16th April 2002

# The Level-1 Accept Problem

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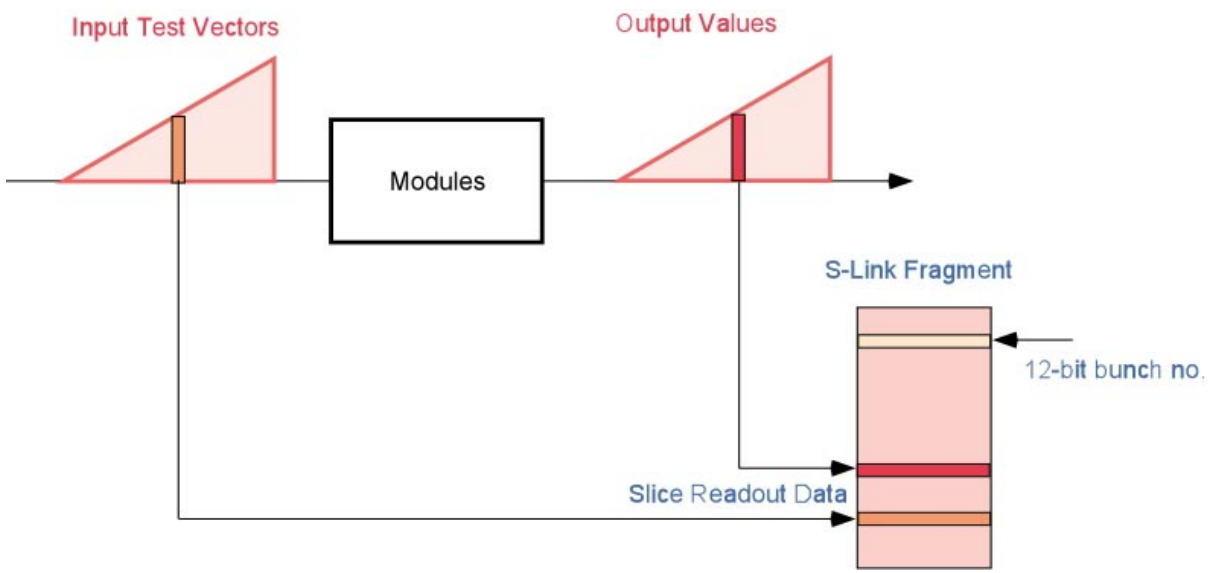
# The Problem (1)



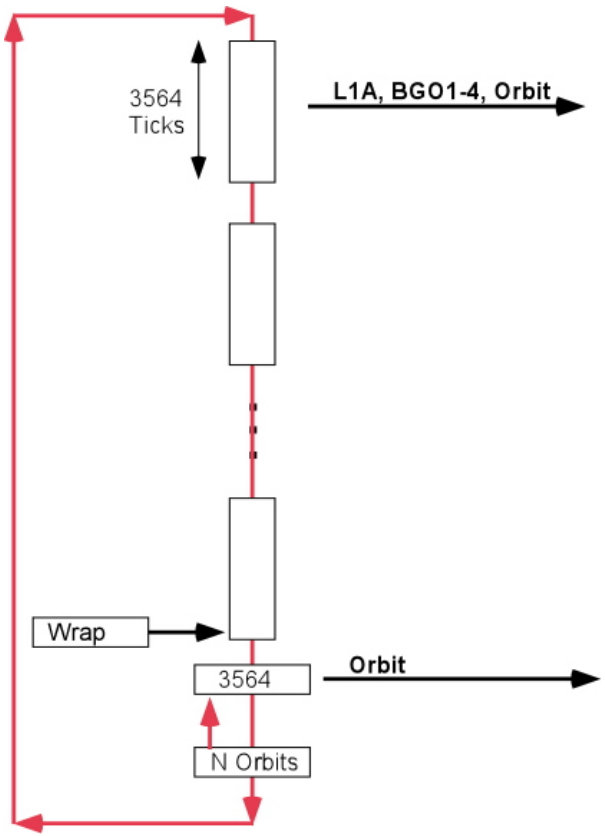

When did the L1A fire?

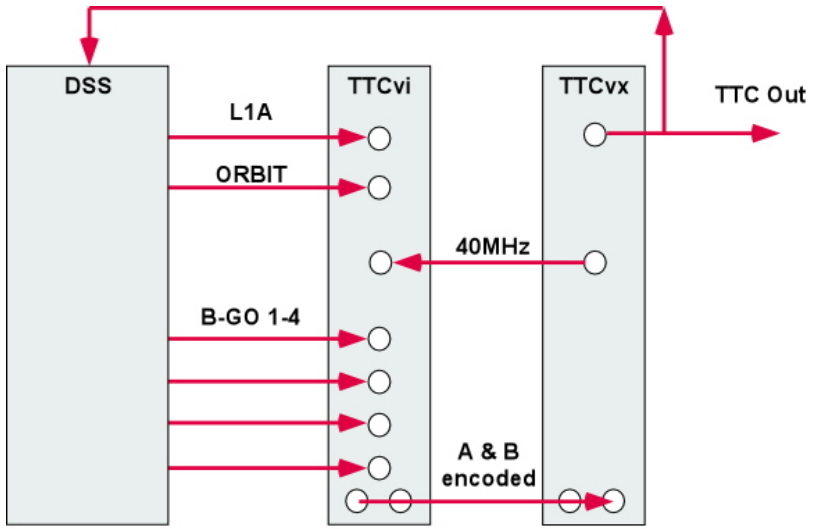
What is the bunch number?

# The Problem and The Solution

- **We need to check observed S-Link readout against computed values from the simulation.**
- **But the simulation can't handle the readout because it doesn't know when L1A will come.**
  - Can't predict bunch number;
  - Can't predict which data slice will be sampled.
- **Solution: Tell the simulation when L1As will fire**
- **Use DSS to generate all necessary TTCvi input signals**

# DSS Generation of TTCvi Inputs



# DSS

- **DSS will be loaded with (up to 8) LHC orbit "Frames"**
  - Each one containing in the least significant bits of each word a pattern of L1A, BGO1-4 and Orbit.
  - They will be output in sequence at 40 MHz up to the wraparound point (a programmable memory address).
  - Then wait N complete Orbit periods, with only the ORBIT signal being generated. Then restart.
- **For testing, Steve has the neat idea of matching the Orbit period to the length of module replay memories.**
  - Needs testing with TTC external ORBIT imput. The TTCvi has fixed length pseudo-orbit, so this must come from DSS.

# Busy !!

- **Handling BUSY is not nice. We don't have a solution yet.**
  - BUSY is generated when the ROD FIFOs get too full.
    - ***This depends on how fast the readout had been running.***
  - We can't predict when it will fire or for how long
- **When it fires, it should prevent more L1As**
  - We can check that the system doesn't overflow at high rates. Maybe this is adequate.
  - The analyser will have to scan ahead in the expected event list to find the next matching event. Maybe use a short loop of a few events only. The event number will mismatch.
- **Ideas on a postcard please.**

# End

# The End