1. **Given the drivers of profitability, in what areas should you expect cooperation? Conflict?**

When the computer market moved from a vertical to horizontal structure, it opened the door for specialized players. Intel became a leading Independent Hardware Vendor (IHV). They invested heavily in capital equipment to create market dominant microprocessors. Meanwhile, Microsoft became a leading Independent Software Vendor by developing the standard in operating systems and pushing for the adoption of uniform software in the computing industry.

A driver of profitability between these two firms is consumer adoption of PCs. Intel and Microsoft had the gold standard of hardware and software for PCs and they worked better for consumers as complements. Intel benefited from software that could keep up with their processors while Microsoft required hardware capable of handling the demands of their software. As a result, a relationship was formed between Intel and Microsoft…Wintel. This symbiosis resulted in collaboration between the two companies that pushed the development of new technology for increased adoption of PCs. Another driver of profitability that resulted in collaboration was industry standardization. For example, in the early 1990s, Intel developed a new computer bus. A bus is a piece of hardware that enables communication of data between computer components. Up until the early 1990s, the ISA standard was the standard, but this particular bus was unable to keep up with increasing processing demands. Intel developed the PCI bus but it faced the challenge of obtaining buy-in for this new standard. Microsoft was a huge supporter of this effort and their support ensured early adoption of this new standard.

Although Microsoft and Intel business was motivated by PC sales, differences in their business motivation created conflict. Intel's business depended on demand for their hardware: microprocessors while Microsoft was motivated to meet new demand and support existing PCs. This divergence in business motivation created strife between the companies For example in 1991, Microsoft pushed for a change in processor architecture which would result in a transition away from Intel's processors. Microsoft was a strong supporter of this change because there was higher speed potential and popular support for the architecture even though it was in direct competition with Intel. Brand identity was a driver of profitability that created conflict between the two firms. For example, Intel offered to offset PC manufacturer advertising costs if they marketed Intel's processors. Meanwhile, Microsoft had a similar campaign but they did not pay for advertising costs and were far more aggressive with their demands for PC manufacturers. If manufacturers did not meet Microsoft's demands then they would have to pay significantly more to integrate Mirosoft's products into their PCs. Also Microsoft demanded that PC manufacturers meet specifications which intruded on Intel's ability to develop the PC platform. Maintaining a strong hold on respective areas of the computer industry was a profit driver that created conflict. This action is not possible without continued development to keep competitors at bay. While the relationship between Intel and Microsoft was stable if each company stayed in its lane, there was

conflict when one of them veered. In the mid 90s, multimedia applications were computationally intensive. In response to this problem, Intel developed software (NSP) for graphics and video applications without the need for hardware. This development enabled consumers to bypass Microsoft Operating Systems to give commands directly to Intel's microprocessor which Microsoft viewed as an intrusion. This development created conflict between the two companies.

Overall, Microsoft and Intel collaborated well for the advancement of the PC community and the introduction of standards. However, their desire to maintain their position in the computer industry coupled with different business goals led to conflict in their relationship. As the landscape of computers continues to change, there will continue to be areas of collaboration and conflict between the two companies.

2. If you are Intel making a decision on NSP, would you a) cave to Microsoft; b) **hold your ground; or c) try to negotiate a compromise?**

In this decision, we must consider the balance of Intel's strategic leverage through its proprietary NSP technology; long-term goals in alignment with Microsoft; and ability to maximize Intel and Microsoft profits through negotiation rather than non-compromise. Considering these factors, it is most likely that Intel negotiates a compromise with Microsoft; this balances Intel's long-term goals with the market and power dynamics at play.

Intel's NSP technology undoubtedly disrupted Microsoft's plans to release Windows 95. Its strategic leverage was set in the hardware and software efficiencies of NSP, which displaced key hardware components like add-in circuit boards, delivering a powerful solution to multimedia application software developers. These efficiencies wouldn't have been a significant risk to Microsoft's upcoming release of Windows 95, assuming they weren't compatible with past Microsoft operating systems nor other platforms - however this was not the case. NSP was developed as an extension to Windows 3.1, an earlier Windows operating system, as well as platform agnostic. This meant that NSP did not require Windows operating systems to be used by multimedia application software developers. In addition, multimedia application software developers had the ability to use NSP through OEMs and other manufacturers. So with a large NSP user base, a realistic assessment given Microsoft's large prospective customer segment of multimedia application software developers in the upcoming release of Windows 95, demand for Windows 95 could significantly decrease given NSP incompatibility with newer Windows operating systems; compatibility with competing platforms; and Intel's early-mover advantage.

Tensions ensued between Microsoft and Intel, as Microsoft embarked on a three-month battle with Intel to end further development efforts of NSP, where he tried to convince Intel to not ship NSP, and mentioned how it would not be supported in future Microsoft operating systems such as Windows 95. This was in contradiction to strong market demand for a multimedia application solution, and during a time when OEMs and other manufacturers were adopting NSP

technologies. From the perspective of Intel, incompatibility with future Windows operating systems could exclude a substantial customer base, and likewise put their rollout of NSP at risk. In this case, multimedia application developers tied to Windows may be unwilling to use Windows 3.1 given the additional features of Windows 95.

