, that last time we presented here it was more like in expiration mode. We thought we need to get to media. We don't know exactly how. We talked about a lot of offering that can evolve from the network space and the change in virtualization of network, et cetera, that we're going to talk. So we're exploring it. And the nice thing about it 2 years later, they become 2 core engines for us, as we believe it can contribute a lot of growth to the company. Tamar will give you more details about the growth in these core engines later on.

Well, this is the core engines that are firing and kicking and supporting our growth.

Accelerators, this is a thing that can accelerate what we do. We gave couple of examples, because there are many more. The first one is geographic and customer expansion, 3 years ago, we didn't have any business in Italy and Ireland. Today, we have 5 customers in these 2 countries. We have in Italy, we have Vodafone Italy, Sky and Telecom Italia. In Ireland, we have Vodafone Ireland and Three Ireland. Pretty much this is all the market.

So this is a good example, how getting to new logos and new geographies is accelerator to our growth. The other one is when we look at system integration and the technology trends, we believe that the cloud migration and the data management, and ability to do all this new agile development services represent us, and we are going to explore how we can leverage these trends, that this will turn to be another growth engine for Amdocs, because we believe it's happening. Everyone wants to move to the cloud. Data management, because all the data, which is exploding become a major issue to everyone. So we believe this what we call system integration and next-generation services represent for us an accelerator.

Like always, what we do is at the same time that we have a core engine accelerator, we all the time looking for diversification and adjacent move. Two years ago, media was presented as adjacent move. Now it became a core engine. In this domain, we are continuing to look in IoT and advertising. We need to figure it out. Like many other people, we think what is the right monetization model for IoT. In advertising, what is the right Amdocs angle to this domain. So this is area that we are going to continue, and we are doing it all the time. By the way, the company -- many years ago, we used to do a strategy once every 2 years. Now, strategy is something we do twice a year or 3 times a year. We're reviewing our strategy, fixing our strategy, all became dynamic process.

So we are looking at this domain. Another thing is with some of the acquisition we've done lately, like projekt2 -- projekt202, this is consulting services to create the best digital journeys. Now with this acquisition, we got many non-telco customers. In retail, BMW is our customer. I think Federal Express is our customer. So -- and first of all, this is very relevant information to our customer or know-how. Because if you consider it, our industry is lagging a little bit about comparing to retail, for example. So this was a very relevant information that we can take to our customer. But at the same time, we're having a lot of customers, which are non-telco, small customers in size. So we are looking to see if we can bring in this consulting digital service opportunity where it will be more than just our customer service provider to our other industry. So this is something which we are exploring.

New domains, like always we say, implicit last time, all the time, we're constantly looking for new domains, new industry, new industry verticals, which is relevant for us. This is something that all the time we're evaluating. We might do M&A for this. But this is an area that we all the time is in the area, and we are looking around all the time.

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So I think this is all the strategy for us or the outlook for the next 3 years. As I mentioned, I believe, we have the right solution, services and products to address all this transformation around us, which is actually accelerating all the time.

This will result in the outlook that we are presenting today. So first of all, from the growth, we see improvement in the growth. So we are projecting 4% midpoint organic growth for the next 3 years. We are going to do this while maintaining the stability in the profit margin that you're familiar today. And also to keep the same -- a similar capacity of capital allocation like we do today, so there are not going to be changes in this domain.

All of this, we believe, will bring us to total return to shareholder between 6% to 10%. So this is the outlook -- the financial outlook that we see for the next 3 years. Obviously, Tamar will give much more details around it.

Now when I look at it from my position as a CEO, and I think why I'm very optimistic that we are going to be successful, it's related to many things. First of all, I think, we have a very good strategy. Seeing that we have addressed the market needs and there is a great fit between the product and services and offering that we have, to all the transformation that is going around us. We have delivery DNA. No one can compete with us. We have close to 100% track record in transformation, no one else have it. And we're dealing with the most and biggest transformation in the world.

We have blue-chip customer. I show you some example. But if you can see around the world, we have great customers. And these are the guys that are consolidating, these are the winners of the market. So this is why we call them blue-chip customers. And I think these are great customers to have.

And as I mentioned, we have the richest set of solution more than anyone else, and we continue to innovate. So innovation is in the DNA of the company. All the time come with new ideas, leveraging new technologies. And I think also that we have the best people. I think that you will see some of the leadership team appearing here today. And I know my leadership team around the world and the Amdocs people, this is second to none. In this industry, no other company have the same reservoir of talent like we do.

So looking it all together, and the fact that I think that we are a market leader, and we have all the right tools to continue to be successful, I really believe this -- that we are uniquely positioned to win.

So thank you. And now I'm inviting Anthony.

(presentation)

Anthony Goonetilleke

Thank you very much. My name is Anthony, and if you can pronounce my last name, there's a present for you at the back of the room.

Today, I'm going to spend a little bit of time giving you a little bit of color to what Shuky spoke about. Behind that technology and behind their offerings. And I have to say, if I can go off-script for 10 seconds, Matt's staring at me, I've known Shuky for 20 years. And he's probably one of the most customer-centric leaders I've ever had the privilege to work for. And after an amazing journey that Eli had, I think he handed the keys to the right person, and we are 100% behind him and look forward to good things.

With that being said, I think it's an exciting time to be in the industry. I think we are going through some major tectonic shifts as we see it. At the end of the day, everything Shuky spoke about that our customers are trying to do is centralized around one thing, and it's about this. It's about owning a greater portion of the customers' day, right? So from the time you wake up to when you pick up your device to when you go and use your various IoT devices in your connected home to what entertains you to your autonomous car, to your GPS, these are all the different touch points you interact with, with your service provider. And at the end of the day, we want to be the company that provides these seamless experiences and connectivity and simplifies this experience.

When I look at the industry, there are some major things that are happening. And one of the things we always get asked, you can imagine, is what do you see coming down the track. What excites you?

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Obviously, 5G is a very, very big change that's coming down the train. But it's not just 5G. When you start to combine 5G with edge computing, with the new standards of WiFi, with electronic SIM, we've had physical SIMs in our devices for -- since the beginning of time, right? And this is changing, and people don't realize the impact this is going to have. Your laptops are going to have a software-based SIM. All your IoT devices are going to have it. You're going to be able to change service providers.

And then you have your IoT devices. You start to connect all of these together, and you'll start to build some really great use cases. And I'll try to give you some color throughout my session and Oren's session and also Darcy's session on media about how all of these things come together.

If you go back 10 years ago, and you look at the history of Amdocs for those of you who've been following us for a long time, if we had a session like this, we would have been talking about one thing. We would have been talking about our BSS stack and a little bit about our OSS stack, and maybe one other thing. Today, we have such a rich set of offerings to provide end-to-end, soup-to-nuts, if you're a greenfield provider trying to start something up or if you're a mega carrier, like Shuky was talking about, around the world, like Galaxy, that needs to increase your top line or drive down efficiency. We have a set of assets that can meet you wherever you are in your journey. All the way from your core BSS stack to the network, which we'll talk about, obviously, I think you guys are very familiar, we're very active participant in the whole NFV journey. We started with the partnership with AT&T, and we're very active in driving ONAP towards virtualization. This is a trend where there is no stopping this. The train has left the station. It's a matter of where is the tipping point. Where will this happen, and it's coming up.

Media, when we look at our service providers, back to my initial statement, if you want to own someone's day, if you want to own components of their day. When we think of media, it's not just video or content. It's also gaming. This is another big trend we see that's happening around the world. We want to make sure that whether it's real-time connectivity or the entertainment part of your life or your connected household that we're at the core of this. All this is wrapped around our services. If you think about our services, I think this is really what differentiates us. We're not a company that says, "Hey, here is something we built. Throw it over the fence. Now go and good luck to you." We stand there side-by-side, and we're accountable in terms of delivery, in terms of making sure that you can grow your revenue, reduce customer churn and start following these KPIs to make sure you have the right ROI for your business case. And when you combine these, I think this is what really creates the magic in Amdocs.

Want to talk a little bit about our technology. If WhatsApp is down for 4 hours or if you can't access Gmail for a few hours, it's an annoyance. You're annoyed. You'll check back later. You'll come back. But if you don't have access to your services on your phone, there will be hell to pay, right? I mean, it will be front page on The Wall Street Journal. So when it comes to technology, everything we do from day 1, this is a fundamental design principle, is carrier-grade and built to be mission-critical. And this also serves us well when it comes to as we diversify into things such as media, when you need to deliver content at the same time, globally on the cloud, all the way down to NFV. If you think of the network, well, you think of these physical boxes, right? So if something goes wrong, okay, you come in. You swap a card out. You put a card in. Now you have this complex, virtualized software world that you need to manage. And this is why we feel like we have a pedigree to help here.

So everything we do from a software perspective -- look, the world is moving very fast, and there are a lot of technologies, like microservices and being cloud native, that enables you to put an app there very fast. But it's a whole another thing to take this and make sure that it's fully available, mission-critical, carrier-grade. And this is what we're really focused on. Shuky gave a great example around open source. We have a whole team of people focused on this. Both from security aspects of it, support aspects of it. The last thing one of our customers wants is if they have a problem, they need to go to a bulletin board and post for a message and hope someone answers, right? This is not the model. So when we stand behind something, this is the muscle we put behind it. And we continue to invest, and we have invested in the past, and we will invest in the future, big amounts of R&D to make sure we continually modernize our platforms and move using the latest version of containers and cloud-native technologies to provide agility.

We're very humbled in terms of our recognition. There are 26,000 people we have worldwide that gets up every day and tries to do something. So when we get some of these recognitions from world leaders, the Gartners or the like, this says something. This says that we're on the right path, on the right track. And as we constantly replatform, and we move to a microservices world and a cloud-native world to have this recognition come behind us. And for those of you in this room that knows, to get on something like a Magic Quadrant, this is not just about telling someone a story. This is about having reference calls, having production references, having volume. So there's all sorts of data that goes behind it. And so far, we've been recognized, and we hope to keep up the same pace.

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I want to now take a couple of minutes here to just zoom into a few things. Obviously, Matt's very hard on me with the time. So he's only given me like a few minutes to share something. So I'll give you a little bit of snippets in terms of how we touch people's worlds.

When it comes to digital transformation, there isn't one customer around the world that isn't on some journey. I mean, this is a definitive statement. This is not just a generalized summary of 50% of customers. If you look at North America and if you think about the whole move of integrated carrier and launching OTT experiences and launching connected home experiences and new dynamic enterprise experiences, all of these are part of digital transformation.

Think about Europe. Europe is going through a slightly different change right now. Europe is going through a very big multiplay shift with all consumers coming together. Amdocs bet -- about 8 years ago, we made a very big bet. We bet that all our wireless carriers are going to go down a multiplay path. Now, say it's Eli's wisdom or the management's wisdom at the time, it maybe. Maybe it's a bit of luck. Maybe it's a bit of both, but this was something that brought us fruit over the last 8 years. As this happened and as they moved to multiplay, we also saw this dynamic, as Shuky mentioned, in the Pay TV providers, where they needed to transform to compete with the Netflixes of the world. And we see something very interesting happening now. We see our Pay TV customers also going down the wireless path, right? You have Xfinity Mobile being launched. You have Charter launching services. So if I kind of look at this crystal ball and I think of 5 years from now what this landscape is going to look like, we're not going to be talking about a telco or a Pay TV provider. We're going to be talking about a service provider that's going to provide you all these services and all these various touch points. And this is what we've built our digital platform for.

We have a -- press it harder? Maybe I need to kick it. Here we go. No, that's too many. There we go.

There was a comment that a very senior CIO made to me about 3 years ago. She said, Anthony, we love the stuff that you guys are doing, right? Some of the new stuff that you guys are bringing out are amazing, but you need to help us get from where we are to the new stuff. And we put a lot of thought about -- around this. It was a very insightful comment. And the way we built our platforms was with this in mind. So some of our customers are starting a digital journey with very small insertion points. With for example, hey, let's launch a intelligent chatbot, or let's digitize one channel, baby steps. And right at the other end of the spectrum, we have our service providers doing full digital transformation. When Amdocs thinks of a digital transformation, it's not just about a user experience. It's not just about a sexy user interface that's easy to use. We think all the way through. So we absolutely subscribe to the perspective that it needs to be a seamless, great experience, but it needs to be real-time. Meaning, it needs to happen now, and it needs to be automated.

If I play this back differently, when I click a button, I want it to happen now, and I need it to happen without anyone manually doing something. So this is really what we call digital. So if we extrapolate that to this kind of picture, obviously rather than just waiting for customers to do full transformations, we can take them down this journey, we can start from here and start to lead them down the path at their pace when they are ready.

And all our digital platform that would currently build DigitalONE supports our CES platform, our Optima platform, even our old legacy Ensemble platform, there's a path where you can start the journey and mature it and move it forward. And this is just a snapshot. We just grabbed some screens of some of our customers around the world. And this is really a micro customer. When I started to look at it, I asked them to grab me some screens so we can show it. But then I started to look at each of the customers and I thought about where did they come from. Where did they start? So we have a customer that did a full retail transformation. We have a customer that started by launching just WiFi by itself. We have a customer that said, "You know what, I want to deploy device activation and sell it on Amazon."

So almost every one of these, our customers came from a different point. But the great thing about us is no matter where you come from, whether full stack or a single insertion point, we can be with them along the journey to take them down this digitization path.

If we look historically back, service providers may have done a transformation, enjoyed it for 3 years, done another transformation, enjoyed it. But what we see now is this continual transformation, this continual digitalization, right? It's a journey. You can't stop. And everything we build is to make sure it fits to the cycle. We used to release our suite -- I think going back 10 years, it used to be every 12 to 18 months. We are now releasing features and functionality every 4 weeks to our customers. Internally, we're deploying it every week. Because this is matching up to the journey that our customers are on.

Going back to that, we want to take a second to zoom in on the network, and Oren will come up and talk about network in more detail. But when we think of the network, we split it into these kind of 5 categories. We're obviously a big sponsor and proponent of virtualization and NFV. But in reality, we know that we are going to live in a hybrid world for a long time. But here is the catch. You can build greatest virtualized network, but you will have a legacy network. And if you do not have this end-to-end view of your network assets, you're going to be blindsided, or you're not going to be able to provide a full service because your network services span across these 2. And so we're very focused on making sure when we talk about hybrid network operations, we're looking at both your inventory and your provisioning across both legacy and the new world.

