TMTB: LITE and SNDK CEOs at Mizuho Conference Key Quotes

TMTB：LITE 和 SNDK 首席执行官在瑞穗会议上的核心观点摘要

TMT BREAKOUT
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SNDK

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1. New Business Models / LTAs — Structure, Pricing Mechanics & Margins

1. 新业务模式 / 长期协议 (LTA) —— 结构、定价机制与利润率

> **CFO:** “In general, there are fixed price components within these new business models, which I believe are important. There are parts of the agreement... **with,**

> eason we did that is because none of us wanted to be unhappy, right? **If prices go up, we would be unhappy because we would not be capturing the upside. If prices go down, our customers would be uncompetitive... their peers would be paying lower prices... Importantly, as we said in our earnings call, even in the low prices, we like the margins.** This is how we structure them. **Margins will be consistent with the margins that we guided in for the fourth quarter, for our fiscal fourth quarter.”**

CFO：“总的来说，在这些新的业务模式中存在固定价格成分，我认为这很重要。协议中有些部分……我们可以称之为定价的‘底价’和‘顶价’……我们之所以这样做，是因为我们谁都不想感到不快，对吧？如果价格上涨，我们会因为没有捕捉到上行空间而不快；如果价格下跌，我们的客户就会失去竞争力……他们的同行将支付更低的价格……重要的是，正如我们在财报电话会议上所说，即使在低价情况下，我们也对利润率感到满意。这就是我们的结构设计方式。利润率将与我们为第四季度（即我们的财年第四季度）所指导的利润率保持一致。”

CEO: “We’re not trading duration for price, right?... That’s not the value proposition. **The value proposition is continuity of supply...** Price is price. Price is whatever’s fair for both of us... You can assume we have somewhat unique insights into price being in the market... As our customers go through that equation... they’re coming to the conclusion that having longer term relationships with suppliers of NAND is a very good idea...

CEO：“我们并不是在用合同期限换取价格，对吧？……那不是价值主张。价值主张是供应的连续性……价格就是价格，价格是双方都认为公平的水平……你可以假设我们对市场价格有着某种独特的洞察……当我们的客户权衡这一等式时……他们得出的结论是，与 NAND 供应商建立长期关系是一个非常好的主意……

It’s changing the trajectory of our business, I think in a very positive way... It’s a very powerful relationship between us and our customers, and it’s very much of a win-win conversation.

这正在改变我们业务的发展轨迹，我认为是以一种非常积极的方式……这是我们与客户之间一种非常强大的关系，而且这在很大程度上是一种双赢的对话。”

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2. LTA / NVM Pipeline — Five Deals Signed, More Coming

2. LTA / NVM 储备项目 —— 已签署五笔交易，更多交易即将达成

CFO: “When we closed the quarter, we said we had signed five deals… we’re very happy about that… It’s a win-win relationship with our customers… They’re coming back, and we’re in constant negotiations with them. As I also mentioned last quarter, there are several conversations going on, and they’re progressing well…

CFO：“当本季度结束时，我们说已经签署了五笔交易……我们对此非常满意……这是与客户的双赢关系……他们正在回过头来，我们也在与他们进行不断的谈判。正如我上季度提到的，目前有几项对话正在进行中，且进展顺利……”

We’re talking to customers across all segments, right? From data centers to edge customers. Obviously, our consumer business is more transactional… it doesn’t really apply there. But we’re talking to all other customers, and as long as we’re willing to operate in this new business model, we’re open for business.

我们正在与所有细分领域的客户进行沟通，对吧？从数据中心到边缘侧客户。显然，我们的消费级业务更偏向交易性质……在那里并不太适用。但我们正在与其他所有客户洽谈，只要我们愿意在这种新的商业模式下运作，我们就开门营业。

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3. AI / Data Center Demand — Inference Is the NAND Unlock

3. AI / 数据中心需求 —— 推理是 NAND 的释放点

CEO: “We see a market with sustained mid to high teens growth… Clearly, there’s a lot of AI demand that’s helping that equation. Data center has now become or is quickly becoming the largest market in NAND. We’ve had many revisions of data center CapEx going up… it’s 14 revisions now… all going up. A lot of that is as AI moves into inference… [**Our customers] are working on what is the architecture**

for inference? That's when NAND becomes a big part of that equation... We've seen it with... KV cache or RAG. NAND has always been the most scalable semiconductor technology. As you start to scale any architecture, I think it's naturally going to come towards NAND... if you need storage... Figuring out what's the right concentration of processing power, what's the right concentration of DRAM, HBM, what's the right concentration of NAND. It's very use case dependent... **I think the big-picture answer to that question is you need a lot more NAND. Because NAND is the most scalable semiconductor technology**. **And if you're going to scale something economically, you're going to want to use as much of the most scalable technology that you possibly can**... NAND has been something where it's been almost always focused on density... Now it's focused more on high performance... It's a much more multidimensional equation... There's been a lot said about AI, but [it's an] extremely fundamental technology shift that we're clearly in the very early innings [of]...

> **首席执行官："我们看到一个保持中高双位数增长的市场……显然，大量的 AI 需求正在助力这一增长。数据中心现在已经或正迅速成为 NAND 最大的市场。我们已经看到数据中心资本支出（CapEx）经历了多次上调……现在已经是第 14 次上调了……全部都在增加。其中很大一部分原因是随着 AI 转向推理阶段……[我们的客户] 正在研究推理的架构应该是怎样的？届时 NAND 将成为该方程式的重要组成部分……我们已经在……KV 缓存或 RAG（检索增强生成）中看到了这一点。NAND 一直是扩展性最强的半导体技术。当你开始扩展任何架构时，我认为它自然会向 NAND 靠拢……如果你需要存储的话……需要弄清楚处理能力、DRAM、HBM 以及 NAND 的最佳配比。这非常依赖于具体的使用场景……我认为这个问题的宏观答案是你需要更多的 NAND。因为 NAND 是扩展性最强的半导体技术。如果你想经济高效地扩展规模，你会希望尽可能多地使用这种扩展性最强的技术……NAND 过去几乎总是专注于容量密度……现在它更多地专注于高性能……这是一个更加多维的方程式……关于 AI 已经有很多讨论，但[它是一个]极其根本的技术变革，我们显然还处于非常早期的阶段……**

A lot has changed in the last year, but I really do think we're just getting started.

