**Notes**:

**Manufacturing options…**

* Over-simplification to say IDM vs outsource
* More important question is can you outsource – his opinion is they cannot outsource their moneymaking products
* Nirvana, ADAS, FPGAs, and new 5G chips – all of these synthesized using non-**INTC** tools and could be outsourced, but won’t move the needle in terms of supply or revs
* Only option is fixing 10nm and 7nm and getting back to high volume manufacturing

**Delta of 10nm vs 7nm…**

* Standard node advancements have always been aggressive – transition switches, gate architecture, shrink, etc. – all about getting higher performance at lower power
* At 10nm, changed ~5 parameters that are the “main changers” for node shrinks
* Problem was, as you change, at 10nm, using multi-patterning vs EUV – running into laws of physics with multi-patterning
* That’s why they failed
* The number of things that could go wrong, did go wrong – hit yield issues hard
* Haven’t been able to put 1 CPU line in high volume with good economics
* What’s different with 7nm… **INTC** now taking **TSMC’s** approach – call it lesson learned
* They’ve now been less aggressive in all 5 parameters that they’re changing
* 10nm, 10nm+, 10nm++ : seeing **INTC** go to iterative approach – not changing everything at once which is how **TSMC** has been operating
* **INTC** 7nm vs **TSMC** 7nm – shrink, pitch, process all better than **TSMC’s**, EUV now at play as well
* Now **INTC** 7nm being more of pseudo 7nm is in play, gives them higher chance of success at 7nm
* So **INTC**, needs to get to 7nm as fast as possible, show high volume success – he is bullish on them getting 7nm right
* 7nm is critical to get right – “house of cards” built on them getting it right
* Once you have 7nm right, you  can make strategic decisions on staying an IDM or spinning out TMG (Technology Manufacturing Group)

**What do you think they do post-7nm?**

* 2 options are stay an IDM or spin out manufacturing
* Depends on what version of Pat Gelsinger comes in
* As long as **INTC** has roadmaps and TAM, and architects to serve the markets, and get 7nm right – then INTC stays IDM
* Becoming a fabless company is different ballgame – BoD won’t be content
* They’ll want to get into a different part of value chain – not just a semis player, suggested buying **VMW** for example…
* Hard to determine what that something else really looks like

**PCs – talk about Desktop and Notebook and why they’ve been successful defending certain markets vs others…**

* PCs and Servers are their two biggest markets
* PCs: broken up to Laptop and Desktop
  + Laptops: broken out to low-end and high-end like Lenovo/HPQ/DELL
  + Desktop: low-end and high-end/Gaming
* Servers
  + Low-End: similar to high-end Desktop market
  + High-End: what Hyperscalers and Cloud use
* Had most success in Laptops – power performance and trade-off made in Laptops far outstrips **AMD**
* Ryzen isn’t tuned to market like **INTC’s** is – business class user who pays high premium
* Laptops positon is most defensible – trump card here is their system design teams
* **INTC’s** design teams are optimizing CPU to serve that market – **AMD** doesn’t have dollars or man power to do this
* System integration teams are the key
* Low-end is more commoditized – volume game – this is where **AMD** is gaining
* But since OEMs here use 1 provider, share gains won’t be big
* Desktop is very performance driven
* **AMD** has focused resources on high perf Desktop parts
* In low performance Desktop parts – also volume game, commoditized, no margins
* High-end Desktop – **AMD** gaining most of share but has same characteristics as low end server space
* **AMD** continues to gain share, will continue to do so in high-end Desktop
* (1) Leadership performance, (2) **INTC** advantage in power and efficiency is not a lever to pull in Desktop or high-end Desktop
* So **AMD** can compete on performance
* Big **INTC** share losses to **AMD** are in low-end Server/high-end Desktop – not high-end Servers
* **INTC** losses smaller in high-end Server…
* Share losses most in: highest in low-end Laptop, high-end Desktop, low-end Server – they will shove this into high volume manufacturing