Obviously, ONAP, and we'll talk a lot more about it, and NFV. We've spent a lot of R&D over the last few years, investing, and we decided to come under the banner of the Linux Foundation, put it in open source to drive this adoption. Because our belief here is in order to drive innovation, we need to get more and more people writing VNFs or network functions. And what this really translates to is, we will sit there behind the intelligence of the control plane and all must be agnostic. So if a service provider wants to choose one of the big NEPs or the VNFs, we're okay with that. If they want to choose a small, agile company, we're okay with that. We want to be a partner around the journey. And again, in a similar way that the digital journey is a modernization path, so is the network. This is -- you start with a few products or a few use cases, and you continue to modernize your network.

Autonomous operations, we believe that taking off these hands off, taking off these fallouts on the network space. This is a key part of our network strategy and roll out an acceleration. Several years ago, we acquired an asset, Celcite, that kind of got us into this game. And this was focused on 3G and 4G optimization. But as you look towards 5G and you think about the densification and you think about the complexity of rolling this out, this is where we feel that we can really add some value.

Those are just like a sample of our customers there. But in the interest of time, I want to talk about 5G and spend a few minutes talking about 5G. It's almost sad that it's called 5G. And the reason for that is, it's just not a natural progression of 2G, 3G, 4G, 5G. Shuky told me this morning, 2G plus 3G, it doesn't make 5G, right? 5G is a complete change in the way we work. It gives service providers an opportunity to reinvent themselves in terms of the services. We obviously now -- going back to Mobile World Congress last year, many C level that came and spoke to us was saying, "Look, we have to make this investment. It's a high investment." But now you hear more and more of them starting to think of the monetization opportunities. And I want to talk about it because I think the functionality and capabilities that 5G will bring in the next several years will change the way that service providers can monetize their network. Think about how we started, right? So I'm not sure how many of you guys remember, but remember voice weekend, nights in minutes, anyone remember that? A few nods, an absolutely yes there. Rollover minutes, things like that. We used to sell voice, right? That became a commodity. 5,000 text messages. So you look for a package that had 5,000 text messages. That became a commodity. Then you move to data. Hey, let's buy a gig, wow. 5 gig here, let's move to that. That became a commodity. 5G brings you to a space where you can really start to monetize services by themselves.

I'll give you a very small example. My daughter wants a VIVE, a VR headset for Christmas, right? So I go and do some shopping here. Cost you about $500, $600 to buy a VR headset. And we're a Mac house. We have MacBooks. It doesn't do the job. You need to buy a $1,500 computer, right? So all up, it's going to cost you about $2,000 to get this thing up and running.

Now think about the capabilities of 5G and what you can do. Potentially, you can get a small headset that sits in your head, connected to 5G, you can provide edge computing services on the cloud that only service providers can provide with a low latency level, and you can sell this as a package. You can sell it as a monthly subscription. So rather than me having to make this decision about how much I spend, you can sell the compute power. You can sell the connectivity. You're not even selling a 1-gigabyte -- I'm not even thinking about data anymore. I'm thinking about a service, and there are many use cases you can do like this. So when you think about network slicing, we're very, very heavily invested in the journey of network slicing from 2 aspects: both from the charging aspects, the monetization, and also the ONAP network aspects.

When it comes to the next ONAP release, we're working with 3GPP which, as some of you may know, is a standards-based organization for 5G to drive some of these standards into the ONAP NFV release. When you look at what we can do in terms of connectivity, think of fixed wireless. Today, we think, oh, we have WiFi in the house. We have our wireless connectivity, and we move around. Tomorrow, you will just think of ubiquitous connectivity. You won't necessarily separate it because you're going to have fixed wireless. You're going to have your WiFi operating seamlessly.

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So the reason I get excited about 5G is, yes, the speed is great, but if it was only the speed. I'm not sure if someone comes to me and says, "Hey, Anthony, I'm going to double your speed. Are you willing to pay double the money you pay?" I'm not sure that's the best use case.

But when I start to think about all of these opportunities to monetize various use cases and various partnerships, right, this is an opportunity that our service providers can own, right? Because they own the network. They own the points of presence. When you think about mobile edge computing, they own that. And we invested very heavily in the last couple of years working with the standards bodies to build the charging system that supports 5G, both around edge computing, network slicing, so that as these use cases come up, we can support it and be there to monetize it. And Oren will speak more about it from a network perspective because we're doing some cool stuff around there as well.

So we're going to zoom in again back into media. So Shuky spoke about media, and I want to draw this picture because nothing in Amdocs happens accidentally. Everything is a very intentional strategy. So if you go back to my comments around multiplay, there was a thesis that our wireless service providers are going to go into multiplay options to sell multiple services, right, not just triple-play, quad-play, but omni-play.

Several years ago, we started to think that that's great, but you can also increase top-level revenue by bringing the angle of media in entertainment and connectivity, owning a bigger share of the wallet. I think it was somewhere between $200 and $350 is the average spend in a U.S. household between connectivity and entertainment, right? And the percentages and the variances change. Now if you're a service provider, either you focus on the connectivity bit or you -- someone else focuses on the entertainment. Now if you can start looking at this whole $350, for example, or $300, your whole paradigm changes, and this is our belief as well.

So with our assets, we've been kind of building together, both organically and via M&A, a set of assets that builds the end-to-end picture in the same way we do on the BSS side. So Vindicia, which has been with us now for several years, is a monetization engine to monetize the subscription economy, and I'll talk about it in a second. UXP manages the life cycle. What is the fundamental difference between someone like an Amazon and some service providers? Within some service providers, you may have multiple logins and user names and multiple places you have your address. You go to Amazon, you have one place. You authenticate yourself. You have one place for your address, one place for your credit card. This creates great value, not just from an ease-of-use perspective because then you can have a full 360 view of the customer. You can know what they're doing, where they're going, what service they're using. So this is a service we have that is obviously valuable both for the telco side but also for the media side.

Ubiquity, we'll talk about, and Darcy will present to it. And then we also looked at our customer experience. So that we can reimagine or reinvent the ease-of-use but also start to add intelligence in terms of matches and predictions and things like that. So you bring these assets together, combine with our BSS system, you provide -- you can now not only provide every touch point, but you can now start to provide all the content directly from the studios to your customers. If our wireless providers decide tomorrow that they want to launch an OTT service, we can provide them a one-stop shop in order to do this, all the way from content to the storefront, with Amdocs, and I think this is the power of our media strategy.

I spoke about Vindicia before and around the subscription economy. There's a lot written around the subscription economy. And obviously, the easiest use case is around all the OTT offerings that we have. You will hear Josh from BBC a little bit later on about the British content but also sports. We have many e-sports companies now that are very interested in, but also physical goods. We have a customer who sells vacuum cleaners in Japan that is using us. Why? Because apparently, people like to get new vacuum cleaners every 6 months, and they pay a subscription fee for it. So as the world reimagines these different monetization models, we have a subscription engine that can power this. And the way we look at the world, people move from a physical world to a very digital-first world. But the way we see the world now, the 2 need to operate very seamlessly.

While we focus on all our core aspects, we're very cognizant of thinking about where the puck is moving to, right? So think of the Wayne Gretzky analogy. Of course, we're very focused on delivering what our customers need to do today, but we're constantly lifting our head up and trying to see where is it going. So these are some of the areas that we've got a footprint in that we're working on. So take something like e-SIM. There's not that much written about e-SIM, but this is a major change that's coming down the track. We already have 6 customers that have signed up with us, with our e-SIM platform worldwide.

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Connected home. We're partnered with ADT. We've launched in 6 countries with thousands of houses that are connected to us. It's very interesting. Think of it from a service provider perspective. The amount of trust that you would have to give your house, and if you think of our service providers' brands, there is a really good adjacency here.

E-gaming and sports. I think I've spoken to some of you in the last couple of months. From an economic perspective, this is something that's booming. They're building a massive e-sports stadium. My daughter sits there watching people play games. It's something that I'm still trying to get my head around, but this is a big industry. We have 6 customers that have already signed up for -- with us to launch e-sports publicly. I think Turner launched Gloud in South America, which is out there. This is something that also we feel is going to change the space.

And advertising. As we go into the content now, you'll hear more from Darcy, we have 1,000 service providers we're delivering content to from studios, right? So these are 1,000 people we're looking at, at a macro level on what they do with the content, how they use it. And almost every one of them are thinking about an advertising strategy and an advertising-based monetization strategy, so this is something we're looking at.

So back to our offering, I truly believe that -- first of all, I need a reason to get out of bed and be excited about what I do, okay? And when I look at what we do, this is really exciting. I mean, we provide full end-to-end connectivity on the BSS side, on the digital side. We expand into media. Because we see how the customers work, it was a natural progression to go from southbound to northbound -- from northbound to southbound, down into the network. And as we look at this, our portfolio starts to build a very full holistic picture to what the service providers need today.

So hopefully you've got a little bit of a perspective of what we do. And as I said, Matt is very strict on time, so can't talk about a lot more, but thank you very much.

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

Thank you. Thanks, everyone. So because I'm strict on time, we now have a 15-minute break. So we'll see you back at 1:25.

(Break)

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

Okay, everyone. If we can get going with the next session. So I'd like to introduce now Oren Marmur, Head of NFV, Amdocs Open Network. And he is here to talk about the service-driven network. Thank you.

Oren Marmur

Okay. Yes, now it's on, and -- okay. Thank you, Matt. And I'm going to talk today about the Amdocs Open Network. And as -- I want to start by walking you or taking you through the journey of Amdocs and the network space, and a bit of history and context. Then I'm going to review how are the service providers network evolving in the space, and this is definitely an area where we see a lot of transformation and change. Then I'm going to talk a bit -- I will try to introduce the concept of what we call the service-driven network, which is our sort of how we call our overall network offering. I'm going to talk a bit about the open network ecosystem, which is another very important trend. And Anthony touched a bit on the open source trend in the industry. I'm going to tie this to 5G. So Anthony covered the monetization side. I want to make sure you understand how 5G plays into this overall story of virtualization and the overall service-driven network. And then we're going to try to share why we're so excited about our ability to win in this market.

I've been privileged to be involved and to lead this NFV domain within Amdocs over the past 3 years. But actually, our network journey started much sooner than that. So actually, it goes back to around 2006. We started, I think Anthony mentioned it a bit as well, with -- it's a combination of several acquisitions we've done over the years, but also a lot of homegrown technology and significant investment in R&D. Started with some inventory systems, then we moved further up the stack into fulfillment and OSS, policy around the mobile space, network optimization, which Anthony mentioned in the context of rollout. But I think that really where we started to see us delivering much more value in the networking space

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is probably around 3 to 4 years ago, when we started getting much more involved in NFV, network virtualization, ECOMP, ONAP and so on. And this is where the more the network becomes software-driven, the more we can deliver value and the more we go deeper into the network.

This is what Anthony showed in terms of our overall network offering. So he touched on the 5G monetization aspects. I'm not going to cover that again. I'm going to try to tie the 5G story into the overall story.

In terms of network rollout acceleration, in the interest of time, we couldn't cover this in any one of the sessions. We'll just mention that there is a huge opportunity here. When we look at fiber rollout, not just for fiber to the home and the residential space but small cells, the entire 5G deployment, there is a massive opportunity around that. And we're actively engaged in those things. But what I will try to focus on in my session is mostly around these 3 left domains: hybrid network operations, the actual NFV or what we call the virtual network expansion and autonomous service operations. I'll emphasize again what Anthony mentioned as well. For NFV to truly succeed, it needs to be viewed as part of what we call the hybrid environment.

There are hundreds and hundreds of billions of installed base out there. The networks will remain. We can be in an Analyst Day 10 years from now and still there will be a significant portion of the network that would remain physical. I think the key to success of NFV is our ability to tie this and to synchronize the operations to make sure that we introduce NFV not just as a silo but as part of an overall ecosystem.

Just to quickly remind you, and I think I've used a similar slide in the session 2 years ago, what is NFV all about. So when we look at today's networks, they are very much physical, very much siloed. So typically, there is a concept, and I will address that later on, which is called vendor lock-in. So it's a lot of different physical boxes from different vendors that are usually proprietary and locked in within their own specific domains. And when we look at NFV, we are trying to change as many physical boxes as possible with virtual network functions or software applications. So rather than have a physical box in a central office or any other physical location, we will be running software applications or virtual network functions.

These will typically run on a cloud-based environment. It could be a telco cloud, what we call a private cloud, so the telco-owned data center or a public cloud. These all need to be orchestrated and controlled, which is where we come into play. And this really comes to address some of the key pain points we have in the industry. These have to do with service agility. So how do we really roll out services much faster, and I will touch on this much later on. Operational efficiencies. So how do we ensure networks are much greater automated and less manual and complex processes as well as cost reduction. Over time, there is the underlying assumption that if you start running more standard applications rather than proprietary hardware, that will lead to lower cost and a CapEx reduction as well. So this is, at a high level, the NFV concept.

And when we tried to look at what service providers are trying to do today. So service providers are trying to transform themselves. So I mean, they must transform themselves in order to remain competitive in the market. And when we tried to gather sort of the main pain points we hear from all of our customers, I think we could categorize them into 4 main areas: first of all, they're trying to become much more agile. So how do you really transition yourself into being able to offer a digital marketplace of applications and services that customers can order at the click of a button and be delivered within minutes. Today, they, in many cases, need to wait weeks -- or days or weeks, not delivered instantaneously. Second is how do we really create an ecosystem of partners and applications and vendors that could be quickly onboarded into a platform and roll out -- allow us to roll out services much faster into the market. The third element is what we call autonomous network operations. Networks today are very rigid, very inflexible and very manual. So how do we really run a much more efficient operation in the network. And last but not least, how do we scale that quickly. When we look at our cloud-based environment, it's all about the ability to scale that quickly, and this is where a lot of the networks today are very limited.

Actually, when you look at all of these capabilities, a lot of these exist today with the companies such as Amazon or Google or Facebook. When you look at most cloud-based environments, they can do this today, and this is where we're trying to draw a lot of capabilities, a lot of best practices, a lot of tools that have been proven and adopted. SDN, software-defined networking, as a technology as this actually started much more from the data center space and is very well proven and pervasive in that environment.

So this is where we're trying to make the telco much more cloud-based and much more similar to the cloud-based providers and mostly agile and with autonomous operations.

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Let me try to walk you through what is the current networks' reality. So when we look at current networks today, and I've tried to simplify this story as much as possible, we have what we call the business-enablement layer. So this is how do we engage with our customers, how do we eventually deliver services to enterprise customers and consumer customers across different applications and different use cases. So this is the digital front-end. This is actually the Amdocs' core business. This is what we've been doing successfully with a huge number of customers as Shuky has presented over many years.