> **过去一年发生了很大变化，但我确实认为我们才刚刚开始。**

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4. Enterprise SSD Ramp — 7x YoY, ~25% of Revenue, Second Leg Just Starting

4. 企业级 SSD 攀升 —— 同比增长 7 倍，~占据营收的 25%，第二增长曲线才刚刚开启

Host framing: enterprise SSD is "almost 25% of the revenues now... might be mid-single digit last year. It's grown 7x year-over-year."

主持人开场：企业级 SSD "目前已占营收的近 25%……去年可能仅为中个位数。它同比增长了 7 倍。"

CEO: "It's been no secret, we've been investing heavily in enterprise SSD. It's a part of the market where we've been under-penetrated, and it's about building the right portfolio to increase our mix in that part of the market... There's really two major categories of products there. There's a performance-based TLC NAND product...

CEO："这已经不是什么秘密了，我们一直在企业级 SSD 领域投入巨资。这是我们渗透率一直较低的一个细分市场，关键在于构建正确的产品组合，以提高我们在该市场的占比……那里主要有两大类产品。一种是基于性能的 TLC NAND 产品……"

used a lot for KV cache and a number of things. That's been the driver of the portfolio over the last year. The second part of the portfolio is the storage-based [capacity] product... This is the first quarter we'll recognize revenue on that product. You're right, we're just getting started on that leg of... the portfolio...

"……大量用于 KV 缓存等多种用途。这是过去一年推动产品组合增长的动力。产品组合的第二部分是基于存储的 [容量型] 产品……这是我们确认该产品收入的第一个季度。你说得对，我们才刚刚开启产品组合中那条增长曲线……"

Now we've got the second leg of that growth coming. Where's that going to lead to over the next year? I think you're going to see the mix of data center go higher... I'm not going to put a specific number on it...

现在我们迎来了增长的第二阶段。未来一年这将走向何方？我认为你会看到数据中心业务的占比进一步提升……我不会给出一个具体的数字……

We believe that a robust portfolio where we can cover as much of the market as possible is the best for long-term profitability of our franchise... We have a global consumer business that already gives us a great starting point. We have a great client business, and now we're building out that great enterprise SSD business.

我们相信，一个能够尽可能覆盖更多市场的强大产品组合，最有利于我们特许经营业务的长期盈利能力……我们拥有全球消费级业务，这已经为我们提供了一个极佳的起点。我们拥有出色的客户端业务，而现在我们正在构建强大的企业级 SSD 业务。

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5. HBF (High-Bandwidth Flash) — Roadmap, System-Level Design, Latency Pushback

5. HBF (高带宽闪存) —— 路线图、系统级设计、延迟挑战

CEO: “If you were a NAND designer, for your whole life, you’ve been told, ‘Give me more density.’... The team started thinking about, how do I re-architect NAND for higher bandwidth, higher write bandwidth?... How do I get to some of the endurance questions, right? An enormous amount of intellectual property was developed over those years...

CEO：“如果你是一名 NAND 设计师，在你职业生涯的全部时间里，你得到的指令都是‘给我更高的密度’……团队开始思考，我该如何为了更高的带宽、更高的写入带宽而重新架构 NAND？……我该如何解决一些耐用性问题，对吧？在那些年里，我们开发了大量的知识产权……”

I think there was a lot of skepticism when we first started talking about it... there’s a lot less now... People can see, hey, inference is a memory-bound problem as much as it’s... GPU bound... [But] it’s not just a plug-compatible replacement for something in the current AI inference architecture... It’s a system play.

我认为当我们最初谈论它时，外界存在很多质疑……现在少了很多……人们可以看到，嘿，推理既是一个受限于 GPU 的问题，同样也是一个受限于内存的问题……[但是] 它不仅仅是当前 AI 推理架构中某个组件的插拔式替代品……它是一个系统级的博弈。

You have to change other parts of the system to get... the whole thing to work... You’re not just going to plug it in for something else that was in the system. Everybody needs to change a little bit... to get a much better answer... [On latency:]

You're in a deterministic read here, so it's... pipelined. You know what you're going to [read].

你必须改变系统的其他部分，才能让……整个系统运转起来……你不能只是把它插进去替换系统原有的东西。每个人都需要做出一点改变……才能得到好得多的结果……[关于延迟：] 你在这里进行的是确定性读取，所以它是……流水线化的。你知道你要[读取]什么。

The latency is only at the beginning... Once you get going, you're going... We understand that issue, and that's part of the issue of why we work as a system level...

延迟只存在于开始阶段……一旦开始运行，就会持续进行……我们理解那个问题，这也是为什么我们从系统层面开展工作的部分原因……

I**n the meantime, we're off building the die... which we expect to have later this year. We're building the controller that actually controls the die and actually... delivers a product, and we'll have that available sometime next year**... We're iterating on that process with our customers to get it to lock into a specific use case, which then we can commercialize... **We haven't really talked about which customers, and we don't want to talk about that just yet... We think it plays across the device all the way to the cloud... As models get bigger, as context lengths get bigger, as agentic comes, mixture of experts models... all of these things are tailwinds for that kind of technology... becoming more relevant.**

与此同时，我们正在制造晶圆……预计今年晚些时候完成。我们正在开发实际控制晶圆并……交付产品的控制器，我们将在明年某个时候推出……我们正在与客户一起迭代这个过程，使其锁定在特定的使用场景中，然后我们就可以将其商业化……我们还没有真正谈论过哪些客户，目前也不想谈论这个……我们认为它适用于从终端设备一直到云端的各种场景……随着模型变得更大、上下文长度增加、代理化（agentic）的出现、混合专家模型（MoE）……所有这些因素都是这种技术……变得更具相关性的利好因素。

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6. Pricing Philosophy & Supply Discipline — The Three-Goal Framework

