PROJECT IMPLEMENTATION PLAN (REVISED)

Phase 1: IP Addressing & Connectivity (Basic Setup & Connectivity)

- **Objective:** Configure "Layer 1 & Layer 2". Ensure devices are cabled to the correct ports, interfaces are enabled, and directly connected IPs can ping each other.
- **Implementation Tasks:**
  - Configure Hostnames for all devices.
  - Enable interfaces (`no shutdown`).
  - Configure IP Addresses/Subnet Masks for physical interfaces according to the corrected standard IP table.
  - Configure Loopback Interfaces (Router-ID).
  - Verify Point-to-Point connectivity.

Phase 2: Interior Gateway Protocols - IGP (Internal Routing)

- **Objective:** Establish distinct routing zones; routers within the same zone (Area/AS) must see each other.
- **Implementation Tasks:**
  - **OSPF Core:** Configure OSPF Area 0 for R1, R2, R3, R4.
  - **Satellite OSPF:** Configure Area 3 and Area 4 (Right-Site).
  - **EIGRP:** Configure EIGRP AS 100 (example) for the Upper-Site (R7, R8, R9, R10).
  - **RIP:** Configure RIPv2 for the Bottom-Site (R3, R11, R12, R13).
  - **Note:** Do not perform Redistribution at this step.

Phase 3: Redistribution & Optimization

- **Objective:** Achieve Full Connectivity across different protocols and optimize the routing table.
- **Implementation Tasks:**
  - **Redistribution:** Perform at edge nodes (ASBR) R1 and R3.
  - **Rule:** It is mandatory to configure **Metric (Seed Metric)** during redistribution to ensure reliability.
  - **Stub/NSSA Areas:** Configure OSPF area optimizations (Totally Stub at Area 1, Normal Stub at Area 4, NSSA at Area 2).
  - **GRE Tunnel:** Configure a virtual tunnel (as per initial requirements) to connect discontiguous areas (Area 1 to Backbone).
  - **OSPF Virtual Link:** Establish a virtual link through Area 3 (Transit Area) between R4 and R5. This aims to extend Area 0 to R5, allowing Area 4 to exchange routing data with the backbone core.

Phase 4: BGP Architecture (Border Gateway Protocol)

- **Objective:** Connect the Enterprise zone (Left-Site) with the simulated ISP.

- **Implementation Tasks:**
  - **iBGP Peering:** Configure between R14 and R15.
  - **Full Mesh:** Ensure iBGP routers are fully peered (or configure standard iBGP between the R14-R15 pair) to avoid Split Horizon issues.
  - **eBGP Peering:**
    - Connect R14 to R16 (ISP 1).
    - Connect R15 to R17 (ISP 2).
  - **BGP Redistribution:** Advertise routes from IGP into BGP and vice versa (be cautious of routing loops).

Phase 5: High Availability - HSRP (Gateway Redundancy)

- **Objective:** Ensure the Gateway is always available for end-users at the Left-Site.
- **Implementation Tasks:**
  - Configure HSRP Groups on the LAN interfaces of R14 and R15.
  - Set up the Virtual IP (VIP).
  - Configure Priority and Preempt to define Active/Standby roles.