And at the bottom, we have the network layer. So this is where typical network or different providers like the Ciscos and Nokias and Ericssons of the world play. And there's a lot of investment and change in the network. Network is moving from copper to fiber, from -- into packet switching and so on, and definitely into -- from 3G to 4G into 5G.

But when you look at it, at the moment, these layers are pretty much disconnected. So you can have an amazing digital front-end. If you're unable to configure or to reflect those capabilities into the actual network, you will not be able to convert that layer into actual agile services that are delivered to customers and vice versa. You can have -- you can invest a lot in software capabilities in the network. If those cannot be properly exposed to that upper layer, those will not be able to be converted into layers -- into agile services. And hopefully, this drawing is sort of able to properly reflect the current situation.

Today, this is pretty much what it looks like. A very complex spaghetti of a lot of manual stitches, siloed operations. There are a lot of different domains from different vendors, and we have manual processes, siloed operations and proprietary stacks, very high cost of service innovation. So it's very difficult. I think it's pretty clear from this drawing that this doesn't scale. You cannot introduce new services quick enough and with a high degree of innovation that is being expected in this environment. So this is actually the reality we're trying to change, and this is, I would try to say, the area we're focusing on. And this is where we are seeing a great need in the market to introduce what we call a service-driven network layer. We can think of this layer as the glue that provides the optimization and the automation and the agility that is required in between the business enablement layer and the constantly evolving network.

This is where if we zoom in on this layer a bit, we are providing a combination of both products and services. By the way, the products are not just NFV, it also has to do with OSS and the mobile optimization tools and rollout tools, so all of the different elements within those 5 pillars of the offering that Anthony and I have shown earlier as well as different services around the network, and this is a very heavy service play as well. And when we zoom a bit further in there, this is not a monolithic set of offering. This is a highly modular set of offering. We have a lot of different components in there. And I'm going to walk you through each one of those but a different set of services, different set of products that could be customized and adapted to different service providers. And this is where we obviously play at the top. So the upper layer is our traditional, what we call, Amdocs Digital, very much what Anthony has focused on in his session. This pink layer is what we call the Amdocs open network where we also put a very strong emphasis on our NFV offering. And at the bottom, and I'm going to mention this later on as well, we have our partner ecosystems. So we have a clear strategy. We have no aspirations and no plans to become a network player in the sense of competing with the Ericssons and Ciscos and Nokias of the world. We believe they'll probably do hardware on their own network functions much better, but we partner with these and we make sure that we provide the proper service agility and automation from top to bottom and from bottom to top.

So hopefully, this is clear. I think the challenge I always have in these presentations is how do you really abstract it. We're dealing with pretty complicated technology here, but I'm trying to focus on the true business value and business assets.

Now beyond the -- I've mentioned the need for automation and the need for service agility. Beyond this, there's another very clear trend in the market that we are seeing and that is, how do we move into open solutions. So Anthony mentioned ONAP. ONAP is the open network automation platform. It's probably the largest -- one of the largest open source communities and projects in the world, definitely in the networking space, started about 1.5 year ago. So it was sort of being planned when we were here 2 years ago and started a bit after that. But it's not just ONAP, we're actively involved in quite a few other standard bodies and organizations: Metro Ethernet Forum, TM forum, ETSI and so on. And it's all about driving standardization and openness into the industry. When you look at it, the industry needs to become much more standardized, otherwise we have too much vendor lock-in. We need to move into much faster innovation. Obviously, break that vendor lock-in. So how do we avoid being locked in to one specific network vendor. And at the end, it's all about driving for further market adoption and expedited market adoption. So we like to draw the analogy to the automotive industry. We also don't have plans of diversifying into producing cars, but what the standardization is all about? Let's first standardize these parts, okay? So let's make sure we have a clear standard for how are all these parts designed and where we come in,

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and as Shuky mentioned, we're, at the end of the day, a delivery powerhouse. We deliver carrier-grade products. So we take all of those standardized parts, and we're able to create different versions of these cars. One customer would like an SUV and a different customer might like to have a sports car where we basically stick -- integrate its -- through a very strong services play, we integrate the best of breed components from the industry, open-source initiatives as well as our own products and technologies. And one thing that is very important to emphasize I think, and we've seen this over the last 2 years, is there is a huge difference between knowing what needs to be done and having done this. And we are very proud to be probably at the forefront of pretty much all of the world's largest and first production projects in this open network space, and definitely in the NFV space. And we've accumulated significant expertise, experience and track record in successfully delivering these projects to some of our customers.

A few examples, and actually, when I was preparing for this, I opened my deck from 2 years ago, and these are just some examples from projects we've successfully implemented since we met here 2 years ago. So ever since we've continued our work with AT&T and we've created -- we've converted ECOMP from an AT&T project into an open-source project. We've also implemented ONAP at Bell, which is now running a high degree of automation at their network. This is one approach, this is what we call a top-down approach. So this is customers that decided to build a service-driven network layer and then start bringing it further into the network.

Another example of a project we're currently implementing, that's at Telstra, what we call a network-as-a-service project. That is a bottoms-up approach. So we started from an OSS -- Telstra Australia -- sorry, yes, even appeared in one of our movies of where you touch Amdocs with the Sydney Opera House. So this is a bottoms-up approach. So this is where we started by implementing OSS, and then we started moving up, and we're creating a layer on top of the OSS that will provide greater agility, and we'll be able to orchestrate across multiple domains.

And then another very exciting project we've took into production a bit over a year ago is with Comcast, and this is what we call our coming-from-the-side approach. So this is where we started with a very immediate business need of delivering SD-WAN solutions, another hot trend in the industry. So it's basically enterprise services, IP-VPNs with security. Though I think there are commercials here in the states of the Comcast business service, the active core service that is actually powered by our solution, and once that went into production, we're now expanding this into a broader platform.

So we see here 3 different approaches, and I think this is very typical of what we're seeing in the industry. There is no one-size solution that fits all, we see different approaches. But at the end of the day, it's all about the same goal of how do we reach to service agility and automation.

This is just -- I'm not going to walk through all of the logos. This is our current ecosystem. And probably, if I showed this slide 2 years ago, we'd have 1/2 the number of logos here. There are not too many companies that are in the unique position we are to be able to openly integrate with all of these companies. So there is, you can see here, a mixture of large vendors, small vendors, different applications, different networking layers. This is growing at a very fast pace, and this is where we see a significant benefit for the standardization. ONAP, to a large extent, is driving this. More and more vendors are eager to join this ecosystem, and this is helping us further drive for adoption in the market.

Very quickly about 5G, and I see I'm running out of time here. So Anthony touched on the monetization aspects, and I want to again emphasize that service-driven layer I've shown, that pink layer, is probably one of the most critical key aspects for monetization because the monetization relies on our ability to really take all of those new services, new verticals, new domains we want 5G to address and tie those with the network.

5G actually adds a much higher degree of complexity. So when we look at 5G, first of all, 5G is the first network that we virtualized from the onset. 5G is being built as a virtualized network day 1. It will not go through a physical stage and then a virtual stage. 5G also introduces the concept of network slicing. So when we're building a 5G network, it's not just one network, it's multiple different virtual networks and you can have different slices for different applications, so that adds another layer of complexity.

And Anthony also briefly touched on edge computing. So 5G also is very much tied with edge computing with pushing more and more compute resources down to the edge. And when we add all of this, and I've worked hours trying to simplify this slide, this is the result. I had to put one complex network slide in here. But when you look at it, this is the same layers I've shown earlier, just with a zoom-in. So this is again the network, and when we move to 5G, the network itself becomes much more software-driven, programmable with a higher degree of complexity in multiple different slices. We're going to have a much more complex business enablement system because we're now targeting multiple new verticals and

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domains and applications. And this makes the need through automation and agility in this service-driven layer even more critical. So we really need to automate both in this vertical direction, so how do we really tie everything from ordering IT into the network as well as across the service life cycle and all of the different applications.

So I apologize I had to -- I promise we'll be looking at only one complex slide. This is as simple as I could get it. And with this, I'll start to summarize, and then I have a short clip I want to show you. We are very excited about this opportunity in the market, and we're very confident about our ability to win. The network world is going through a tremendous transformation. I've spent most of my career in the networking space. This is probably by far the greatest revolution this market has gone through, much more significant than the transition from TDM to IP. This is truly transforming the way networks are being operated. It's all about automation, how do you move into a much more agile environment and how do we move it into an open environment.

If there is one key takeaway I want you to take away from this is that layer, that pink layer, we're providing what we believe is the critical blue layer. So our -- that layer is what enables agility, enables automation, provides seamless interoperability from ordering, all the way down to monetization of the network as well as it provides an open environment that supports multiple different vendors. And we believe we are very well positioned to be what we call the new domain experts. So when you look at service providers, and we hear this from a lot of our customers, view Amdocs as a disruptor in the network. So rather than working just in being locked in to the traditional vendors, we are a disruptor that could come in and change their network. As the network is becoming more and more software-driven, this is where our track record, years and years, decades of track record of delivering carrier-grade software becomes even more critical. And we have, and I think this is also a key message we wanted to leave you with, we have a very broad network offering. So NFV is definitely a key pillar in it, but it goes much broader than NFV. It's about products, services and also a very large team of strong network experts that we've built around this offering. And before I leave off stage, so a few more seconds, I want to show you one of the use cases of something we're implementing with our customers these days.

(presentation)

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

So with that, I will thank you, and I'm very proud to invite Darcy, who I think is the only Amdocs employee who'd ever won an Emmy award, right.

Darcy Antonellis

So hello, everyone, it's a pleasure to be here. So Oren and I tried to figure out an easy transition from networks to media, and I can assure you it was a little bit challenging, but we're going to start out with a video and part of it is to kind of get you into the mindset of thinking about media and how you engage with it in your day-to-day lives.

(presentation)

Darcy Antonellis

So a little fun fact is, that original audio that you heard, that is from the 1948 version. So I think the point being there that media is a big component of our day-to-day lives. It's a big component that cuts across platforms that we utilize, and while we're going to talk about Amdocs and Hollywood, we're not going to talk about, even though we're not going to talk about Shuky and Tamar trying to audition for the Bradley Cooper and Lady Gaga, the Star Is Born role, we can talk about that at the break. But we're going to get into how Amdocs Media integrates in, and integrates in well, as part of Amdocs overall.

So we're going to take a little bit of time to go through kind of a market overview on disruption and what we're seeing. We'll talk about the introduction of Amdocs Media; the Vubiquity acquisition, which has been mentioned already; and the value propositions that we see; and then most importantly, what we've achieved to date and what we're looking ahead to in the future.

So disruption, that has been the term certainly across the media and the communications sector. The best way to think about it or at least how we think about it is in 3 easy buckets. Certainly, the telecom/media consolidation across the biggest brands, whether it's Disney and Fox, AT&T, Time Warner and so forth, and some of these were mentioned earlier. Service providers continuing to launch direct-to-consumer OTT offerings. So adjacent services to their core businesses to, again, garner a larger share of your time and your wallet. And then the third is the content brands getting into the direct-to-consumer OTT space, and again, traditionally wholesalers. They are now retailers. And they're retailers that needed the expertise, they need support around the -- really the mission-critical services that are required to engage directly with consumers.

So what is the data or the thesis behind kind of why we're making these investments and bets, and some of the data right here just points to it very, very clearly.

By 2022, Internet traffic's roughly 75% will be video. Your communications methodology and how you and your kids and their kids will be transacting and dealing with each other will only continue to grow utilizing video as the primary protocol. And I was always shocked to watch that my kids never learned how to write cursive, like, what's that about? This is a core and fundamental change culturally and globally.

The adoption of 5G, you've heard a lot about that through the other sessions, which will be the enabler, it's all about video, all about experience and supported by a host of services.

Investments in original content. Much has been said about Netflix and their investments around original programming; and now we can add to that, iTunes or Apple; we can add to that, Amazon. And the big players -- Hollywood players are doubling down on their production investments.

And then new formats, whether it's virtual reality, augmented reality, eSports or gaming, those are all new verticals for monetization across the video space and with very strong growth expectations.

So with those metrics, what do we see in the market? Simply put, content owners moving into the direct-to-consumer space with new direct-to-consumer OTT models, recognizing the competition that they have, increasing complexity, right going from that wholesale to resale model. And this quadrant is basically all about those that make content, those that distribute content and those that consume content.

On the right side, and we use the content owners on the left, service providers on the right, the content distributors, in addition to investing in 5G, are also looking to diversify and get very close to the IP -- either IP participation or down and out IP ownership of content and looking at how they add that into overall omni-channel experiences. And the consumers, as Anthony mentioned, have one goal, I want it anywhere, anytime, any device, and in fact, we did some work around, ultimately, what is a screenless society, but it's a platform, at the end of the day, delivery to any platform for consumption. They want it to be relevant, they want it targeted, they want rich feature sets and the overall experience to be highly, highly personalized. And that's where things like artificial intelligence, machine learning come into play for us. And it's one of the areas we're now looking at and focusing on as part of the overall advertising kind of diligence that Shuky mentioned as we think about where we're going to play.

So with the data, with what's going on in the market, with the disruption, how do we support those changes? And here's how we meet those needs. And the overlay is actually quite compelling. When you think about Amdocs' core capabilities, working with carriers and mission-critical systems and really supporting -- at the end of the day, supporting the customer experience and monetization, so content owners, they look to us when they need the expanded distribution, things like Vubiquity brings with global distribution of content, we'll talk a little bit more about Vubiquity specifically, direct-to-consumer capabilities, understanding that retail experience and moving to a global day-and-date world, and what does that mean? Day-and-date in the media space means when a piece of content is produced, we can distribute it around the globe localized with the right censorship in any given market with all the standards and practices on the same day at the same time. Why is that important? It's important because that thing called piracy that markets have worried about for years becomes less of an issue. And now you can monetize that content at a true premium because you're making it highly available at the same day and the same time.

The content distributors, they want to be able to target their audience with relevant content, provide the linkage to the content owners. So Vubiquity, we have some relationships with some 630 premium content providers. All the major studios, networks, indies, specific genres like gaming companies, they don't have those relationships and that impacts time-to-market. So we can help them with their programming strategy, and we can help them to build a compelling premium content experience based on those relationships and get them the rights and access to that content. So faster

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time-to-market, and then integrate it into the Amdocs core. Consumers, they're just saying, "Okay, you know what I want? Anywhere, anytime, any place and it has to be relevant."