6. 定价哲学与供应纪律 —— 三大目标框架

CEO: “There’s three things we’re trying to do… Number one, we want to get a fair price for our technology… I think we’ve gotten to that point. Y**ou can argue, could we get more?… If we can get more, we’ll get more.** That’s our job… Number 2, **we want to get rid of the volatility… on the economics… There’s been so much volatility… up and down, cyclicality… I’ve said this many times, it’s just corrosive on the indust**ry. It makes it difficult to invest in the industry… The third thing we want to do is we want to grow… One of the most interesting things about our technology franchise is we have a built-in growth lever of more volume every year… mid to high teens bit growth… I think that’s fairly unusual in a large technology business…

首席执行官：“我们正努力实现三件事……第一，我们希望为我们的技术获得公平的价格……我认为我们已经达到了这一点。你可以争论，我们能否获得更多？……如果我们能获得更多，我们就会去争取。那是我们的职责……第二，我们希望消除经济上的波动性……过去波动太大了……起伏不定，周期性循环……我多次说过，这对行业具有腐蚀性。它让行业投资变得困难……我们要做的第三件事是实现增长……我们的技术特许经营权最有趣的特点之一是，我们拥有一个内置的增长杠杆，即每年更多的出货量……中高双位数的位元增长……我认为这在大型科技业务中是相当罕见的……

[But] all three of these variables are related. If you start growing faster, you oversupply the market, and then pricing comes down and volatility goes up… It’s really about balancing all three of these… To your point, not leave anything on the table.

[但是] 这三个变量都是相互关联的。如果你开始增长过快，就会导致市场供应过剩，随后价格下跌，波动性上升……这实际上是关于平衡这三者……正如你所言，不放过任何获利机会。

”

7. Wafer Allocation & Portfolio Optionality

7. 晶圆分配与投资组合选择权

CFO: “We like all our customers… At the end of the day, we produce a wafer and we have to make a decision where we allocate it. We want to have a portfolio that’s

balanced across segments, right? Because that's more sustainable over time. We don't want to maximize value just for this quarter, but over time.

CFO：“我们喜欢所有的客户……归根结底，我们生产晶圆，必须决定如何分配。我们希望拥有一个跨细分市场平衡的投资组合，对吧？因为从长远来看，这样更具可持续性。我们不想只追求本季度的价值最大化，而是要追求长期的价值。”

We're constantly making choices on where we allocate BiCS, and the new business models are a foundation for that.

“我们一直在不断选择 BiCS 的分配去向，而新的业务模式正是这一决策的基础。”

”

CEO: “What we like to have is a lot of optionality in our portfolio… Every quarter is different. It's changing a little bit now with the business models.”

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8. CapEx & Capacity Roadmap — Node Transitions, Cost Per Bit, Long-Term Planning

8. 资本支出与产能路线图 —— 节点转换、每比特成本、长期规划

CFO: “We're adding capacity all the time. We're growing capacity in the mid to high teens, right?… We've also said that we made the most cost-efficient transition of the BiCS transition so far…

CFO：“我们一直在增加产能。我们的产能增长率在 15% 到 19% 之间（mid to high teens），对吧？……我们还说过，到目前为止，我们实现了 BiCS 转换中成本效率最高的转型……”

Next year, we're going to be continuing that transition to [the next BiCS node], and then we're going to start building some capacity for [the following node]. It will be a little bit more expensive per bit… same growth, but a little bit… higher cost.

明年，我们将继续向 [下一代 BiCS 节点] 过渡，然后我们将开始为 [再下一代节点] 建设部分产能。每比特的成本会稍微贵一些……增长速度相同，但成本会……略高一点。

It would still be lower [as a] % of revenue, obviously, as our prices have continued to go up… We take a long-term view of the market. Now we talk to our customers, we understand where that growth is, and that's where we're planning to. We can't react to… one quarter of what['s] happening today, right? It takes 110 days to produce a wafer…

显然，随着我们价格的持续上涨，其占收入的百分比仍会降低……我们对市场持有长期观点。现在我们与客户沟通，了解增长点在哪里，并据此进行规划。我们不能对……当前一个季度的变化做出反应，对吧？生产一片晶圆需要 110 天……

We want to make sure that we're there to source profitable and sustainable bits.

我们要确保能够供应盈利且可持续的比特产能。

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(Transcript renders the node names as "Big Save" / "Big Stan" — likely transcription artifacts for BiCS node names; host framed the question around "BiCS… 300 layer plus.")

（速记文本将节点名称显示为 "Big Save" / "Big Stan" —— 这很可能是 BiCS 节点名称的转录误差；主持人围绕 "BiCS……300 层以上" 提出了问题。）

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9. Capital Allocation — Nanya/DRAM Investment, JV Extension, Debt Paid, $6B Buyback

9. 资本配置 —— 南亚科技/DRAM 投资、合资企业延期、债务偿还、60 亿美元回购

CFO: "Number one, we need to invest in the business… We've made some strategic investments to strengthen our supply chain… We invested in Nanya to get more access to DRAM, which is very important to us, particularly as we expand into data

center, which consumes more DRAM.

CFO：“第一，我们需要对业务进行投资……我们已经进行了一些战略投资来强化供应链……我们投资了南亚科技（Nanya）以获取更多 DRAM 资源，这对我们非常重要，特别是随着我们向数据中心领域扩张，该领域对 DRAM 的消耗量更大。

We extended the JV agreement for another few years, so that’s great investments in the business… We said we wanted to pay down our debt, so we started with $2 billion. That’s all gone… The third thing to do, which is really the role of our company, is to return cash to our shareholders.

我们将合资协议又延长了几年，所以这些都是对业务的重大投资……我们曾表示希望偿还债务，因此我们从 20 亿美元开始。现在这些债务已经全部清偿……第三件事，也是我们公司真正的职责所在，就是向股东返还现金。

We announced a $6 billion share buyback program with earnings. As you can imagine, we should be executing on that, and we will give you an update at the end of the quarter and then what’s next.

