HSTR Tutorial Summary.

1. ***RMII does not exist as a standard?***
   RMII will not be referenced in the PARs.
2. ***What does "Extend the 802.5 MAC protocol for gigabit" mean?***
   We are extending the data rate of the 802.5 MAC to support gigabit.
3. ***Are you doing dedicated only at 100Mbit/s, or shared as well?***
   The PAR will indicate that HSTR will be dedicated, using the TXI (full duplex) protocol.
4. ***a) Why do you have different PARs for copper and fibre?***
   b) Why will fibre take 6 months longer?
   The 802.5 committee has experience in the past of running two PARs in parallel to develop Token Ring over copper and fibre. There was no divergence between the two standards. It is the intention to continue this method of development for the HSTR standards.
5. ***Why reference 100BASE-FX, rather than FDDI directly?***
   After considering both the FDDI and 100BASE-FX PHYs, the standard will reference 100BASE-FX rather than FDDI, as we are intending to use the modifications made by 802.3 in their use of the FDDI PHY.
6. ***How are you going to do phantom?***
   We are not mandating the use of phantom. The 802.5 MAC has been modified to work without the use of the phantom signal. It is not the intention to inter-operate with Ethernet 100BASE-X.
7. ***HSTR is not differentiated from FDDI, 802.12 and 802.1p.***
   Existing technologies can be combined (for example 802.3 with 802.1p) to provide Token Ring-like functionality. Token Ring is the only protocol that can provide true native support. Customers today have Token Ring networks employing these facilities. HSTR is the clearest migration path to preserving these facilities.
   Eight user priority levels
   Source routing
   Frame length: 22 to 18200 octet.
   Compatible management. Existing management tools will support HSTR.
   HSTR will retain pin outs with classic token ring.
   Customers have indicated that they are not prepared to migrate to 802.12 and FDDI.
8. ***Long frame formats may not work over 100BASE-TX?***
   Analysis has indicated that devices can support long frame formats. The standard does not mandate that devices support 18200 octet frames.
9. ***a) Have you done cross talk analysis?***
   b) 4/5 and 3/6 are the worse pairs to choose for 100BASE-TX.
   c) Baseline wander?
   100BASE-TX requires that it operates on a class D link, irrespective of the pairs chosen. HSTR will operate on these class D links.

   The use of the token ring pairs will increase the chance of a link failing. However, the continued use of lobe test by the 802.5 MAC will prevent stations from joining these links. We acknowledge that there may be problems, and will continue to investigate these issues during the development of the standard.

   Baseline wander has been investigated, and has not shown itself to be a problem.
10. ***Keeping the same cost for increased performance is not what other technologies are doing. They reduce the cost as well.***
    We are also looking to reduce costs. However, we show that we can meet the cost/performance criteria.
11. ***PARs submitted to committee are different from what was presented. Why?***
    We continued to address issues arising from the review of the PARs. The only changes made in the Final PAR are responses to these issues.
12. ***Bit ordering should never be a customer concern.***
    True, but life sucks.

13. **"Support emerging bandwidth-intensive applications" is counter-intuitive to supporting an existing customer base. Discuss.**
    Existing customer bases will migrate towards emerging bandwidth-intensive applications. HSTR will be there to support them.
14. **Will you share HSTR survey with 802?**
    A number of companies conducted their own internal surveys. An attempt will be made to summaries these summaries.
15. **You are building a new MAC. Say so.**
    We are not building a new MAC. We are making minimal changes to the existing MAC to support dedicated HSTR, while retaining support for 4/16, shared and dedicated entities.
16. **What do the customer like about HSTR?**
    High speed, native, easy migratory path, standards bases, preservation of key Token Ring attributes (frame size, source routing, priority, robustness, management)
17. **What percentage of those surveyed used frames greater than 4.5k?**
    Not asked.
18. **What percentage of those surveyed used priority at more than 2 levels?**
    Not asked.
19. **Have the Ethernet PCS management objects been mapped onto Token Ring management objects?**
    The current Token Ring management objects are retained in HSTR. Where this requires Ethernet PCS management objects to be mapped, they will be. Technical investigation has indicated that no new Ethernet management objects need to be defined to support this mapping.
20. **Is HSTR aimed at backbone only? Will there be no HSTR NICs?**
    HSTR is a complete solution; addressing everything from backbones to NICs.
    Initially application of HSTR is expected to be for backbones, switch to switch links, servers and workstations that require higher bandwidths.
21. **Will HSTR NICs be cost effective when compared with Fast Ethernet?**
    We satisfy the cost/performance criteria, where we will provide significantly better performance for a cost that is comparable to today's 4/16 Mbit/s Token Ring solutions.
22. **Why not use proprietary HSTR implementations?**
    Our customers require inter-operable standards based solutions.
23. **Auto-negotiation…**
    The auto negotiation standard has allowed vendors to produce devices that can only support 802.3. These devices cannot be configured to auto negotiate 802.5 (or any other protocol).
    Auto negotiation has yet to prove itself in the market place.
    The proposal by 802.5 to not support auto negotiation, was the result of investigations into the available 100BASE-TX devices, and how these could be configured to allow HSTR operation.
    By retaining the 802.5 pin outs (on UTP), HSTR devices would not be able to auto negotiate with Fast Ethernet devices. It is also the intention that HSTR devices will not inter-operate with Fast Ethernet devices.
24. **Compatibility with existing 4/16 Mbit/s devices is beyond the scope of the proposed standard.**
25. **State that HSTR uses a common station and port specification.**
    The PAR will be updated.
26. **Why does it say "Gigabit or greater"?**
    The PAR will be updated.
27. **How many vendors are committed to producing HSTR devices?**
    The numbers will be added to the PAR.
28. **a) 4/5 and 3/6 may have a problem being plugged into 100BASE-TX. Auto-negotiation could have helped.**
    b) What happens when you misconnect copper and fibre HSTR and fast Ethernet?
    Copper has no issues for the ethernet network.
    Fibre is potentially a problem, with a HSTR station transmitting small Token Ring frames for a maximum of 780ms during an attach attempt.
    How did 802.3 solve this problem, when connecting 100BASE-FX into an FDDI network?