So the Vubiquity acquisition. So let me take a pause here and talk about that. Our company was acquired back at the end of February of this year, and I've been privileged to be the CEO for Vubiquity, and now a member of the Amdocs organization and family. And it's been a terrific 9 months. We've been kind of brought in. And I must say that, while I thought about, and as we thought about the acquisition and bringing our media expertise and distribution capabilities to Amdocs' core, it wasn't -- it didn't hit me as much as it did as when we went to Mobile World Congress this past year, where the industrial logic around the acquisition became completely evident, where Amdocs' customers were saying, "we've worked with you, we need to handle video, and we need to handle media and video and figure out how to make video part of our exclusive and differentiating offers to our customers."

And from that, I'm going to show you something, a couple of slides from now, and I'm watching the time, I'm doing this like live TV. We walked away from Mobile World Congress with 35 commercial propositions. Now we've narrowed that down to 10, but myself personally underestimated the clear value of becoming part of the Amdocs family.

So with the Vubiquity acquisition, this is kind of by the numbers about the company, the company -- we're a platform and content services company. We support -- again, work with over 600 content owners, deliver to actually 121 countries but who's counting, 80 languages. We manage millions of assets globally, and our library exceeds that of Netflix. Why does it exceed that of Netflix? Because as an independent provider, we need to support all cultures, all geographies, and well beyond, what say, just the Hollywood English language-only properties. So we have over 150,000 unique titles. We provide content licensing expertise. So we will help our customers, first, let's learn about your subscribers; second, let's help you program services in that you can use as retention, acquisition tools as part of overall offers to differentiate yourself in the market by working on the content space. So the way we think about it simply is, you have content owners that have content and you have lots of players that need content, and we help to broker that.

Large libraries, as I've mentioned, as well as genre-specific, we've had a lot of success in markets around the world creating very small subscription video-on-demand offerings that target specific interests for communities. And now we're starting to take local highly produced content in those same markets and help those content creators export it to other markets around the globe because people like communities and people of like cultures like to be together. And so if you can target those communities, you find a great opportunity in being able to offer subscription-based services that are targeted with content that's highly relevant.

Here we go. So with that as the backdrop, what's our strategy? Simply put, it is a 3-pillar strategy for Amdocs Media: deliver end-to-end services and enable and empower any consumer-facing video service regardless of the platform, format or monetization model. In fact, everything that we build is with the thesis that we don't know what the next monetization model will be. What we do know is that we have to make sure whatever we've built technically, and I'm an engineer by trade, so I'm a geek by trade, but whatever we build technically, that we can support new business models that you may wish to try.

So with content owners on the left, service providers on the right, first, content management and distribution, licensing, rights management, localization for global distribution, regulatory compliance. If we don't do these things well, then we shouldn't even kind of be in the business.

The next is experience, insights and analytics. So what do we learn about your consumption and your behavior with content, with video? And then how can we use that to continuously iterate and offer you things that, again, are relevant when you're spending time engaging with us.

And then the last, as I mentioned, is monetization, to be agnostic to business model. So whether it's subscription video-on-demand, transactional, advertising based, free, ownership, right? So that's ownership model is always good for kids content.

And the last is premium video-on-demand. And this is what you've probably read in trades about getting access to content while it's still in the theatrical window, right? So you pay a premium, you get it delivered digitally and securely to your home while it's still in the theatrical window.

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We work with all of the biggest, and we're privileged and honored to work with some of the biggest MVPDs around the world, but we also work with the largest OTT players in the world. We're a preferred service provider for Netflix, Amazon and iTunes. And the 3 of those maintain monthly metrics on being able to service them. And so it's highly KPI-driven, and if you don't maintain those metrics, you are asked to step off of the list, and unfortunately, don't get to work with them.

So what does this look like? So I'm going to open this up a little bit. This is the stack. For Amdocs' core solutions and services, again, we think about from wholesale to B2C embedded intelligence, right? We already have a strong analytics capability that's now being incorporated into media, our BSS and customer experience and our services. That mission-critical discipline is wholly relevant for the media space around security, around chain of custody. You don't get access to premium assets, all right, everybody likes to use Game of Thrones, I'll use Game of Thrones, unless you can clear a number of those bars. We couple that now with our media offering. These are some of the assets Anthony talked about: Vindicia on the customer engagement side, UXP for user life cycle management. So we understand who you are throughout your journey and how to make your experience more frictionless. And then up the stack, partner enrichment so that we can help to add third parties easily, curated content as I've talked about already, with the full stack then of kind of the services that are needed to support an online experience. Projekt202 helps with the overall customer experience with its design-led thinking. They help our customers take really actual customer experiences by observing how they engage with your application and use that to define how you're going to improve the experience versus engineers putting a set of requirements up on the wall and saying, "now let's build to it," and so very, very, helpful when it comes to designing a customer experience.

So the value chain, I mentioned that we narrowed it down to 10, I want to go through all of these very quickly on -- the onboarding of content and distribution, personalization of that content utilizing our insights and analytics, the reselling again of locally produced content to other markets on behalf of those content owners or bundling content with core offerings, all provide differentiated experiences that our carriers can offer.

A quick case study. This is a great example of some success across WarnerMedia, Turner, long time customer for Vubiquity. We work with all of their networks. We reach 100% of their affiliates. We help them with advertising insertion across all of those networks so that they can monetize not only the first air, but all of the downstream availability of that content by adding additional advertising units. And Vindicia works with them for their -- some of their OTT brands that you see here, most recently, again, the launching of the gaming platform, Gloud, in Latin America.

So finally, looking ahead, we've made some progress to date. In 9 months, our pipeline has grown 3x. I've done 48 trips in 9 months. It's always bad when the flight attendants know your name. We secure -- Vubiquity was never in Asia Pacific before. We've won our first deal in Asia Pacific. And we've got a whole host of new logos. I mentioned that premium video-on-demand service and getting content while it's still in theater, that's red carpet video, that's a new service that's coming out to offer that content at a premium. And terrific relationships with Turner, Viacom and Verizon where all of those relationships have expanded this year.

Looking ahead, we need to convert a great pipeline that we have. We need to scale up our resources now that we're in regions like Asia Pacific, and we've built -- again, we've built an end-to-end set of -- end-to-end solution set, but it's very modular. So you don't need to take our content licensing all the way through to a customer experience. You can kind of -- our customers can kind of insert themselves where they actually need platform access and expertise.

And then last, this year, we're going to be spending some time on blockchain for media as well as positioning the specific areas we want to play in eSports and gaming. So why do we think we'll win? Again, that end-to-end offering that's available, but also flexible to -- flexible for our customers. The logic -- the logical nature of our integration is part of AmdocsOne. We are an incumbent in many of the service providers globally. And we focus on media, it's what we do. We're very disciplined about what we are and what we're not. We work for both the content owners and the service providers, and then last is to provide expertise across both areas, again, left side of the page and right side of the page based on those requirements.

I think I'm like 40 seconds over thereabout. Thank you very much. There you go.

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

Thank you. So now we're going to have a slight change of pace. We can invite Anthony up here, and we're going to do a quick stage shuffling here. I'd like to introduce Joshua Axelrod. Do you have mic? So Joshua Axelrod is the Product Director at BBC for BritBox. And he is responsible for defining

the product and the customer experience and also for growing the subscriber base. And I for one am very happy he's here because as a kid growing up in England in the '70s and '80s, I've rediscovered a whole new bunch of content that I feel was long forgotten. So I became a subscriber the other night, I highly recommend it. So I'll hand it over to Anthony.

QUESTIONS AND ANSWERS

Anthony Goonetilleke

Well, thank you, Josh, for making the long trip. I told Josh yesterday, "hey, Josh, like, do you need some help in getting here, like we'll send you a car." And he goes, "Anthony, I can see the NASDAQ building from where I am."

Joshua Axelrod

There was a lot of confusion in my brain, "Oh my God, do I need a car to get over there? I'm literally a block away. You could look that way and we're right over there on 6th Avenue."

Anthony Goonetilleke

So Josh, like Matt said, maybe we're from the Australian angle, we're huge fans of British content and big followers of Doctor Who, Rowan Atkins (sic) [Atkinson], Blackadder, all of the stuff, and I was delighted to find BritBox, and I'm a subscriber to it and love the service, my kids love it. So tell us a little bit about -- I mean, first of all, tell us a little bit about yourself and what you do in your role and a little bit about the service?

Joshua Axelrod

Yes, definitely. So I'm going to give you 2 parts to my background: one is more of the business side. I've held product leadership positions at CNBC, part of NBC Universal at Apex, which was sort of a combination of MGM, Lionsgate and Paramount -- Paramount, Lionsgate and MGM, got to get that right, over there in the Viacom building. And product ownership and leadership with a film company called SnagFilms, which is an offshoot of an AOL project with Steve Case. So what that means is, I've had a hand in a variety of different kinds of video delivery methodologies. There's the AVOD, which is the ad-supported video-on-demand. There's SVOD, which is subscription, which is where I am now with BritBox. And with Apex, we were what is known as MVPD-based OTT. So if you have a cable subscription, you put in your cable credentials, and then you could authenticate. So that's a little bit of the business background, but on the personal level, I would call myself a content supernerd having -- I was watching the Superman video there, and I kind of sort of tied in there at the part with the VHS tape, so that was kind of me. But really loving content from a very young age. Even to this day, I could probably tell you Monday night lineup, well, that's incredible going through to Tuesday night. So I just consumed all this stuff all the way through Saturday night, slept and watching movies, any kind of content that I could get my hands on. So where I am right now is really the combination of sort of the technical side of things and really what it comes down to is my passion for content. And there happens to be a lot of British content as well. As a kid, I discovered Doctor Who. It was terrifying, but at the same time, I loved it. And I just kept watching it, and I would record episodes on VHS tapes. And then here I'm now. So when the opportunity came up at BBC, well, this is just a natural fit, because it wasn't just Doctor Who, I'd watched Blake's 7, then I watched The Young Ones, anything I could get my hands on. So now it's all in one place in BritBox.

Anthony Goonetilleke

And so the OTT landscape is a very competitive landscape. There are many offerings out there. So when you start to think about it, I know you guys have the freemium offering, I think it's 7 days; you have the monthly, which I'm a subscriber of; you have the annual package; and I think you now just launched a gift service, which you can give out for Christmas and things like that, which is also awesome. So talk a little bit about the challenges and what you need to go through? And how you -- I know you guys have a great growth rate and you're growing very fast in terms of your subscribers

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in a very competitive landscape. So talk a little bit about -- give us some color on how you acquire those customers, retain it and how we help you in some of those roads?

Joshua Axelrod

Yes, absolutely. So this is definitely a tough space to be in. We're on the content distribution side of things if that gives you a little bit of frame of reference. BritBox was started by BBC, turned into a joint venture with ITV. Now if you are from the U.K., these are probably familiar names to you. If not, think of it as if it was like ABC and NBC got together and put together a service. It's how monumental it is. What's really challenging about it is that when we had started out the service, we had set out with some very specific goals that we thought were important for us in order to succeed. So one of them was platform ubiquity. We need to be across lots of different platforms, earlier I saw mentioned, if people want to watch content wherever they want to watch it, so we want to be there. The other thing was, we also want to accept payments wherever payments could be accepted. This is really, really hard, like I can't underscore that enough because what you have are a whole series of walled gardens from the Apple in-app purchase, or IAP; the Google IAP; Rokus, they all have their own kind of walled systems, but we wanted our users and our subscribers to be able to buy a subscription. We offer the monthly subscription as you mentioned. We just added annual subscription. And we also wanted to have their subscription be portable. So if I purchase a subscription on the website, I want to be able to log in to my iOS device and watch it and vice versa. Our goal is to ensure that our users can watch the content that they want to watch wherever they want to watch it. Okay, so that is like super, super hard to do. And so in order to actually make this happen, which by the way, you don't see this everywhere, but again, it was a core goal of ours. So we worked with Vindicia and that was our company of choice. And so just, again, a little bit of background, when it comes to building an OTT service, there's a lot of different moving parts to this. There's your entire content pipeline, which includes transcoding, storage, delivery out to the CDNs. There's player technology, and then there's all the front-end development. But one of the core pieces was around payments. And so when it came to payments, we had to look outwards because BBC already has an incredibly robust stack around the content pipeline, around the delivery parts. And we were able to piggyback on top of that very nicely, and a lot of this stuff was coming from the core iPlayer stuff, again, if you're a U.K. person, it's probably very familiar to you. So we looked outside for payments and that's where Vindicia came in. So we faced a number of challenges, and one of those challenges again is ubiquity. Another challenge is just managing something that we call entitlements. So again, this is sort of an industry thing where think of an entitlement as like the receipt that you get when you pay for something. So if you've paid for a subscription, you get an entitlement, and everybody here, if you have a cable package, you have an entitlement, you may not know it, but you've got one. Otherwise, you can't watch cable TV. So we need to actually manage all of these entitlements across lots of different systems that have lots of different, we call them, grace periods. Grace periods is the time when we sort of forgo any kind of payment snafu and we still grant you your entitlement. And every single payment provider has different grace periods. We also had to do this in an environment of high availability, low latency because we don't have anybody waiting for this stuff, either to buy their subscription or to actually start watching a show, because keep in mind what happens in the background is that when you click play, we actually do a full round-trip, we validate your entitlement, make sure you're a paying person, and then we start to play. We retrieve the data. There's a lot of stuff that's happening. Every single piece in that chain has to work very quickly. So these are our -- these are kind of our table stakes or baseline standards. So we've engaged with Vindicia, and I'll cut to the ending here, the ending is here, if we launch on 5 platforms within 10 months from the time that I had started working on the project, the time of launch was 10 months, that includes full integration with enabling purchases across web and also across all of the other platforms, and that's where we stand today. So that was sort of very similar.

Anthony Goonetilleke

We -- this is what we live for, to take the complex and make it simple. This is what we strive for. So I'm really, really happy to hear you say that. Just -- can you share a little bit in terms of going forward, and as you look at it, people tend to think, like you said, that "hey, it's payments, it simple and you just put out a subscription," but you guys are trying all sorts of new services and launching them very fast, trialing them, converting freemium users to premium users, and so there's a lot of intelligence in terms of customer retention, churn reduction so you keep collecting payments and things like that. Can you talk a bit about the nuances and kind of your thinking around this as you build up this ecosystem?