我们在发布财报时宣布了一项 60 亿美元的股票回购计划。正如你们所料，我们应该正在执行该计划，我们将在本季度末向大家通报最新进展以及后续计划。

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10. Cyclicality Debate & the Re-Rating Thesis — “Putting Points on the Board”

CEO: “There’s nothing I can do about other players in the market or anything else. We only manage our company… What we can do is be transparent about what we’re doing and explain… why do we think that the way we’re doing it is better than the way it’s been done in the past… We’re not prisoners to the past…
Whenever you bring up the word LTA, the first thing the person across the table starts saying is all the reasons they won’t work… There’s so much scar tissue, and there’s so much… history… How do I disprove something? It’s very hard to disprove something, except you just keep putting points on the board… That’s what we do. We keep putting the numbers up… We were here back in February of 2025… We stood on a stage in this very room, and we made the case for our company… Did

people believe us? I don't know if they did or not. They gave us, like, a $6 or $7 billion valuation... Now they have a little more belief, right?...
For the people that believed a year and a half ago, it's turned out very, very well for them... [On the SSD catch-up:] These are long design cycles... three or four years at least. Building an ASIC is not easy. Then getting qualified at a major customer can be a two-year process...
You had a new management team come in six years ago that had more of an enterprise background... We've just run that play long enough now with an unbelievable internal team that has all of the expertise in how to build NAND controllers, applying all of that to the enterprise market... When you do that for long enough...
you end up with great products.
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LITE

Speaker: Michael Hurlston (CEO) | Host: Vijay Rakesh (Mizuho) | Audience Q: gross margins

发言人：Michael Hurlston (CEO) | 主持人：Vijay Rakesh (Mizuho) | 观众提问：毛利率

1. The Photonic Super Cycle — Record Revenue, "None of the Drivers Hitting Yet"

CEO: "It's an AI super cycle. Within that AI super cycle... it's a photonic super cycle. We've never seen anything like this in the optics industry. I think the highest revenue quarter that Lumentum had in its history was about $500 million, and we're poised to go over $1 billion this quarter, so double the highest quarter ever.

CEO："这是一个 AI 超级周期。而在 AI 超级周期中……存在着一个光子超级周期。我们在光学行业从未见过这样的景象。我想 Lumentum 历史上营收最高的季度大约是 5 亿美元，而我们本季度有望突破 10 亿美元，也就是达到历史最高季度的两倍。"

I think there's so much runway ahead... The growth drivers for the company are vast and varied, and really none of them are hitting yet. Really the best is yet to come in terms of optical scale up, optical scale out, our optical circuit switches, none of which really you see in the numbers yet...

我认为前方还有很长的增长空间……公司的增长驱动力既庞大又多样，而且实际上目前还没有一个真正开始发力。就光学规模化扩展（scale up）、光学规模化外扩（scale out）以及我们的光线路交换机（OCS）而言，最好的时期尚未到来，这些目前在财务数据中都还没有真正体现出来……

We've gone up, but I think we've got a lot of runway and a lot of gas in the tank from here.

我们的股价已经上涨了，但我认为从现在开始，我们仍有很大的增长空间，后劲十足。

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2. Scale-Out — 200G EML Transition (ASP 2x), Transceivers, Nvidia CPO

2. Scale-Out（横向扩展）—— 200G EML 转型（平均售价翻倍）、光收发器、Nvidia CPO

CEO: "If you look at our scale-out business... there's actually probably three components. There's the EMLs that we supply to everybody else, and right now the majority of those EMLs are 100G per lane, meaning it's 800G transceivers that are getting manufactured based on those EMLs. We see a transition now to 1.6T led by Nvidia and Google...

首席执行官："如果你看我们的规模化外扩（scale-out）业务……实际上大概由三个部分组成。首先是我们供应给所有其他厂商的 EML（电吸收调制激光器），目前这些 EML 大多是单通道 100G 的，这意味着基于这些 EML 制造的是 800G 光模块。我们现在正看到由 Nvidia 和 Google 引领的向 1.6T 的转型……

Now we're supplying 200G EMLs to that market. That ASP is roughly double, so it's a huge tailwind for us as we start working through that transition... The second

thing is... we supply transceivers... probably not our best business, but all of a sudden, it's a business that's growing really well.

现在我们正向该市场供应 200G EML。其平均售价（ASP）大约翻了一番，因此随着我们开始推进这一转型，这对我们来说是一个巨大的利好……第二点是……我们供应光模块……这可能不是我们利润率最高的业务，但突然之间，这项业务的增长势头变得非常好。"

We have one main customer that's done very well in the market. They're picking up a ton of share, and they're deploying 1.6T right now... We have a second customer that's been really a positive surprise for us... The third thing is the scale out as it relates to the CPO switches.

我们有一个在市场上表现非常出色的主要客户。他们正在抢占大量市场份额，并且目前正在部署 1.6T 技术……我们还有第二个客户，对我们来说确实是一个意外的惊喜……第三点是与 CPO 交换机相关的规模化扩展。

We have a business there that's very unique, a high-powered laser that we supply to Nvidia. That partnership has been announced... They obviously invested some money in the company. That scale-out business has been surprisingly strong.

我们在那里有一项非常独特的业务，即我们向 Nvidia 供应的高功率激光器。该合作伙伴关系已经公布……他们显然向公司投入了一些资金。那项规模化扩展业务的强劲程度令人惊讶。

We've talked about in the fourth quarter of this year, seeing somewhere between $50 million and $100 million incremental revenue coming from our scale-out CPO... You don't see anything from us yet in scale-out CPO. You don't see a lot from us yet in the 1.6T transceiver.

我们曾谈到在今年第四季度，将看到来自规模化扩展 CPO 的增量收入在 5000 万美元到 1 亿美元之间……目前你还没有看到我们在规模化扩展 CPO 方面的任何表现。在 1.6T 光收发器方面，你也还没有看到我们的太多动作。

Those two things are going to layer on to a base business that's already pretty strong... Our view in the transceivers now... the majority of 1.6T shipments today are all EML... We do anticipate a shift to silicon photonics, right? Even in that shift, we believe the number of EMLs is going to go up cycle over cycle.

这两项业务将叠加在已经相当强劲的基础业务之上……我们目前对光收发器的看法是……今天大部分的 1.6T 出货量都是 EML……我们确实预见到会向硅光子技术转变，对吧？即便在这种转变中，我们相信 EML 的数量仍将随周期逐年增长。

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3. Scale-Up & NPO — The Next Leg, "Bigger Than Even the CPO Opportunity"

3. Scale-Up 与 NPO —— 下一个阶段，"规模甚至超过 CPO 的机遇"

CEO: "Scale-up is where we see an opportunity for the optical industry, and arguably we're the leader in the optical industry, to take our technology and put it in racks and in clusters...