Given the strategic advantage of Intel in its NSP technology, and that of Microsoft in its operability with future Windows platforms, Intel should negotiate with Microsoft. Let's consider if Intel does not negotiate with Microsoft: NSP's rollout may not reach the momentum it needs for a sustainable competitive advantage given incompatibility of Windows 95 and unwillingness of multimedia developers to use their Windows 3.1 extension given the additional features of Windows 95, allowing the time needed for Microsoft and NSP competitors to implement alternatives, effectively taking Intel's dominant market position.. This choice is in favor of Microsoft, given its command of the prospective multimedia solution market and infrastructure dependency of a large segment of multimedia software developers; Intel's chances of a successful NSP rollout and dominant market share with this choice are low. Now let's consider if Intel caves in with Microsoft: NSP rollout would be ended entirely, as Microsoft mentions in email "We are trying to convince them [Intel] to basically not ship NSP." This choice is in the obvious favor of Microsoft, effectively ending Intel's NSP rollout, so it should absolutely not be taken. Given that both of these choices are in favor of Microsoft, Intel's remaining and best option is to negotiate with Microsoft.

Through successful negotiation, Intel will partner with Microsoft to exclusively offer NSP through Windows 95 and future Windows operating systems, opting to delay its release as it is adapted to Windows 95. As a part of this agreement, Microsoft is not allowed to develop an NSP alternative or partner with a competitor - they must exclusively partner with Intel for a significant period of time (this time period will be a critical point of negotiation for Intel). Considering the dominant market share of multimedia software developers tied to Windows' infrastructure, while this incurs a deadweight loss in the market and prevents Intel sales through OEMs and other manufacturers, it minimizes the chance of Intel's market share being taken by competitors such as Microsoft if NSP were to be incompatible with future Windows operating systems, and if multimedia developers were to not use NSP's Windows 3.1 extension upon release of Windows 95. Successful negotiation will therefore maximize the profits of Intel.

On the other hand, through this arrangement Microsoft will minimize the chance of an unsuccessful release of Windows 95, as well as save valuable time and resources stonewalling Intel, developing an NSP alternative and/or partnering with another NSP competitor unlikely to match the technological efficiency of Intel's NSP in time for Windows 95 to confer a high enough buyer's surplus for multimedia application developers utilizing OEMs or other manufacturers to switch over to Windows 95. Let's also consider the subject-matter expertise in multimedia solutions in Intel relative to Microsoft, and the sheer cost of resource and time it would take for them to develop a viable in-house solution in time to save the release of Windows

95. While this also incurs a deadweight loss in the market by tying Microsoft to one multimedia application development solution provider amidst a growing competitive market for such technologies, taking into account a much lower-cost in-house solution, it maximizes their profitability given the overall risk-reduction of an unsuccessful release of Windows 95, which compounds to future Windows operating systems.

3. As Intel, do you believe that, on NSP, Microsoft will a) cave to Intel; b) **hold his ground; or c) be willing to negotiate a compromise?**

Based on the case study, it's more likely that Microsoft will hold his ground on the topic of NSP and exercise hard power. In the early 1990's, Microsoft's most crucial investment was Windows 95, the latest OS that they will be releasing in 1995. Developing a new OS version takes years and Microsoft wanted everyone on a united front when it came to the launch of Windows 95 and its adoption by OEMs and other manufacturers. As NSP stood in 1995, it was platform neutral and would allow software developers to give graphic handling instructions directly to the microprocessor and bypass any Windows limitations. APIs can also be ported to other operating systems easily. On top of that, NSP was only compatible up to Windows 3.1 and further development would be required for it to be completely compatible with Windows 95. All of these reasons created the schism that's seen in 1995 between Intel and Microsoft as Microsoft became strongly opposed to the release of NSP as it would decrease the impact of the launch of Windows 95.

Microsoft and Intel had a history of both being stubborn, and their relationship was complicated. In the 1980s when Microsoft wanted to retake its intellectual property that it contributed to optimize Xenix, neither of the parties spoke to each other for several years. Microsoft had the advantage of being able to sway the industry and allow it to advance at its own pace, which was shown when it took Microsoft and other operating systems ten years to produce a 32-bit operating system. Intel's reliance on complimentary software for its products put it in a vulnerable position, because that is what created demand for its microprocessors. In Exhibit 9 of the case study, it's shown that Microsoft owned 86% of the operating system market share in 1993. Even if NSP is cross-compatible with other operating systems, it's pretty crucial that Intel works collaboratively with Microsoft on the pure reasoning that Microsoft manages such a large OS market share. In addition, Microsoft has generally needed Intel less than Intel needs Microsoft. Microsoft can continue generating significant revenue by selling upgrades and applications to the current installed base. However Intel would need to rely on a new operating system or version to utilize the full potential of their latest chips.

Microsoft did not want Intel to be doing anything that might help their competition, such as the investment Intel had made in IAL. On the topic of NSPs, it was mentioned in an internal Microsoft email that they will not agree to any accommodating position

on Intel's NSP except if Intel agrees to not ship NSP out to customers until 90 days after the launch of Windows 95. If Intel does that, then it will not disrupt the launch of Windows 95 too heavily. The same email also states that Microsoft cannot appear neutral on NSP to customers and that they must take a firm opposing stance on NSP release. In a public statement on the internet, Microsoft warned OEMs and ISVs that they have no intention of using or installing NSP, which further showed the influence and power that Microsoft has in the situation.