Joshua Axelrod

Yes, absolutely. So now you're speaking my language around retention and acquisition. These are the kinds of things that I need to think about. What I do not want to think about is all sort of the nitty gritty stuff that's happening around the actual nuts and bolts, the guts of billing. So we think about acquisition all the time. How do we get more people on to our service, and then we think about retention, which is how do we keep them on our service. So from an acquisition standpoint, there's a number of different things that we are constantly thinking about. One of those, again, is just being available on platforms. Vindicia enables that because we can consolidate and we can manage all those various entitlements and the various grace periods across all those different platforms. So spinning up new platforms is something that is -- has a very, very clear path for us when in the past it may not have been such a clear path. So that's one aspect of it. In terms of acquisition as well, we think about our product offerings. So up until about -- what's today, the 10th, so yes, up until about 3 weeks ago, we only had a monthly plan. We literally just introduced our annual plan on the 15th, and we also introduced the ability to buy a gift subscription. So these are 2 things that were again enabled through Vindicia. That's really important to us to be able to do these things. It was, I would call it, relatively straightforward. As a matter of fact, it was me setting up the billing products, doing things like that. So Vindicia allowed us to create all the coupon codes that we needed in order to actually deliver a gift code to somebody who purchases it, and then also set up the annual plans and make sure that we're doing all the synchronization across all of the other -- the IAP, or the in-app purchase, platforms as well. So those 2 things were extremely important to us. We're seeing a fantastic uptick. I can't share numbers. The data is really super early, but let's just say that we're really, really happy with what we're seeing come in. So in terms of acquisition, in terms of retention, those are the kinds of things that on sort of a mechanical level that have to be taken care of. One of the other things that's really come to light for me is, we talk about the stuff that I can do and the stuff that my team can do. And I work with marketing folks and CRM folks, business leads, et cetera, and I kind of take all of that stuff and turn it into a product. So we have a degree of control over things, where do we do marketing spends, what kind of features do we add, all that kind of stuff. It's a whole another aspect of it. And this is something that really kind of knocked me out about Vindicia was that, in addition to all of those kinds of things, we need to think about the mechanical aspects of retention, right? So what happens is, somebody tries a credit card, and it usually works, but sometimes, it doesn't, either there is not enough money on the card or they've got a new card, the numbers haven't been updated. There's all sorts of stuff that's happening. What I've learned is that there are like a million robots behind the scenes at Vindicia that have learned when it's the best time to retry. So first of all, we do something called a 3-by-3 retry logic, which is simply every 3 days...

Anthony Goonetilleke

Space expand.

Joshua Axelrod

Yes, we -- every 3 days, we try it again. But while that's happening, these robots or machines are looking for who this person is? What is the -- how do we define them in terms of their financial characteristics? And then when is the best time to bill them? When do we think that they get paid? Do they have a credit card update that needs to be retrieved? Vindicia is doing all these things. So this is something we call involuntary churn rate. I need my involuntary churn rate to be as close to 0% as possible because I don't want to have to think about this stuff. I want to think about the product aspects of things. So what we've seen is that, first of all, we've good subscribers and that's great. So we've got a -- an initial success rate of about 95.5%. That's people who are getting rebilled on the anniversary of the subscription, but it's still at 4.5%. And when your numbers are growing, that's actually a lot of people. So Vindicia has a retry logic in there. And this is the stuff that we get. It's pretty awesome. I don't mean to be being so colloquial about it, but this is a little bit like magic. And that has actually brought our retry rate up to about 97.8%. Now that's awesome and its industry leading, but we want to go a little bit further. So we have literally just within the past few weeks engaged with the Select product. So this is another product that Vindicia does. It's like a little extra juice on top. Our goal is to get that involuntary churn rate again as close to 0% as possible because if Vindicia is minding that aspect of the shop, then I can just focus on customers, I can focus on the experience and I can focus on my team and making sure that I can deliver products that satisfy all the stuff that they need to do. So when I look at acquisition, when I look at retention, I see it as a stew pot of all sorts of different things, but I absolutely must have the best ingredients to extend kind of a silly metaphor, frankly. Vindicia is the best of those ingredients. If you start with good stuff, you're going to get the best stuff on the product.

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Anthony Goonetilleke

It's interesting you say that, when we look at it or when we think about it, we sit on this bunch of data, and when we add an angle of intelligence to it, we think -- if we can try to increase these KPIs so you can focus on delivering content and trying to improve it, right, we can bring the best of not just in U.S., what else happens around the world, right, and bring this intelligence built into the platform to you. So glad you enjoyed it, glad you liked it. Anything else you want to tell these guys, free coupon to get BritBox 7 days for free, right? We'll give it to everyone.

Joshua Axelrod

Yes, we'll pass that on, a 7-day free trial, and then that will roll into your subscription. We think you'll -- we have -- like, it's really a good program. And even if I didn't work for BritBox, like this is the stuff that I would be watching. There's a lot of new stuff, and we have a ton of classic stuff as well. If you're looking for something to dig into, I highly recommend a show called Mum, it's just amazing. It's absolutely sublime. And the cast is fantastic and superb. The other thing, and I forgot to mention this at the beginning, no, I do not have a British accent, so I apologize if you are expecting one.

Anthony Goonetilleke

BritBox comes with subtitles just in case.

Joshua Axelrod

Yes. I work with a huge team in the U.K. directly under the BBC and then some other teams all around the U.K. for different aspects of it, but the business itself is based here in New York at our BBC studios, formerly BBC Worldwide. But again, britbox.com, I know people who work there, they're pretty awesome. I think you'll really like the programming.

Anthony Goonetilleke

And you have some good partners too?

Joshua Axelrod

We have, absolutely. But one of the things, and I couldn't really fit it into all of this stuff, but one of the things that I would say internally is that when we talk about Vindicia and the partnership with Vindicia, there's a couple of things that really stand out: one, I would say this to everybody, it's like we have like a Ferrari engine for our billing partner, like -- literally, like this is a company that does, it builds engines and the crazy, crazy high-performance engines. It's pretty awesome. The other thing too is that the relationship that I have with Vindicia, it's -- there's no real data point around this, but the fact is, I -- my guy is [Dave Vanderbilt], I've got his number on my cellphone, I can talk to him and say, "tell me about the industry, tell me what you're seeing in peer set or just I just want to talk to you about some of these aspects." That's pretty amazing, and that's all across the entire team. I work with [Cleveland], I work with [Lee], I work with a whole bunch of folks. And that to me is the really -- that's like the underpinning of the entire thing. So this is like magical logic that's happening, all the robots doing their stuff, and this is the relationship I have with these guys as experts in the field that I can talk to, I can reach out to as my lifeline as whatever it is that I need, and then as we roll into additional products knowing that our engagement is going to be the best that it possibly could be.

Anthony Goonetilleke

Thank you. That's what we strive for to be here to make you successful. So Josh, thank you very much and really appreciate you coming over here.

Joshua Axelrod

Thank you. Yes, I appreciate the opportunity to talk to everyone. Thank you.

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

Thank you very much, Josh. So now we'll take a 10-minute break, and we'll come back with the second customer, PLDT. Thanks.

(Break)

PRESENTATION

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

All right, everybody. So now we would like to go to our second customer for the afternoon. And I'd would like very much introduce Jerry Brace, who is the Chief Information Advisor from PLDT, all the way over in the Philippines. We're very grateful to have him come over to be with us today. And also Gary Miles, our very own Chief Marketing Officer, who's going to host the fireside.

So I'll hand it over to the very capable, Gary. Thanks.

Gary Miles

It sounds bad but we'll have to deal. Okay.

Matthew E. Smith - *Amdocs Limited - Secretary & Head of IR*

Okay.

QUESTIONS AND ANSWERS

Gary Miles

Great. Jerry, so first of all, thanks for coming. It's -- Philippines is not the shortest route, so whatever the closest of destinations. Maybe you can tell us a little bit about PLDT, your business, the scope of it, your focus? I understand you guys just had a 90th birthday, which is significant, congratulations.

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Thank you. Thank you. So first of all, this was titled a fireside chat. I'm looking for the fire, coming from the Philippines, it's cold here.

Gary Miles

Fair enough. Fair enough.

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Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

So we did celebrate our 90 years, and actually from the Philippines' standpoint, it goes back to almost the handover of the Philippines from the U.S. to Philippines government, so a long time ago. And PLDT was built from acquisition, acquiring a lot of small companies. And then once some size, started into more bigger companies, and so, thus leading to a market driven by or a business driven by consumer, wireless and fixed as well as strong on the fixed side for our enterprise markets, which also expands into data center and ICT services as well. $4.8 billion in market cap, 69 million customers across wireless and fixed and operating for 90 years across the Philippines, which is a collection of 7,000 islands, so you can imagine the infrastructure challenges.

Gary Miles

Yes, the complexity. It's interesting because we heard both Anthony and Shuky talk about multiplay. You guys are very much an integrated carrier with many, many offerings. We really made a bet on multiplayer space, but borne fruit for us, as we heard. You look at what's happening in Europe, where single play churn rates are 25%, quad play churn rates are 5%, multiplayer seems to be paying dividends, particularly in a world where we've got a 100% more or less market penetration, so it's really a war on churn. So we subscribe to this strategy that PLDT is trying to play out. Tell us a little bit if you can give us a background of yourself, you're from Oklahoma, I'm from Texas, we're both living overseas. You're a little bit further afield than I'm. But can you give us a little bit of, I mean, you're running all the IT, really for PLDT. can you tell us a little bit about the scope of your work and the journey you made to get there?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Sure. So starting from way back, maybe...

Gary Miles

Active for about -- not 90 years.

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Yes, I started even in telecom before maybe some people were born here. But I cut my teeth in telecom, and I've enjoyed seeing the changes in telecom over those years, and spent time starting out early days in transformation. So I've been working with transformation programs for a lot of years. Stopped off for a period in the energy sector, which was really interesting, in retail energy, where I saw it's selling -- instead of electronic signals, it's selling electrons running down a wire and molecules down a pipe. But at the end of the day, it's about delivering customer experience to customers. And that needed IT, technology. So it all comes back to a similar kind of model, if you will. The last 5 years I've been looking at data, working with companies to drive data adoption and data programs, and landed in the Philippines about 3 years ago, working with one of those companies on the chart there in the Philippines, and we only have 2 telcos by the way. So working with them and then landed over for our transformation project at PLDT.

Gary Miles

We actually like, whoever we're working with both companies in the Philippines also. It's something we try to specialize in. So okay. Tell us a little bit about your areas of growth, your capital allocation to fuel growth in the coming near term?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

So really going back a couple of years ago, early 2016, we established the business transformation office and that was directing our investments in, first, from an IT perspective, our transformation of IT, and that title was business transformation, because we wanted it to be led by the business,

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but focused on transforming the IT platforms. And from there, we've now expanded that to also include other areas of the business and that would be the network side, so a lot of network transformation, and then the investment in the network side is significant for us. So I mentioned market cap of $4.8 billion, revenues over $2 billion, but we're spending almost USD 1 billion on capital for our network expansion. And that is largely...

Gary Miles

That's annually?

Jerry D. Brace *- PLDT Inc. - Chief Information Advisor*

That's annually. So that's largely to expand our 4G, our LTE services, and to catch-up a little bit on the data side, we were a little bit behind on the 3G so we were jumping ahead on the 4G, LTE. And then we we're pushing ahead on our 5G, so we're already -- last month, we had the first video call in the Philippines from 5G to 5G. We -- because of the -- being behind, so we're focused on a turnaround, so in order to turn around our wireless business, we are really looking at implementing the engine that we need in order to compete with that other carrier that we have there. And that other carrier started a few years earlier with an implementation of Amdocs. So now we're a little bit on the catch-up side with them.

Gary Miles

Right. And for your network -- you have some of our assets as well on the network side from a planning and inventory perspective, correct?

Jerry D. Brace *- PLDT Inc. - Chief Information Advisor*

So in our -- the scope of our project, we have included network inventory as well as network rollout in order to track that and the OSS products of order management as well. So those are included in the scope of that project.

Gary Miles

Can you share with us a little bit the general scope of this management transformation that we're doing together? The scope of the project with Amdocs, and some of the reasons you selected Amdocs?

Jerry D. Brace *- PLDT Inc. - Chief Information Advisor*

Yes. So we stumbled a little bit, I'll say we were stumbling a little bit when I arrived and we -- from the initiation of our business transformation office, we were looking at how to take a SI, a system integrator, and take products and stitch them together to replace and transform our old systems, but our discussions were not as fruitful as we wanted, and we backed up and said, "What should we do next? And what should our Plan B be?" And there's when we looked at companies and Amdocs being the prime company that had premier products in its telecom space. We wanted somebody that had a breadth of products that could help us transform our whole infrastructure or applications infrastructure from where we were, stitch together a set of systems, drop it to 0, and at the same time go from 0 transform digital new age system up to a lower bar, by the way, fewer systems, decommissioning over that time about 150 systems in 2 years. So an aggressive schedule to decommission systems and replace them with the new Amdocs products.

Gary Miles

It's interesting, because I think, this is back to the accountability model that Shuky referred to. So we saw, I think for a long time there was a best-of-breed versus best-of-suite war on the marketplace. And eventually, we've seen more and more carriers like yourself move towards an integrated partner to provide both of them to go on and do things like the managed transformation that you talked about to bring in, modernize

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the systems, decommission some of them over time, so that you have a smooth transition towards your future digital state, which is, which -- I think, we're seeing that work well around the world, we're obviously excited about this project. So about these major transformation projects, if you embark on a project like this, whether SingTel or Vodafone, PLDT and others, this decision is a brave one, it usually outlasts the C-suite that makes it. Can you share with us some of the expectations that you want to achieve out of the transformation?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Well, to start with, it's a matter of TTO, right? The systems themselves are complex. In order to make our business simple, as Josh mentioned earlier, it takes a complex system in order to make our interactions with customers easy. So we -- when you look at that, this set of dispersed systems that we had, it takes time to change those out, and so you have to put a program together that's going to take years in order to complete, remember my wedge of taking existing systems to 0, new systems up to a higher bar. So that's going to take some time and it also takes an architecture. You need to know where the destination is in the road. But the most critical part of that journey I think is the business side of the transformation, and that is in transforming the business you have to shed some things. So prioritizing and rationalizing the products that we have in the market, maybe even sets of customer that we don't want to serve anymore. That part of the decision-making process for us takes time. Customers are slow.