CEO："Scale-up（向上扩展）是我们看到的整个光通信行业的机遇，而可以说我们是该行业的领导者，我们将把我们的技术应用到机架和集群中……"

We're going inside the cluster, and we have connections that run either cross-rack between racks, or now in many cases, we're seeing inside the rack itself with an emerging NPO opportunity, near packaged optics...

"我们正在深入集群内部，我们的连接要么跨机架运行，要么在许多情况下，我们正看到机架内部出现的 NPO（近封装光学）机遇……"

The sum total of that, the magnitude is far greater than scale-out, even in the first instantiation, which we would expect for us to start shipping in the second half of 2027... For you to see scale-up optical products on the market in the first part of 2028. It's very soon...

"其总和的规模远大于 scale-out（向外扩展），即使是在第一代产品中也是如此。我们预计将在 2027 年下半年开始出货……你们将在 2028 年上半年看到 scale-up 光学产品上市。这已经非常近了……"

What we've seen probably in the last two months, really since our last earnings, is a market shift in interest from others, non-Nvidia class customers, around NPO. They're trying to solve the same problem. At 1.6T... 200G per lane, you have some difficulty with copper...

在过去的两个月里，确切地说是自上次财报发布以来，我们观察到市场兴趣发生了显著转变，来自非 NVIDIA 级别的其他客户对 NPO（近封装光学）的需求激增。他们正试图解决同样的问题。在 1.6T……单通道 200G 的速率下，铜缆连接会遇到困难……

It simply can’t go over any sort of reasonable distance, even with retimed copper… You saw yesterday, one major hyperscaler made an announcement with Corning… That is really indicative of how that guy is thinking about near-packaged optics… The number of lasers that they would want to deploy, because they’re going much more aggressively…

即使使用带重定时器的铜缆，它也根本无法跨越任何合理的距离……你昨天看到，一家主要的超大规模云计算厂商与康宁（Corning）共同发布了公告……这真实地反映了该厂商对近封装光学的思考方式……由于他们采取了更激进的策略，他们想要部署的激光器数量……

to an optical back plane… is actually larger. We’re looking in the face suddenly of an opportunity that’s really started to snowball… From a number of racks, you’re probably talking smaller, but from a number of optical lanes, it’s actually bigger because they’re going all in…

转向光学背板……实际上规模更大。我们突然面临着一个开始产生滚雪球效应的机遇……从机架数量来看，规模可能较小，但从光通道数量来看，实际上规模更大，因为他们正全力以赴……

They’re saying, ‘Look, in order for us to leapfrog, let’s say NVIDIA, we’re going to have to move quickly and have more 1.6T lanes going down the back plane of the rack.’… The size of it looks like it’s frankly bigger than even the CPO opportunity that you and I have talked about…

他们在说：“看，为了实现对 NVIDIA 等对手的超越，我们必须迅速行动，并在机架背板上部署更多的 1.6T 通道。”……坦率地说，这一规模看起来甚至比你我之前讨论过的 CPO（共封装光学）机遇还要大……

[On other ASICs:] What we see as other ASICs are running at 200 gig SERDES and 200 gig per lane, they are going to have to deploy optics… It’s a little easier to deploy. Some performance hit, but the laws of physics still apply… We see other ASIC guys that might be competing with NVIDIA… really considering how do I leapfrog.

[关于其他 ASIC：] 我们看到其他运行在 200G SERDES 和单通道 200G 的 ASIC 将不得不部署光器件……这在部署上稍微容易一些。虽然会有一些性能损失，但物理定律依然适用……我们看到其他可能与 NVIDIA 竞争的 ASIC 厂商……正在认真考虑如何实现跨越式发展。

Part of that leapfrog strategy is a heavy degree of optics in the back plane… [On DWDM:] What we see now is, as these NPO opportunities come online, more of them are considering a DWDM… to try to leapfrog more data per fiber.

这种跨越式战略的一部分是在背板中大量使用光器件……[关于 DWDM：] 我们现在看到，随着这些 NPO（近封装光学）机会的出现，越来越多的厂商正在考虑使用 DWDM……试图通过单根纤维传输更多数据来实现跨越。

If they're able to do that, they think they can offer differentiation against some of these initial CPO types of products.

如果他们能够做到这一点，他们认为自己可以针对初期的一些 CPO（共封装光学）类产品提供差异化优势。

"

4. Capacity & Supply — Undershipping Demand by 30%+, Greensboro = $5B Incremental

4. 产能与供应 —— 供货缺口达 30% 以上，格林斯伯勒（Greensboro）工厂将带来 50 亿美元的增量

CEO: "The optical industry… used to think in scales of thousands… when we were serving AT&T and Verizon… Now we're getting into units of hundreds of millions. It's multiple orders of magnitude in terms of how the industry, not just Lumentum, but the industry has thought about producing these things. Our fabs are definitely straining.

CEO：“光子行业……过去在服务 AT&T 和 Verizon 时，考虑的是数以千计的规模……而现在，我们正步入数以亿计的单位。就整个行业（不仅是 Lumentum，而是整个行业）对这些产品生产规模的认知而言，这是多个数量级的跨越。我们的晶圆厂确实正处于满负荷运转的压力之下。

We’ve gone from… very small number of shipments to massive numbers, and it’s still not enough. We’re under shipping demand by more than 30%, our estimate on EMLs and sort of this very early phase of co-packaged optics… We’re bringing a ton of supply online. We’ve just bought this fab in Greensboro…

我们已经从……极少量的出货量转变为海量出货，但即便如此依然供不应求。根据我们的估计，在 EML（电吸收调制激光器）以及共封装光学（CPO）的极早期阶段，我们的出货量比需求低了 30% 以上……我们正在投入大量产能。我们刚刚收购了位于格林斯伯勒（Greensboro）的这座晶圆厂……

and we think that can generate $5 billion of incremental revenue… With all of that said, at the end of that journey, we actually feel like we’re going to be further behind. As fast as we’re adding supply… as fast as our competitors are adding supply, the demand is going up…

