HV fanout & breakout boxes

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- # hybrids > # HV channels => need fanout boxes
  - Located in MCH2 near HV Bira supplies
  - Required splitting 1:1, 1:2, 1:4
    - Splitting is determined by currents
  - Issues
    - HV 300 V in L2-5, 1000 V in L0-1 (compared to 100 V for Run2a)
    - Mapping
      - Lesson from run2a operations : never split one HV channel between hybrids belonging to different VRBs. Why? One HV trip maps to different VRBs (and even VRB crates) and causes multiple readout & download logistics problems + confusion for shifters. BIG ISSUE
      - Plan to preserve most of cabling
  - spark gap 150 V
    - Safety requirement
      - Bira supplies HV up to 3000 V
    - So far (Run2a) not a single spark occurred
      - Bira has software/hardware protections

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- Proposal for Run2b
  - Keep fanout boxes
    - Located in MCH2
    - Do we need spark gaps at all ?
      - Bira has software/hardware overvoltage protection
  - Use 1:4 splitting for 4 hybrids in the same stave
    - Map these hybrids to the same VRB
    - Can we eliminate 1:2 splitting in Layer 3 ?
  - For L0-1 (1000 V)
    - One HV channel per hybrid
    - New cabling MCH2 - Platform
    - No fanout boxes needed
  - Need a break point for cabling at the Platform
    - present Breakout boxes location
    - HV 50-conductor -> HV 34-conductor
  - Preserve 34-conductor and IB backplane (?)
- Prague group interested in design and manufacturing of the new fanout boxes
  - Design & Prototyping
  - Production
  - Installation & Maintenance