Gary Miles

Customers are not just for you guys. I don't think it's -- you're not unique in this place. We actually believe that one of the reasons we're successful in transformations is, we're very opinionated about this point, and the parity of functionality is the killer of a transformation. And what's nice about it is more and more we're seeing that we're in the room, with the business, obviously together with IT, prioritizing, planning, and then when we do co-development and DevOps, we're really a partner in this process. And so I think there is a lot of new tools and technologies that Anthony talked about, together with the business priorities that are making -- bringing value a lot quicker and bringing the business -- instead of just the IT transformation, really bringing the business transformation forward. Let's talk about, you talked about managed transformations, okay? Do you see this trend accelerating globally? I mean, I know you've got a PLDT view, but do you see more and more customers potentially moving to a managed transformation, more to gradual one, are there some things triggering this? What's your view on this, Jerry?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Well, we do see that definitely to be competitive, and in the Philippines market, we've recently gone through some changes from government and the ability to hire resources through some labor laws. And having Managed Services is actually the only way we can hire outside talent. And one of the reasons for us and expectations of our Managed Services, if you will, is that we can lower costs driving efficiencies, we can improve our service levels, but the third really important is that we can think wider and deeper than we do now. So we need a partner to help us. And if we don't have that capability of Managed Services, it would be hard for us to move forward and get that extra -- expertise in order to drive our business.

Gary Miles

Right. Right. I think that from this perspective Amdocs is -- we -- from -- I think, we're a unique company in that we see the business operations of 350 customers from around the world, so we can see what's happening in Bolivia or Brazil, that may work in Poland, that may work in the Philippines, that may work in the U.S. And to try to bring this to bear inside the business transformation and inside the Managed Services, we come in and try to help supplement the workforce that's local to the different organizations.

So let's talk a little bit about AI. AI is -- and it's kind of one of those waves in the ocean that seems to be picking up a lot of momentum, hopefully it's not going to pick up way too much momentum too quickly. But anyway, the trend in AI is impacting our industry, I think in a very positive way. Can you share with us some of the things that you see AI playing a role in either your company or globally?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Yes. First of all, we need AI in order to understand our customer interactions better. We need to know our customers better, what they're doing, who they're talking to, the interactions that they have. But also to take that data, that information and to be able to leverage the suite of telecom services and adjacent services that we have to offer customers. So that's as important to be able to predict proactively, solve customer issues, so that they don't become issues, if you will, so to be able to take that data and improve our customer experience. And the other side of it is from an IT perspective, from a technology perspective to be able to take the data about operating our systems, and in itself make them more self-healing, so to be able to leverage AI both from a customer perspective externally and in internal perspective driving the operations improvements.

Gary Miles

Yes. We have our board of advisers annually, we had them this last year in London, and one of our advisers basically said, "Look, it's pretty straightforward. We want to grow revenues and we want to reduce cost." And I think a lot of business will say that. But I think AI is a good engine for that, you mentioned it yourself, how do you sell the right product, in the right time, in the right channel? How do you manage the journey, so that they are successful, they fall onto a success path instead of a failed path, from that side? And then I think that what we're doing with a lot of our Managed Services, is how do we bring AI into the decisions so that the NOC is not over-flooded with alarms, which alarms make sense, how can you predict what's coming, predictive failures? This is also essential for our business, and particularly, for our continued profitability on the Managed Services side.

I'm going to ask one more question, then I'm going to move actually to the audience. So if you want to think through some questions that may be interesting to ask Jerry about, then please think that through. Arguably, communications is the number one driver of GDP in the last 30 years, right? I mean, we've got the Internet, smartphones, applications, it's just been an amazing engine of growth on a global perspective. I actually think that communications is set to play even a more fundamental role in our future digital society. I mean, if you look at the way we're going to need to be able to monitor healthcare devices of an individual from their home, to the ambulance, to the emergency room, we have driverless cars and trains on roads and rails, and how the enterprises of tomorrow are going to build the society on the backbone of communications and sensors and IoT, et cetera. What is your view, I mean, you guys have a very strong enterprise space -- place, what is your view in general on the next 5 years for communications for our industry and media for our industry, so?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Yes. Sure. So if I think about that 30 years, I witnessed that evolution of telecom and the importance, the relevance of that over time. I remember back when there was new challenging technologies that being in the telecom business, we thought were going to take our business away. But in fact, ended up growing and expanding and had wider opportunities. So If you just take that as a track record, and you look forward, and say that's going to be the history, I expect that's going to be true as well. And if you think about technology itself in that global reach, the telecom that we have shortens the distance between families and friends, between business and customers. And that's the critical part of the personal side that you mentioned. And I think, we envision our future from science fiction. So, Darcy, you showed the 1948 Superman out through today, and we envision our future in how we're going to be communicating based on the science fiction movies that we see. And eventually those technologies are real and so it's really amazing. And from a telecom perspective, we will stay relevant because of our investment. There is -- we have an embedded investment in a network and those networks as we talked about earlier on the networks across the Philippines and the number of islands that we have to connect in order to deliver services. And we will do a network upgrade. We have right now a challenging third player coming into our market, and we see an investment.

Gary Miles

Yes. The Chinese coming.

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Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

We do.

Gary Miles

Yes.

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Yes. They're already near the border, but now they're coming on the shore.

Gary Miles

Right. The Philippines is one of the few countries with a duopoly today, right? I don't know how many there are, but there's not very many, but you definitely have the Chinese coming, so that will be an interesting dynamic for our 2 customers there, and hopefully our 3 customers very soon. You never know. We would like to say that.

Listen, I'd like to thanks for the -- I'd like to open the -- Linda in the back has a microphone. So Jerry has come a long way and has a lot of insights from many operators around the industry. So if you guys have any questions about Amdocs, the comms industry in general, please don't hesitate.

Shaul Eyal - *Oppenheimer & Co. Inc., Research Division - MD & Senior Analyst*

Shaul from Oppenheimer. Jerry, I had a quick question. Amdocs, I think the relations between PLDT and Amdocs to an extent have been inherited through the Comverse acquisition that they had done a number of years back. Can you maybe a little bit compare, contrast with respect to the relations at these days, so I think it was back at 2014 or '15, and maybe reflect with respect to 2018?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

I'm not sure exactly the question of going back to the relationship then in 2014 up to now.

Shaul Eyal - *Oppenheimer & Co. Inc., Research Division - MD & Senior Analyst*

Maybe how has the relations developed since Amdocs in a way has taken over? Those relations have been more of a prepaid billing, and Amdocs at that time focused slightly more on postpaid. So how that has evolved?

Jerry D. Brace - *PLDT Inc. - Chief Information Advisor*

Yes. I'll say 2 things. From the overall relationship standpoint, between Amdocs and PLDT, and previously the existing platform provider before Amdocs acquired them. So that relationship was really strong, and that relationship actually led to part of the successful now upgrade of the platform that we had, that was part of our decision-making process, by the way, to upgrade that platform versus go to a whole brand new system from the other product that Amdocs offers. So those 2 sides are, I think, really important, the relationships itself and then that we were doing an upgrade of an existing platform. That helped us shorten, again, the time to market for us to catch-up with the competitor.

Gary Miles

Maybe I can add something there. The Comverse assets have proven to be, as Shuky mentioned, very helpful on a number of ways because we're in a lot of growth markets we are able to bring agility and solutions to those markets, but also the -- particularly, in here and PLDT and number of other places, it's a jumping off point or a core asset that we can build upon like we're able to build upon here to take an engine that was right at the heart of the business, and then expand it into a much broader proposition. By the way, we also had through another acquisition the Pontis assets, which were some of the AI assets, that were in PLDT that we're also able to grow upon. So I think this is one of the areas where M&A is working out well for us.

Are there some other questions from the room?

Right. We will now handover to the woman that everybody has been waiting for. To get to the heart of the real issue. So I'd like to invite Tamar up to stage. And Jerry, thanks again for joining us and coming so far, we're really -- and the partnership. Thank you.(presentation)

PRESENTATION

Tamar Rapaport-Dagim *- Amdocs Limited - CFO & COO*

Hi, everyone. Great to be here, and thank you for being patient. Waiting till the last session. We are here to talk about a couple of things today in my session. First, we'll report to you how we've been doing in the last 2 years relative to the outlook that we've given 2 years ago exactly here in NASDAQ in December '16. Then we share with you very small adjustments that we are doing to some disclosure practices that we have shared with you a lot of information about the growth drivers. We've heard today about the network, we heard about the media, we had a great example here with Jerry talking about Managed Services, all those 3 growth drivers are playing very well in our numbers and expected to continue and bring growth moving forward. I want to share with you a bit about our corporate social responsibility. I know I usually talk about results and financial outcomes, I want to talk about how we influence through many of the things we are doing also the society we live in. And then wrap up with a outlook of how we see the next 3 years playing out '19 through '21 in terms of our financial results, and wrap up with the investment thesis summary.

So looking on our projection, 2 years ago, when we gave a 3-year outlook, we talked about 2% to 5% constant currency growth, and we talked about 16.4% to 17.4% in the operating margins and 6.5% of midpoint EPS growth. Overall, we are tracking at the midpoint of those expectations, when we're looking at the revenue numbers on a constant currency basis, we are at around 3.5% around those 3 years. Obviously those 3 years include just to be clear, actual of '17 and '18 and the outlook of '19. It's not exactly apples-to-apples, because we did have acquisitions during this period, but as you know, we integrated those acquisitions pretty quickly into our business, you've seen just as an example with Amdocs Media already couple of months after the acquisition, we have integrated several assets that we have together with Vubiquity into what we call today Amdocs Media.

On the operating margin, we've been actually raising the range to 16.5% to 17.5% and tracking at the higher end of that range during the last 2 years, and also guiding to track at the higher end of the range during '19. And on the earnings per share supported by the operating income and the continuation of the capital allocation, with the buyback, we generated the earnings per share growth close to the midpoint of our expectations.

When we are looking on our overall performance on a longer period, not just the last 2 years plus '19, I think, it's interesting to note our consistent performance on the earnings per share, and I think it's something that is sometimes not being noticed that well. Overall, as a company, we've been generating about 5% to 7% EPS growth for several years now on a consistent basis, if you compare it to S&P 500 EPS growth as some kind of a benchmark, you can see years like '15 and '16 where the results on the S&P 500 companies have been very low and years like 2018, where a lot of the S&P domestic companies, obviously enjoyed the tax reform, which boost the earnings up. Looking forward, when you compare where the expectations are tracking now for S&P 500 companies is actually tracking down significantly, while we are consistently continuing with that range of around midpoint, single-digit midpoint for the EPS growth. So I think that consistent performance is an attribute of a lot of the things we talk about later in my presentation in terms of what Amdocs bring at the end of the day from your point of view as investors.

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In terms of the revenue performance over the last years, as we expected, the directory business, which is the smallest segment in what we do, it's based on the old days of the earlier part of the initiation of the company, providing business to directory, we did expect that business naturally to go down and place a drag of about 1% on our revenue growth. Indeed that was the case, and you can see that our core business what we call AmdocsOne, previously referred to as CES, customer experience systems, is actually grown at the CAGR of 4.3% relative to the overall company performance. That directory business is now actually representing about 1% of the business overall, so the fact it will continue to go down will not be as much of a drag moving forward, just sort of giving that indication here.

When we're looking on 2018 specifically, we've had a year where we faced a decline with our #1 customer, AT&T, it was actually even bigger than what we expected in the beginning of the year. We are in the prolonged process around their consolidation with Time Warner and other reasons. And at the same time that we faced 15% decline in the customers which comprised of 1/3 of our business coming into the year, we've actually enjoyed a very strong momentum in the rest of the business coming from the different growth engines that we're talking about. The Pay TV had a very strong momentum in North America capturing new customers such as, DISH, that we just heard, Charter, a great momentum in Comcast, winning a big modernization and Managed Services deal with Altice USA. We've added new logos such as very great activity, you can say not really new, PLDT, but almost like a new logo in terms of the magnitude of business that we wanted in PLDT relative to the footprint we had before. So the rest of the business organically as well as augmented by the M&A activity, we had over the years actually grow 12% in fiscal '18, and more than offset the pressure we had with AT&T resulting in the growth of 2.8% year-over-year.

When we're looking on our operating margin performance, we've continued to track at the higher end of the range we have given to the market over the last several years. We did raise the range over time as well, and continue to improve the reported margin from year-to-year. Now that's a result, I know it looks really smooth from the outside, it's like this 10 basis points performance improvement year-over-year, but underneath that, there was a lot of things going on. On the one hand, we are continuing to see a lot of penetration into new countries, new logos, that require some set-up investment, whether it's a country in the emerging markets, such as Philippines, or whether it's Italy, that requires us to invest in opening a new site, in adjusting the software to the localization needs, et cetera, et cetera. We are also continuing to invest heavily in innovation, all those great things that we are seeing coming out of the technology group and the service organization that we have require obviously investment.

So on the one hand, we are continuing to invest and that's putting some pressure on the margins. At the same time, we are continuing to improve significantly our performing engines. We are putting a lot of focus on improving tools, methodologies in everything we do in terms of our services organization, anything between how we actually develop software around methodologies such as DevOps, all the way to technology such as microservices that is creating a more agile organization, and we're also investing significantly in optimizing our global delivery organization. We have 25,000 employees. They are spread all over the world, but we're very focused on having a strategic view on how we are actually building the organization in terms of what are the central development centers that we have, neutral centers, expertise, access to the right talent, of course. And we've seen that model actually showing the strength as we were going through 2018, you can imagine the magnitude of change in demand having one customer called AT&T, a very significant customer, having going down in demand, while we are actually seeing very strong demand in other customers, in other countries, in other domains and we've managed to do that, while actually improving the margin year-over-year. And that has to do a lot of with this, what I call improving the performing engines of the company.

When we are looking into the growth drivers and what's actually helping us to generate growth, there are 2 domains that we see definitely as growth drivers for the company. One is the Pay TV and Media and the other one is network. And I know I have been asked along the years a lot of times to try -- help us to quantify that, okay? What is it actually meaning for you? So I want to talk first about the fact that both of them together in the aggregate are already at scale, these are not small growth drivers, together they comprised about 30% of our revenue in 2018. If you compare to where we were in 2016, the 2 of them grew very nicely over the last 2 years, Media and Pay TV at 8% CAGR and the network domain at 12% CAGR, so definitely much faster than the corporate average. When you're looking on the network domain, we have a long history as you've seen of evolving into the network domain all the way to -- our success as Oren presented and adding over the years capabilities around policy management, radio access network optimization, and now we're leveraging the virtualization of the networks to the NFV offering, it's 5G is driving a lot of new opportunities for us. And we are continuing to see the opportunity moving forward to continuing growth and add a lot of capabilities there to the market.