我们认为这可以带来 50 亿美元的增量收入……即便如此，在这一进程结束时，我们实际上觉得我们会落后得更远。尽管我们增加供应的速度很快……尽管我们的竞争对手增加供应的速度也很快，但需求增长得更快……

The number of optical lanes is going from zero to some massive number in a short period of time to try to intersect this 1.6T transition… If you look at the demand on our CPO products, you would argue that 100% of the capacity, including the six-inch line in Greensboro, is spoken for… We’re unique in operating five fabs, and…

为了赶上 1.6T 的转型浪潮，光通道的数量在短时间内从零增长到了一个巨大的数字……如果你观察市场对我们 CPO 产品的需求，你会认为 100% 的产能（包括格林斯伯勒的 6 英寸生产线）都已经被预订一空……我们运营着五座晶圆厂，这在行业中是独一无二的，而且……”

we’re probably far and away the leader in this laser market, both in terms of product quality, product performance, but also sheer output… When we talk about adding 10%, that’s a big number… We’re still going to be significantly behind, the industry’s going to have to find a path.

我们可能在激光器市场遥遥领先，无论是在产品质量、产品性能，还是在绝对产量方面都是如此……当我们谈论增加 10% 的产能时，这是一个庞大的数字……我们仍将面临严重的供不应求，整个行业必须寻找出路。

There’s just a lot of optical demand and simply not enough supply.

光通信需求极其旺盛，而供应根本无法满足。

”

5. Gross Margins & Pricing Durability — 33% → ~47-48%, “Not Worried About a Pricing Reset”

5. 毛利率与价格稳定性 —— 33% → ~47-48%，“不担心价格重置”

CEO: “I come from the semiconductor business… and we had one of the best gross margin stories of my previous company… We went from mid-30s to over 60% gross margin… We’re on that trajectory now with Lumentum. We’ve grown gross margins by about 14%, from about 33 now to 47, 48, depending on whose number you believe, in a little over a year.

CEO：“我出身于半导体行业……在我之前的公司，我们拥有最出色的毛利率增长案例之一……我们的毛利率从 30% 中位增长到了 60% 以上……现在 Lumentum 也正处于这样的轨道上。在一年多一点的时间里，我们的毛利率增长了约 14%，从大约 33% 增长到了 47% 或 48%，具体取决于你相信谁的数据。

That’s definitely been driven by price. It’s been driven by mix. It’s been driven only a very small amount by cost. We haven’t taken a lot of the variable cost out of the product… Going back to the Synaptics story, there was a massive run-up on price during COVID… in the semiconductor business. That never reset.

这绝对是由价格驱动的。是由产品组合驱动的。成本驱动的比例非常小。我们并没有从产品中剔除大量的可变成本……回到 Synaptics 的故事，在新冠疫情期间，半导体业务的价格出现了大幅上涨。而这一价格从未回落。

Once the demand fell off, and we saw it fall off very significantly, pricing didn’t go down. We would say the same thing here.

一旦需求下降——我们也确实看到了需求显著下降——价格并没有随之下跌。我们在这里也会持同样的观点。

I’m not worried about a pricing reset because I think it’s a lot more durable than is given credit for, and I think the evidence point is what we saw in semis during the COVID crisis, the massive run-up from TSMC that people passed on, and that proved to be sustainable.

我不担心价格重置，因为我认为价格的持久性比人们预想的要高得多。我认为证据就是我们在新冠危机期间看到的半导体行业情况：台积电（TSMC）大幅涨价，人们将成本转嫁了下去，而事实证明这种涨价是可持续的。

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6. OCS — TAM Re-Sized to ~$10B, Google Merchant Opportunity, In-Rack Failover “Biggest Yet”

6. OCS —— 市场总量（TAM）重新调整为 ~$10B，谷歌商户机遇，机架内故障转移“规模空前”

CEO: “In a backward look, the majority of our shipments actually have been to a spine switch replacement type application. We are shipping to multiple customers. We’re shipping in reasonable volume to two...

CEO：“回顾过去，我们的大部分出货实际上都用于脊柱交换机（spine switch）替换类的应用。我们正在向多个客户供货。其中有两家客户的出货量相当可观.....

Kathy was talking to me in the car, I think we’ve actually sized the TAM more like $10 billion, and we see that opportunity actually growing, not decreasing... [Google is] deploying the OCS... in a scale-up topology. The way they’re able to deploy OCS sort of negates all this conversation we’ve just been having about CPO and NPO.

Kathy 在车里跟我谈过，我认为我们对总潜在市场（TAM）的估值实际上更接近 100 亿美元，而且我们看到这个机会实际上在增长，而不是在减少..... [Google] 正在以一种纵向扩展（scale-up）的拓扑结构部署 OCS.....他们部署 OCS 的方式在某种程度上否定了我们刚才关于 CPO 和 NPO 的所有讨论。

Their architecture is very elegant... They really don't need to deploy CPO and NPO... [Google is] manufacturing their own MEMS-based switch today. They designed it... They're deploying it in tremendous numbers. Certainly, there's an opportunity, we think, for us to be a third-party merchant supplier and eventually take all of that.

他们的架构非常优雅……他们确实不需要部署 CPO 和 NPO……[Google] 目前正在制造他们自己的基于 MEMS 的交换机。这是他们设计的……他们正在大量部署。当然，我们认为我们有机会成为第三方商用供应商，并最终接管所有这些业务。

Does it make sense for Google to manufacture OCSs? I'm not sure that's a business they want to be in... What we're seeing on the OCS side is an emerging opportunity we think is the biggest yet. That is to deploy an OCS in the rack itself, one per rack, a smaller, narrower circuit switch... If you're running these big inferencing models...

Google 自己制造 OCS 是否合理？我不确定那是他们想要涉足的业务……我们在 OCS 方面看到的是一个新兴的机会，我们认为这是迄今为止最大的机会。那就是在机架本身部署 OCS，每个机架一个，一种更小、更窄的光线路交换机……如果你正在运行这些大型推理模型……"

if you direct traffic to a GPU that's failing, you're going to lose millions of dollars in a compute run... What people are considering is, look, how do we create resiliency in our racks, in our clusters, and be able to route traffic to the least loaded GPUs? An easy and elegant way to do that is with one of these OCSs...