**Leadership Team – how’s the technical team evolve, and how will Pat Gelsinger too?**

* Bob Swan left Pat a strong business leadership team, and weaker technical leadership team
* Gregory Bryant and Navin Shenoy – VPs reporting into them are good, know their businesses, not arrogant, focused on customers
* Would be surprised if business leadership changes are made by Pat
* Think he focuses on TMG (manufacturing) or IPG (silicon architecture group)
* All of the issues **INTC’s** faced… the group that had to pick up the slack is the silicon group – they no longer have the blanket to side behind manufacturing leadership
* Some of old guard has come back to **INTC** to solidify the leadership to lead this group
* Jim Keller changes ran against the grain on what **INTC** stood for – thinks was a bridge to far
* Manufacturing team is most interesting – it is difficult to explain – Pat needs to bring in someone
* Doesn’t know who Pat can trust to focus on incremental gains under a new plan of attack for the business
* Brought someone in from **GlobalFoundries** – lessons learned on x86 manufacturing useful
* Sees material change in manufacturing group – some internal will be brought up and external too
* Silicon engineering group likely more focused on old stalwarts coming back

**Foundry strategy – you were there a long time, how things have changed over time…**

* Goal at that point, was the more **INTC** was able to act like a foundry, the more it learned about how a foundry behaves
* Method to madness was a bridge to far in his opinion
* The foundry business is an adventure that they can’t afford
* How they fold it back into the mothership is the most interesting piece
* **INTC** doesn’t have the chops, culture, know-how, time, energy, cash, etc. to be a foundry

**So you don’t see the momentum of the being a foundry?**

* No… he doubts it
* The investment in cash in HR, S&M… idea is good but they don’t have the all resources needed
* If they get 7nm and 5nm right… fix the core business and can maybe take advantages down the road but would be in 3-5yrs from now if at all

**Cash as a constraint – have heard that manufacturing is more strategic now – if they got a check form the US Government for example, what would they do with it?**

* High volume, high GM business funded a few things – some M&A they made, and investments in system design for Laptops
* As GMs go down, the cash that it throws off is reduced
* Would not be in foundry, or silicon architecture
* It would be to maintain node, and customer acquisition is where they spend it

**Do you have a timeline in which you see them being more right than wrong?**

* Thinks 7nm takes another 2-3yrs at high volumes, with leadership product lines
* Then another 2yrs form there to get to 5nm, which is high volume, high yields and robust economics
* 7nm doesn’t go “right” – success in high volume, high yields, buts costs off – thinks it just remains an expensive process
* Won’t get the economic advantage they’ve enjoyed in the past

**In 2yrs to get to high volume on 7nm – is that an EUV issue? Or multi-patterning issue?**

* Of the key parameters – multi-patterning vs EUV solves for only a few issues
* Still have others like interconnects and gateway
* The machines you use to test those are slower
* EUV at 7nm with how less aggressive on the transition **INTC** will be is a big gain, but other parameters will keep them from economics – but will get yields so could technically be viewed as a success

**Licensing IP with TSMC? Can you expand on this notion?**

* The way he sees it, licensing **TSMC** IP is interesting
* Would probably work if **INTC** adopts iterative manufacturing process
* Doesn’t see though how **TSMC** wins or gets an advantage
* They’d be giving up core advantages they’d have now and if **INTC** comes back down the road then customers would have lower market share
* Doesn’t see it making a meaningful difference, even if they get top dollar for it because won’t replace long term revs for **TSMC**

**Would it make sense for INTC to acquire GlobalFoundries?**

* Wonders what the antirust is here…
* From a customer base standpoint… questions for what? What advantage **INTC** gains for that?
* Price has to be expensive to buy one of the few robust foundry plays out there
* Doesn’t see Pat Gelsinger getting distracted – would be surprised if he does that before the core issues are fixed
* Doesn’t see it happening

**Moving up the stack… mentioned VMW prior… could you expand here…**

* Bob Swan was big on looking at new rev streams **INTC** could play in
* **Atos** or **Capgemini** – think about what they do in technical market and what they provide to IT (Servers and Laptops)
* How much value could **INTC** add to services business to make their job easier and gain larger share of IT spend
* Next linear adjacency **INTC** has been interested in is the Services space – how much of a distraction would this be is key
* Depends on version of Pat Gelsinger that comes in

**So if INTC pushes aggressively as possible on 7nm and gets it right – what’s company look like after that?**

* 3yrs they have 7nm right, convinced the market through transparency and results they have their mojo back
* Have shown 7nm, 5nm, 3nm roadmap at high volume manufacturing
* Surprised market with 5nm products
* Key: get 7nm right enough, and surprise the market with 5nm
* Share will be 80% in Server and 70% in PCs – will lose share overall and be a smaller company than in past
* Then Pat will make decision to stay an IDM
* Might use the cash to move into adjacencies like Services or 5G