At the same time, we're very excited about the fact that we are seeing this convergence between connectivity and media entertainment. That's creating a lot of opportunities for us. What we classify here as Pay TV is the ones that are, I'll say the classic and traditional Pay TV players such as

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Comcast in the U.S. or Ziggo, which is a joint venture partnership between Vodafone and LGI in the Netherlands, but obviously, the world is converging, but in order to give you some sizing, we try to create some demarcations that obviously will disappear over time as this convergence is actually happening. And also, obviously media is directly connected to what we are doing in the Pay TV space as Darcy presented. A great opportunity moving forward for us as well, we actually expect those 2 growth engines to continue and grow 8% to 10% CAGR in the 3 years ahead of us.

Another very important dimension of our growth is the diversification into new regions and new logos. Interesting to share, I think those 10 flags out there, obviously, this is not representing all of the countries we operate in. These are just additional 10 countries that were added in the last several years in which we had 0 several years ago, and now we have over $40 million, meaning -- representing more than 1% of our revenue. And that is a result of the regional expansion we've had into the Rest of the World, so, of course, in areas such as Philippines as we mentioned, into India, all the way to the other part of what you call Rest of the World, the Latin America and Central America, with countries such as Argentina and Chile and Mexico, but it also include some countries in Western Europe, classical traditional Europe, such as Italy, such as Netherlands, such as Ireland, countries in which we have very little business and Russia as well.

And when you look in terms of customer activity, definitely Philippines is a great success story for us, starting with Globe in 2011. After we managed transformation, Globe is the second largest carrier in Philippines, and then PLDT, more recently, continuing with SingTel Group, that Shuky talked about, definitely a very dominant group in APAC, in which we have massive transformations going on with several of their assets. Going to Vodafone and Airtel in India, Telefónica -- sorry, Telecom Italia, Vodafone and Sky in Italy, looking into Vodafone in Netherlands, and 3, part of the Hutchison Group, and also Vodafone in Ireland, and Vivo, which is the second largest affiliated within Telefónica Group in Brazil, and obviously across the region with Telefónica as well as with América Móvil and AT&T going south of border into Mexico as well as an opportunity we captured and then created major business with.

All of that, in addition to new logos or I would say revived logos in the U.S. because some of these customers were actually like U.S. Cellular or Comcast were long-time customers of ours running on legacy systems, but what's interesting that over the last several years we've seen a great modernization wave happening from the wireless carrier, with guys like U.S. Cellular that is going through a digital transformation with us all the way to the Pay TV industry in North America that's finally wakened up and investing in modernizing the very antiquated systems and we've had a great success with many of them here: DISH, Charter, Altice, Comcast, we're very proud to serve those great names. So all of that resulted in the fact that not only we're diversified into many more countries that comprise significant part of our business, but also overall, if we look on our top 10 customers and our concentration around them, we move from being around 75% of revenue in 2010 to 66% of revenue in 2018, which we think is another interesting indication of that diversification that we mentioned.

Now all of that is translating into the 3Q -- sorry, 3Q regions that we are reporting, North America, Europe and -- sorry, about that. North America, Europe and Rest of the World all grew during that period of 8 years that I'm looking at here, but interestingly and intentionally, we invested a lot in diversifying outside of North America, and we've seen a wonderful ride in the Rest of the World with double-digit growth and Rest of the World is comprising now already over 20% of our revenue. We've seen very nice momentum in Europe as well, continuing to grow against an end market that is not growing in some of these years during this period or growing very slowly. While this end market has been growing their top line slowly, we actually enjoy the wave of modernization that is coming from the fact that we're going into multiplayer, the fact that they want to modernize the system and become just better in terms of customer experience, becoming digital companies, and we also enjoyed growth in North America as a result of those different trends that we talked about before.

I want to shift now to the third dimension I wish to talk about which is services, and within that, in particular, Managed Services. As a company, we are actually coming with quite a breath of service capabilities that can help our customers to go through the different things they need to do in order to get better and improve their customer experience and become digital organization. And we do everything between the regional strategic design, thinking about the digital journeys all the way to actually defining the need for development and developing the software, including implementation and customization that is required to actually deploy the software into their domains, and also the operations. And what does it mean in operations, everything that needs to be done in order to run the system, this complexity that needs to be abstracted and into creating a simple customer experience is what we excel at. And when we are saying operations, we are actually thinking about something very different than the your mess for less kind of vision that many SIs have. We're coming with a very smart way in terms of thinking how we are taking our domain expertise, the fact we understand the telecommunication and media business processes. We understand how to leverage technology, automation,

artificial intelligence and everything that has to do with actually combining the 2 in order to provide a very different value proposition that we call SmartOps.

And when we're taking SmartOps and thinking about how we can help our customers, it's in terms of, first of all, taking the market leadership position that we have in understanding how to deploy software very effectively and bringing that software all the way to taking them through complex journeys, such as the journey that Jerry Brace described in PLDT, where they need to deal with providing ongoing business day in, day out in a very high level of KPIs, in a predictable and hopefully lower cost structure, and do all of that while you modernize your system, you retire legacy systems and all of that should be smooth journey to actually bring that value, and we can help our customers go through that whether they choose us in terms of the software of choice that they want to deploy or they ask us to be a prime and lead SI around different third parties that we can help them manage. And definitely by being a long-term partner for many of our customers and being acknowledged by industry analysts as a market leader in this domain, we are enjoying a very nice win rate with our SmartOps.

So how all of that is translating into numbers? We are seeing Managed Services as a growth driver as well, Managed Services is like a different dimension of how we look on things, it's the way we engage with our customers, and about 52% of our revenue in 2018 is already coming from Managed Services engagements. Now this engagement is actually -- usually the part that come after the initial projects. So traditionally beginning of the relationship with the new logo is coming from an organization project, where we sell the license and services to deploy the system into production, but over the years, we've seen more and more customers actually shortening the time between the initial project and adopting our Managed Services model, all the way to the fact that what we call today managed transformation that is actually selling upfront within the same deal, the same engagement, the new project of modernizing the system, all the way to managing first legacy systems from day 1, and then helping the customer go through that transition and supporting them the system that is being deployed over several years.

And if you see on the chart here, we've seen a couple of examples in history, where once in a couple of years we had to manage transformation win, MetroPCS as an example in 2008, and then we had in 2012 Globe, and again, these are not all the names, but just to give you a feel of the pace. In 2018 alone, we had already several managed transformation wins, so we definitely see this model and we think we are coming with a unique business capability to enable that model to be successful, so we've had wins with Sky in Italy, PLDT that was mentioned today, Airtel Bharti in India, Altice in the U.S. so you can say it's actually spread all over the world, and we have already a very strong start to 2019 with a follow-up significant deal within infra space in PLDT and also just this week we signed a new deal with Astro, a leading content and commerce player in Malaysia, that is adopting our capabilities of managed transformation to take them through the journey to the cloud with AWS, very meaningful transformation for them. It's a 5-year deal, so again very excited about that. And I think it's interesting to note that while we are seeing this already as a growth driver growing at 4.5% CAGR since 2010, majority of our customers are still not on our Managed Services offering. So we definitely see an opportunity there to converge many of our existing customers into the Managed Services model, and also bring new customers with the managed transformation model.

In terms of adjustment into the disclosure practice, just a couple of housekeeping notes. Directory, as I indicated before, used to be segmented we disclosed, it's very small as of now, we don't expect any material changes there moving forward. So we will stop effective Q1 '18 to disclose that segment -- sorry, sorry. So Q1 '19, we will stop providing disclosure about this revenue of directories. And something you should be familiar with as we talked about it already at the earnings of Q4 and guiding for '19, is the fact that we would like to bring the term normalized free cash flow to help you understand some discrete nonrecurring items within the cash flow that should be looked at differently. So we will provide the numbers of both of what we call normalized free cash flow as well as the reported free cash flow. So for example, in the first half of 2019, we are going to have settlement of a certain legal case, which we call obviously nonrecurring, and then the investment in the campus that we will be running in 2019 of the rate of about $50 million is going to be excluded in that normalized free cash flow.

So I wanted to spend a couple of minutes talking about how we impact the society we live in. We're very proud with the fact that we've taken the corporate social responsibility in a material way in the company. Already several years ago, we've done a materiality assessment and decided how we want to approach it. This is just an example of the front page of our corporate social responsibility report of 2017, you can access that through the amdocs.com. website, and we believe that as a company is not just about the results we provide, and of course, the returns that you would like to see and the value we bring to our customers. It's a lot also about how we are -- faster than me, sorry, how we are, first of all catching the people in our company. We have 25,000 employees to the multiple, each one of them have families, so let's say, about, I don't know, 100,000 people influenced just by our employees and then the ecosystem around us.

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And we are very passionate about the fact that we are pushing forward a lot of things such as diversity -- gender diversity, diversity of cultures. I'm proud to lead in the company that the gender diversity program we call Inspire.

In terms of cultures, you heard 85 countries. That by itself means that we are touching many, many cultures. And in many occasions just within even -- just in single sites that we have, we can see very interesting combination. Just as an example, we have a very important site in Cyprus that is a new shore and includes a lot of R&D activities for us. And we have over 26 nationalities just in Cyprus, quite an amazing combination in one site. And we have other examples like that.

The supply chain and definition we are making with our supplies in terms of going green. The business conduct, very important, part of how we do business and the ethical and values that we bring into the company and our demands from employees. And, of course, anything that has to do with the communities and the community commitment we are making in terms of maintaining the right level of employment and pushing different populations in the community. And we have over 35,000 volunteering hours, many community relationship partners and also continuing to push for, obviously, professional standards around environment and health.

I want to talk to you about the outlook we are seeing. We are guiding for the next 3 years for a top line growth of the range of 2% to 4% -- sorry, 2% to 6%, midpoint being 4%. Within that, we include the performance of different growth engines that we talked about. And as some of these growth engines are actually still in the earlier part of this cycle, such as the media opportunity that we are all very excited about, we needed to take some assumptions about how it will play out in the range. And I got some question in the break, okay, how come the range has been expanded from 3% to 5% to 2% to 6%? It's because we actually feel, on the one hand, very excited about the opportunities, and some scenarios can be even over the high end. But at the same time, we need to be cautious of the fact that it's beginning of that cycle that we are seeing. Same goes for network virtualization and 5G. How fast will adoption rate happen? There are different factors that play here.

In terms of the operating margin, we are keeping the message around the operating margin being at the higher end of the range of 16.5% to 17.5%, and believe that the different combinations that we have between continuing to invest heavily into R&D and expansion into new domains, at the same time, improvement in our performing engines, will result in tracking at the higher end of that range. And on the non-GAAP EPS, we are tracking with an outlook of 4.5% to 8.5%. So 6.5% of the midpoint, you can understand from that, that relative to the 5% midpoint we guided for '19, that actually assumes acceleration in the 2 years afterwards, in '20 and '21. All of that together with the dividend yield assumed here, for sake of simplicity, at 1.7% based on the point of time we announced the dividend increase of 14% is adding up to a total shareholder return as represented by EPS growth plus dividend yield of 6% to 10%.

So what are the moving parts? And this is a summary for you, guys. You can imagine how the different moving parts look like for me and my team when we analyze the different scenarios. But seriously, when we're looking into the revenue and what can go well and what could go wrong, and we are looking into the different moving parts, I want to start actually with the middle here. And the middle is those items that can play very well for us but can also put some pressure downward.

I want to start first with consolidation. Consolidation has been part of our industry for a while. Some may say it will slow down. Some may say it will actually continue at the high pace. But just look on what's happened in the last, I don't know, 18 months, we've seen AT&T and Time Warner. We obviously have AT -- sorry, T-Mobile and Sprint waiting for the regulatory approval, Vodafone and LGI, Comcast going after Sky. I mean -- and the list is obviously wider than that. And as we've seen in the past, consolidation is usually good news for us in the long term, because it adds complexity. Usually, those consolidations are happening in order to create a different value proposition for the market, and we are the enablers of that. But at the same time, in the shorter term, it can add uncertainty as the different players around the potential emerging companies are looking into, okay, what does it mean how the new strategy will look, how long will the regulatory approval process take, et cetera, et cetera. So I want to put that here as both kind of a potential upside and a potential downside.

FX has been the story of life for the last decade. The currency volatility is there. We are protecting our bottom line through operational decisions as well as derivatives. And we've done a decent job there. While at the top line we may continue to see the FX making an impact and, as always, regulatory changes may make an influence on us as well, I will say that, in general, when we are looking on our revenue and what kind of changes can happen, so beside the fact that we have the growth engines and how fast they will accelerate, the fact we are running large-scale transformational projects that comprise about 1/4 of our revenue is creating some volatility into the numbers. But at the same time, we need to remember that the

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rest 75% is actually pretty predictable. Now those transformation projects may change in terms of pace, in terms of different milestones that the customers want. So this is the kind of things that may happen. When we're looking into the impact that this has on the margins just in terms of how labor-intensive these activities are and if we have different changes we need to cope with, as flexible as we are, as I gave through the example of 2018, that may have an influence on the margin as well. But overall, I believe that when we factor all of those moving parts, and we obviously tried to give you at the end of day the outlook that tried to include all of these moving parts within the range that we are talking about, just giving you some color here about the different drivers.

I want to touch for a minute on tax. Naturally, this is a major part of how we're driving net income. At the end of the day, we need to share the pretax income with different governments around the world. When we are guiding for '19, we've provided the tax range of 13% to 17%, just consistent with what we've been doing in the last 2 years. But at the same time, I want to acknowledge the fact that there are many, many governments and many initiatives out there such as BEPS coming from the European community, the U.S. tax reform and other initiatives happening all over the world, where, primarily, usually, governments are trying to see how they collect more money. Now at the end of the day, our job is to prepare for that as a multinational company. We are trying to obviously see ahead of time what's happening and prepare. We're very disciplined on including tax as part of our operational business decisions as a major consideration. But I just want to put it out there that, obviously, there are different moving parts and some things that are out of our control. And I've seen recently more governments actually enacting laws with immediate effect or even retroactive effect, which is something I've never seen in my career beforehand. So we are seeing this actually taking a different path. We are not guiding for a 3-year outlook because it's harder to predict for 3 years how the tax will happen. But in our model, just for clarity, we are assuming the same range, the 13% to 17%, into the 3-year EPS outlook that we've given.