如果你将流量引导至一个发生故障的 GPU，那么在一次计算运行中你将损失数百万美元……人们正在考虑的是，看，我们如何增强机架和集群的韧性，并能够将流量路由到负载最低的 GPU？实现这一目标的一种简单且优雅的方式就是使用这种 OCS（光电路交换机）……

[On why MEMS wins:] MEMS is sort of the de facto standard in switching. Why? Well, it's a mirror... What you want to have first and foremost in switching is no loss. If I'm just shining light from a mirror and directing it from one port to another, there's no loss.

[关于为什么 MEMS 会胜出：] MEMS 某种程度上是交换领域的行业标准。为什么？因为它是一面镜子……在交换中，你首要追求的是无损。如果我只是通过镜子反射光线，将其从一个端口引导到另一个端口，那是没有损耗的。

If you have piezoelectric, you have LCOS or some of these other things, there's loss in the system... The knock on MEMS-based solutions has been the reliability because you have a moving mirror... Our WSS solution... has been in the ground for

20 years... forming the backbone of the United States internet, that's also MEMS-based...

如果你使用压电技术、LCOS 或其他类似技术，系统中就会存在损耗……对基于 MEMS 解决方案的诟病一直是可靠性，因为你有一个移动的镜子……我们的 WSS（波长选择开关）解决方案……已经在地下运行了 20 年……构成了美国互联网的主干，那也是基于 MEMS 的……

We think we figured out the reliability a long time ago... It's 100% about the loss... MEMS is the right answer... [Roadmap:] Our standard product today is 300 by 300... What we see are opportunities to run the ports up, which is going to make it very difficult for a competing technology to come in. MEMS almost has to be used.

我们认为我们很久以前就解决了可靠性问题……这 100% 与损耗有关……MEMS 是正确的答案……[路线图：] 我们目前的标准产品是 300x300……我们看到的是增加端口数量的机会，这将使竞争技术很难介入。几乎必须使用 MEMS。

The higher the port count, the more this loss principle... works in our favor. We see port counts going up in our roadmap, and then we actually see ports going down. There, it's going to be a little more competitive, and we're going to have to think about cost... perhaps reimagining it so we can get the cost down...

端口数量越高，这种损耗原理就越是对我们有利。在我们的路线图中，我们看到端口数量在增加，但随后实际上又看到端口数量在下降。在那个领域，竞争会更加激烈，我们必须考虑成本问题……或许需要重新构思，以便降低成本……

drop the ASP a bit, and compete in these very high volume emerging applications.

降低一点平均售价（ASP），并在这些出货量极大的新兴应用领域进行竞争。

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7. Substrate Supply & China Geopolitics — "Not Well Covered Anymore"

7. 基板供应与中国地缘政治 —— "不再被充分报道"

CEO: “We’re uncomfortably comfortable right now with our substrate position… With our numbers escalating like this, we are going to have tension in the system. It’s just unavoidable. When we talked after the last earnings call, we felt like we were well covered with our primary supplier. We’d done a long-term agreement with them…

首席执行官：“目前我们对基板供应状况感到一种‘不安的舒适’……随着我们的数据像这样攀升，系统中必然会出现紧张局势。这是不可避免的。在上次财报电话会议后的交流中，我们觉得主要供应商的覆盖情况良好。我们已经与他们签署了长期协议……”

Numbers have gone up considerably since then. I’d say, no, we’re not well covered anymore. We’re going to have to find alternate sources of supply. One of the issues right now is the substrates are controlled by the Chinese government. Outside of a couple of Japanese suppliers, the preponderance of supply is coming from China.

自那时以来，数据已经大幅上涨。我想说，不，我们的供应保障已经不再充分了。我们将不得不寻找替代供应源。目前的问题之一是基板受中国政府控制。除了几家日本供应商外，绝大部分供应都来自中国。

The Chinese seem to be adding supply faster than the Japanese. You have to now find a workaround. We’re a little bit uniquely situated… in that we can have substrates go from China to the U.K., and in so doing work around some of the licensing and restrictions… We’re uniquely positioned in that way.

中国方面增加供应的速度似乎比日本快。你现在必须找到应对方案。我们的处境比较独特……因为我们可以让基板从中国运往英国，通过这种方式绕过一些许可和限制……我们在那方面拥有独特的优势。

Make no mistake, it’s something we’re working on… It’s definitely become a little bit tighter than since the last time we chatted… [On market access:] I think the sum total of products that we ship to… Chinese hyperscalers is zero… We’ve been very specifically blocked out of the Chinese hyperscaler market.

毫无疑问，这是我们正在努力解决的问题……自我们上次交流以来，情况确实变得更加紧张了……[关于市场准入：] 我认为我们出货给……中国超大规模云厂商的产品总额为零……我们被明确地排除在中国超大规模云厂商市场之外。

Meanwhile, there’s a lot of sourcing of Chinese components that are going into U.S. hyperscalers… Even if you said tomorrow, ‘Look, let’s wave a wand and kick the Chinese out of the U.S. supply chain,’ it would actually bring the U.S. hyperscalers

to their knees because they are sourcing a ton of components...

与此同时，美国超大规模云厂商正在大量采购中国组件……即使你明天说，“瞧，让我们挥动魔杖，把中国踢出美国供应链，”这实际上会让美国超大规模云厂商陷入瘫痪，因为他们正在采购大量的组件……

It’s not like I can run out and fill that void immediately... The U.S. government and our side of the industry would have to work together in a much more concerted fashion... to make that a reality in reverse.

我不可能立刻跑出去填补那个空白……美国政府和我们行业的这一方需要以更加协调的方式共同努力……才能反向实现这一目标。

”

8. Competitive Moat — Laser Design/Process Integration; China Threat Confined to CW

8. 竞争护城河 —— 激光器设计/工艺集成；中国威胁局限于连续波（CW）激光器

CEO: “It starts with our laser business... It’s not as a Broadcom or an Nvidia would talk about where you have a process coming from TSMC... and then you have a design, and the two things are actually somewhat divorced from each other. With lasers, that’s not the case. The two things are totally intermingled.