Free cash flow has been tracking over the years around 100%. In some years, we were lower in terms of earnings to cash conversions. Some years, higher. We've been actually having disappointing result in 2018, primarily because about $60 million of collection just shifted into the first week of October, which is the beginning of our next fiscal year. But putting that aside, even if I'm kind of adjusting for this shift, we are expecting improvement of our performance of earnings to cash conversion in '19, and we expect normalized free cash flow to rise to $600 million in 2019. And over time, we expect earnings and cash to track in a similar way.

Capital allocation, we are not changing anything in our policy, which has been overall balancing between the needs of the cash to continuing support the growth of the business and the different strategic initiatives as well as returning cash to shareholders. We've committed to return the majority of free cash flow 2 years ago, and indeed, we've done so through the buyback and the dividend. The dividend is something we've increased year-after-year in the last 6 years already, and we should expect to continuing see dividend increases. We are not committing to any pace, but you should expect it to track more or less with the growth of our activities. And on the buyback, we are indicating that on '19, we are also expecting to return the majority of the free cash flow, again, as always, subject to the level of activity around M&A and the macroeconomy, but overall, we are trying to create the balance between that and continuing to support the M&A as a driver. And if the need will be for more capital for M&A, we also have debt capacity that is untapped as of now and that we can use. And overall, we expect that the combination of that balancing act between continuing to fuel the growth of the business and returning cash to shareholders is what's driving the total shareholders return of 6% to 8% -- sorry, 6% to 10% of the outlook.

So to recap, we are talking about revenue growth of 2% to 6% of CAGR in the next 3 years, continuing to track at the high end of 16.5% to 17.5% on the operating margins, EPS growth of 4.5% to 8.5% and that translating with the dividend yield to 6% to 10%, supporting an investment thesis that is built on 7 parts if I need to articulate it in 1 page. One is the fact that we are -- as a market leader, we'll continue to generate new growth engines and improve the growth rate to 4% midpoint relative to the 3.5% you've seen before in the past performance, continue to bring the win rate through the market leadership that we have, continue to expand into new logos and, obviously, leverage the growth engines that we talked about: network, pay TV and media and regional expansion in Managed Services. We continue to build on the recurring business model that we have, the fact that we are coming with long-term relationship to our customers and continuing to bring them value. Whether it's through Managed Services or just ongoing support, obviously, Managed Services is kind of the highest level of visibility that we can have. But overall, if you look at the end of the day on Amdocs, usually, we enter a year with 80% visibility, with backlog that we have entering that year. And obviously, we want to see that pattern continuing, while we are continuing to sell many new project.

Margin stability. Very important part of the piece here. Continuing to translate the earnings into robust free cash flow and allocating that smartly, both to support the growth of the business and return the majority of free cash flow to the shareholders, generating attractive total shareholder

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return and all of that augmented by the management depth and experience and, obviously, the smooth transition from Eli to Shuky that happened recently.

So I want to invite Shuky to join me on the stage for some Q&As that you guys may have.

QUESTIONS AND ANSWERS

Unidentified Participant

You provided an indication of media network revenue growth rates going forward. Do you have a similar outlook on Managed Services?

Tamar Rapaport-Dagim - *Amdocs Limited - CFO & COO*

We are not guiding separately for Managed Services because it's harder to predict which customers will adopt into that model. But we definitely push forward as much as possible to continue and show our customers the value proposition. We are very strong believers that the Managed Services is a win-win model in terms of the value proposition that is kind of the superset of what we can bring to the customers, and it's a very good model for us. So definitely, we'll continue to push that, and we do believe it will continue to help growth, but it's harder to predict in order to give a specific number around that.

Unidentified Participant

Okay. Just a follow-up. And I'm not sure if there's much of an overlap on the media network and the Managed Services, those 2 different charts. But if you back out the growth rates on those charts and you look at the remainder, it looks like there's a remaining stub of the business that's declining somewhere in the 10% to 15% annual rate based on the forward indication for the next 3 years that you're giving out overall. If you could just give us an indication of what's driving that decline.

Tamar Rapaport-Dagim - *Amdocs Limited - CFO & COO*

So I probably did a poor job in explaining that those are different dimensions of the business and they do overlap. So while I'm looking from the offering point of view, we can look at media, Pay TV and network, the Managed Services is the engagement model, and it overlaps, in a way, with the media, Pay TV and network. And, therefore, just subtracting the 2 and reaching the conclusion you just gave is not the right math. But in general, I will say that while those growth drivers have been the ones pushing us forward, we continue to see growth in the core business. Actually, we've had obviously some push happening with AT&T in 2018, but if I exclude that piece that is obviously an important piece, you can see that the momentum elsewhere, even in our core business that we don't call growth engines, has been positive and continuing to push forward, just at the lower rate from the growth engines.

Unidentified Participant

Shuky, this is probably a pretty good question for you given the amount of time you spent with AT&T over the years. And then what we've seen from the business, obviously, tough year with AT&T given what they've been going through, but the rest of the business growing 12% is a pretty remarkable year. So if you think of some of the initiatives, we talked a lot about media today, talked a little bit about payments and, certainly, network. When you think about your wallet share at a big customer like AT&T or if you want to look at some of your other Galaxy customers, Telefónica might fit into this, how much deeper can the wallet share go as you expanded media, as those entities do a lot more with content and media on their front? Would love to sort of think about where that can go over time given that someone like AT&T is already 30 percentage type of customer.

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Joshua Sheffer - *Amdocs Limited - President & CEO*

So if you look about our activity in AT&T is very diverse. So obviously, we are doing AT&T Mexico, we are doing all the postpaid, by the way, that they declared that this is one of their growth engines. So all the postpaid of AT&T is running our system, prepaid in Cricket, the fixed wireless and many, many other business within the AT&T. So we have network activity pretty diverse in AT&T. In the projection that we put here for the next 3 years, we didn't put like any -- like a snapback in AT&T or something big. We have opportunities. We look at it more like a normal growth, and we saw fluctuation. There are some opportunities that, at this point, we don't know exactly how to quantify them. We talk about WarnerMedia and the fact that it's -- we have incumbent in this -- with the acquisition and the offering that we have. So the answer to your question is, right now, we assume their potential. This is why we give this big range from 2% to 6%. But in the numbers, we did not put like a major substantial deal, although there are some opportunities.

Unidentified Participant

I don't know, Shuky, Tamar, Anthony, maybe Oren, but it's on -- question on the NFV front, two-part question. I think in one of the slides, I think you've actually indicated a 36% year-over-year growth. Just trying to understand what's the basis. So it's 36% of what? What was this number last year or over the course of the past 3 years? Understanding it is very hard to put some sort of a number of the overall NFV opportunity. I think that's number one. And number two, maybe as a follow-up, maybe more of the high end, and again, it's a topic that we've also discussed with Eli over the course of the past 18, probably 24 months. So in the sale process of the NFV, if I recall correctly, initially, when you're starting pushing this service, the product offering, the platform, one of the initial obstacles was actually that the mid-level people you've gone into within the organization have savvy, to understand that, wow, this automation engine, which brings a lot of positives, can get me out of my job over the course of the next few years, which necessitated you to guide probably top to the bottom in terms of the management team. Have you been seeing any change with that process over the course of the past few quarters as you go and maybe reposition the sales message within the various service providers?

Joshua Sheffer - *Amdocs Limited - President & CEO*

So I will answer the second question, then you can get back to the first one. I think we see change. I think that virtualize a network is a must. So it's not the question if how and when, it's the pace. So everyone is doing it. So we see less and less more than resistance from the people that are used to it. And I mentioned, buy boxes for all in the last 20 years, and then you need to do the software. So we see less resistance. And secondly, which I think is important and we talk about 5G, 5G is virtualized from the ground up. I mean, no one is building 5G on a physical network. So this is why I believe 5G is going to accelerate the path to adopting virtual network and all the tools that are coming with it.

Tamar Rapaport-Dagim - *Amdocs Limited - CFO & COO*

Now the numbers, the 36% was a market indication of some analysts. I mean -- and they're all over the place in terms of the different analyst expectations. We've included our expectations around the NFV growth rate, which is much faster within the network indication that I've provided. And it's not just directly NFV. We're seeing a lot of activities around next-gen OSS, service -- things like self-healing service assurance. Many initiatives were coming with kind of wrapper around what is the core orchestration layer of the NFV that are great opportunities for us. And we do see that, maybe in a similar way to what we've seen in a more traditional business, the vast majority of the monetization opportunity is coming from the services play. Yes, of course, we can make the money from license and maintenance and we do, but the bigger dollar amounts will come from the services around it.

Unidentified Participant

Just wanted to get your thoughts. On one hand, your margins have moved up. And on the second hand, you have invested $800 million or so in acquisitions. And you could either think of that as sort of R&D that's outsourced or used to drive revenue growth in the future. When you look at your '17 to '19 growth and then you look at '19 to '21 growth, there's not that much expansion. So is it just because '18 and '19 is being held by --

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held back by AT&T and things should change? Or how should we think about it? Or should we expect similar deployment of capital into acquisitions to kind of sustain that growth rate?

Tamar Rapaport-Dagim *- Amdocs Limited - CFO & COO*

So maybe just to clarify in terms of the numbers, well, the reality did include the acquisitions. The forward-looking outlook is organic. So we're not comparing here apples-to-apples. And at the same time, I mean, going to the fundamentals of your questions, it's not clearly just R&D money, because some of these acquisitions is not a matter just of should we develop a product or no, it's about creating a market presence, relationship, things that cannot be achieved just by putting more money into Anthony's shop and telling him, "Hey, develop that product," which he can because he has great talent, but it's about creating -- those 20 years of experience with the media and content creators that you cannot achieve overnight, of course. So definitely, we see the M&A as part of the investment in growth, but not just as a substitute of the R&D money. And we have seen great results. Some of these acquisitions are still young in their tenure with us. So obviously, time will tell, and we have great expectations, but some of them have enough mileage in order to see the success. For example, Comverse, that we've done in 2015, a lot of the new logos that we've seen here are a result of a very smooth footprint that we had through the Comverse acquisition that we expanded significantly into a much bigger deal, like the PLDT relationship that was mentioned here. So I'm very excited with the ones we've done. And we have enough mileage to track. (inaudible) is another example. And the ones that we've done this year, we have hopes and plans and, obviously, great beginnings. Some indications like pipeline, et cetera, definitely should help us moving forward.

Anything to add, Shuky, on this?

Unidentified Participant

Two questions, if I may. The first one, there is some estimate of your geographical distribution, let's say, 65% in North America; and 20% and 15%, rest of the world, Europe. So your gross margin or cost of revenue or whatever way you want to characterize it, is it consistent with that, in other words, in terms of net profit?

Tamar Rapaport-Dagim *- Amdocs Limited - CFO & COO*

So when we're looking on the margin, it's less about where it is in the world and more about the longevity of the penetration that we're at with the given customer. Because, initially, as we go into a new country or a new logo, usually, the relationship starts with the fact we need to invest in the setup. And usually, it's a very competitive situation that is based on some kind of modernization project that everybody in line, they are competing there. And we are building this relationship then for decades. That's kind of our vision, long-term partnership. And then once we have penetrated into a customer, we can come and expand the relationship after we've made that initial investment and continue to generate additional upsells, more recurring revenue that should improve the margin over time. So it's less a matter, is that new customer, is, I don't know, Altice in the U.S. or is it PLDT in Philippines, but more about the longevity of the relationship and how it evolves over time. And do we actually manage to expand the relationship with the customer beyond the initial project, which is usually the case? And this is kind of the vision that we have for these kind of cycles with any given customer.

Joshua Sheffer *- Amdocs Limited - President & CEO*

Just to add to what Tamar said, definitely, when we have Managed Services, we are much more stabilized in margins. Our penetration in APAC would usually -- people there try to spend less, majority for engagement in APAC of Managed Services.

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Unidentified Participant

Second question, in Managed Services or with your other half of your revenues, if you would just give a rough estimate what percentage of revenue comes from professional consulting services, customizing your end-of-run product versus standard software product, which was already developed and just applied within Managed Services or just other means of sale. Is there any way to break it out?

Tamar Rapaport-Dagim - *Amdocs Limited - CFO & COO*

I will say, in general -- I mean, years ago, we used to disclose license revenue separately. Then we realized it does not really tell the story of how you monetize our offering. We live in a concentrated industry. The service providers out there that actually comprise the industry in a meaningful way are probably 200 names. In such a concentrated industry, usually, a monetization model that comes and tries to build on license and maintenance per se is not viable. And we realized that years ago. And we're actually coming, therefore, with a unique business model that is providing the software product that is kind of the spearhead and providing the unique capabilities, but we also take the accountability to actually deploy this product into production. And the monetization, whether it's just a "transformation" project or all the way to managed transformation, is actually creating monetization that is much wider than just the license fees.

Joshua Sheffer - *Amdocs Limited - President & CEO*

And it will continue to -- in the future, we don't like to see -- when we move to DevOps, meaning that we do -- by the way, this is a unique differentiation, because we will do the product delivery, the customization and the operation. And when you move to DevOps, you can have people in the morning changing something in the code and after that, the operation. It becomes the same team. So the blur between these type of things are going to go away. I mean, you are not going to see a team which is doing level one and team which is doing delivery and team which is doing data center. Everything is blurring completely.

Unidentified Participant

Another question. Can you just talk about -- you've assembled some good media assets. And in terms of going to market, is that Amdocs sales force kind of taking that to the customers? Or is it the new assets -- the sales force that came with it? And then second related to that is, given the number of inquiries have increased, is that more domestic or how sort of spread out that is from your -- the inquiries where it's coming from?

Joshua Sheffer - *Amdocs Limited - President & CEO*

So I think it's both. In some cases, that we have a very strong compass like Time Warner, now WarnerMedia, obviously, the beachhead or this relationship that is coming from the -- relationship that Vubiquity owns. On the other hand, we opened Vubiquity to a dialogue of all our customer on the world. So customer that will take Vubiquity 2 months to get a meeting, suddenly, in APAC, in Europe, in other places, in North America become very accessible. So today, every customer-facing manager of Amdocs understand the Vubiquity and the Amdocs Media offering and start to pitch this to our customer. When Darcy mentioned that we tripled the pipeline, all of this come from all this presence that I show over the world, that suddenly, if in the dialogue before between us and this customer was mainly our core business of -- business of BSS, digital OSS, then it evolved also to network, and now it also evolved to media. So we are using the same relationship to pitch all this offering and the combination between them. So I think that it pretty much come from both.

Well, thank you guys for joining this afternoon with us. I hope it gave you a better view of what we do, the financial outlook, and looking forward to see you soon. Thank you.

Tamar Rapaport-Dagim - *Amdocs Limited - CFO & COO*

Thank you.