首席执行官：“这始于我们的激光器业务……它不像博通（Broadcom）或英伟达（Nvidia）所说的那样，你有一个来自台积电（TSMC）的工艺……然后你有一个设计，这两者在某种程度上是相互脱离的。对于激光器来说，情况并非如此。这两者是完全交织在一起的。

You have a process and you have a design, and the two things sort of work hand in hand, and there’s a lot of iteration that goes into that. Our laser design really separates us out.

你有一个工艺，你有一个设计，这两者相辅相成，其中涉及大量的迭代。我们的激光器设计确实让我们脱颖而出。”

We have lasers, particularly at higher power levels that other people simply can’t

get to with the reliability and with the performance, and that makes us very difficult to compete with. EMLs are also very difficult to make...

我们拥有激光器技术，特别是在高功率水平上，其他公司根本无法达到我们的可靠性和性能，这使得我们极具竞争力。EML（电吸收调制激光器）的制造难度也非常大……

The EMLs we deliver [are] very high quality, and our customers report the transceivers that they're able to build using our EML lasers yield much higher. We really have a big differentiator, I think a moat with that laser business... [On Chinese competition:] Chinese supply is definitely there, even with lasers.

我们交付的 EML 质量非常高，据客户反馈，使用我们的 EML 激光器制造的光收发器良率要高得多。我认为我们在激光业务上拥有巨大的差异化优势，或者说护城河……[关于中国竞争：] 中国的供应确实存在，即使在激光器领域也是如此。

Where, for the most part, it's pigeonholed is the CW laser... The most difficult thing to do are these ultra-high-powered lasers that go into co-packaged optics. You have the near-packaged optics lasers. You have EMLs. At the bottom of the stack are CW lasers... We don't make many CW lasers.

在大多数情况下，他们被局限在 CW（连续波）激光器领域……最难做的是用于共封装光学（CPO）的超高功率激光器。此外还有近封装光学激光器和 EML。在技术堆栈的最底层是 CW 激光器……我们并不生产很多 CW 激光器。

We've sort of skated outside of that zone because it is a bit more of a competitive environment... We still think we have advantage... the performance advantage we offer, the reliability we offer, the yield that we offer... It's difficult for some of these Chinese guys who have been supplying themselves now to go into the open market.

我们基本上避开了那个领域，因为那里的竞争环境更为激烈……我们仍然认为自己拥有优势……包括我们提供的性能优势、可靠性优势以及良率优势……对于一些一直自给自足的中国厂商来说，想要进入公开市场是很难的。

We don't think it's a fait accompli, but again, for our position, probably not as much a threat as it might be for somebody else.

我们并不认为这是既成事实，但同样，对于我们的立场而言，这可能不像对其他人那样构成威胁。

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9. Strategic Pivot — Systems → Components, Expanding the Portfolio

9. 战略转型 —— 从系统到组件，扩大产品组合

CEO: “There’s been a marked strategic shift in the company, and that strategic shift has been toward our components. I think the previous administration and frankly, optics in general sort of value[d] systems. If you look at some of our competitors, they’re systems first… They’re really going after high-dollar content and generating boxes…

首席执行官：“公司发生了显著的战略转变，这种战略转变一直朝着我们的组件业务方向发展。我认为前任管理层，坦率地说，整个光学行业通常更看重系统。如果你看看我们的一些竞争对手，他们是系统优先的……他们确实在追求高价值内容并生产整机设备……”

We were very much in that space. We weren’t particularly good at making systems… What we’ve done over the last year is pivoted the company a lot more to components. I’m much more content feeding into these system suppliers and being a strategic partner for them rather than, in some instances, competing.

“我们过去也深耕于那个领域。但我们并不特别擅长制造系统……在过去的一年里，我们所做的是将公司更多地转向组件业务。我更愿意为这些系统供应商提供组件，成为他们的战略合作伙伴，而不是在某些情况下与他们竞争。”

We just don’t see ourselves as being a differentiated systems guy… If you fast-forward… five years, we want to add more components to our portfolio. We think we can compete in more than just lasers. We think there’s a lot of things that go around the laser that are interesting.

我们并不认为自己是一个具备差异化优势的系统厂商……展望未来五年，我们希望在产品组合中增加更多组件。我们认为自己的竞争力不仅限于激光器。我们认为激光器周边的许多领域都非常有前景。

Photonic ICs, photodiodes, maybe laser drivers, maybe even getting in more to the semiconductor world with TIAs… We’re now looking aggressively as to how we can increase our shoreline on the components end of the business.

光子集成电路（PIC）、光电二极管、或许还有激光驱动器，甚至可能通过跨阻放大器（TIA）进一步深入半导体领域……我们现在正积极寻求如何扩大我们在组件业务端的市场覆盖范围。

”

10. DCI / Scale-Across — $1.5B Component TAM Today → ~$4B by 2029

10. 数据中心互联（DCI）/ 横向扩展（Scale-Across）—— 当前组件潜在市场总量（TAM）为 15 亿美元 → ~到 2029 年将达到 40 亿美元

CEO: “This is a smaller TAM… a very interesting one because we have very high market share… I think the current component piece of the DCI market or scale-across is about $1.5 billion. We see that growing to about $4 billion by 2029. There’s good growth in that market driven by two things. One is, frankly, the politics of data centers…

首席执行官：“这是一个较小的潜在市场……但非常有趣，因为我们的市场份额非常高……我认为目前 DCI 市场或横向扩展市场的组件部分约为 15 亿美元。我们预计到 2029 年这一数字将增长到约 40 亿美元。该市场的增长主要受两个因素驱动：一是坦率地说，数据中心的政治因素……

where people are not looking to have these massive data centers in their backyard. The second is the power… If you make a more modular data center, you don’t have the power draw, at least localized on that particular grid… We see a lot more of these smaller data centers getting built out, and you have the emergence of inferencing.

人们并不希望在自家后院看到这些庞大的数据中心。其次是电力问题……如果你构建一个更模块化的数据中心，就不会产生那么大的电力消耗，至少在那个特定电网的局部区域是这样……我们看到越来越多这类小型数据中心正在建成，同时推理需求也正在兴起。

This agentic AI is creating a lot of need for compute, and that compute really can’t be contained… to one specific area. You’re going to have a lot more of these data